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Approaches to IS strategic planning in public sector organisations

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Thesis Submitted to The University of Dublin, Trinity College, for the Degree of Doctor of Philosophy

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March 2007

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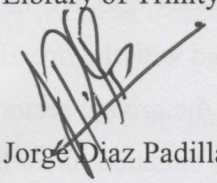

Jorge Díaz Padilla Boyer

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March 2007

Summary

The strategic planning of information systems (IS) involves the development of functional-level IS strategies which contain activities and applications to assist an organisation in managing the IS area, executing its business plans and achieving its business goals. Previous research has demonstrated that it is necessary that the IS strategies are strongly synchronised with the overall business strategies. However, not only have these studies been undertaken in the private sector, but due to a large number of organisations with an inadequate synchronisation situation, there is still a need to further understand how to carry out the process, especially in the public sector. Therefore, in order to detail the synchronisation's nature and recognise the reasons for its accomplishment, an investigation and research question were proposed with the objective of explaining why and how public sector organisations synchronise their business and IS strategies.

The interpretative methodology consisted of multiple exploratory case studies around six government departments and offices in the Republic of Ireland. The field work was carried out by means of inductive semi-structured interviews with business and IS managers, together with the collection of secondary data. After analysing the data, a theoretical framework emerged about how business and IS strategies are synchronised. This model, which alters according to the mutual influence between the business and IS strategies, portrays four distinct synchronisation approaches in public sector organisations. Furthermore, the results reveal specific actions that these organisations have carried out in order to accomplish the process, and a list of reasons as to why these organisations have endeavoured to synchronise both strategies. For theorists, the outcomes contribute to the body of knowledge within the IS field and provide further evidence about the nature of the IS strategy and its relationship with the business, its strategy and objectives. For practitioners, the results augment the understanding of how public sector organisations have achieved the synchronisation process, thus presenting more information about how government departments and offices incorporate and exploit technology.

*I want to dedicate this thesis to my two **Paulinas**, the most important people in my life;*

*To my parents, **Patricia** and **Jorge**, the best role models I could have hoped for;*

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Jorge Diaz Padilla Boyer (March 2007)

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List of abbreviations

ADP	Automatic Data Processing
BASIS	Business Access to State Information and Services
BSE	Bovine Spongiform Encephalopathy
BSI	Business Service Identifier
BSP	Business Systems Planning
CEO	Chief Executive Officer
CIO	Chief Information Officer
CMOD	Centre for Management Organisation Development
CSF	Critical Success Factors
DAF	Department of Agriculture and Food
DBG	Delivering Better Government
DCMNR	Department of Communications, Marine and Natural Resources
DP	Data Processing
DSS	Decision Support Systems
EAS	Electronic Access System (in Land Registry and the Registry of Deeds)
ESB	Electricity Supply Board
ESD	Electronic Service Delivery
ESS	Executive Support Systems
EU	European Union
GTM	Grounded Theory Method
ICIS	International Conference on Information Systems
ICT	Information and Communication Technologies
IM	Information Management
IS	Information Systems
ISD	Information Systems Division (in the DCMNR)
ISP	Information Systems Planning
ISPU	Information Society Policy Unit
ISSP	Information Systems Strategic Planning
IT	Information Technology
ITRIS	Integrated Title Registration Information System (in Land Registry and Registry of Deeds)
LGCSB	Local Government Computer Services Board
MAC	Management Advisory Committee
MIS	Management Information Systems
MIT	Massachusetts Institute of Technology
OASIS	On-line Access to Services, Information and Support
OECD	Organisation for Economic Co-operation and Development
ROS	Revenue Online Service (in the Office of the Revenue Commissioners)
SAM	Strategic Alignment Model
SDPM	Strategic Data Planning Method
SISP	Strategic Information Systems Planning
SMI	Strategic Management Initiative
SPIS	Strategic Planning for Information Systems
SWOT	Strengths, Weaknesses, Opportunities and Threats
TM	Top Management
UN	United Nations

CHAPTER 1

INTRODUCTION

> *"Theoretically, planning may be good. But nobody has ever figured out the cause of government stupidity – and until they do (and find the cure), all ideal plans will fall into quicksand."*
>
> Richard Feynman
> Nobel prize physicist (1918-1988)

1.1 Introduction

Notwithstanding their size, industry or nature, organisations carry out planning activities to survive, to compete in an ever-changing environment, and to best manage their human and monetary resources. Since the 1960s, ten years after computers started to be introduced into businesses, a new kind of planning came into being as managers became aware that too many investments were being made in these novelties and just a few benefits were being realised. After forty years, the importance of planning the technological resources in organisations is as relevant as ever. This has been demonstrated by surveys that rank it as one of the top concerns for business and information systems (IS) managers, and investigations that naturally highlight it as a critical requirement in both public and private organisations. However, one particular issue within the planning of IS resources has been persistently emphasised by theorists and practitioners alike, namely, the influence that business strategies and IS strategies can have on each other. This influence, which is the focal point of this research, is referred to in this study as the 'synchronisation' of business and IS strategies.

This first chapter presents the objective of the thesis, together with its structure, methodology and boundaries. Sections 1.2 and 1.3 identify and define the research problem, and provide background information about the current investigation and the research question. Section 1.4 describes the research contributions, stating the expected outcomes of the thesis and its justification. Even though Chapters 4 and 5 comprise the research methodology, Section 1.5 intro-

duces the method of enquiry. Section 1.6 portrays the thesis structure and outlines the content of each chapter. Then, definitions of relevant terms as used throughout the thesis are presented in Section 1.7. Finally, Section 1.8 states the scope of the investigation and its limitations.

1.2 Background to the research

The IS field, a young multidisciplinary branch of learning, was created after the need to deal with computer-based IS in a business context (Jayaratna 1994), addressing managerial, social and technical concerns of firms which rely on technology for their operation (Chan and Huff 1992; Clarke and Lehaney 1997). Throughout the years the IS field has been shaped by many supporting disciplines (*e.g.*, management science, organisation science and sociology), together providing the essence of a field that focuses on technical issues from an organisational perspective (Khazanchi and Munkvold 2000). Given that initially their focus (*i.e.*, IS) was not relevant for the operation of companies or for business managers' decisions (King 1988b), the IS field was not taken very seriously or even as an academic discipline in its own right (Avgerou *et al.* 1999). However, nowadays not only has this body of knowledge brought together a considerable amount of high quality theory (Hamilton 2004), but IS have become an important element during business strategy implementations and enhancements, efficiency considerations in businesses' operations, and to the way technology has become an integral part of many products and services.

It has been demonstrated that the incorporation of IS into most organisation's processes improves efficiency, effectiveness and competitiveness (Sinclair 1986). Moreover, it has been acknowledged that IS are futile in isolation in organisations. A joint responsibility between business units and the IS area (Rosser 1996) is necessary to integrate, influence and incorporate technology into the business function and its strategy (Lederer and Mendelow 1986; Tozer 1986), particularly to achieve benefits such as competitive advantages (Gupta *et al.* 1997; Kaye 1993; McFarlan *et al.* 1983). In order to facilitate the process and achieve these benefits, strategic planning concepts were introduced into the IS discipline to formally formulate, implement and evaluate strategies. Consequently a further topic and future research topic emerged (Ansoff 1987; Mintzberg *et al.* 1998), a subject matter critical during the implementation and management of technology in private and public organisations: namely, the strategic planning of the IS function.

Computer systems planning was identified in the 1960s when organisations realised that expensive technological developments were not supporting the business function or contributing to its objectives (Bensaou and Earl 1998). It subsequently became an important aspect of this planning to link the computer resources to the business in order to prepare organisations for the future, to face their competition, and to accomplish their business goals (Kriebel 1968/1969; Lederer and Sethi 1988). In order to aid the IS strategic planning (ISSP) process development, it has been acknowledged that IS strategies should be prepared (Galliers and Leidner 2003). These strategies are socio-technical organisational requirements that not only have to be sustained and guided by business strategies (Ward and Peppard 2002), but have to be grounded in the firm's operation and synchronised with the business's mission and objectives. In other words, both strategies have to influence each other concurrently (King 1978; Reich and Benbasat 1996).

The synchronisation of business and IS strategies, an important research topic throughout the years (Burn 1996; Kearns 2006; Luftman *et al.* 1993), is characterised by a business strategy that simultaneously influences its technological counterpart (Gupta *et al.* 1997), together with an IS strategy that affects the formulation of the organisational objectives and goals (King and Zmud 1981). Furthermore, even though the synchronisation process has been the number one reason and objective for IS strategic planning for many years (Galliers 1987; Luftman and McLean 2004), it has been acknowledged that most of the research work into this topic lacks empirical or theoretical bases (Bakos and Treacy 1986; Jarvenpaa and Ives 1990), especially regarding how to accomplish the process and the effects of a weak synchronisation (Avison *et al.* 2004; Grover and Segars 2005; Hirschheim and Sabherwal 2001; Papp and Fox 2002; Pyburn 1983). This has caused the predomination of business and IS strategies that do not or only partially influence each other (Burn and Szeto 2000; Luftman and Brier 1999). Consequently, not only several benefits can be missed (Chan 2002; Chan *et al.* 1997; Henderson and Venkatraman 1993), but numerous problems can be instigated (Rucks and Ginter 1982).

The two main components of the synchronisation process are: a business strategy that embraces the necessary actions to help organisations achieve their business objectives (Baets 1992); and an IS strategy that comprises the activities that determine how the IS area contributes to the accomplishment of the business's goals (Lederer and Sethi 1988). Moreover, due to directly and indirectly influencing the synchronisation process, the business and IS managers, the

business function (*i.e.*, operation of the organisation in general and the interaction between all areas) and the IS function (*i.e.*, IS area, including its staff and techniques) are also relevant elements among the factors that shape both strategies. These six components (*i.e.*, business strategy, IS strategy, business managers, IS managers, business function and IS function) are referred to as the 'synchronisation agents' throughout this thesis.

1.3 Research question

During the last decades, academics, practitioners and consultants have continuously highlighted the importance of pursuing the necessary actions for achieving a strong synchronisation between business and IS strategies. As a result, benefits have been demonstrated and recommendations have been widely published. However and especially in the public sector, it is still common to find organisations that do not or only partially undertake these activities, mostly because they find it difficult to successfully accomplish the process. Despite extensive evidence of successful cases and documented benefits in private companies, lack of synchronisation has happened in government due to deficient information about the nature of the process, particularly about how public sector organisations have pursued the synchronisation, and an understanding of the reasons for engaging in this endeavour.

After reviewing the IS literature in general, IS strategic planning was acknowledged as a contemporary, noteworthy topic for this study since this theme is persistently focused around the management of IS resources. In addition, ISSP helps businesses achieve their objectives and develops enhanced products and services. Since one of the purposes of developing an IS strategy is to favourably influence an organisation, the close synchronisation between business and IS strategies was constantly referred to as the key factor for successful IS strategic planning (Baets 1992; Henderson and Venkatraman 1993; King 1978; King 1988a; Zviran 1990). For that reason, together with a lack of empirical investigations that focus around the development process of this synchronisation, the predomination of cases with limited synchronisation and the need to contribute to the body of knowledge within the IS field, the synchronisation of business and IS strategies was selected as the main research topic. Recently, it was stated that while there have been many studies that examine the *what* questions of ISSP, particularly concerning the synchronisation issue, there has been little research around the *how* questions (Avison *et al.* 2004; Grover and Segars 2005). Moreover, with the objective of learning more

about the process and to complement the *how* question, it is indispensable to analyse *why* public sector organisations are engaging in these activities. Therefore, in an area where there is a need for more rigorous and less descriptive models (Jarvenpaa and Ives 1990), the scope of the question that sets the limits of this investigation is why and how do public sector organisations synchronise their business and IS strategies?

The literature states that if the two strategies are developed without influencing each other, important differences may occur in the basic assumptions upon which each one is built (Matthews 1992). The organisation needs an IS strategy to fulfil its requirements, to help in the attainment of business objectives by means of technology, and to achieve benefits such as competitive advantages. Likewise, the IS area needs the business's direction and experience for efficiency purposes and proper management of the company's technological resources. However, although prescriptive and normative publications predominate, especially focused on the private sector, the literature still lacks evidence of how business and IS strategies influence each other in public sector organisations, and why these organisations have undertaken the necessary actions to pursue the synchronisation process.

1.4 Research justification and contribution

It has been recently stated that research on the topic of IS strategic planning is still needed in order to contribute to managerial knowledge of the IS field, its parent discipline (Banker and Kauffman 2004). Therefore, this thesis has the objective of developing novel theoretical insights that provide an original contribution to academic knowledge in the IS field. In line with this, the research results aim to expand our knowledge of IS strategies and their relationship with the business function, to provide a greater understanding of the nature of the synchronisation process, and to enhance the information that public sector organisations have about how the business strategy can influence and be influenced by the IS strategy, all of which will add to the body of knowledge within the IS field and provide practitioners with evidence of best practice.

As described in Chapter 3, after its importance being documented for more than a decade, the synchronisation of business and IS strategies remains a key concern to top business executives. However, most of the publications dealing with this issue have been normative and prescriptive

(Hann and Weber 1996), mainly stating *what should* be done, instead of *how* synchronisation is to be achieved (Grover and Segars 2005; Hirschheim and Sabherwal 2001; Papp 1999). Therefore there is still a gap in the literature and a need to explore how organisations synchronise their business and IS strategies (Allen and Wilson 2003; Baets 1992; Luftman and Brier 1999; Nath 1989), especially in the public sector (Willcocks 1992). Consequently, the research contributions are: first, to explore and identify the reasons and motivations of *why* public sector organisations addressed the synchronisation of business and IS strategies by analysing the main activities performed and the nature of the mutual influence of both strategies; and second, to improve our understanding of *how* these public sector organisations have synchronised their business and IS strategies by means of a theoretical framework that explores the nature of the synchronisation process.

1.5 Methodology

In order to answer the research question, following an interpretative paradigm, the thesis' methodology (detailed in Chapter 5) consisted of multiple exploratory case studies (justified in Chapter 4). Data collection methods included inductive, semi-structured interviews, together with the gathering of documents. Six cases, corresponding to government departments and offices in the Republic of Ireland (hereafter referred to as Ireland), were developed around the 'synchronisation of business and IS strategies' unit of analysis. The analysis of data, which identified categories from concepts and codes with the objective of building knowledge, consisted of within-case and cross-case scrutiny. Before the main field study, a pilot case study was carried out to validate the design and complete the case protocol.

The case study method was selected due to the nature of the research question, the researcher's abilities and resources available. Moreover, this method is particularly appropriate where the phenomena being researched are not supported by a strong theoretical base, where they embrace meaningful characteristics of real-life events and when investigating 'how' and 'why' questions (Benbasat *et al.* 1987; Yin 1989; Yin 1994). In contrast to other techniques such as surveys and observations, interpretive case-based research facilitates the understanding of complex social happenings in their real-life setting; without clear boundaries between phenomenon and reality (Yin 2003). Furthermore, there is a strong case study tradition in the IS field (Dubé and Paré 2003; Lee 1989).

1.6 Thesis structure

The macro-level structure of this thesis and the main links between chapters are portrayed in Figure 1.1. In total there are eight chapters – including six appendixes that support the study's methodology – which correspond to the literature review, methodology, results and conclusion of the investigative process. The following paragraphs outline the main arguments of each chapter.

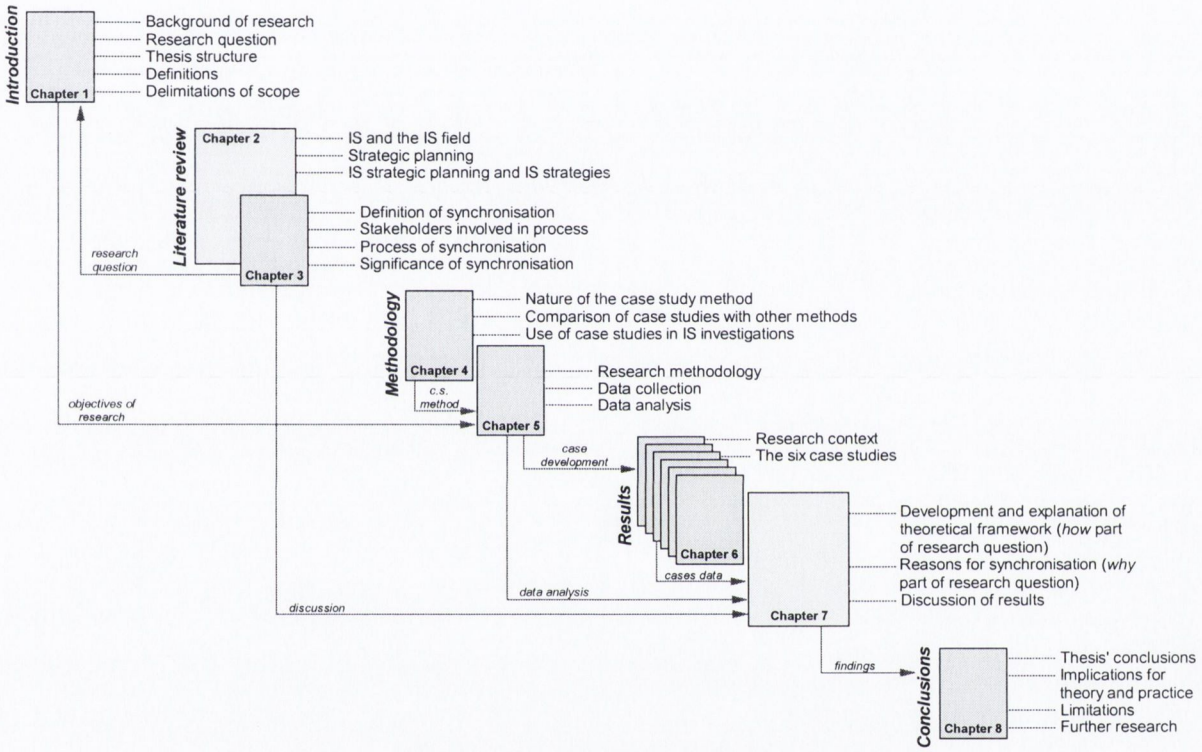

Figure 1.1: Thesis structure

Chapter 2: Since the literature review provides a comprehensive theoretical context for the research question, the unit of analysis and findings, there are several topics covered (see Figure 1.2). Initially, a review of the two main fields is presented: the IS field (parent field and '*i*' in the figure) and the strategic management field ('*ii*'). One of the topics of the strategic management field is strategic planning ('*iii*'). Thus, IS strategic planning ('*iv*') – *i.e.* the planning of the IS function and the development of IS strategies – is formed by combining strategic planning with concepts of the IS field. Most of the content of Chapter 2 embraces the IS strategic planning subject and its output, IS strategies.

Chapter 3: One of the sub-topics of IS strategic planning, and the focal point of the thesis, is the synchronisation of business and IS strategies ('*v*'). Therefore, this subject matter is

detailed in Chapter 3, providing its background, characteristics and issues as associated with the research question ('*vi*').

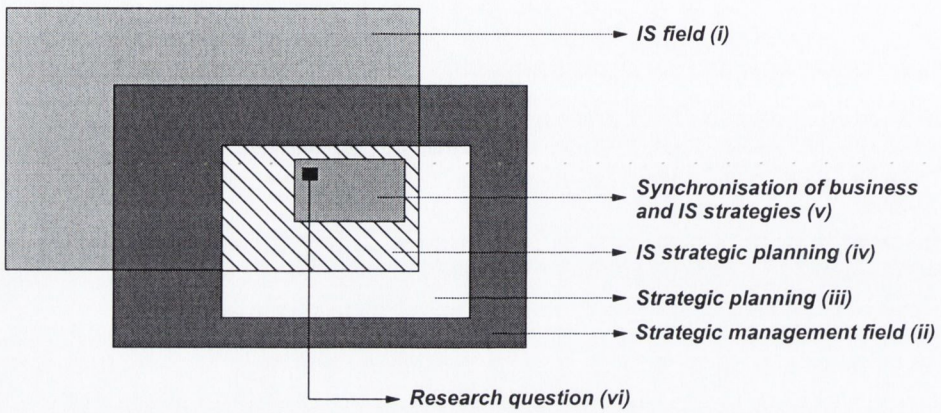

Figure 1.2: Organisation of literature review and situation of research question

Chapter 4: Since the case study method constitutes the technique used to carry out the investigation, it has to be justified. Therefore, this chapter provides more information about the use of the case study method, including its background, phases, benefits, and how case studies have been used in IS investigations.

Chapter 5: Using the previous chapter as background information, Chapter 5 describes the research methodology (*i.e.*, how the research work was carried out) of the present thesis, including how many cases were developed, how the research protocol was constructed, how data were collected, and how concepts and categories were extracted from raw data. Finally, the 'synchronisation actions', which directly emerged from raw data and constitute the first main outcome of the thesis, are described.

Chapter 6: This chapter encompasses the content of the six case reports, which are the product of the within-case analysis. Furthermore, a portrayal of strategic management in the Irish Government is included as research context.

Chapter 7: Treating the cases as its foundation, Chapter 7 presents the research findings. These include the characteristics of the theoretical framework (second main thesis' outcome) that emerged from the data collected, from the cross-case analysis and from the literature. It also looks at the reasons why top managers of public sector organisations synchronise their business and IS strategies (third main outcome). Moreover, these results are discussed and justified with previous literature.

Chapter 8: The concluding chapter provides a synthesis of the key research findings, describes their implications for theory and practice, and makes a number of recommendations for further study.

1.7 Definitions

Definitions of some terms as used throughout the thesis are outlined in this section. They are further expanded in Chapters 2 and 3.

- *Information systems*: assortment of computer-based interrelated components that collects, processes, stores and distributes data in the form of information to support decision making, coordination and control in an organisational social context (Avgerou *et al.* 1999; Khazanchi and Munkvold 2000; O'Brien 2004; UKAIS 1999);

- *Strategic planning*: process that develops strategies in a structured, formalised manner (Mintzberg *et al.* 1998). It leads businesses and its functions by means of corporate-level, business-level and functional-level strategies that integrate the organisation's major goals, policies and activities into a cohesive and coherent whole;

- *IS strategic planning*: process of "identifying a portfolio of computer based applications that will assist an organisation in executing its business plans and realizing its business goals" (Lederer and Sethi 1988 p.446);

- *IS strategy*: formal functional-level plan that identifies the IS area's role in supporting the strategic objectives of the business (Boddy *et al.* 2005; Kriebel 1968/1969; Ward and Peppard 2002) while also coordinating the IS function's main future and current activities;

- *Business strategy*: overall plan of action which defines the organisation's mission, objectives and competitive position, and the process by which the organisation uses its resources to achieve those objectives (Mintzberg and Quinn 1996; Tichy *et al.* 1982);

- *Synchronisation of business and IS strategies*: concurrent influence that both the IS strategy (a functional-level strategy) and the business strategy (a business-level strategy) have on each other.

1.8 Delimitations of scope

The delimitations of this study are as follows. Firstly, this research was confined to the analysis of the synchronisation of business and IS strategies, which is the influence that these both strategies have on each other. Any factors beyond the formulation and implementation of the mission and objectives of the two strategies, together with the impact that the business function (and its people) and the IS area (and its staff) have in the process were not particularly taken into account. Secondly, IS strategic planning and thus the synchronisation of business and IS strategies were analysed under the deliberate strategy perspective and focused around an intended strategy formation process (see Section 2.2.2). Strategies that emerge by confusion, learning and chance were not considered. Thirdly, the investigation was narrowed in scope through the focus on certain types of public sector organisations in Ireland. Due to strategic management concepts that have been in place in the Irish public sector for the last 10 years, variations could exist in other countries in the characteristics of how business and IS strategies are synchronised. Fourthly, even though the synchronisation is a process rather than an observable outcome or document, it was investigated by analysing its effects, activities and people at one point in time throughout the six case studies (see Section 5.2.1). Consequently, since each of the organisations was at a different stage of the synchronisation process during the study, the characteristics of how activities unfolded over time were beyond the scope of the present thesis. Finally, the process was analysed by discussing with business and IS managers why and how the synchronisation activities were carried out, while concurrently reviewing documents and archives as supporting evidence. Any other sources that might provide additional information were not considered.

1.9 Conclusion

This chapter has presented the foundations and structure for the thesis. It introduced the background of the investigation and the research question that guides and limits the study. Following this, the research was justified and the methodology briefly described. Finally the thesis structure was presented, together with definitions and the delimitations of the research. Building on these foundations, the next chapter commences with the background of the research, introducing the IS strategic planning topic and its wider body of knowledge.

CHAPTER 2

THE NATURE OF IS STRATEGIC PLANNING

> *"In preparing for battle I have always found that plans are useless, but planning is indispensable."*
>
> Dwight D. Eisenhower
> US general and Republican politician (1890-1969)

2.1 Introduction

Information systems strategic planning (ISSP) emerged as a necessity to efficiently manage the information systems (IS) area, its resources and operations, to help public and private organisations develop enhanced products and services, and as a way to support a company's objectives[1] while maintaining a competitive position in the marketplace (Hartono *et al.* 2003). It is not a one-time activity: the planning and its outcomes – IS strategies – need to be a continuous, ongoing pursuit (Clarke and Lehaney 1997; Galliers 1987b), where by means of learning and feedback, this process is enhanced until it attains its purpose.

Since the emergence of IS strategic planning in the 1960s, it has gained significance in businesses not only to achieve multiple organisational benefits, but also to prepare for the future and to be flexible in an ever-changing environment[2]. Nevertheless, since the literature has emphasised the complexity of the process (Kearns and Lederer 2004; Laware 1991; Newkirk *et al.* 2003) and practitioners have struggled with its development (Baker 1995; McFarlan 1971), academics have researched techniques and published recommendations to overcome obstacles. Ultimately, ISSP has evolved from the combination of business planning and IS concepts into "an important and challenging management function" (Basu *et al.* 2002

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[1] Objectives or goals direct activities toward key and specific results, setting performance levels which a firm seeks to achieve and representing the ends which the organisation aims to attain (Ansoff, 1987a).

[2] Environment refers to all the internal and external forces which the organisation has little or no control and that affect strategic options, culture and structure (see Section 2.5.4).

p.521), and has become a key requirement in public and private sector organisations, connecting all areas, functions and people at all levels towards the achievement of the overall business objectives.

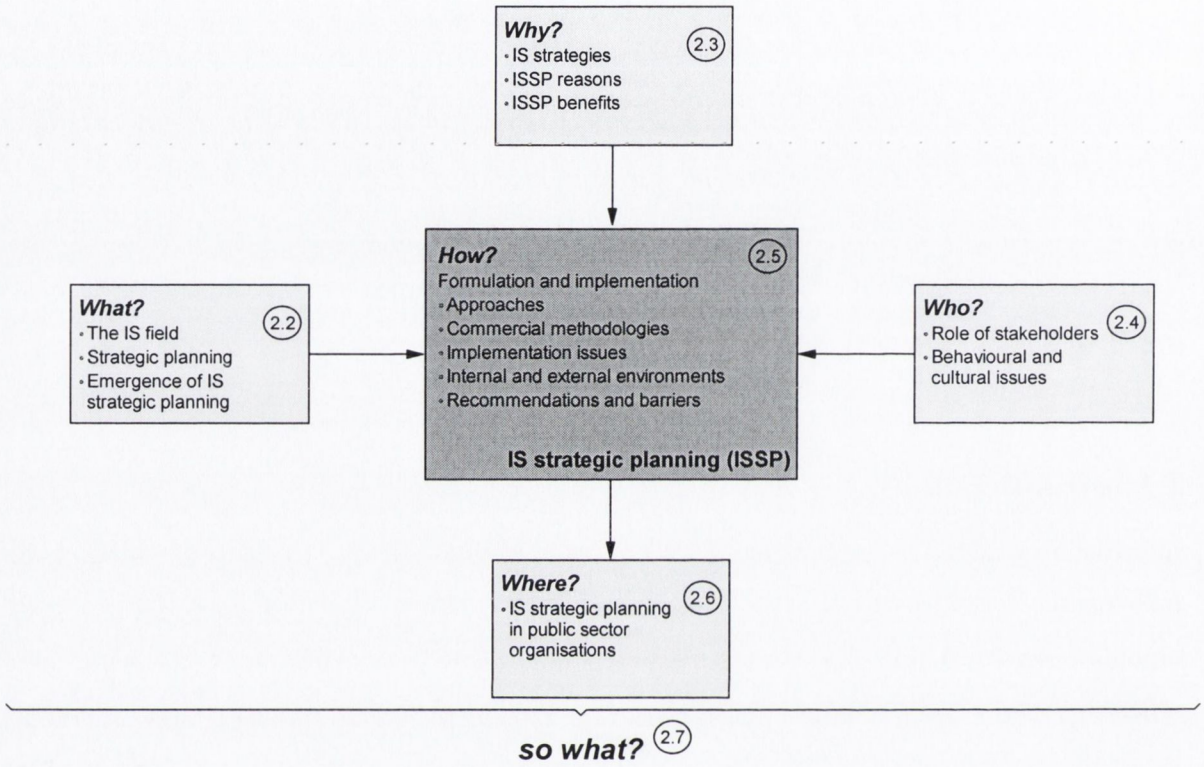


Figure 2.1: Organisation and structure of Chapter 2

The synchronisation of business and IS strategies: the main research topic of this thesis as detailed in Chapter 3, not only has ISSP in its foundation, but is considered a sub-topic of IS strategic planning (Lederer and Sethi 1996). For that reason, it is essential to initially layout the nature of IS strategic planning and to show where this topic fits in its wider body of knowledge. In order to achieve these objectives and thus prepare the groundwork for the thesis' key theme, this chapter is organised according to six questions related to ISSP (see Figure 2.1) and recounted in a chronological fashion. In the figure, the circled numbers indicate the section in this chapter that discusses the relevant topic. Section 2.2 comprises *what* constitutes IS strategic planning. Therefore, since it is formed by IS and strategic planning concepts, these subject matters are detailed, as are their definitions, evolution and importance. Section 2.3 covers *why* it is worth accomplishing this endeavour by looking at the strengths, the benefits and reasons encountered when formulating and implementing IS strategies; together with the functions and characteristics of these strategies. After this, the *who* part is explained in Section 2.4 by

focussing on the involvement of stakeholders and by detailing the role of business managers, users and steering committees, together with the behavioural and cultural issues that impact the process. Section 2.5 is about *how* the planning is actually performed, including its formulation (approaches and methodologies), implementation, and issues that cover both steps (environment impact, recommendations for success, and identified barriers and problems). Since this thesis is focused on the public sector, Section 2.6 portrays how IS strategic planning is carried out in these organisations (*where* question). Finally, Section 2.7 draws together all sections in the chapter and asks: *so what*? It encompasses the significance of ISSP in the investigation, together with an assessment of the reviewed literature with the purpose of highlighting the gap in the literature and the need for empirical research.

2.2 Definition and components of IS strategic planning

IS strategic planning, which is the planning and management of IS resources, was created with the purpose of administrating organisation-wide technological resources while carrying out IS long-range planning in support of the business objectives. Due to its technical and managerial nature, this topic is mainly shaped by two fields, namely, the IS field (its parent body of knowledge) and the strategic management field (which includes strategic planning as one of its themes). As a result, IS strategic planning emerged as the application of organisational planning concepts with a focus on IS, and has the objective of establishing the purpose and future direction of IS resources in firms.

What is the first of the main questions that structure this chapter and has the main objective of discussing specifically what is IS strategic planning, including what are its main components, origins, and characterisations. However, in order to do this, a description of its parent field (*i.e.*, the IS field) is first required, including: what is an information system? How has it evolved throughout the years in public and private sector organisations? What are its implications? Then, an overview of the strategic planning topic is also essential, including a portrayal of its parent field (*i.e.*, the strategic management field), its development since its early stages, and a depiction of how it is performed in the public sector. After this, IS strategic planning is defined as the combination of these two components. Finally, the evolution of ISSP throughout the years is presented. The following sections detail these issues.

2.2.1 IS and the IS field

The first key elements that need to be discussed in order to comprehend 'IS strategic planning' are IS and its body of knowledge, the IS field. Therefore, the objective of this section is to present an overview of the characteristics of these concepts as defined throughout the investigation, and to highlight the subsequent implications for IS strategic planning. In order to do this, first the definition and socio-technical nature of IS is presented, including a summary of the multiple terms that have been used for its identification. A detailed recount of the evolution of IS and the IS field is beyond the scope of this thesis. However, milestones on this development in public and private sector organisations are highlighted and summarised. Finally, the nature of the IS field is described, including its emergence, multi-disciplinary nature, implications and perspectives.

Information systems: definition and nature

The definition of *information systems* is formed by the terms *information* (*i.e.* compilation of data organised in such a way that it is more significant beyond the value of raw facts (Stair and Reynolds 2005)) and *systems* (*i.e.* collection of interrelated components that work together for a common purpose (O'Brien 2004)). Therefore, an information system is an assortment of interrelated components that collects, processes, stores and distributes data in the form of information to support decision making, coordination and control in an organisation (Khazanchi and Munkvold 2000; O'Brien 2004; UKAIS 1999). Based on this definition, there can be several types of IS (*e.g.,* informal like word-of-mouth or manual like paper-and-pencil). However, in this thesis the focus is on formal, organisational computer-based IS (hereafter referred to basically as IS) which employ computer hardware, software, telecommunications networks, computer-based data management techniques, and other forms of information technology (IT) or information and communications technology (ICT) to effectively analyse, design, transform and use data resources in organisations and society (Avison and Fitzgerald 2003; O'Brien 2004). Nonetheless, since IS focuses on the application of technical systems to business problems, together with the understanding of what these systems might do and their social effects on organisations, IS are considered socio-technical systems (Avgerou *et al.* 1999; Galliers 1991). This way, IS involve theories and practices related to the social and technological phenomena (UKAIS 1999) that combine computing and communications technologies in their social contexts. The socio-technical perspective requires that the people who will be using a technology (sometimes referred as the softer aspect) should be incorporated into its design to reflect the social nature of work as well as the efficient use of technology (the

harder aspect) (Davis 2000). Nonetheless, the interaction of these two aspects is what enhances the field (Avison and Fitzgerald 2003).

Throughout the years, the concept of IS has faced problems of recognition and legitimacy (Avgerou *et al.* 1999). The main reason for this has been due to the multiple terms used for its identification, which include IT, informatics, business information systems, information science, business systems and management information systems (or MIS, which in North America is predominantly equivalent to IS) (Avgerou *et al.* 1999; Khazanchi and Munkvold 2000). Due to this confusion of terms, Earl (1987; 1989) made a distinction between the two most general designations: IS and IT. He said that while IS mainly refers to the systems and applications that should be in line with the business needs, IT refers specifically to the features of technology (*e.g.*, architecture, security, hardware and networks) (Ward and Peppard 2002). Accordingly, since technology facilitates the realisation of applications and systems, IT are considered a subset of IS (Khazanchi and Munkvold 2000). Nevertheless, collectively both concepts are essential for the survival of the business and for providing competitive and strategic leverage. The changes in terminology reflect changes in the IS field's scope and consequently, as portrayed in the next sub-section, to the research agenda during the evolution of IS (Davis 2000).

The evolution of IS in private and public sector organisations

Computers have been used commercially in business administrations since the 1950s (Mukherki 2002; Somogyi and Galliers 1987). The first transaction processing and reporting applications were batch systems that used limited input and output media, such as punched cards, paper-tape and printers (Somogyi and Galliers 1987). Formally IS, as defined in this thesis, emerged in the 1960s with electronic data processing systems, record and store bookkeeping applications that could only be afforded by governments and the largest organisations. However, these centralised and stand-alone systems which produced mostly technical changes, had limited impact, and were very costly to produce (Laudon and Laudon 2002). Moreover, in many organisations, IS were initially introduced as part of the accounting or finance department with the purpose of reducing costs in administrative functions (Mukherki 2002). But due to the need for focused development, specialised management and an increase of data processing capabilities (Davis 2000), they required an area of their own. Initially it was called the electronic data processing (EDP) or data processing (DP) function; however, as its functions and responsibilities expanded, it became known as MIS or IS area.

In the earliest days of IS, government organisations were the leaders and primary innovators in computer use (Head 1982). It was their work which served as the principal stimulus to the development of the field (OTA 1981). During the 1950s and 1960s, many public sector organisations in the USA and Britain were already using information technology to its maximum capabilities (Margetts 1999). As a result, not only can many of the current developments in technology be traced back to governmental research in these decades, but the first successful large-scale data-processing implementation was developed in the US Census Bureau, the initial impetus towards programming languages for business applications was carried out in the US Department of Defence (Head 1982), and the Internet emerged as a US protection against a perceived military threat during the Cold War (Sabbagh 1994).

Throughout the 1970s practitioners became aware of the strategic potential afforded by IS, causing a predomination of mainframe computers (Ein-Dor and Segev 1978) and a spread of terminals across government departments (Margetts 1999). During the 1980s, with the replacement of dumb terminals with PCs and the growth of lower-cost and higher-decision making computer capabilities, the field started to be taken more seriously. Not only did organisations extend the use of information processing and communications technology to operational processes, but top managers paid more attention to its impact (King 1988b; Myers and Avison 2002; Pyburn 1983). During this time, the long-lasting advantage that governments had in technological innovations began to fade mainly due to the greater commercial motivation of the private sector and the larger funds available to bigger companies[3]. Therefore, the gap widened between what governments could potentially do with IS and what they were actually doing. By the 1990s, IS formed a significant proportion of most governmental operating budgets. Moreover, IS investigations increased their concentration on and were closely associated with, the efficient utilisation and exploitation of technology in business organisations (Avgerou *et al.* 1999).

Lately, and mainly due to the Internet, organisations have achieved inter-enterprise integration, dramatically altering the way public and private sector organisations operate (Markus 2002; Mukherki 2002). Currently the public sector is trying to use IS as an integrative government-wide tool, applying concepts like e-government and e-procurement to enhance its services and operation. However, an increasing proportion of IS exploitation in several governments still

[3] Despite this situation, the Irish Department of Social Welfare was Digital's largest customer in the world.

relies on external support and advice from private sector companies (Margetts 1999). In line with this and as expanded in the next sub-section, in a few years the IS field has "developed its own subject matter, a distinctive research perspective, and an excellent scholarly communication system," demonstrating the emergence of a research tradition in IS (Baskerville and Myers 2002 p.5). Moreover, it has developed an IS function that is considered a major functional business area, an important contributor to operational efficiency, a major source of information and support, and an important ingredient in the development of competitive products (Avison 2003; O'Brien 2004). Particularly for the public sector, Margetts (1999) identified advantages of incorporating IS into its process: IS 'replaced' bureaucracy through the reduction of staff; developed the possibility to link spatially distinct locations, offices, citizens and foreign administrations; and finally it amplified the potential of military operations to a considerable extent.

The nature of the IS field

The role of IS, their importance in companies and the technology required to support these systems have undergone a substantial transformation since the 1950s (Somogyi and Galliers 1987), when computers were mainly used for scientific calculations and massive routine administrative tasks. As said in the last sub-section, IS emerged in the 1960s in large measure because computer scientists could not adequately address the use of computers in an organisational context. Their technical nature and focus prevented them from paying adequate attention to wider managerial and social aspects, causing a tendency to view the field in narrow technical terms (Heany 1965). These issues inhibited the establishment of the field's first principles (Adam and Fitzgerald 2000), causing investigations not to be considered relevant either to business managers or practical to the operation of most firms. Consequently and with the purpose of becoming stronger in the application and management of technology, the IS field started to become broader. It incorporated other disciplines (Adam and Fitzgerald 2000), but preserving a focus to IS investigations (Fitzgerald 2003). After the first academic programmes on IS appeared in the late 1960s (Avgerou *et al.* 1999), the combination of hardware, software, data and communications formed the core of IS. But as each of these dimensions were developed and integrated, the concept, design and capability of IS underwent massive changes (Mukherki 2002).

For more than 40 years, several theorists have considered the IS field as an undeveloped emerging discipline (Banville and Landry 1989; Paul 2002), not yet established, and formed by

drawing upon other, more fundamental and mature bodies of knowledge (Keen 1980). In other words, it is regarded as "an intellectual subject in search of knowledge" (Fitzgerald 2003 p.226). Moreover, due to the short life of the IS field, some authors consider that it still does not has a very clear purpose or conceptual design (Checkland and Holwell 1998). Nevertheless, it has been demonstrated that the field has a significant role in providing useful knowledge for the success of organisations, supporting business strategies, enhancing business processes and managing the effective use of technology in firms (Khazanchi and Munkvold 2000; O'Brien 2004). Therefore and due to this last argument, some academics consider the IS field as a field in its own right (Baskerville and Myers 2002), even having caused the formation of entirely new bodies of knowledge like bio-informatics, biotechnology and geographical information systems (Baskerville and Myers 2002).

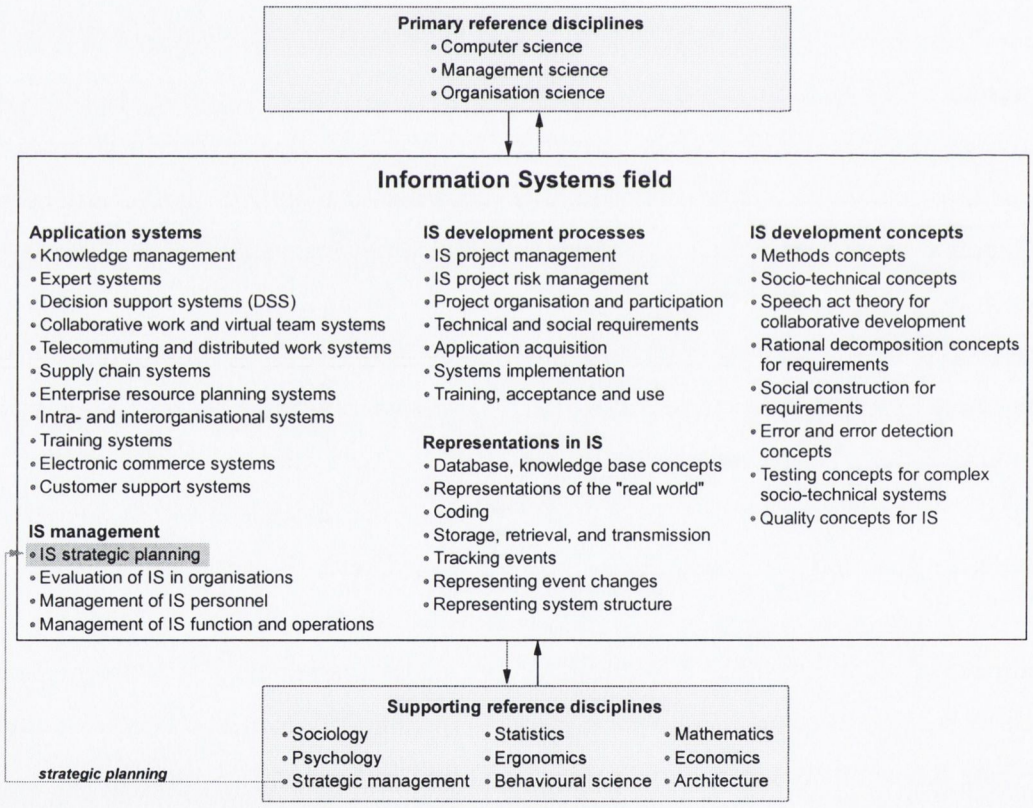


Figure 2.2: Classification of IS field and reference disciplines (adapted from Baskerville and Myers, 2002; Davis, 2000; Khazanchi and Munkvold, 2000)

With respect to the incorporation of other disciplines, there are principal and secondary contributors. As seen in the top part of Figure 2.2, the primary contributors to the IS field are computer science (the study of computers, including their design and uses for computations, data processing and storage, and systems control); management science (the use of

mathematical models, statistics and algorithms to aid in decision-making and management practices); and organisation science (or organisational behaviour science, which is the study of individual behaviour and group dynamics in organisations) (Khazanchi and Munkvold 2000; Laudon and Laudon 2002). However, there is also an extensive list of supporting disciplines from which IS research has constantly borrowed concepts (bottom part of Figure 2.2). Some of these subjects are technically oriented; nevertheless, special attention is paid to their social side, particularly to the development, use and impact of technology in an organisational setting (Myers and Avison 2002). These areas include psychology, sociology, statistics, economics, behavioural science, ergonomics and mathematics (Adam and Fitzgerald 2000). Together they concentrate on changes in attitudes, management and organisational policies (Laudon and Laudon 2002).

The multi-disciplinary nature of the IS field has several implications. On the one hand it has been criticised on the basis of a lack of uniqueness in terms of topics, theories and methodologies (Benbasat and Zmud 1999; Benbasat and Zmud 2003). Falkenberg *et al.* cited in Khazanchi and Munkvold (2000) say that the multiple bodies of knowledge that impact the field, together with the large variety of interest groups, imply an identity crisis. Also, Keen (1980), in the first international conference on information systems (ICIS) in 1980 said that IS was more a theme than a substantial field. A decade later he added that the IS field has nothing unique, since its foundations have been borrowed from other fields (Keen 1991). Moreover, King (1993 p.293) comments that the IS field might not even be a field, "but rather an intellectual convocation that arose from the confluence of interests among individuals from many fields..."; in other words, a "fragmented adhocracy" (Banville and Landry 1989 p.56).

On the other hand, since it employs theories and methods from related disciplines, some authors consider the pluralistic and multi-disciplinary nature of the field as a major strength (Chan and Huff 1992; Cheon *et al.* 1993; Robey 1996), along with the means by which it has developed quickly and with rich theoretical variety (Adam and Fitzgerald 2000). Moreover and because of this, the theories embraced, the methods applied and the topics addressed by IS scholars are varied, producing a rich diversity across the discipline (Benbasat and Zmud 2003). The IS field indeed initially benefited from the contributions from other fields; nevertheless, it is not the only body of knowledge that has an eclectic and pluralist foundation. In fact, as mentioned by Fitzgerald and Adam (1996 p.5), "it is quite natural in many emergent fields to borrow a foundation of usable knowledge and concepts from more mature disciplines"; for example,

psychology from psychophysical philosophy. Nowadays, the IS field has been singularly successful in developing its own research perspective and tradition. Evidence of this can be found in the fact that at least one major journal (*i.e.* MIS Quarterly) has been around for more than 25 years, that the field's major international conference (*i.e.* ICIS) is more than 20 years old, and that most major universities have IS departments (Baskerville and Myers 2002).

In summary, this section presented an overview of IS and its body of knowledge, the IS field. As regarded in this thesis, IS are a collection of interrelated socio-technical components that collects, processes, stores and distributes information by means of computer technologies to support decision making, coordination and control in organisations (Khazanchi and Munkvold 2000; O'Brien 2004; UKAIS 1999). Since its emergence, IS have changed the way public and private organisations operate, even playing "an increasingly vital, policy-critical role in the process of government, bringing new challenges, risks and dangers as well as solutions" (Margetts 1999 p.162). Initially IS were overlooked by top managers; nevertheless, with the aid of efficient planning procedures they have evolved into a critical element in most organisations. Accordingly, not only have they transformed businesses, but they have revolutionised the way business is conducted (Avison *et al.* 1999). One of the main topics of this multi-disciplinary and relevant field – part of the IS management perspective – is IS strategic planning (see middle part of Figure 2.2). Therefore, on one hand any research carried out on this theme contributes to the IS field, its parent discipline; on the other hand, advances in the IS field or in any of its primary contributors like computer science, management science or organisation science might influence the IS strategic planning topic. However, ISSP did not emerge as an issue unique to the IS field. It was formed in the 1960s by combining IS concepts and, as described in detail in the next section, strategic planning concepts.

2.2.2 The strategic planning process

The second main constituent of the 'IS strategic planning' subject matter is *strategic planning*, an integral part of the strategic management field and categorised as one of the fundamental activities of top management (Ansoff 1987c; Mintzberg 1978). Initially conceived in the 1960s as a technique to adapt organisations to the external environment and solve administrative problems (Hussey 1990), it lost its attraction after some shortcomings caused managers to demand a more comprehensive form of business planning. Nevertheless, after extensive research was carried out in the topic, weaknesses were addressed and top managers started noticing its positive effects, it became a critical formal instrument for managing and guiding

future business operations. As seen throughout this section, it was derived from, and mainly evolved in, the private sector (Bowman *et al.* 2002); however, important developments have lately been acknowledged in public sector organisations, modifying the way government organisations have traditionally worked (Joyce 1999).

Before starting this discussion, it is important to establish which strategy perspective was followed throughout the present investigation. One view of the nature of strategy was illustrated by Whittington (2001). For him, there are four basic generic strategy approaches (Figure 2.3), each with its own view of how strategic management is carried out.

- *The Classical*: Strategy is a rational process of deliberate calculation and analysis, designed to maximise long-term advantages and vital for securing the future. The objective is to master the internal and external environments to be able to predict future changes;
- *The Evolutionary*: Strategies only emerge as the process of natural selection delivers judgement. The environment is considered too unpredictable to anticipate effectively and the future too volatile to plan for. It is the market, not the managers, which make the important choices;
- *The Processual*: Long-range planning is considered useless. Strategy emerges from a pragmatic process of learning and adaptation;
- *The Systemic*: The forms and goals of strategy-making depend particularly on a social system in which strategy development takes place. Rather than seeking profits, organisations with this type of strategy have other interests such as professional pride or managerial power. Public sector organisations are generally found in the systemic perspective.

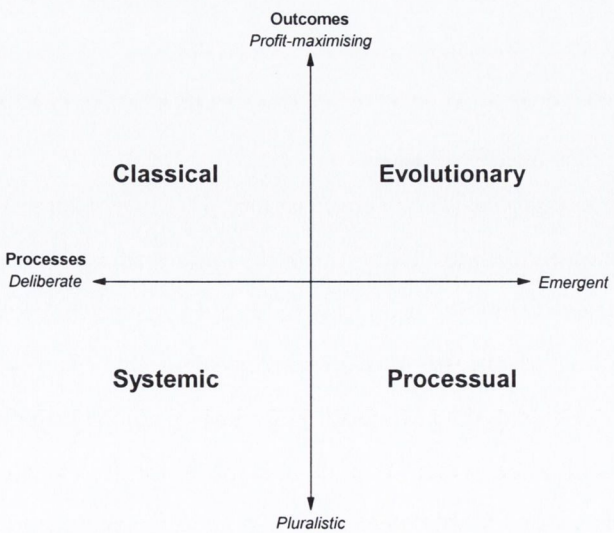


Figure 2.3: Generic perspectives on strategy (Whittington 2001)

As seen in Figure 2.3, there are two dimensions (horizontal and vertical axes): outcomes (measures the degree to which strategy either produces profits or seeks other possible outcomes) and processes (reflects how far strategies are the product of deliberate calculation, from fully realised to a pattern not completed as intended). In this thesis and section, the discussion is focused around an intended strategy formation process (*i.e.*, on the deliberate side of Figure 2.3 and exemplified by the Classical and Systemic approaches), rather than strategy emerging by chance, confusion and conservatism. The Planning School, proponent of strategic planning and discussed below, recognises both processes; nevertheless, it has a preference for strategies deliberately planned and executed (Mintzberg *et al.* 1998). Therefore, in accordance with the nature of IS strategic planning (introduced in the next section), the argument is treated as a formal, explicit and pre-meditated planning process, with clear objectives and aimed at rational goals.

Deliberate strategies, as the ones focused in this thesis, are shaped by a desired direction intentionally formulated or planned by managers. However, not all objectives are realised (*i.e.*, the actual strategy followed by an organisation). On the one hand, due to unworkable plans, changes in the environment, or external influences, the strategy or parts of the strategy can turn out to be unrealised (Johnson *et al.* 2005). But on the other hand, a strategy that was not expressly intended can be the one realised. This type, called emergent, comes about through everyday routines, activities and processes in organisations (Johnson *et al.* 2005). In line with this, while intended strategy development techniques include strategic planning and strategy workshops, emergent strategy development techniques comprise logical incrementalism and resource allocation routines. Nonetheless, few strategies are purely deliberate (*i.e.,* no learning), just as few are purely emergent (*i.e.,* no control). Therefore, ideally a mixture of these two has been recommended in order to *form* as well as be *formulated* (*i.e.*, to exercise control while fostering learning) (Mintzberg *et al.* 1998).

The following sub-sections are organised around deliberate strategic planning process as portrayed in Figure 2.4 (dotted line). First, the brief evolution of business planning is presented, featuring strategic planning as the middle phase between long-range planning and strategic management. Ten distinct but related approaches to develop strategies are then introduced, highlighting the Planning School as the driving school of strategic planning. After this, even though every approach has its particular dimensions and steps, the ones specific to the strategic planning process are detailed, together with their benefits and criticisms. This is followed by

the concept of strategy, including its definition, types and levels. Finally, an overview of how public sector organisations carry out strategic planning is described.

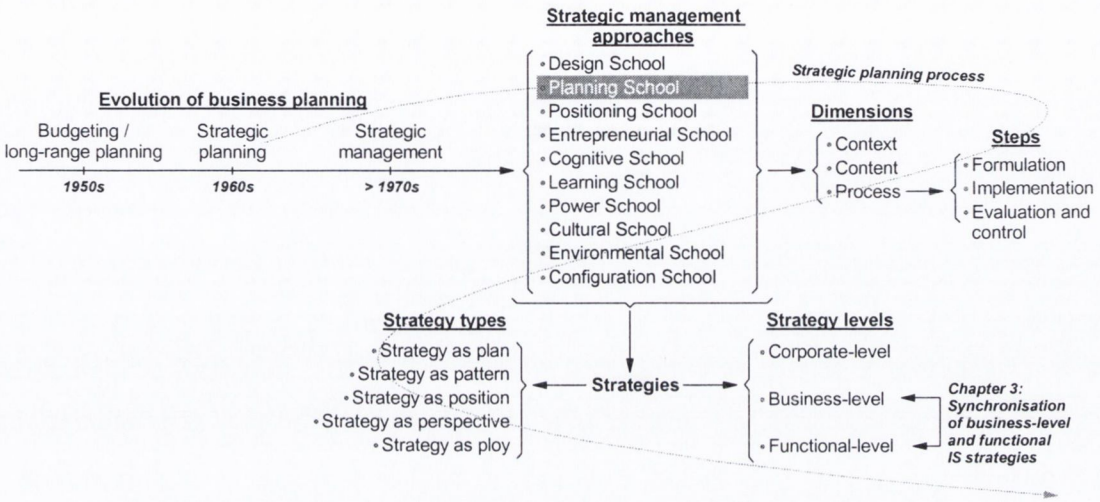


Figure 2.4: Evolution and concepts of the strategic planning process

Evolution of business planning

The evolution of business planning can be traced back to the 1930s when no distinctions existed between organisational theories, their management and their strategies (Spender, 1993 cited in McKiernan 1996). After a long progression, it finally became a critical managerial tool in both public and private sector organisations (Hussey 1990; Joyce 1999). Several authors have divided the development of the planning process in several overlapping phases (Ansoff 1991; Gluck *et al.* 1980). Nevertheless, these stages can be condensed to budgeting and long-range planning in the 1950s, strategic planning in the 1960s, and strategic management in the 1970s and beyond.

Formal planning started as a *budgeting* exercise in the America of the 1950s (Mintzberg 1994). However, organisations promptly acknowledged the need for *long-range planning* as a response to the pressures of rapid growth, the size and complexity in their structures on the one hand, and to the budgeting inability of preparing the firm for its future competitive challenges and expansion needs on the other (Ansoff and McDonnell 1990). With this, long-range plans started to emerge addressing the necessity to plan beyond annual budgets (Hussey 1990), extrapolating past trends and experiences with the purpose of predicting future actions.

The mid-1960s can be regarded as the period when modern planning became known with the publication of the first book on strategy (Ansoff 1965) and the first survey of planning in

practice (Scott 1965). These achievements surfaced after top managers acknowledged that the firm's environment had become progressively changeable and discontinuous from the past (Ansoff 1987a), a situation that long-range plans could not handle. As a result, strategies emerged as a link between an organisation and its environment (Schendel and Hofer 1979), causing long-range planning to go through several evolutionary changes until yielding what became known as strategic planning.

The second phase, *strategic planning*, surfaced in the 1960s after a number of firms experienced saturation and growth decline due to their inability to adjust themselves to a constantly-changing environment (Ansoff and McDonnell 1990). This 'new' form of planning had the objectives of providing managers with a longer-term method of planning future business activities, better control during the development course of the firm, and the anticipation of changes in the external environment (Ansoff 1991; Henry 1981). Furthermore, it aided in the formulation of a promising diversification strategy (Ansoff 1965) and in the establishment of the firm's goals by "deciding on changes in these objectives, on the resources used to attain these objectives, and on the policies that are to govern the acquisition, use, and disposition of these resources" (Anthony 1965 p.24). By the mid-1960s, most large corporations had already incorporated these concepts (Mintzberg 1994). However, problems started to become apparent due to a lack of information on how to handle emerging needs and issues (Ansoff 1991).

The strategic planning paradigm changed the way organisations operated by combining strategy formulation, objective identification and environmental analysis. However, it had several shortcomings (Schendel and Hofer 1979). First, there was no comprehensible distinction between corporate-level strategy and business-level strategy. Second, the relationship between strategy and operation (*i.e.*, its implementation) was not clear. Third, the role of general management was ambiguous; for example, while some authors recommended only involving top managers, others claimed that all executives should be drawn into the planning process. Due to these issues and to the increasing rate of change and macro-economic instability that resulted in rapidly outdated strategies, poorly understood objectives, and strategies that slowly produced results, managers by the mid-1970s were abandoning their planning systems while stressing the need for a broader approach to strategy (Ansoff and McDonnell 1990; Henry 1981; Marsden 1998).

The third phase, *strategic management*, formally emerged in the early 1970s as a response to the strategic planning shortcomings (Ansoff 1991); for example, rather than only concentrating on internal processes, it developed the firm's potential and focused more on the alignment of environmental impacts with the organisation's mission (Grunig and Repper 1992). Furthermore, it distinguished between corporate-level, business-level and functional-level strategies, and extended strategic thinking as the responsibility of all managers, not just top-level executives. Therefore, strategic management promoted a system of corporate values and decision making that extended planning responsibilities across all levels and functions (Gluck *et al.* 1980). As a result, it was promptly regarded as a requirement by top managers (Lorange and Vancil 1976).

Nowadays, strategic management is regarded as an academic discipline in its own right (Mintzberg *et al.* 1998), necessary to formulate, implement and evaluate strategies with the purpose of achieving the organisation's objectives (David 1997), fulfilling stakeholder expectations (Johnson *et al.* 2005), and providing specific guidance in areas such as finance, human resources and IS. Taken as a whole, strategic management can be characterised by four aspects (Johnson *et al.* 2005; McDonald 1996): (1) due to its nature, strategic management is a process, formed by managerial decisions and actions, and focused to attain strategies that work in practice; (2) identifies the impact of the strategies on the external environment and stakeholders expectations; (3) is concerned with complexity arising out of ambiguous and non-routine organisation-wide situations; and (4) deals with the long-term direction of the firm at business, corporate and functional levels. Therefore, strategic management is broader than strategic planning and can be summarised as "the process by which an organization's management guide its adaptation to the external environment" (Ansoff 1991 p.3) and produces "fundamental decisions and actions that shape and guide what an organisation is, what it does, and why it does it" (Bryson 1995 p.4-5). Despite these acclamations, strategic management has been criticised because practitioners regard its foundations as based on intellectual constructs rather than on reality (Ansoff 1991).

The emergence of the Planning School

As seen above, business planning can be broken up in several evolutionary phases. Nonetheless, throughout this development ten distinctive 'schools of thought' were documented (Mintzberg *et al.* 1998) which encapsulate several approaches of strategy creation (see Figure 2.4). These schools can be grouped in three categories. The first three schools (*i.e.,* Design,

Planning and Positioning Schools) are prescriptive in nature, more concerned with the 'proper' ways of how strategies should be formulated. The seven other schools of strategy formation are more descriptive, with the first six (*i.e.*, Entrepreneurial, Cognitive, Learning, Power, Cultural and Environmental Schools) considering specific aspects of the process of strategy formation (mainly describing how strategies get made) and the remaining (*i.e.*, Configuration School), which is regarded as a combination of the others (Mintzberg *et al.* 1998). Despite there being ten schools of thought, only the Planning School (and its relationship with the Design School) is detailed in this thesis due to the fact that it is considered the driving force of strategic planning.

The Planning and Design Schools were developed in parallel in the 1960s. However, the Planning School peaked in the 1970s when numerous books and articles were published about the topic that in one way or another impacted its practice and generated appeal. Initially and as described earlier, it had a number of deficiencies and limitations, causing managers to lose interest in its incorporation; however, they were addressed in due course until it yielded a relevant managerial tool for strategy formation. This situation is illustrated in Figure 2.5, which portrays the extent of interest of strategic planning in relation to the number of publications about the topic (Wilson cited in Ascher and Nare 1990; Mintzberg *et al.* 1998). As exemplified, in the late 1970s the number of papers associated with strategic planning in private sector organisations started to decline (some years later in the case of the public sector). However, one decade later it began to regain its popularity as a disciplined effort (Bryson 1995; Mintzberg 1978).

The premises of the Planning School are (Mintzberg *et al.* 1998): (1) intended and deliberate strategies result from a controlled, conscious process of formal planning; (2) the CEO is the architect of strategy in principle, but responsibility rests with the planners in practice; (3) strategic plans have to be decomposed and formalised so that they can be implemented through detailed attention to objectives, programs, and operating plans of various kinds. In other words, the Planning School has a machine assumption: produce each component as specified, assemble them according to a blueprint, and at the end a product (a strategy) will result (Mintzberg *et al.* 1998). In line with this and as described in the next sub-section, strategic planning is regarded as a three stage systematic process (or two by several authors) of formal planning (*i.e.*, strategy formation, implementation and evaluation). Therefore and unlike other schools, the Planning School quantifies the organisation's goals as a separate step from strategy formulation, carries

out SWOT (strengths, weaknesses, opportunities and threats) analyses to measure the internal and external environments (a step incorporated from the Design School), and assesses the final product before implementation.

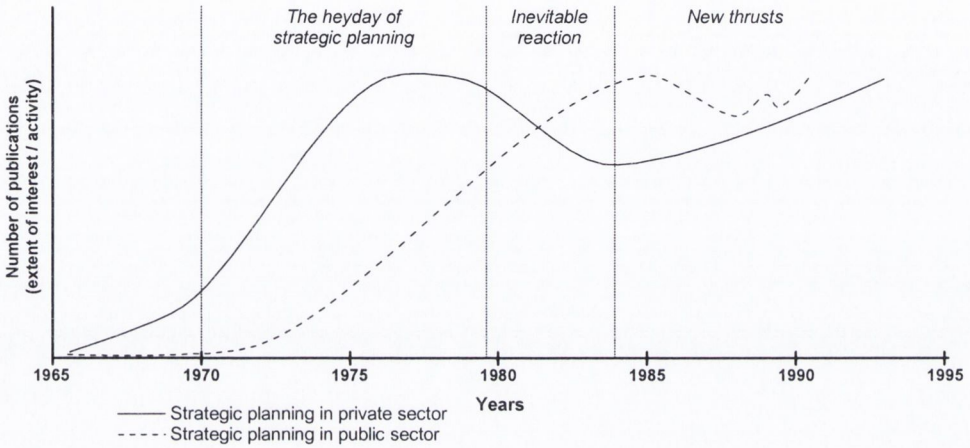


Figure 2.5: Popularity of strategic planning by number of publications (adapted from Mintzberg, *et al.*, 1998; Ascher and Nare, 1990)

Development of strategic planning

Mintzberg (1994 p.12) defined *planning* as a formalised procedure in the form of an integrated system of decisions that has the purpose of coordinating and controlling organisational activities. Sixteen years earlier, Mintzberg (1978) regarded *strategy* as a pattern in a stream of decisions made over time by several people at different functional levels. Therefore, by combining the planning and strategy concepts, a process occurs which develops strategies by means of structured, formalised procedures (Mintzberg *et al.* 1998) with the purpose of determining the organisation's overall direction, the specific actions necessary to achieve the desired direction, and the action plans of how those strategies will be executed. Consequently, strategic planning links acting to thinking which in turn connects implementation to formulation (Mintzberg *et al.* 1998).

Despite the fact that strategic planning is a process, designed or supported by planners, it has three distinguishable dimensions: (1) strategy process (the manner in which strategies come about; in other words, *how* the process is undertaken, by *who* and *when*); (2) strategy content (*what* is the substance of the strategic decisions, *what* differs from firm to firm, and *what* are the outcomes of the process); and (3) strategy context (circumstances that determine the process and the content of the strategy; that is, *where* is the planning carried out based on the unique

characteristics that distinguish one organisation from another). These three dimensions interact with each other (De Wit and Meyer 2004). For example, if the conditions surrounding strategy activities change (its context), the manner in which the strategy is developed (its process) will be affected, and consequently the outcomes of the strategy (its content) will be impacted.

The strategy process dimension, which guides the strategy formation process, has been traditionally characterised in numerous ways. At first, it was simply identified as achieved or omitted (Ramanujam and Venkatraman 1987). However, several models emerged soon after that portrayed the process as a flow chart (Mintzberg 1990), as series of distinct rational steps (Wheelen and Hunger 1995) or as a matrix of interrelated parts (Patterson 1986). Nevertheless, since strategic planning has a focus on business concepts that directly and indirectly affects the performance of organisations (Hoskisson *et al.* 1999) and that results in the formulation, implementation and evaluation of business plans (Pearce and Robinson 1997a), the planning tasks are usually synthesised in three on-going and integrated steps (Andrews 1971; Ansoff 1965):

- *Strategy formulation*. It assesses existing strategies, develops the organisation's mission, conducts internal and external environmental analyses, and establishes the firm's objectives;

- *Strategy implementation*. "Implementation is a procedure directed by a manager to install planned change in an organization" (Nutt 1986 p.233). In line with this, to implement strategies and achieve the desired results, it is necessary to perform resource allocation and establish policies and programs. An effective implementation is vital for the success of any strategic plan (Beer *et al.* 1990); however, it is a complicated task that generally is left unfinished (Noble 1999); and

- *Strategy evaluation and control.* It carries out measurements, including the extent and degree of successful strategies, against initial objectives (Wheelen and Hunger 1995). This phase, which some authors do not regard as a major step, is outside the scope of this thesis; see Carter, *et al.* (1990), Lederer and Sethi (1996), Premkumar and King (1991), and Raghunathan and Raghunathan (1991) for in-depth discussions.

Strategy formulation, or the making of strategy, is not considered an easy undertaking; for example, Mintzberg (1987) stated that strategy creation is more a craft than a structured,

disciplined methodology. Strategic planning was criticised in the 1970s due to its rigidity, its inability to develop true strategic choices, and its failure to promote intuition and creativity (Bresser and Bishop 1983; Harrison 2003; Hill and Jones 2004; Wilson 1994). However, it has been acknowledged that the main reason for these disparagements is that strategic planning is a complex process involving the most sophisticated, subtle, and at times subconscious of human cognitive and social processes (Mintzberg 1990). Despite these issues, it has been demonstrated that there is a positive relationship between the introduction of strategic planning concepts and performance (Brews and Hunt 1999), and that "the benefits generated by strategic planning outweighed the costs of undertaking these efforts" (Poister and Streib, 2005 p. 54).

Strategies: types and classifications

The strategic planning process has the ultimate objective of guiding organisations by means of strategies (Mintzberg 1994), "central, integrated, externally oriented concepts of how the business will achieve its objectives" (Hambrick and Fredrickson 2001 p.49). Usually in the form of documents but embracing abstract ideas as well, strategies are considered the high point of managerial activity (Mintzberg *et al.* 1998) that integrate the organisation's major goals, policies, and activities into a cohesive and coherent whole (Quinn 1980). Nonetheless, despite setting the course of action for an organisation's purposes, promoting coordination in a focused effort, reducing ambiguity, and preventing wasting time and resources on disparate activities (Hambrick and Fredrickson 2001; Mintzberg *et al.* 1998), some authors regard strategies as an abstract and expensive method which ultimately might not even produce perceptible benefits (Ansoff 1987a). Nevertheless, Mintzberg in his *Strategy Safari* book (Mintzberg *et al.* 1998) concluded that this view might occur because the strategic planning process is more fluid and unpredictable than people are aware.

The word 'strategy', derived from the Greek *strategos* (*i.e.*, the art of the general), evolved from a key factor in military campaigns (Ansoff 1965; Cummings 1993), to its acknowledgement by a number of business firms between 1950 and 1970 (Ansoff 1965), until becoming a crucial requirement in modern organisations. Early definitions regarded strategy as "the determination of the basic long-term goals and objectives of an enterprise, and the adoption of courses of action and the allocation of resources necessary for carrying out these goals" (Chandler 1962 p.13), and as a "pattern of objectives, purposes, goals and major policies and plans for achieving these goals, stated in such a way as to define what business the company is in or is to be in and the kind of company it is to be" (Andrews 1971 p.15). These

two definitions were initially summarised as "the pattern or plan that integrates an organization's major goals, policies, and action sequences into a cohesive whole" (Mintzberg 1991 p.5). Nevertheless, some years later it was acknowledged that five definitions were necessary to encapsulate the real meaning of strategy (Mintzberg *et al.* 1998):

- *Strategy as plan.* It is a direction, guide, or course of action (intention rather than actual). This is the type of strategy favoured by Planning School affiliates and the form that ISSP is most associated with;
- *Strategy as pattern.* A consistent pattern of behaviour over time (realised rather than intended);
- *Strategy as position.* Locating brands, products or companies within the conceptual framework of consumers or other stakeholders. Strategy determined primarily by factors outside the firm;
- *Strategy as perspective.* It is the organisation's fundamental way of doing things. Strategy determined primarily by a master strategist; and
- *Strategy as ploy.* It is a manoeuvre intended to outwit a competitor.

At first, organisations planned on a single level. However, after Anthony (1965) divided the planning and control functions into three (*i.e.*, strategic planning, management control and operational control), strategy-making was categorised by several classifications that range from two (Newman and Logan 1981) to five levels (Gluck *et al.* 1982). Although sometimes not easily distinguishable, each layer is progressively more detailed in order to provide strategic guidance to the next level of subordinate managers. Fundamentally there are three primary levels: corporate-level, business-level, and functional-level strategies, each operating on several time scales from short-term to long-term. While the first two are cross-functional (*i.e.* contain implications from all functions within an organisation), functional strategies are considered more operationally focused. Moreover, other proposed levels include enterprise strategy, as the interaction of a firm with its environment (Ansoff 1979); international strategy, as a global orientation of the organisation (Magaziner and Reich 1982); and operational strategy, that due to its narrow focus has been characterised more as tactical than as strategic (Pearce and Robinson 1997a). The three main levels are:

- *Corporate strategy.* Is concerned with the overall scope and directs the organisation as a whole in corporations engaging in more than one line of business. It is the pattern of decisions that involves the identification of trends and the formulation of strategies in global, technical and market arenas. Moreover, it determines a corporation's overall

objectives, purposes or goals, and defines the range of businesses the company is to pursue;

- *Business strategy.* Less comprehensive than corporate strategies, business strategies identify how a division, a strategic business unit or a firm not part of a wider corporation operates and competes with respect to a given industry. Business strategies are regarded as overall plans of action (or overall business plans) which define the organisation's mission, objectives, competitive position, and the process by which the organisation uses its resources to achieve those objectives (Mintzberg and Quinn 1996; Tichy *et al.* 1982). This level is market-oriented and functions at the level of products, services and competition, identifying objectives and procedures to attain these goals. However, in public sector organisations, where objectives are mainly intangible and strategies are not focused on economic gain, business strategies work as guidelines of how the organisation performs with regard to specific functions, cooperating with other governmental agencies and aiming towards the provision of services in an environment without profits or competition. Due to its importance, business strategies have become an increasingly relevant research focus for IS investigations (Chan and Huff 1992), especially because it is inevitable that technology can become one of the central factors in the firm's business strategy (Itami and Numagami 1992); and

- *Functional strategy.* In contrast with the other two strategies, functional-level strategies guide the implementation of business strategies and the use of resources in each of the firm's sub-divisions. This level of strategy focuses on short and medium term activities within a specific functional area of operation such as marketing, finance and IS[4]. Moreover, objectives and actions plans are developed for each area to guide the behaviour of its staff in order to meet the business and corporate strategies. The synchronisation of business and IS strategies, the main research topic of this thesis, corresponds to the link between business-level and IS functional-level strategies (see Figure 2.4).

Initially strategies were not always written; they were frequently found in the head of the chief executive who communicated them as required (Steiner 1969). Nevertheless, strategic planning

[4] In some information-intensive companies such as Amazon and eBay, the business and IS strategies are the same. However, public sector organisations normally have an IS strategy that guides the IS area's functions.

formalised strategy development by means of a deliberate process of formulation, implementation and evaluation in order to minimise risk, remain opportunistic, and experiment and learn (Quinn 1980). As part of the Planning School development, hundreds of different strategic planning models have been produced to formally develop and operationalise strategies in ordered steps (Mintzberg 1994). However, most of these coincide in the following five phases (Hill and Jones 2004; Mintzberg *et al.* 1998; Steiner 1969): (1) determine the organisation's mission and objectives (rather than regarding these two concepts as part of the strategy, some authors consider them as a guiding mechanism (Hambrick and Fredrickson 2001)); (2) analyse internal and external environments; (3) perform strategic choices and analyse the strategy's impact; (4) implement the strategy; and (5) evaluate and revise the strategy.

In summary, even though strategies have been defined as a plan that integrates the major goals, policies and action sequences of the corporate-levels, business-levels or functional-levels, five individual definitions (*i.e.*, as a plan, pattern, position, perspective and ploy) are needed to expose the real meaning of strategy. Moreover, in line with the main topic of this thesis, while business strategies guide the overall business, the way it operates and competes with respect to a given industry, IS strategies are functional-level strategies that guide the IS function in line with the business' goals[5]. Therefore, the synchronisation of business and IS strategies is the 'link' between these two levels. However, because the present investigation was carried out in the public sector, the next section describes how strategic planning is conducted in these type of organisations and how they compare with private companies.

Strategic planning in the public sector

Planning, as a technique to guide organisations into the future, was originally envisaged for private companies as a way to expand profit margins (Chakravarthy and Lorange 1998). However, in recent years it has been considered that public sector organisations can benefit as much than commercial firms from strategic management concepts (Johnson *et al.* 2005). Moreover, it has been proven that the incorporation of its strategic planning sub-topic into government bodies can be more beneficial than the development of conventional long-range plans (Bryson 1995). Nevertheless, this has not been straightforwardly accomplished, especially due to discrepancies between the two sectors.

[5] A link can also exist between the corporate- and functional-levels; nevertheless, due to the nature of public sector organisations, in this thesis only an association between the business- and functional-levels is explored.

Notwithstanding ongoing endorsements of strategic planning concepts by private companies, governments have not been easily persuaded to introduce these ideas (Joyce 1999). Initially public sector planners had to concede that their organisations were too politically constrained and their goals too vague to carry out strategic planning (Ascher and Nare 1990). Nevertheless, due to a need to deal with increased uncertainty and interconnectedness of the external environment on the one hand, and to the introduction of strategic planning concepts by mandate even when there was no planning experience on the other hand (Bunning 1992), these organisations have started to think strategically, translating their insights into effective strategies to cope with these changes (Bryson 1995). Ultimately, it has become a popular and an evolving phenomenon indispensable to lead public sector organisations in particular directions, enhance performance, engage and commit civil servants, and form partnerships and joint ventures with other organisations, public and private (Joyce 1999). In other words, these strategic concepts have facilitated the means by which public sector leaders engage traditionally rigid managers and bureaucratic staff into change (Joyce 1999).

Despite some authors saying that strategic planning is still under-theorised, limited and inconclusive in the public sector (Stewart. 2004; Vinzant and Vinzant 1996), concepts and related techniques are continuously published on this topic specifically for government organisations (Alford 2001; Joyce 1999). Strategic planning was begun in the private sector, and it is here where the majority of the literature is focused (Bowman *et al.* 2002; Chakravarthy and Lorange 1998; De Wit and Meyer 2004). However, while some authors state that most of the strategic planning literature can be applied to a public sector setting (Ferlie 2002; Wortman 1979), other authors say that this is not possible due to policy ambiguities, the openness of government, and the fact that government decisions generally take much longer to apply than in private companies (Ring and Perry 1985). Even so, it is believed that the problems experienced in implementing strategic planning in the public sector have been similar to the ones encountered in the private sector (Ascher and Nare 1990).

When comparing public and private organisations, most differences are concerned with economic conditions, cultural disparities and underlying goals (Rainey 1983; Self 1977; Whorton and Worthley 1981); for example, while profits guide private companies, public sector organisations face multiple objectives, many of which are intangible. In addition, unlike private companies where strategies tend to be more clearly defined and related to products, market share, profitability and return on investments, in the public sector strategies are more

ambiguous, more difficult to measure, and external forces (*e.g.*, the EU, Central Government and global bodies like the UN) might mandate its objectives and sometimes even funding (Campbell and Garnett 1989; Wamsley and Zald 1973). Diversities stated in terms of the public sector's characteristics relative to those of the private sector that impact on the strategic planning process include (David 1997; Rainey *et al.* 1976; Ring and Perry 1985; Toft 1989): less market exposure, no competition, fewer incentives for productivity, public strategy often set by legislature, managers with less decision-making power, public planning subject to significant public scrutiny, lower job satisfaction and less organisational commitment. Despite these limitations and the fact that public sector organisations operate in a more complex environment than those in the private sector (Ring and Perry 1985), these organisations have finally acknowledged that strategic planning concepts can enhance the efficiency of public services and provide a wider range of benefits (Bryson 1995; Joyce 1999). Furthermore, some recommendations that have been made to facilitate the strategic planning process in governments and achieve strategic change include: communicate the strategy to all stakeholders, maintain stakeholder involvement throughout the process and provide better incentives, especially to lower-level staff (Nutt and Backoff 1993).

This section presented the nature of strategic planning, a critically important part of business management (Henry 1981). Even though this subject is business-related, it constitutes the essence and bases of IS strategic planning. As seen throughout this section, strategic management has been evolving since the 1950s as a requirement to manage change in public and private sector organisations. One of its topics, strategic planning, emerged in the 1960s after the need to formalise strategy development procedures. Initially it lost attractiveness; nevertheless, it soon became a necessity for many public and private sector organisations that wanted a methodical technique to reduce uncertainty, coordinate stakeholders' efforts, establish objectives and proactively search for business opportunities. Some years later, as described in the next section, these concepts were incorporated into the IS domain, yielding a formal practice to manage IS resources, link technology developments to the business needs, and create IS strategies synchronised with business strategies.

2.2.3 The emergence of IS strategic planning

Throughout the last two sections, an overview of the characteristics, progression and main components of the concepts that jointly provide the foundations of IS strategic planning was presented (*i.e.*, the information systems field and strategic planning). On the one hand, IS are

regarded in this thesis as computer-based socio-technical systems that manage information to support the operation of businesses. Identified since the 1960s as a need to address the use of computers in an organisational context, IS apply technical systems to business problems but in their social contexts. Therefore, when studying IS strategic planning, it is necessary to include theories and practices related "to the social and technological phenomena, which determine the development, use and effects of information systems in organizations" (Ward and Peppard 2002 p.3). This is because the IS field incorporates a body of knowledge that examines the occurrences that emerge when technological and social systems interrelate with each other (Lee 2001). This interaction "embodies both a research perspective and a subject matter that differentiate the academic field of information systems from other disciplines" (Lee 2001 p.iii) like computer science.

The IS field, together with the collaboration of disciplines such as computer science and organisation science, has a significant role in supporting business strategies and thus providing useful knowledge for the success of public and private sector organisations. So with the purpose of bringing greater structure to the field's knowledge contribution and establishing broader comprehension of its multi-disciplinary nature, five perspectives (other classifications have also been proposed to describe its nature) that have developed the IS tradition were identified (see Figure 2.2). They are, application systems, IS management, IS development processes, representations in IS, and IS development concepts (Avgerou *et al.* 1999; Davis 2000). As highlighted, one of the IS management themes is 'IS strategic planning', which is directly shaped by strategic planning (derived from strategic management) and focuses on the planning of the IS area, on the development of strategies to guide the organisational IS resources, and in the identification of new ways of doing business.

On the other hand, strategic planning is characterised as a systematised formal process that formulates, implements and evaluates strategies. Conceived in the 1960s, its main focus is leading businesses and its functions by means of strategies that integrate the organisation's major goals, policies and activities into a cohesive and coherent whole. The planning function can be divided in three primary levels: corporate-level, business-level and functional-level. Strategic planning can be carried out at any of these levels. Nevertheless, in line with IS strategic planning, the formulation and implementation of IS strategies is accomplished in the functional-level, setting the direction, guide or course of action of the IS resources and technological developments with respect to the business overall objectives. Strategic planning

has positively transformed the way public and private sector organisations operate and the services they provide; however, it has been regarded as a complex method that requires the involvement of several stakeholders and the use of considerable resources to produce perceptible benefits.

By combining IS and strategic planning concepts, *IS strategic planning (ISSP)* emerged as a need to strategically plan the technological environment in order to effectively manage the IS function in line with the organisation's objectives. This way, it enables an organisation to align IS with its business needs and to achieve its business goals (Reich and Benbasat 2000). Formally, it has been defined as "the process of identifying a portfolio of computer based applications that will assist an organisation in executing its business plans and realizing its business goals" (Lederer and Sethi 1988 p.446). In line with the nature of IS, ISSP is not a purely technical process; it is shaped by socio-technical characteristics that bring together technology and the business as a whole (Hax and Majluf 1991). Therefore, it is a process that links business strategies, processes, organisational structures and cultures with technology, associating technical procedures with people in a variety of organisational settings and business environments (O'Brien 2004).

Nowadays IS strategic planning is widely known as an endeavour that facilitates the efficient integration of technology. However, there is an issue with recognition: so many definitions and such a wide variety of terms exist for IS strategic planning that it has taken on somewhat of an intuitive and ambiguous meaning (Finnegan and Fahy 1993; Holloway and King 1979). The most commonly used terms are (Fitzgerald 1993):

- Information systems strategic planning (ISSP) (King 1988) – designation used in thesis;
- Information systems planning (ISP) (Galliers 1987b);
- Information strategic planning (Martin 1986);
- Strategic planning for information systems (SPIS) (King 1988);
- Strategic information systems planning (SISP) (Kunnathur and Zhengzhong 2001) – term also used for the planning of strategic information systems, which has the purpose of supporting an organisation's competitive strategy (Rackoff *et al.* 1985).

As seen in this section, ISSP is formed by applying strategic planning concepts in an IS context. In other words, it is the preparation of IS strategies, the establishment of IS objectives in line with the business, and the analysis of the environment with the purpose of better supporting the

business goals with technology. Nevertheless and as shown in the next section, this has been evolving throughout the last four decades.

2.2.4 The progression of IS strategic planning

Nowadays, as seen throughout this chapter, IS strategic planning is a critical issue that substantially contributes to an organisation's success (Hartono *et al.* 2003). It facilitates top executives' understanding of how to position the firm in a dynamic technological environment, together with how to organise the delivery of IS products and services while meeting business goals. However, it has not always been like this.

Before the emergence of ISSP it was not possible to establish long-range objectives due to the absence of IS strategies and pre-defined procedures to adapt to the environment. Also technological developments were mainly driven by capacity requirements rather than by business goals, and systems prioritisation was based on current organisational activities rather than on future projections (King 1988b; King and Teo 1997; Lyles 1979). During the 1960s and due to the impact of strategic planning, organisations realised the need to develop IS that supported the firm's objectives and goals (Bensaou and Earl 1998); however, initially business strategies were uncommon and business managers scarcely involved themselves in IS tasks (Rockart 1988). The IS staff was responsible for conceptual design, programming, implementation and operation of all systems. Moreover, IS managers, who were primarily concerned with assessing the future computing needs of the business (King 1988b), did not have a relevant position in the organisation. Therefore, unsuitable manpower, together with limited financial and managerial resources, meant that ISSP was initially not taken very seriously (McFarlan 1971) and that it was merely focused on managing internal computer systems (Boynton and Zmud 1987; Evans and Hague 1962).

In the 1970s, business and IS managers realised that wider-reaching plans were necessary to identify the firm's existing services with a focus on technology (Shidal 1978). Consequently, for the first time, IS 'master plans' (as the strategies were initially called) were created as a fairly formal and comprehensive activity (McLean and Soden 1977). At first they included a description of the various systems and subsystems that organisations operated or planned to develop (King 1988b). But after business managers began to be involved in the planning process in the 1980s (Ansoff 1987b), computer resources started to have a strategic role in

business objectives and goals (King and Teo 1997), mainly aimed at the achievement of competitive advantages[6] (McFarlan 1984a; Waema and Walsham 1990).

In the next decade, due to a rise in noticeable benefits and to methodologies that eased the process (Adriaans and Hoogakker 1989; Andersen Consulting 1987), there was a significant increase in the number of organisations carrying out IS strategic planning activities (Atkinson 1990). Despite this, there was still a large number of incomplete and deficient IS strategies mainly due to organisational barriers, social difficulties (Ball 1982; Bowman *et al.* 1983; Galliers 1987c) and problems with methodologies (Pyburn 1983). Also, substantial consideration started to be placed to both the formulation and the implementation of IS strategies (Potter 1987), especially by business managers (Wallace 1985). With respect to the public sector, the integration of technology with the business and the linkage between the business and IS strategies were considered important issues among public servants (Caudle *et al.* 1991).

During the 1990s, IS and their strategies became critical for the running of the business; therefore, organisations required efficient IS strategic planning procedures (King and Teo 1997). While IS managers grew to be a critical element in the planning of the business (Stephens et al. 1995), organisations benefited from an active involvement of business managers in IS strategic planning (Galliers 1992b). However, the extent and quality of the interaction between these two types of managers were brought into question (Finnegan and Fahy 1993; Flynn and Goleniewska 1993). Moreover, tools and methodologies to assist the IS strategic planning process were extensively utilised (Lederer and Mahaney 1996). At the end of this decade, a distinctive phenomenon took place, which directly affected a large number of companies and had far-reaching effects: the 'dot-com' era.

In the late-1990s, the Internet changed the world of business (Venkatraman 2000). During the few years that the dot-com era took place, while established companies shifted their strategies

[6] Porter (1985) says that by carrying out IS strategic planning functions and by using information as a strategic weapon, organisations can achieve *competitive advantages*: become a low-cost producer for a given product, facilitate a specially defined market niche, or differentiate their products from their competitors (Atkinson and Montgomery 1990; Ives and Learmonth 1984; Karimi 1988; Lederer and Calhoun 1989; Wilson 1989). However, realising these technological benefits is not an easy task since the process has to be ongoing and knowledgeable employees from all areas must participate (Flynn and Goleniewska 1993; Laware 1991). Moreover, to produce any competitive advantage, a link has to be established between IS and business strategies (Goldsmith 1991).

and automatically became global players, a substantial number of recently-created Internet start-up ventures emerged (Slade *et al.* 2002; Stace *et al.* 2001), most without viable business models, tangible assets or manufactured goods (Betz 2001; Weber 2001). This period transformed the way private companies operated, bringing "remarkable gains in effectiveness and efficiency" achieved through the creative use of information systems (Weber 2004 p.iii) and flatter organisational structures (Stace *et al.* 2001). Furthermore, as technology started to take over the business operation, IS professionals and people knowledgeable about Internet innovations were in great demand (Weber 2004). Due to this rapid, technological growth, setting objectives and developing coherent business strategies were not considered as significant duties in many of the 'dot-com organisations' (Wickham 2001). Moreover, IS strategic planning was not adequately carried out, causing IS strategies to be scarcely produced or synchronised with business strategies. In 2002 the boom was over, primarily triggered by the inability to assess intangibles, to the inflation of stock prices, to the reliance on a single technology, and to the pursuit of erroneous and fragmented business methods (Rheault and Sheridan 2002). This caused a reduction in IS investments, the disappearance of companies that provided IS services (Weber 2004), massive employee layoffs (Wickham 2001), and consequently faith in IS strategies. However, not only was this not prevalent in the public sector, but it made evident the implication of more robust business plans and the efficient administration of IS resources (Betz 2001; Stace *et al.* 2001; Venkatraman 2000).

As said in the above paragraph, during the late-1990s the world experienced the dot-com revolution. Regardless of its inevitable collapse, government policy makers learned from the private sector and began to apply e-commerce and e-business tools and techniques to the public tasks (Accenture 2000; Miller 1988; Pimenidis and Bolissian 2003), generating what is known as e-government. These innovations required changes in the way governments had been traditionally working, in their strategies, and in the interaction between public bodies. The formulation of the business strategy is considered as the first step in the implementation of e-government (Tambouris et al. 2001); however, it should not consider technology as the main driving force. It has been suggested that an IS strategy for e-government – sometimes referred to as an e-strategy – should be linked to the business strategy in order to facilitate access, exploit information content, add value to offered services, and promote a shift of culture towards quality and effectiveness (Stamoulis et al. 2001). Nevertheless, compared to the private sector, public agencies have moved at snail's pace in adopting e-strategies (Holmes 2001; Prince 1994). Section 6.2.3 provides more details of these strategies in the Irish context.

Nowadays, IS strategic planning and its product, IS strategies, are considered as indispensable by business managers for the operation of all organisations (Mirchandani and Lederer 2004). Moreover, ISSP is regarded as a knowledge management activity that enhances organisational learning (Hartono *et al.* 2003). Since organisations began to understand that IS could improve internal efficiencies (Hartono *et al.* 2003), IS strategic planning became essential to succeeding in the competitive global marketplace and developed into a key concern facing business and IS managers (Newkirk *et al.* 2003). However, ISSP is a time-consuming and costly process, necessary for technology to assume a critical and strategic role in organisations (Kearns and Lederer 2004).

In summary, the IS strategic planning process has progressed throughout the years from tactical short-term decisions and without key implications for business functions, to synchronised arrangements that concurrently influence and are influenced by the business strategy. Moreover, ISSP is an on-going activity that when appropriately accomplished can contribute substantially to an organisation (Hartono *et al.* 2003) and enhance the management of its IS resources. Commencing with the next section, the actual IS strategic planning endeavour is described, together with the advantages, reasons and objectives of the process.

2.3 The rationale behind IS strategic planning

Despite a fall in the number of articles about IS strategic planning in the last years (see Figure 2.10), recent surveys of key issues for IS managers have demonstrated that ISSP and IS strategies are still critical and necessary aspects for practitioners (Aladwani 2000; Mirchandani and Lederer 2004; Newkirk *et al.* 2003; Pai 2006). In line with this and as stated by the chapter's second main question, *why* is it worth investing time and resources in IS strategic planning? This section describes the strengths of the process which produces IS strategies as outcomes. First, the main assets of IS strategies are introduced. Then, the reasons for undertaking IS strategic planning are illustrated. Finally, the benefits that emerged from the IS strategic planning process are presented.

2.3.1 Characteristics and role of IS strategies

As described in the last section, the outputs of the IS strategic planning process are IS strategies. Since their emergence, these strategies have been designated as formal functional-level plans that identify the computer's role in attaining the strategic objectives of the business

while preparing the organisation to face internally and externally the future and the competition (Kriebel 1968/1969). Being a blend of internal resources and external forces (Zani 1970), the main idea of preparing an IS strategy is to decide "what to do, how to do it, ... and when to do it" (Schwartz 1970 p.28); in other words, "a pattern in a stream of decisions and actions" (Mintzberg 1978 p.935). Furthermore, IS strategies should be grounded in the business while prioritising the investments required to achieve the planned applications (Ward and Peppard 2002). Currently, IS strategies are still regarded as important as ever (Galliers and Leidner 2003) and defined as organisational requirements or demands for information and systems to support the business strategy (Ward and Peppard 2002).

Nowadays, organisations can produce three types of information-related strategies (some firms do not have written strategies; however, in this investigation it is implied that to facilitate its preparation, dissemination and impact, the strategies must exist in a printed form): IT, IS and information management (IM) strategies. Based in the discussion of Section 2.2.1 about the various labels assigned to IS, Earl (1987) regards IT strategies strong on technology issues and infrastructure, but inadequate on identifying application needs and business thinking. Therefore, IT strategies are supply oriented and concerned with *how* the organisation's requirements for information and systems to support the business strategy have to be addressed by technology (Hackney *et al.* 2000; Peppard 1993; Ward and Peppard 2002). Alternatively, IS strategies are related with the organisation's soft-systems or application set (Earl 1987). Due to its coverage, IS strategies are demand oriented, ideally owned by senior management and determine *what* is needed from IT to support the business needs (Earl 1989; Hackney *et al.* 2000; Peppard 1993). Finally, IM strategies are involved with structures and roles for the management of IS and IT, including the *who*, *where* and *when* between specialists and users, management responsibilities and performance measurements (Earl 1989).

This thesis solely focuses in IS strategies, which are functional-level strategies in charge of a particular organisational function (see strategy levels in Figure 2.4) (Boddy *et al.* 2005). As in other functional areas (*i.e.* human resources and marketing), strategies are generally developed by breaking down the overall business strategy into the responsibilities of that particular area. Therefore, the existence of IS strategies implies that there is actually an IS function that provides IS support to the organisation. However, due to their cross-cutting nature and overall implications, IS duties are not solely the responsibility of the IS area. Moreover, IS strategies can be categorised as short, medium or long-term. However, more than reflecting their timeline,

these notions reveal the strategy's principal objectives. Short-term IS strategies emphasise the achievement of precise quantitative points, usually during a one-year period. Medium-term IS strategies generally use a multi-year time horizon to achieve their requirements. Finally, long-term IS strategies seek to contribute or influence the future developments of the company (Soden 1975).

In summary, IS strategies are recognised as necessary attainments since without them, the introduction of technology to the business and its impact with existing and future functions might only have short-term and tactical implications. Furthermore, opportunities might be missed and efforts might be duplicated (Basu *et al.* 2002). Additionally, in turbulent environments like the present one where 50% of public and private sector IS initiatives fail and only 10% are delivered on time and within budget (McDonagh 2004), a comprehensive, documented and formal IS strategy increases the chances of success and yields more satisfactory results than an informal, incremental plan (Salmela *et al.* 2000). Nonetheless, as expanded in the next section, there are several motivations identified among top managers as to why they prepare IS strategies and carry out IS strategic planning.

2.3.2 IS strategic planning reasons

Several empirical investigations have been carried out about the reasons for carrying out IS strategic planning activities, which attainment may be used by executives as a measure of achievement (McLean and Soden 1977; O'Connor 1993; Venkatraman and Ramanujam 1987). These reasons are generally derived from the main business goals (Zviran 1990), indicating a desired state that the organisation wishes to accomplish (King 1978; Parker and Benson 1989; Prince 1994). In Table 2.1 the IS strategic planning reasons are sorted by relative importance based on the average score granted throughout the years in several publications. Additionally, the last three columns show the average rank for each decade. The table demonstrates that the alignment of IS with business needs, which is directly related to the synchronisation of business and IS strategies, has been the most important reason for pursuing ISSP since the 1980s.

Table 2.1: Summary of published literature about reasons for ISSP

		70s	1980s			1990s			Decades		
Rank	IS strategic planning reasons	McLean and Soden (1977)	Doll and Ahmed (1984)	Grindley (1985)	Galliers (1986)	Earl (1990b)	Conrath, *et al.*(1992)	Lederer and Sethi (1996)	1970s	1980s	1990s
1	Aligned IS with business needs			1	1	1		2		1	2
2	Improved user involvement and communication	1	1	2			2	3	1	2	3
3	Identification of strategic applications						3	1			2
4	Improved TM commitment and communication	2				3	1	7	2		4
5	Improved coordination of IS developments				3					3	
6	Improved adaptability of IS		4							4	
6	Sound management practice				4					4	
6	Implications for telecoms growth			4						4	
6	Improved morale and sense of purpose						4				4
7	Improved resource forecasting and allocation	3	7		2	4	13	5	3	5	7
8	Creation of corporate database		5							5	
8	Reduced backlog			5						5	
9	Improved IS function	4	3		4		8		4	4	8
10	Established technology path and policies					5		6			6
11	Creation of applications portfolio	5	2		5			9	5	4	9
12	Improved software management		6							6	
12	Improved decision making	6							6		
12	Seek competitive advantages from IT					2		10			6
12	Increased employee productivity						6				6
13	Concern regarding mainframe strategy			3	10					7	
14	Increased visibility of IT in organisation	9					10	4	9		7
14	Reduced maintenance costs	8	8						8	8	
15	Increased understanding of the company	10					7		10		7

As portrayed in Table 2.1, there are several reasons to plan the IS resources; however, due to motives such as limited resources and top manager's interests, not all can or must be accomplished. Especially in a rapidly changing environment like the technological one (Galliers 1987b; Kay *et al.* 1980), the identification of priorities are key elements in the IS strategic planning process (Lederer and Mendelow 1993) and the means to determine which reasons – which can become objectives of the IS function – will be pursued. While objective setting is necessary to provide some definition in the absence of a clear picture of the future (Peterson 1989), prioritisation in accordance with the company's overall objectives is essential

to determine the importance and feasibility of IS projects (Coe 1974; Kehoe *et al.* 1993; Soden and Tucker 1976). Organisations have more than one goal or wish to accomplish several reasons (Earl 1993). As a result, executives must differentiate between the irrelevant or unworthy objectives, and the critical or significant. Nevertheless, tension and criticisms can affect priority classification, causing managers, for example, to select projects with the fastest profits instead of those with the highest returns (Lederer and Mendelow 1991).

Determining the right priorities from the beginning is critical; however, sometimes this is not easy to accomplish (Kay *et al.* 1980). Changes in priorities can be very costly and may force the suspension of one project in favour of another (Lederer and Mendelow 1993). Also, the grounds on which stakeholders choose to prioritise IS projects depend on the hierarchical position of the planner; for example, while top managers may give precedence to developments which are coordinated between the business and IS strategies, middle managers might focus on a lower level (Lederer and Mendelow 1986). Therefore, methods like *Critical Success Factors* (Rockart 1979), *Information Engineering* (Goldsmith 1991) – see Section 2.5.2 – and even steering committees (Lederer and Mendelow 1993) – see Section 2.4.3 – have been suggested to partially ease the process, determining which systems are likely to make the greater contribution to the achievement of the business objectives (Adriaans and Hoogakker 1989) or accomplish further economic benefits. In line with this and as described in the next section, IS strategic planning can generate several benefits, such as identify opportunities for effective resource management, build commitment to shared objectives, and provide a strong stimulus and sense of direction to employees at all levels (James 1984).

2.3.3 Benefits for undertaking IS strategic planning

In the 1960s, a decade after computers started to be used commercially, strategies became a significant issue as advocated by the Planning School (Evans and Hague 1962). By that time, following the incorporation of strategic planning concepts to IS issues, Blumenthal (1969) had already recognised the need for IS strategies and documented some of its benefits. Some years later, managers started to be aware that IS strategic planning could not only prepare organisations for change and allow them to take advantage of opportunities (Collard 1971), but producing IS strategies could also increase their effectiveness (McFarlan 1971), improve user and top management communication and cooperation, and enhance resource requirement forecasting and allocation (Soden and Tucker 1976). Around this time, the quality of the elements of the written strategy started to be a differentiator between good planners and those that were

not. Consequently, several authors (Collard 1971; McFarlan 1971; Schwartz 1970) began to write about the IS strategies' content, including their sections, outputs and key features.

During the 1980s, the popularity of IS strategic planning grew considerably, becoming a favourite publication topic among academics, practitioners and consultants. Since ISSP began to offer opportunities for influencing business strategies and processes by means of the capability of new technologies (Ives and Learmonth 1984; McFarlan 1984b), companies started to be aware of potential payoffs for planning (Atkinson 1990). In the next decade, the principal IS strategic planning advantages were not very different from previous years. The identification of how to address business needs with technology was still its top benefit among business managers, IS managers and user managers. Also, top management support, better priority setting, identification of competitive advantages, and top management and user involvement in IS issues were also attained (Earl 1990b; Earl 1993).

Table 2.2: ISSP expected benefits vs. realised benefits (Earl 1986)

Expected Benefits	Realised Benefits
1. Improved top management support	1. Improved top management support
2. Improved user involvement	2. Improved resource forecasting
3. Improved resource forecasting	3. Improved business planning
4. Improved business planning	4. Improved user communication
5. Understanding the organisation/business	5. Understanding the organisation/business

Even before actually carrying out IS strategic planning, benefits can be anticipated. Nevertheless, since it is a complex endeavour, it is one thing to expect benefits but another very different one to realise them. Galliers (1992a) found that although the majority of the companies in a study affirmed that formal reviews of the IS strategic planning process constantly took place, only few were confident that benefits were identified and addressed. In another study, Earl (1986) reported the benefits attained by a large sample still in the early stages of formulating IS strategies (Table 2.2). He found that the number one expected gain was also the one offering the greatest benefit (*i.e.*, improved top management support), but there were differences in the rest of the issues. Furthermore and despite this, failing to plan the IS resources or not producing IS strategies can also cause problems such as repetition of work, failing to anticipate benefits from IS investments, poor management of information, duplicated and incompatible systems, and IS applications with shorter than expected life-cycles (Basu *et al.* 2002; Lederer and Sethi 1996; Salmela *et al.* 2000; Ward and Peppard 2002).

The objective of this section was to discuss why it is worth carrying out IS strategic planning and thus producing IS strategies, a costly and time consuming endeavour (Kearns and Lederer 2004; McFarlan 1971; Pyburn 1983). However, it has to be completed, especially because numerous business accomplishments depend on the successful implementation of functional-level IS strategies, or, more importantly, due to the problems that can be triggered if this planning does not take place (Lederer and Gardiner 1992). Published literature discusses problems that can emerge and even makes proposals for overcoming them (Lederer and Sethi 1996). Nevertheless, these complications are still common, and in spite of so much evidence and the numerous recommendations given by academics, practitioners and consultants to ease the process, they are causing planning failures, which is the reason why fewer organisations are actively developing IS strategies. Furthermore, in order to succeed and as shown in the next section, each stakeholder has distinct responsibilities in the process.

2.4 Stakeholder involvement

During the formulation and implementation of IS strategies, each stakeholder has distinct roles and responsibilities (Teo and Ang 2001), functions that have progressed throughout the years. In the beginning, only business managers had the duty (or the vision) to initiate the preparation of IS strategies to manage the organisation's computing resources (Ein-Dor and Segev 1978), which was then implemented by the data processing (DP) or IS area. The user's ideas or necessities were not considered at all (Soden 1975). But as technology started to gain a strategic position in the business' operation, the IS area developed its own strategy, but with a vision, mission and objectives still derived from the business strategy. The main responsibility for its creation now rested on the Chief Information Officer (CIO) or IS manager (King 1978). Then, the whole organisation began to participate in the creation of the IS strategy: top managers introduced the overall vision, middle managers helped shape the strategy according to their area's necessities, and the users were queried about their requirements. Subsequently, a distinct form of managing the IS strategic planning process was created, namely, steering committees. Supported by business managers and formed by IS and business members of different areas, the main goals of these committees were to attain a better direction for the IS strategic planning function and to closely supervise the implementation of the IS strategy (Doll and Torkzadeh 1987).

When planning, the ideal stakeholder should be "a man who is both a philosopher and realist, theoretician and practical politician, soothsayer and salesman" (Kirby Warren 1966 p.43). In line with this, the following sections describe in a chronological fashion the distinct roles of the individuals involved in the planning of the IS area and resources (the chapter's *who* question), and whose profound commitment produces greater ISSP success (Basu *et al.* 2002): business and IS managers, users, middle managers and IS steering committees, together with behavioural and cultural issues of this socio-technical process.

2.4.1 Role of business and IS managers in the planning process

During the planning of the IS area, business and IS managers have analogous roles. Business managers were originally the only individuals responsible for decision-making and for formulating and implementing business strategies (Anthony 1965). But as IS increased their importance in the operation of businesses, while the role of IS managers expanded from basic technological and operational functions to organisation-wide activities (Rockart 1988), business managers became more involved in preparing IS strategies and in promoting technology throughout organisations (Lederer and Mendelow 1988). Nevertheless, more importantly than their individual roles, a key element that contributes to the success of the IS strategic planning process is having good relationships between these two types of managers (Earl 1990a; Feeny *et al.* 1992).

Even though business and IS managers have a critical role in the process, they have analogous responsibilities. On the one hand, the involvement of business managers to IS issues is necessary to establish credibility, cooperation and direction (Battaglia 1991; Klein 1987; Minard 1991). Therefore, even though some reluctance has been perceived throughout the years (Avison *et al.* 1999; Kovacevic and Majluf 1993), there has to be considerable commitment of business managers, while a strong backup and support must be 'felt' all over the organisation for the IS strategic planning process. Nevertheless, in many organisations their IS knowledge is limited to management reporting systems and their decision criteria are usually based on costs (Ruohonen 1990).

On the other hand, the IS manager is the highest ranking executive responsible for providing the business with understanding about applicable computing technology and with the tools and infrastructure that allow the development and implementation of innovative business systems (Rockart 1988; Synnott 1987). However, their knowledge must not be exclusively technical; IS

managers should understand how the business makes money (in the case of private companies) or how it addresses the society's needs (in the case of the public sector), how it is positioned in the marketplace, and what and where to use business-driven information and technology to deliver better products and services (Broadbent and Kitzis 2005). Some of the attributes recommended for IS managers are a high degree of technical and business knowledge (Broadbent and Kitzis 2005), the ability to look after the business' technology investments (Synnott 1987), and the proactive use of business and technical awareness to enhance the business with innovative ideas concerning effective uses of IS (Rockart 1988).

Throughout the years, the roles and responsibilities of business and IS managers have evolved from top managers without commitment to IS issues and IS managers with no involvement in business planning, to the reiteration of the cooperation between both executives. The rest of this section describes this progression, that even though it portrays the main occurrences in the last four decades, nowadays there are organisations that still operate with situations that were identified – and in theory dealt with – years ago.

In the late 1960s and early 1970s, the data processing department, as it was most commonly known, was a support mechanism with low importance in the business hierarchy. Moreover, it typically came under the financial unit's command (Selig 1982). Because of this, IS personnel suffered from a lack of knowledge about the organisation's operation, and IS managers from inadequate guidance on how to actually plan the IS area (Pyburn 1983). As a consequence, business managers had overall responsibility for IS strategic planning (Ein-Dor and Segev 1978; Kriebel 1968/1969), delineating the strategies, structure and decision-making processes based on their experience and knowledge (Zani 1970). In addition, they were the only ones aware of the firm's situation with regard to its environment. It was still common that the Chief Executive Officer (CEO) viewed technology not as a key element in the company's future, but as an expense (Jarvenpaa and Ives 1990). However, some authors considered their involvement necessary to avoid crises, to ensure commitment (Tricker 1982) and to implement the stated strategy (Lyles 1979). Since these early stages, research reiterated that IS managers must directly report to the top management team and participate in the corporate planning process (Lyles 1979).

In the next decade, what previously was a support process now became a core activity. The preparation of the IS strategy involved directives, systems executives, evolving technologies,

and subsequently users (Miller 1979; Peterson 1989). However, as before, IS objectives (long, medium or short-term) and policies were still established by business managers (Soden 1975), but with the difference that this was accomplished via executive workshops (Galliers *et al.* 1994) or steering committees (Kay *et al.* 1980). The importance of business managers in the process was evident (Lederer and Mendelow 1988): IS strategies were more likely to succeed with the chief executive's support, especially when working with a long-range timeline (Lederer and Putnam 1987; Lyles 1979). Moreover, it was noticed that the more organisational layers there were between the business and IS managers, the lower the effectiveness and the planning success (Pyburn 1983). Therefore, for the first time IS managers were becoming part of the companies' operation and sometimes even involved in business strategy formulation (McFarlan *et al.* 1983).

Especially during the 1990s, the IS function became critical for the survival of some organisations (King and Teo 1997). With 80% of IS managers in charge of planning their company's IS strategy (Stephens *et al.* 1995), the amount of involvement of senior managers was still a concern, but much less so than in the early days of IS strategic planning. Current attention was now placed on the quality of this participation, the recurrent lack of commitment from top executives (Galliers 1992b), and the coordination between business and IS managers (Lederer and Mendelow 1989). Furthermore, it was believed that techniques such as executive workshops improved the business managers' involvement and dedication to IS issues (Galliers *et al.* 1994).

In the last five years, no new advances or novel breakthroughs on this topic have been made. Authors still reiterate the importance of business managers' involvement as the most important success factor in the formulation of IS strategies (Smaczny 2001), and the lack of management commitment and support the principal cause of ISSP problems (Teo and Ang 2001). Moreover, IS managers still consider IS strategic planning as a critical topic, essential to compensate for the escalation of investments in IS, and necessary to measure the strategic impact of IS on businesses (Palanisamy 2005). Nevertheless, there is evidence that complications are still present, that business managers are still, in spite of everything, not completely engaged in the IS strategic planning process, and that more communication channels are needed between users, IS personnel and top executives (Kearns 2006).

2.4.2 Involvement of middle managers and users

Middle managers and users have different roles and responsibilities, but they interrelate during IS strategic planning. Middle managers are important when coordinating separate business units or departments/divisions in a single company, particularly in conflict situations. Moreover, the participation of users is essential in order to fully exploit the potential of IS, especially when technology influences operative units in terms of its effects on business strategies (King and Teo 1997).

In the late 1950s, Leavitt and Whisler (1958) predicted that middle managers will eventually disappear as they were being replaced by automatic decision makers. However, instead of vanishing, middle managers flourished, having their functions expanded as computer systems facilitated a more effective allocation of time, skills and resources (Kriebel 1968/1969). Years later, although their importance was reduced due to 'flatter' organisational structures, their functions were generally confined between top managers and project managers (Lederer and Mendelow 1986), maintaining a significant position in the IS strategic planning process (Dansker *et al.* 1987).

Effective IS strategic planning should consider the organisation as a whole (Schwartz 1970; Tharrington 1985). It requires a detailed analysis of the functions of all organisational areas, together with an examination of how IS can fulfil their staff's needs (Moskowitz 1986). The concept of contemplating the user's requirements became known in the 1960s. During that time, it was realised that the risk of not using the final product increases when this essential step is not pursued (Ackoff 1967). Initially, neither middle managers nor users were extensively considered in the shaping of the IS strategy, although wide communication and cooperation between all levels was a primary planning objective (Soden 1975). Systems developers tried to understand the detail of the users' tasks to create applications that fit more effectively with their jobs (Zani 1970). In the 1980s, the participation of the whole organisation during the design of new systems was encouraged. Not only did this improve the image of the IS area among 'internal customers', but it also made them realise that their needs were finally being addressed (Wallace 1985). Nowadays the users, along with their knowledge of business processes and organisational goals, coupled with effective feedback and adequate resources for implementation (Premkumar and King 1994b), are considered vital in the ISSP process (Flynn and Goleniewska 1993; Palanisamy 2005).

Understanding user's requirements has always been a serious problem facing IS managers, especially because user perception of the IS area generally depends on the efficiency and reliability of the services provided. Nevertheless, this activity should be completed before starting the planning of the IS resources (especially in bottom-up developments – see Section 2.5.1). Because of the day-to-day interaction with users, operating managers consider the lack of user involvement the most important drawback of the IS strategic planning function (Lederer and Mendelow 1986). The reality is that in many cases users do not know their needs, and what is worse, they habitually change their requirements during development (Lederer and Mendelow 1991). Although they favour tangible benefits, these internal customers eventually recognised the success of the IS strategic planning function (Galliers 1987b); however, in order to motivate an active participation in the formulation of the plans and reduce dissatisfaction, in some firms monetary incentives have been introduced (Lederer and Mendelow 1986b).

Consequently, as this section described, the involvement of middle managers and especially users in the IS strategic planning process is essential. The first ones are responsible to direct specific areas and small groups of people. And since IS are mainly used by users, the contribution of these individuals is crucial to facilitate the formulation and implementation of IS strategies in line with the customers' requirements (Premkumar 1992; Teo and Ang 1999). Moreover, and as the next section shows, steering committees achieve cooperation and communication between all roles.

2.4.3 The importance of IS steering committees

Considered as a facilitator to improve IS strategic planning efforts and increase user satisfaction (King and Raghunathan 1987), an IS steering committee provides direction to the IS strategy creation process (Nolan 1979). Its members can include everyone who is involved in the management and planning of the company (Kay *et al.* 1980): members of the IS group, business and middle managers, chief executives and sometimes even external consultants. Chaired by a business manager, they generally meet every week, month or whenever it is necessary to review progress. One purpose of these committees is to supervise the approval (Minard 1991), creation, implementation and modification of IS strategies, following current organisational objectives, vision and policies. Additionally to setting project priorities (Lederer and Mendelow 1993; Reuber 1991; Wallace 1985), they assign resources and resolve political conflicts that may arise during the process (Gibson and Nolan 1974), especially when resistant managers oppose changes in their areas, roles or responsibilities.

An IS steering committee is a support team and a managerial tool that has been constantly used since the mid-1970s. Initially, business managers were not part of the committee, which is the reason why it was viewed as parochial and ineffective. In addition, generally the group did not have access to the business strategy and only worked with short-range objectives (Lyles 1979). One decade later, when committees started to be headed by business managers rather than IS managers (Doll and Torkzadeh 1987), the organisation became aware of the importance of this group (Teo and Ang 1999). Since then, these committees have started to act as a board of directors with the whole company as their scope and IS as their premise, ensuring that every system is linked with the business strategy (Luftman and Brier 1999; Nolan 1982; Ruohonen 1990).

The importance and principal objectives of IS steering committees are a matter of constant study. It has been demonstrated that the existence of this group has a significant impact on the IS strategic planning function (Premkumar 1992) and in the enhancement of the synchronisation of business and IS strategies (Raghunathan and Raghunathan 1989). Moreover, although these committees are associated with a more formalised and systematic strategy, their perception is related to the existence of a written strategy and not to the firm's size (Doll and Torkzadeh 1987). But as in any attempt of a group to find common objectives, problems can emerge (Ruohonen 1990) due to individual preferences, lack of cooperation or misunderstanding of roles (Fleit 1990). In addition, personal feelings or conflicting personalities may trigger disruptions and bring about failure. For example, insufficient commitment may cause a shortage of sufficient senior managers with appropriate authority, rivalry between members, or the erroneous conception of technology as a cost centre rather than a source for additional revenue and profit (Teo and Ang 2001). Nevertheless, based on multiple successful cases, practitioners encourage pursuing this formation.

The last three sections described the roles of the main stakeholders involved during ISSP. However, due to their social features, there are some behavioural and cultural issues that can surface during the formulation and implementation of IS strategies, thus enabling the process or inhibiting its progression. This subject matter is described next.

2.4.4 Behavioural and cultural issues during IS strategic planning

Humans, with different personalities, behaviours and judgements, control the environment where strategies are conceived, designed and implemented. Consequently and due to the socio-technical nature of the ISSP process, taking into account cultural and organisational factors are

crucial to consider when developing meaningful and relevant IS strategies (Prince 1994). Since this increases the complexity of building an IS strategy, the challenge is to develop a process that in addition to identifying potential IS applications that support the business strategy and efficiently control the available IS resources, it needs to address management awareness issues, communication barriers and problematic organisational approaches (Dantzig 1990). For example, some of the social factors that influence the IS strategic planning process include the relationship between business and IS managers, market heterogeneity, the IS area's knowledge and planning experience, and the agreement level between top managers on ISSP issues (Sambamurthy *et al.* 1993).

Due to the technical nature of the IS people, it is common to find interaction problems between these individuals and the rest of the company's stakeholders. Therefore, in order to address any conflicts and expand the IS strategy's impact throughout the organisation, it is necessary to concentrate on cultural and behavioural issues during the process instead of solely considering technical systems and procedures (Kovacevic and Majluf 1993). Related to this, Gwo-Guang and Gough (1993) described key social characteristics that need to be addressed by the IS group: acquaintance with business requirements, an innovative idea generation process, a change management process and an organisational learning process. Other matters to ease this interaction include the creation of a steering committee, the dispersion of IS specialists among the business units and the development of project boards chaired by general managers (Kovacevic and Majluf 1993).

Due to attitude and behavioural variations among business and IS managers, every organisation has distinct planning practices (*e.g.*, time-span, methodologies, personnel involved, and even how the business and the IS strategies are synchronised) (Hann and Weber 1996). Furthermore, it has been empirically tested that the planner's standpoint and personality might affect the IS strategy's content, the way it is formulated, the extent of its implementation, and how activities are prioritised (Reponen *et al.* 1996). Therefore, in order to accomplish an efficient and innovative strategy, it has been recommended to maintain a personality balance between the people involved until the best possible combination can been reached. To exemplify the importance of these human relationships, Reich and Benbasat (1996) proposed an intellectual and a social dimension when linking the IS strategy to the business function. The intellectual dimension refers to the strategy's content (internally consistent and externally valid), while the social dimension highlights the fact that both business and IS managers should understand and

commit to each other's objectives and plans. Both dimensions are necessary to avoid awareness and commitment problems, making full use of IS in support of the business strategy.

In summary, any IS strategy development project is an ongoing process that should involve every stakeholder in the organisation. Human relations are complex and sometimes even adversarial, especially when incompatible interests exist in different areas or at different hierarchical levels. However, even though the formulation and implementation of IS strategies are complex endeavours, it needs to tackle socio-technical issues, trying to ease any behavioural complications that can impede its successful development.

Overall, this section has discussed the main roles that are involved in the development of an IS strategy and during the planning of the IS resources, together with behavioural issues that exist between them. Other individuals not described that can also influence the process are other companies (including competitors), consultants, and in the case of public sector organisations, Central Government and the citizens. With this background, the next section starts discussing *how* ISSP is carried out – its internal nature, development and implementation.

2.5 ISSP process: formulation and implementation

Since every organisation has its own structure, objectives, characteristics and people, the approaches followed to plan the IS resources may vary. Moreover, when planning IS resources, there are no simple routines or single activities to follow (Earl 1990b; 1993). Instead, it is a mix of procedures, techniques, interrelated tasks, analyses and discoveries of how organisations pursue their IS strategic planning activities and formulate IS strategies (Newkirk *et al.* 2003), together with which methods, tools or resources aid its implementation and influence the necessary tasks to achieve its objectives. Therefore and in order to formalise the process, Mentzas (1997) identified five phases for its development, representing the components of the planning process: strategic awareness (*i.e.*, identifying the business and IS systems, and defining the planning objectives), situation analysis (*i.e.*, analysing the business and IS systems, together with the business and IS environments), strategy conception (*i.e.*, scanning of the future and identifying alternative scenarios), strategy formulation (*i.e.*, formulating the technological architecture, and strategy synthesis and prioritisation), and strategy implementation (*i.e.*, elaborating action plans, and evaluating strategy and control procedures).

This section is centred in the *how* part of the ISSP process and is organised around the formulation and implementation dimensions of strategic planning (see 'steps' part in Figure 2.4). First, the most relevant approaches and operating modes during IS strategic planning are described in Section 2.5.1. These issues are essential to realise the basics of how the business and IS strategies are synchronised with each other. Next, a summary of the strengths and weaknesses of the most popular commercial methodologies such as Business System Planning, Critical Success Factors, and the Stages of Growth Model are portrayed in Section 2.5.2. The implementation of strategies is discussed in Section 2.5.3. Section 2.5.4 presents the influence of the internal and the external environments during IS strategic planning, elements that impact both the formulation and the implementation of IS strategies. Then, Section 2.5.5 outlines key points or guidelines of how to realise a successful planning process and increase its achievements. Finally, the problems and barriers that cause ISSP to be a complex set of activities and difficult to implement are introduced in Section 2.5.6.

2.5.1 Approaches followed during IS strategic planning

Organisations, according to their planning experience, preferences and nature, can follow different planning approaches for the analysis, design and implementation of IS strategies. This topic has been constantly re-examined by academics, but barely mentioned in practitioners' publications[7] because these individuals deal more directly with the formal planning methodologies that use these concepts as bases (see Section 2.5.2 below). Moreover, it is necessary to address these concepts to better comprehend in which ways the business and IS strategies influence each other (see Chapter 3).

Since the late 1970s, five philosophies (see Figure 2.6) have been identified (in decreasing order of comprehensiveness and increasing order of modularity) that relate to the development of IS strategies in organisations (Ein-Dor and Segev 1978). Historically, while academics prefer comprehensive and more structured strategies, practitioners favour evolutionary approaches because they are easier to handle in complex situations. These are:

- Top-down: IS design is initiated from the top, according to the business's needs and changes in the environment (Friedlander 1985);

[7] When examining who wrote the articles that discuss the different IS planning approaches (*i.e.*, Section 2.5.1 in this chapter), it was recognized that most of the publications were written by academics, rather than practitioners or consultants.

- Inside-out: IS are built according to opportunities presented, but later are integrated with the other functions;
- Parallel or feedback: strategic and tactical systems are created in parallel, linked by successively stronger feedback loops;
- Bottom-up: modules are developed from the bottom up (*e.g.*, user or IS requirements), but integrated consecutively with the rest of the systems; and
- Evolutionary or modular: IS are created according to operational needs, but they are integrated as required.

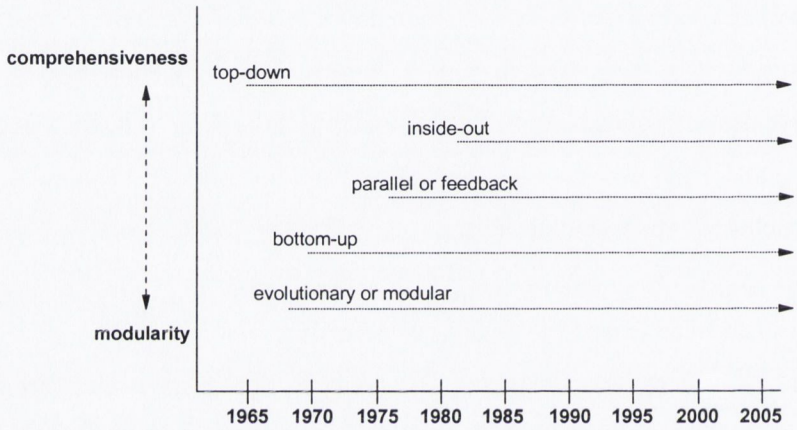


Figure 2.6: Evolution of approaches with degree of comprehensiveness and modularity

Because the parallel approach is not widely documented and due to the fact that some authors consider the evolutionary and the bottom-up approaches as equivalent (Zachman 1977), the rest of this section and thesis concentrates solely on the top-down, bottom-up and inside-out approaches.

The top-down or decision analysis (Davis 1974) approach became widespread in the 1970s with a need to incorporate business objectives into the IS strategy (Hufnagel 1987). With evidence of numerous successes, this approach has continuously been regarded as necessary, for example, to achieve information-based competitive advantages (Grover and Segars 2005; King 1985; Vitale *et al.* 1986). Due to the fact that it follows a logical way of design and subdivides complex problems into smaller and more specific representations (Henderson and Sifonis 1988), traditional methodologies such as Critical Success Factors (Henderson *et al.* 1987) and the Strategic Data Planning Method (Goodhue *et al.* 1992) are based on this type of approach.

The bottom-up or data analysis style (Davis 1974) emerged when organisations, lacking a business strategy, built IS piece by piece according to the needs and demands of the IS area. Although it was the preferred method for several years, it was also regarded as a "patched... crazy quilt of residues from automated clerical procedures" (Zani 1970 p.96) and even considered responsible for many IS recorded failures (King 1978). Only some consultants continued promoting it, especially when an organisation lacked or had a deficient business strategy (Head 1983). Due to its characteristics, the bottom-up approach is considered pragmatic, incremental, and heavily relies on the involvement of the people affected. However, it tends to be random and unplanned (The Butler Cox Foundation 1985), scarcely producing any changes in organisational structures or decision-making methods (Litecky 1981). Despite the fact that it can capture the users' demands, it can fail to gain control of the technology that influences the business strategy (Arkush 1986). Some other weaknesses include delays due to managerial disagreements, complex integration with other systems, and the possibility of redesign in case of significant inconsistencies (Zachman 1977).

When comparing the bottom-up and top-down concepts, the latter has been referred as a smarter method of designing information systems and a tactic to gain more control after eliminating the influence of middle managers in information decisions (Dearden 1972; McFarlan *et al.* 1973; Zani 1970). Due to these differences, since the mid-1970s practitioners have understood the limitations of employing only one style, corroborated by a survey that showed a 90% preference for a combination of bottom-up and top-down approaches (Soden and Tucker 1976). Consequently, the hybrid or inside-out approach was conceived (Zachman 1977), where instead of using solely a top-down or a bottom-up style, it employs the best attributes of each of the traditional approaches (The Butler Cox Foundation 1985). Furthermore, 15 years after Soden and Tucker's investigation, another survey confirmed the permanence of this dichotomous style (Conrath *et al.* 1992), demonstrating an 80% inclination for the inside-out approach. Business System Planning is an example of a methodology that is built with this kind of style, consisting of top-down planning and a bottom-up implementation (Lederer and Sethi 1991).

While the top-down model is a business driven analytical approach and the bottom-up one is an adoptive technological approach (Galliers 1987b; Huff and Munro 1985), the inside-out approach is regarded as a comprehensive (to both IS and organisational issues) and competitive (Reponen 1994) interactive model that assesses existing and future business issues by

conducting internal and external analyses (Wassenaar 1990). The inside-out approach, which is the most advanced operating mode, requires an assessment of business capabilities and goals as well as an identification of the opportunities provided by IS. Consequently, top managers first promulgate policies and guidelines, and then review and approve the developed strategy (King 1988b) until achieving full user and managerial support (Lederer and Putnam 1987).

In a more practical way, the top-down, bottom-up and inside-out approaches are associated with the operating modes followed during IS strategic planning (*i.e.*, proactive, reactive, isolated and eclectic) and thus to the synchronisation of business and IS strategies. For example, a top-down approach can be found when the IS strategy is formulated in a reactive manner directly from the business strategy, and a bottom-up approach is generally found when business strategies are proactively influenced from IS strategies. Therefore, as seen in Figure 2.7, approaches and operating modes can interrelate and portray how the planning of IS resources is carried out in line with its strategic nature ('goal-seeking' or 'issue-based') and position ('business-driven' or 'technology-driven').

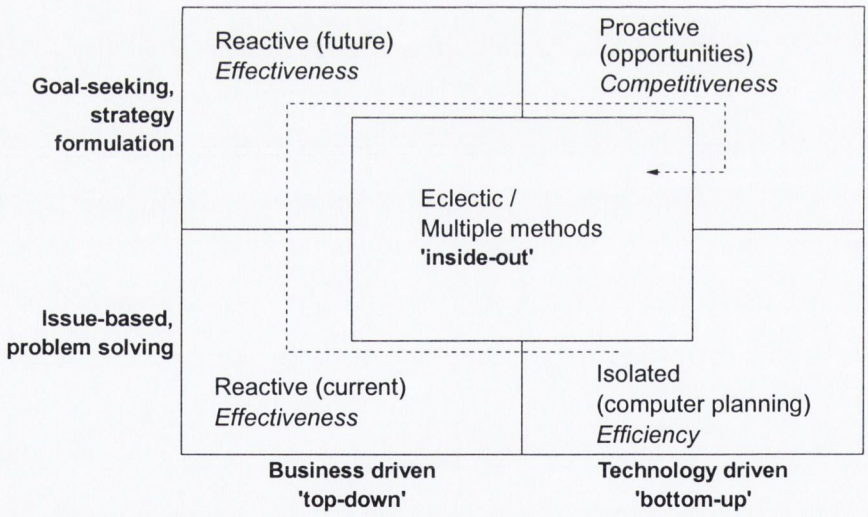


Figure 2.7: Development path for ISSP operating modes (Galliers 1987b; Galliers 1991)

The first author to write about the two principal operating modes of IS (*i.e.*, reactive and proactive) was a consultant (Soden, 1975). He said that during IS strategic planning, generally two roles are involved: reactive (defensive posture) and proactive (actively interacting with the strategic planning effort). Several years later, Galliers (1987b) proposed a framework (see Figure 2.7) that placed the isolated approach before these two roles, where a non-strategic, bottom-up line of attack and an efficiency style predominated in isolation from the rest of the

business (Galliers 1993). The author mentions that the IS strategic planning evolution starts with the isolated and passes through the reactive (effectiveness) mode, by the proactive (competitiveness), until finally attaining the inside-out approach, which tries to solve the problems and weaknesses of the former approaches.

More specifically, in the reactive mode (see Figure 2.8) the IS area shapes its strategy based on the previously developed business strategies (top-down). With this, the IS activities are aligned with the long-term plans of the company. Its supporters justify this service role on the deep concentration of users' needs and requests (Soden 1975; Soden and Tucker 1976). But while the process progressed to have a mission-oriented scope, with a long-time horizon and with strategic importance, the approach evolved into being proactive (Lyles 1979). This mode (see Figure 2.9) states that business and IS strategies are developed together, enabling the IS area to influence the company's strategy formulation. Its defenders state that this change agent role has the capacity to create new technological innovations and computer systems. As seen in the two figures, in both modes the cycle is complete when top management approves the IS strategy (Soden 1975; Soden and Tucker 1976).

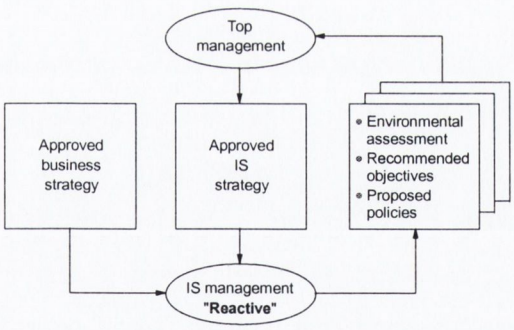


Figure 2.8: Reactive strategy development process (Soden 1975)

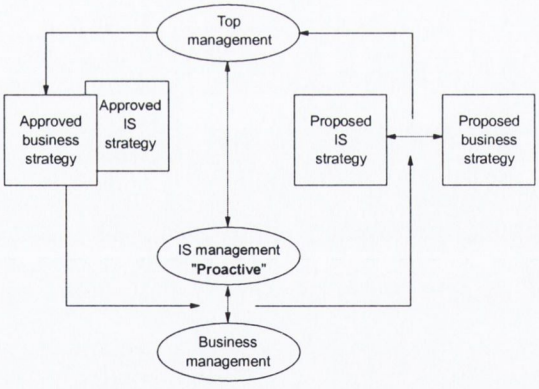


Figure 2.9: Proactive strategy development process (Soden 1975)

Although research in the mid-1970s mentions that 'proactive' refers to advanced planners and 'reactive' to novice planners (Soden 1975; Soden and Tucker 1976), both postures have extensively been used by practitioners throughout the years. Traditionally, the planning philosophy was reactive, especially with the advent of planning methodologies such as Business Systems Planning (Zachman 1982) and Critical Success Factors (Rockart 1979). But in the early 1980s, due to changes in the environment (The Butler Cox Foundation 1983) and following the application of Porter's concepts of IS strategy (Porter and Millar 1985), it was no

longer considered optimal. Therefore, the proactive process extended its popularity by paying attention to business process redesign, business reengineering, and matters of external and internal nature to the organisations (Galliers 1991; Galliers 1993).

This section discussed several approaches of how the ISSP process can be carried out. These topics were developed and mainly documented in the 1970s and 1980s; however, they represent the foundations of how the synchronisation of business and IS strategies, the main topic of this thesis, is actually accomplished by the influence that exists between both strategies during IS strategic planning. These approaches and operating modes were not very practical in their raw form. Therefore, as described in the next section and based in formal models of strategic planning that guide the development of business strategies, commercial methodologies were produced to conduct the formulation and implementation of IS strategies.

2.5.2 Commercial methodologies for IS strategic planning

Methodologies for the development of IS strategies were conceived when organisations started to have difficulties during the formulation and especially during the implementation of IS strategies (Gill 1981), thus requiring a facilitator throughout ISSP. Their common goal is to generate, via key analytical, evaluative and creative strategic planning activities (Earl 1989), a combination of technological and business outputs (*e.g.*, organisational objectives, information architectures, IS strategies, and individual project plans) that will aid the organisation in confronting any unexpected changes in the internal and external environments (Flynn and Goleniewska 1993). Moreover, based in the approaches and operating modes described in the last section, these methodologies identify competitive advantages by means of technology, analyse internal processes, and synchronise their business and IS strategies (Goodhue *et al.* 1992; King 1988b; Porter 1985).

The first methodologies were created by academics in the early 1970s when the expansion of the capability of business processes became a priority. During the 1980s, commercial methodologies used by vendors and consultants started to gain wide acceptance (Adriaans and Hoogakker 1989; Andersen Consulting 1987). Generally these employed a top-down planning approach; nonetheless, all methodologies were formed by independent and ordered steps (Pyburn 1983), trying to exploit internal and external resources to build efficient and successful IS strategies that agree with their short and long-term objectives. Due to the fact that these tools

are competing rather than being directly equivalent, variations exist in their duration, number of phases, involvement, complexity and cost (The Butler Cox Foundation 1983).

Critical Success Factors[8] (CSF) (Rockart 1979), the Stages of Growth Model (Gibson and Nolan 1974; Nolan 1979) and Business Systems Planning (BSP) (IBM Corporation 1975) are not only the most popular methodologies, but also where the majority of the remaining techniques are derived or blended. From the three, the Stages of Growth Model turned out to be particularly relevant: by the mid-1980s it was used in over 200 consultancy studies (Nolan 1984) and the article where it was introduced (*i.e.*, Gibson and Nolan, 1974) became one of the 15 most cited publications by IS researchers at the time (Hamilton and Ives 1982). The model resulted in six stages that organisations typically undergo in the development of IS solutions (Hayward 1987). But it was not until a revised version developed by Galliers and Sutherland (1991) that Nolan's model eventually provided useful guidelines for diagnosing the IS evolution from its beginnings to the achievement of its full maturity (Barlow 1990; Hayward 1987). Nowadays, even though the model is considered dated for the current technological context, it works as a learning method to identify the maturity stages of the IS strategic planning function and its adaptation to the environment (Grover and Segars 2005).

Other secondary methodologies include Information Engineering (Goldsmith 1991), Martin's (1986) Strategic Data Planning Method (SDPM) and Earl's multidimensional approach (1986a; 1986b; 1989). Moreover and due to precise requirements, in-house or custom-made methodologies are also widely employed (Basu *et al.* 2002; Earl 1990b; Galliers 1986). More recently, just a few frameworks have been suggested; for example Mentzas's (1997) five-phase SISP model and Hatten and Flatten's (1997) IS strategy framework. In the last years, due to their complex implementation and the resources involved in their execution, mainly consulting companies have developed proprietary methodologies to assist organisations during ISSP (Tillquist 2000).

Unfortunately the perfect methodology does not exist: all have many strengths, but also several weaknesses (Lederer and Mendelow 1991). This leads to organisations experimenting with different techniques until they find one that fulfils their requirements. Moreover, the selection of a methodology is considered a problematic task due to the fact that each one is presented as

[8] Some authors consider CSF more as a tool than as a methodology (Karababas and Cather 1994).

"the solution" (Bowman *et al.* 1983 p.13). So while it can be a success in one organisation, it can be a failure in others (Lederer and Sethi 1998). Several published papers compare and evaluate the advantages of one technique or combination of methodologies over another (Lederer and Sethi 1988; Premkumar and King 1991), but confusion still exists as to which tool to employ. The focus of methodologies may vary regarding several aspects of the overall problem, and which of these characteristics are worth considering or neglected is a matter of individual judgement. Despite the attention that academics have given to these methodologies, problems have caused IS rigidity and passiveness in handling new situations (Palanisamy 2005). Consequently, customised in-house methods that combine aspects of several methodologies became very popular (Earl 1990b).

IS strategic planning has been recognised since the 1970s as an intricate and complex set of activities (McFarlan 1971). As seen in this section, tools and methodologies were created to facilitate the development of IS strategies; however, they only constitute part of the process and do not guarantee the success of the strategy (Moskowitz 1986). In a survey conducted in the late-1980s (Lederer and Sethi 1988), 23% of respondents were dissatisfied with their planning methodology, yielding an average score of 3.5 on a scale from 0 to 6. Therefore, selecting a methodology has always been problematic. Only experience will show how to apply a given methodology to significantly impact the IS function. Consequently, even today external consultants are constantly being contracted to aid in the IS strategic planning task and as the next section describes, especially during the implementation of IS strategies.

2.5.3 Strategy implementation issues

Although the implementation of IS strategies has been a concern for managers for many years (Earl 1990b), not many published papers before the mid-1980s discuss this topic extensively. This phase is so crucial that ISSP can be regarded as a failure if the implementation does not happen or is not successful (Potter 1987). Furthermore, its achievements and performance are generally determined by the extent to which IS strategic planning meets its objectives (Lederer and Sethi 1996), and by how it has been operationalised (Gottschalk 1999b). Other reasons why strategy implementation is considered important include (Gottschalk 1999a): failure to carry out the IS strategy can cause lost opportunities, duplicated efforts and wasted resources; the lack of implementation leaves firms dissatisfied with the planning process; and implementation deficiencies may cause complications establishing and maintaining priorities.

Despite its relevance, it is common to find unexecuted IS strategies (Earl 1993; Ward and Griffiths 1996) or undeveloped systems as stated in the strategy (Gottschalk 1999b). Repeatedly, plans end up on shelves without being carried out due to numerous problems such as a lack of resources, erroneous migration procedures and unrealistic calculations of cost/time (Lederer and Sethi 1988). Moreover, if the strategy is not implemented within a reasonable period of time (Lederer and Sethi 1996), technological or organisational changes can render it obsolete (Goodhue *et al.* 1992). This raises the question of why an organisation should take the trouble of developing a costly strategy that it is never going to pursue.

While the formulation of an IS strategy is traditionally considered a top manager's responsibility, implementation is primarily the task of middle managers and users (Lederer and Calhoun 1989), but still with the active involvement of senior executives (Walsham and Waema 1994). Nowadays, it is recommended that the whole organisation must be involved in the development of IS strategies, especially because it has been demonstrated that strategies formulated exclusively by top managers are often modified or even sabotaged at lower organisational levels during implementation (Allen and Wilson 2003). The implementation phase can easily be neglected (Raghunathan and King 1988), particularly if business managers opt not to implement something that will instigate major organisational changes (Teo and Ang 2001). Therefore, in order to complete the overall planning procedure, it is recommended to organise suitable feedback mechanisms between users and top managers, ensuring that the implemented systems and infrastructure have the desired effects (Auer and Reponen 1997; Premkumar and King 1994). The better these instruments, the greater the ISSP success (Premkumar and King 1994b).

Except in cases where users are involved in the preparation of the IS strategy, these individuals are generally not aware of all planning phases, activities and resources entailed. Also, since they might only be in contact with the final product, the implementation of the strategy will have a strong impact on user satisfaction (King and Raghunathan 1987; Raghunathan and King 1988). So in order to increase the chances of success, it is essential to ensure that the IS strategy is appropriately developed, considers the organisation's and users' requirements, that it is synchronised to the business strategy, and is fully implemented. Creating an IS strategy by itself is insufficient since it is only part of the planning process (Walsham and Waema 1994).

Several factors can cause implementation problems; for example changes in the business strategy, alteration of priorities, insufficient top managers' commitment in ISSP, and in the case of public sector organisations, legislation changes (Hartono *et al.* 2003; Lederer and Mendelow 1993). Nevertheless the main barriers are human, such as social inertia, office politics or differing value systems (The Butler Cox Foundation 1985). Therefore during strategy formulation, in order to achieve support and avoid resistance, special attention has to be paid to social requirements and responses, always trying to present the strategy in an understandable and clear style (Lederer and Salmela 1996; Lederer and Sethi 1998; McFarlan 1971). Furthermore, using a comprehensive strategy facilitates its implementation since incremental or informal planning may fail by not producing enough managerial support (Salmela *et al.* 2000).

IS strategic planning is an essential activity in every organisation that wants to effectively manage its IS. The main objective of this process is to develop IS strategies to best handle IS resources, to support the organisation's objectives, and to accomplish benefits such as process enhancements (King 1988; Premkumar 1992; Premkumar and King 1994). To do so, it has to be formulated while including the whole organisation, and implemented and synchronised with the business strategy (see Chapter 3). However, due to difficulties in its formation, to the resources involved in its execution, and to the complexities in measuring the process (King 1988), not all implementations are successful or can be regarded as accomplished. Furthermore, as described in the next section, issues such as the impact of internal and external environments also affect the outcome (Burn and Szeto 2000).

2.5.4 The impact of internal and external environments

The environment is composed of those factors and conditions in and around the company that are not part of the strategy, but that can or should influence it (Smits *et al.* 1997). As a factor it can be divided into the internal or external business environment, and the internal or external technological environment (Pant and Hsu 1999). These two environments, although related, differ from each other. The external environment is composed of physical and social factors that influence the organisation from outside (*e.g.*, uncertainty, political problems and legislations, economic fluctuations and competitors). The internal environment is concerned with the necessary resources for designing, managing and controlling the organisation's inner issues (*e.g.*, the organisation's size, financial results, structure, clarity of its corporate strategy and its IS resources) (Smits *et al.* 1997). The simpler and more predictable this 'atmosphere' is, the more effective and efficient the planning process (Lederer and Salmela 1996).

Normally the IS strategic planning function is affected by environmental turbulence (Kay *et al.* 1980; Lederer and Salmela 1996; Premkumar and King 1991). Changes in competitors, technology, customers, government and vendors can shift priorities and increase the strategy risk, making it valueless before it is fully implemented (King and Teo 1996; Lederer and Mendelow 1993; Vitale *et al.* 1986). This has been noticed since the 1980s, when it was said, on the one hand, that business managers work in unstable, unpredictable and political environments, only concerned with long-range, external variables; and on the other hand, that IS personnel operate in a stable, largely apolitical environment, with emphasis on short-range, internal variables (Rucks and Ginter 1982). Therefore, when formulating and implementing IS strategies, an environmental assessment should be carried out (Rogerson and Fidler 1994; Salmela and Spil 2002). This way, the strategy is adapted to the growing uncertainty and firms can be prepared to react to external influences such as competitors' gains or new associations with vendors and customers (Lederer and Mendelow 1988). However, this is not easy. Technological capabilities greatly increase environmental complexity and uncertainty (Porter 2001), making the adjustment of the IS strategy more convoluted (Teo and Ang 2001).

Some authors (Hofer and Schendel 1978; Tricker 1982) view strategy as the link between its internal resources and the opportunities created by its external environment. Therefore, IS managers need to have an understanding and awareness of the outer situation to detect change, assess the strategy's impact and trigger any modifications (James 1984). As mentioned above, it is important to develop an IS strategy that is efficient and flexible; nevertheless, it is more crucial that it is successful (see next section for recommendations). However, in order to assess its utility, the IS strategy has to be measured or evaluated, corresponding to the third phase of the strategic planning process (not considered in this thesis).

2.5.5 Successful IS strategic planning

As described in this section, throughout the years several conditions have been recognised to enable the successful formulation and implementation of IS strategies. In the 1970s, since it required elements from the whole organisation, the IS strategic planning process was already seen as a complicated task. Therefore it was recommended that a group of experts from every division should team up to collectively work on the process (Dearden 1972). Furthermore, the communication between business and IS managers, the development of projects in a more

proactive manner, and the definition of an IS mission that supports the business strategies were already seen as key points that contribute to a successful endeavour (Lyles 1979)[9].

In the next decade, it started to become clear that any form, size or type of IS strategy will not be successful without the commitment and involvement of top managers (Galliers 1986; Galliers 1987a) or without the creation of an environmental analysis, and the establishment of priorities (Lederer and Mendelow 1986b; Martino 1983). In addition, the level of maturity of the organisation (Doll and Torkzadeh 1987) and the methodology used in developing the IS strategy (Lederer and Sethi 1988) were other factors instrumental to the success of the planning process. In the 1990s, computer-aided software engineering (CASE) tools were promoted as a way of facilitating IS strategic planning (Lederer and Mahaney 1996). However, the involvement and support of top management continued to be regarded as essential (Earl 1990b), in addition to performance measurements of the IS area (Clark 1992), continuous evaluations of planning benefits and the participation of users (Galliers 1992a). Eventually, of six parameters identified in the ISSP literature as essential for a successful planning process, the synchronisation of business and IS strategies was pointed out as number one (Ang *et al.* 1995).

In the last few years, academics have continuously recommended actions which were claimed to succeed in the formulation and implementation of IS strategies; however, not only experience is an issue to consider (Lederer and Mendelow 1993), but also the amount of ISSP. It was noted that too little planning would result, for example, in a lack of understanding of the environment and of emerging technologies (Premkumar and King 1991; Raghunathan and Raghunathan 1991). On a diverging view, too much planning would require too much time and changes in the environment would render the strategy obsolete before implementation (Newkirk *et al.* 2003; Sambamurthy *et al.* 1994). Moreover, it was noted that novice planners tended to have more problems and ultimately more failures when developing IS strategies, so a firm is more likely to achieve a successful execution as experience is built up (Galliers 1987a) or alternative, by hiring consultants to aid in the task (CCTA 1991). Problems still exist even

[9] Derived from the strategic management literature, the criteria to measure the success degree of IS strategies has been a long-standing debate (Galliers 1992a; King 1988a; Premkumar and King 1994a). It is a complex process (King 1988a), especially because planning effectiveness must be measured in multidimensional terms (Fitzgerald 1993; King 1988a) and is influenced by concepts such as environmental volatility, competitive trends and business conditions (Pyburn 1983; Raghunathan and Raghunathan 1991; Vitale *et al.* 1986). Nonetheless, some measures commonly used comprise the fulfilment of objectives, planner satisfaction and financial performance (Carter *et al.* 1990; Chan and Huff 1992; Lederer and Sethi 1996; Premkumar and King 1992).

among the most advanced planners; however, as described next, their existence can be attributed to other factors.

2.5.6 Identified problems during IS strategic planning

Since its emergence, ISSP has reached a considerable status among IS and business managers (Brancheau and Wetherbe 1987) enabled by the many reported benefits and accomplishment stories. However, despite recommendations such as the ones outlined in the last section, there are several problems that can impede its successful development (McFarlan 1971).

In the 1970s, some major difficulties for developing successful long-range IS plans (as IS strategies were still commonly called at that time) included a lack of free communication and commitment to change, heavy reliance upon a single person in determining the direction of IS, and also the absence of a corporate strategy (Lyles 1979; Soden and Tucker 1976). It was believed that these issues were caused not only by a lack of maturity of the IS effort, but also by deficient procedures. Nevertheless, it was recognised that some of these problems could be reduced through experience. Also during the 1970s, the considerable cost involved started to become a matter of concern (Rockart 1979). But it was not until King (1978) introduced a model to link the business strategy with the IS strategy that the process was better acknowledged, causing its barriers to be reduced (see Figure 3.2 in the next chapter).

In the early 1980s, IS strategic planning was mainly involved with long-term organisational support and in analysing the influence between the business and IS strategies (Baets 1992; Bowman *et al.* 1983). Some identified reasons for not accomplishing successful strategies included the allocation of resources, the required time, difficulties associated with measuring benefits, and the complexity of understanding users' needs (Ball 1982; Bowman *et al.* 1983; Galliers 1987c). All of these problems resulted in almost 50% of users regarding the IS strategic planning process as being 'less than successful' (Lederer and Sethi 1988) and 53% of IS managers dissatisfied with the planning process.

While anxiety to change predominated in the 1970s (Soden and Tucker 1976) and methodological struggles in the 1980s (Pyburn 1983), the main concerns in the 1990s were leadership issues (Finnegan and Fahy 1993; Flynn and Goleniewska 1993; King *et al.* 1987), together with a need for free communication and commitment to change (Teo and Ang 2001). Additionally, complications continued as the IS community was positioned between two

contrasting postures. On the one hand, pressure existed to integrate IS into the organisation, due not only to infrastructure investments, but also to the weight imposed by success stories from industry. But on the other hand, there was evidence that suggested that the IS strategic planning process was not useful (Goodhue *et al.* 1992). For example, it was found that less than 50% of organisations were undertaking ISSP at that time (29% in medium size and 19% in small firms) (Conrath *et al.* 1992; Falconer and Hodgett 1997). Nevertheless, it has been acknowledged that one reason for this is the lack of management commitment and involvement to IS strategic planning (Galliers 1991; Lederer and Sethi 1992).

This section has described how the IS strategic planning process is internally performed, dividing the discussion in formulation and implementation. As seen, there are several procedures of how an organisation can plan the IS resources, prepare IS strategies and execute the stated proposals. These techniques depend on the firm's resources, capacity, experience, objectives and importance given to technology; nevertheless, several problems can impede its development. The significance of this section lies in the fact that the degree of synchronisation between business and IS strategies, as described in the next chapter, depends on the way the ISSP process is achieved. However, before characterising this synchronisation of strategies, the next section portrays how ISSP is carried out in the public sector.

2.6 IS strategic planning in public sector organisations

Since 'information-driven' and 'information-intensive' industries (*i.e.*, banks and financial services firms) generally are associated with the most advanced technological implementations (Porter and Millar 1985; Premkumar and King 1991), this implies that there are actually significant differences among industries with relation to the IS strategic planning process. At first, it was believed that all companies, notwithstanding their size, planning experience and industry, should manage the IS resources in the same manner. Nevertheless, several studies have identified differences in planning methods and in the importance given to IS across industry boundaries (Harris and Dave 1993; Jarvenpaa and Ives 1990; Johnston and Carrico 1988), predominantly between private companies and government organisations.

While private companies have been exploiting IS capabilities for a long time, similarities between the public and private sectors, such as the degree of technological integration and

project size, have been demonstrated (Margetts and Willcocks 1993; Stamoulis *et al.* 2001). Nevertheless, pronounced differences have also been found (Caudle *et al.* 1991), especially because public sector organisations do not have the same stability as found in private corporations, and also because they are influenced by strong external forces, *e.g.*, by Central Government and the citizens (Lasden 1981). In particular, evidence has demonstrated variations in business objectives, requirements and potential to exploit IS (Premkumar and King 1994b; Zviran 1990). Consequently, while specific characteristics may influence the introduction of technology in some firms, it is expected that ISSP features will also differ between both sectors (Porter and Millar 1985). Moreover, since IS in government administrations are frequently driven by current political necessities and constituent petitions, even the most thorough long-term IS strategies can be overridden (Bannister 2001).

In general, the public sector has been slow to adjust to new times; however, through a more entrepreneurial form of government that fosters competition, mission statements and a decentralising authority to empower employees and teams, not only public organisations have been modernising (Osborne and Gaebler 1992), but a state has been reached where IS have become vital (Margetts 1999). In general, IS investigations have mainly evaluated IS strategic planning in the private sector, even though governments are the world's largest consumers of technological products and services (Caudle and Marchand 1990) and the fact that IS are vital, policy-critical features of almost every contemporary public administration (Margetts 1999). Initially, public sector IS managers relied on private sector research and best practices to plan the IS area (Holley *et al.* 2002). However, since a special issue of the *Public Administration Review* focused its attention on the need for dedicated research into public sector IS in the late-1980s (Bozeman and Bretschneider 1986), generalising about private sector research to managing IS in the public sector has been called into question by scholars (Flynn and Hepburn 1994; Holley *et al.* 2002). Despite this, some authors maintain that the two sectors are not two completely distinct domains, but internally homogeneous (Alford 2001).

IS are a powerful catalyst for organisational change, significantly affecting how the firm delivers services to its customers. Even in government, it is essential to harness IS in support of business objectives, to pursue effectiveness and to complete an internal technological transformation for maximum leverage (Stamoulis *et al.* 2001). As in the private sector, IS strategic planning can benefit public sector organisations in many ways; for example, addressing demands for more and better services (Andersen *et al.* 1994; Schoeniger 2000),

reducing costs and increasing productivity (Bajjaly 1998). Furthermore, through this planning, these organisations are able to provide the same interaction quality which people now expect from the private sector (Schoeniger 2000). Nevertheless, not many public sector organisations are formally undertaking these activities (Bajjaly 1998).

Two decades ago, due to its volatility, it was "extremely difficult, if not impossible" to develop long-range IS strategies in government organisations (Lasden 1981 p.105). Nowadays, even though some progress has been achieved, IS planners in public sector firms still often have difficulties trying to relate IS strategies to the goals and objectives of the business (Lederer and Sethi 1988). It is said that this is because government organisations are generally more bureaucratic than private organisations, more subject to external pressures, and that they have to deal with more barriers during IS strategic planning (Lederer and Sethi 1988). In addition, the objectives of government and its IS function must be related to the interests of various groups external to the organisation (*e.g.*, education, public health and national security) (Savas 1982), whereas in the private sector IS objectives are in line with business objectives contributing to the organisation's success and profits (Ward and Griffiths 1996).

Managers of every organisation, whether public or private, formulate strategy (Tricker 1982). In both sectors, top management support and stakeholder involvement are important factors that influence the quality of IS strategies. However, in many public sector organisations and countries (Ireland being an exception) business managers are political appointees oriented toward near-term accomplishments rather than long-range objectives. Furthermore, these managers might not evince the same affinity toward strategic thinking as a private company executive (Head 1983). In governments, whose stakeholders include legislative officials, government employees, technology vendors and interest groups, as well as the citizens themselves (Holley *et al.* 2002), IS staff must educate a wide-range of people to make them aware of the importance of their involvement and support for IS issues. Moreover, they have to inform these stakeholders of the advantages and changes that might occur during IS strategic planning. Therefore, business managers in these organisations have a responsibility to learn about IS and provide adequate commitment and involvement for major technological initiatives (Byrd *et al.* 1995).

As described throughout this chapter, IS strategic planning are critical managerial activities that both the private and public sectors must follow in order to become more effective through the

strategic use of IS (Byrd *et al.* 1995). The process has been evolving since the 1960s; however, despite documented reasons for planning and evidence of benefits, not all organisations are carrying out the process. In the late-1980s, one of the first surveys of public sector IS managers was performed by Caudle, *et al.* (1991). They uncovered that the number two issue in importance for public servants was already the synchronisation of IS with the organisation's objectives (the number one issue was the integration of technology with the business). Nonetheless, this synchronisation, which is reviewed in detail throughout the next chapter, was found to be more stochastic than concrete and conceptually more difficult to handle than would be the case in private sector enterprises (Byrne 1993).

2.7 Critique and significance of ISSP topic in thesis

Synchronisation is achieved by formal planning procedures, approaches and operating modes that shape the IS strategy and guide the IS function to support the business and its objectives. As its designation suggests, it directs the business strategy and the firm's stakeholders to be concurrently in line with the IS strategy and its staff. Before describing the nature and procedures of this synchronisation, this final section has the purpose of highlighting the importance of incorporating a detailed account of the IS strategic planning topic in this thesis, and briefly discussing some significant issues identified in the themes and publications written throughout the last four decades.

This first chapter of the literature review is formed by a thorough assessment of the IS strategic planning topic, including its parent field (*i.e.*, IS field) and the subject that has directly shaped and influenced ISSP throughout the years (*i.e.*, strategic planning). Overall, a comprehensive discussion of IS strategic planning is critical in this investigation because (1) the synchronisation of business and IS strategies – main subject matter of this thesis and as specified in Chapter 3 – is a subtopic of ISSP; (2) since synchronisation has been constantly referred to as the key factor for successful IS strategic planning (Baets 1992; Henderson and Venkatraman 1993; King 1978; King 1988; Peak *et al.* 2005; Zviran 1990); and because (3) ISSP is a mechanism to achieve synchronisation (Pai 2006; Reich and Benbasat 1996). Accordingly, the synchronisation of business and IS strategies is the essence of IS strategic planning (Chi *et al.* 2005; Kearns and Lederer 1999), and a successful ISSP process helps achieve an enhanced synchronisation (Grover and Segars 2005). Consequently, an IS strategic planning literature review is required in this thesis with the purpose of introducing the

synchronisation's foundations, the role of IS strategies, and methodologies and approaches that form the core of the process, together with its parent field, and related disciplines and functions.

As seen throughout this chapter, authors have emphasised that empirical research in an applied topic such as ISSP is required to "understand better the issues confronting practitioners, so that practice can be improved and greater utility obtained from our investment and use on information technology" (Galliers 1996 p.3). However most of the publications that form the subject, and in general the IS field, are normative and prescriptive (Hann and Weber 1996). Moreover, the quality of the existing empirical investigations is not homogeneous, the private sector is the main focal subject, and some inconsistencies can be distinguished between authors. For that reason, the following points highlight some identified issues of the literature review:

- Since almost every author that contributes to the IS field places their particular standpoint of what an information system is, how is the field constituted, if it is really a field on its own and what are the differences between information systems, IT and IM, a disarray of definitions and hence a lack of clarity is present. Because confusion can prevail about the meaning of IS, this thesis adopted the position that information systems are computer-based socio-technical systems that manage information to support the operation and control of businesses. Moreover, criticisms and debates are common between academics about the number of sub-groups or topics that the field can be divided into, and also about the maturity of the IS field and its multi-disciplinary nature. While one group maintains a lack of uniqueness, an identity crisis, and even a fragmented adhocracy, the other faction argues for its rich theoretical variety, diversity, and average circumstances among emerging disciplines. Evidently the author favours the second school of thought and agrees that despite its significance, the IS field is still an underdeveloped and emerging discipline that requires to incorporate other fundamental fields of study, such as computer science and sociology, with the purpose of becoming wider-reaching and helpful for practice.

- Due to the vast number of prescriptive publications written by practitioners and consultants, an unambiguous characterisation of strategic planning is difficult to achieve. So with the purpose of attaining certain clarity of the synchronisation's foundations, it was necessary to do an in-depth review of strategic management, its schools of thought and evolution. As a result, Figure 2.4 was prepared where it is portrayed where strategic planning fits inside the strategic management discipline, and how these topics are associated with the

synchronisation of business and IS strategies, the main theme of this thesis. Moreover and due to the complicated nature of this business-related subject, an initial division was justified between the intended and deliberate strategies (type used in thesis), and the strategies that emerge by chance, confusion and conservatism. In addition, business planning can be divided in ten intertwined but mainly disengaged schools of thought. In line with the characteristics of IS strategic planning, the Planning School is the one that most resembles the way the business and IS strategies are formulated and implemented. Furthermore, these strategies are synchronised between the business-level overall plans and functional-level IS strategies.

- After analysing why it is worth carrying out IS strategic planning activities, several definitions and characterisations for IS strategies were uncovered; nevertheless, no significant disparities were found. Essentially, IS strategies are regarded as formal functional-level plans that are grounded in the business and identify the technology's role in attaining the strategic objectives of the organisation in general. When investigating the reasons to plan the IS resources, variations were found throughout the years (see Table 2.1); however, the alignment of IS with business needs continually maintained a top position. Originally these reasons were only conceived by business managers and from the business goals. Another topic with agreement among authors is the prioritisation of IS resources. The identification of priorities is considered a key element in the ISSP process (Lederer and Mendelow 1993) to rank the objectives of the IS area, its feasibility and distribution of resources. Finally, based in empirical investigations, observations and even experience, the benefits derived from planning the IS resources have been continuously reported throughout the years. Despite the recurrence of several advantages, an evolution can be noticed in the role of top managers, the exploitation of new technologies and the degree in which these benefits were attained in organisations.

- High quality empirical investigations about the stakeholders' involvement in ISSP are plentiful, especially in relation to the role and responsibilities of top executives, the liaison between business and IS managers, the importance of engaging users in the formulation of strategies, and the influence of steering committees in the process. However, there is a lack of recent research concerning cultural and behavioural disparities among the people involved in the planning of the IS area, and also about the social characteristics and personality features of the CIO, business managers and IS staff. Due to the socio-technical nature of

ISSP, technology is only part of the process of building forceful ties between the IS area and the business, and therefore it should be given a stronger consideration by academics.

- Due to its significance, resources entailed and complexity, most of the ISSP research converges in the formulation and implementation of IS strategies. Between the late-1970s and early-1980s, focus was mainly placed in the planning approaches for the analysis, design and operation of IS strategies. With a predomination of prescriptive publications, three main philosophies (*i.e.*, bottom-up, top-down and inside-out) and two operating modes (*i.e.*, reactive and proactive) were extensively discussed by academics and consultants that identify how the IS strategies are formulated and linked with the business. After some years, authors discontinued writing about this subject and concentrated on the commercial methodologies for ISSP. Initially most publications were descriptive and emerged with a narrative of these techniques; however, later academics focused on their effects, benefits and problems, and even prepared case studies about their use. In relation to the implementation of IS strategies, notwithstanding its relevance authors started to reflect on this topic until the mid-1980s. Rather than investigating methods to ease the implementation, they gave special attention on the number of organisations without executed IS strategies, problems that emerge when this is not accomplished and who must be involved in this phase. Finally, with mostly positivist investigations carried out in private companies, authors researched the features that facilitate a successful ISSP process and the problems that can impede its development.

- Even though this literature review centred its attention on ISSP, it included publications about its parent field (*i.e.*, the IS field) and the subject that directly influenced its development (*i.e.*, strategic planning). Because of these appraisals, the contribution of the investigation can be misinterpreted. Due to the nature and purpose of the main topic of this thesis – the synchronisation of business and IS strategies – the research outcomes only contribute to the IS field. However and as a consequence of its foundations, it can be believed that some authors that publish in this subject matter aim to contribute to the strategic management field or to its strategic planning subject matter. This can be clarified by carrying out a query in two of the most popular electronic databases of business journals (*i.e.*, ABI/Inform Global and ScienceDirect), and corroborating that the number of articles in the strategic management field that embraces technology or IS strategies is minimal. Interest in strategic management is purely business-related and with a wide-ranging focus on strategy, mainly centred on the corporate and business levels. Nevertheless, it is important to include

the emergence and nature of the strategic planning topic in this thesis since it is the theme that caused the ISSP subject matter to develop, to increase its significance, and to have wider-reaching effects in organisations.

- After examining this literature review, the reader can establish that even though ISSP is still considered a relevant topic, there is a domination of books and articles published between the late-1980s and early-1990s (especially in the sections with reference to approaches and methodologies). So with the purpose of sampling the popularity or attractiveness to academics, consultants and practitioners of the ISSP topic, Figure 2.10 was prepared based on the number of publications used to produce this chapter (in particular Sections 2.2.3 to 2.6, corresponding to the segments on the ISSP topic). If supposing that this graph and its regression line portray the progression of the ISSP subject matter, it can be observed that throughout the 1970s the number of articles, books and conference papers in fact started to grow, until eventually peaking in the early 1990s. After this, the number of publications on the topic gradually decreased. This does not mean that the importance of the subject diminished. Some reasons include the increasing difficulties of surveying IS managers and thus obtaining relevant data, the shifting of interests, the emergence of new topics that has drawn researchers' attention (*i.e.*, e-business and Internet-related systems), and even the increasing importance of theory as the basis for research in an subject (*i.e.*, the IS field) that some authors consider as lacking a strong theoretical base.

After 40 years of evolution, the IS strategic planning topic is still regarded as a key and challenging aspect for top managers and with considerable impact in every organisation, public or private (Galliers and Leidner 2003). Shaped by combining concepts from the IS field and strategic planning, not only has it efficiently managed IS resources, transformed business operations, and generated better services, but it has also achieved organisations' objectives previously not believed possible. As the literature indicates, technology cannot work independently of business processes; both parts must interact to collectively attain the organisation's aspirations (see Figure 2.11 for a summary of the chapter, including shaping points, key themes and implications). Therefore, the synchronisation of business and IS strategies – detailed next – is the enabler of this link, causing business and IS people to network with each other and to achieve a strong alignment between the IS resources and the business needs. Nevertheless, there is an existing gap in the literature, particularly in relation to how this synchronisation is carried out in the public sector.

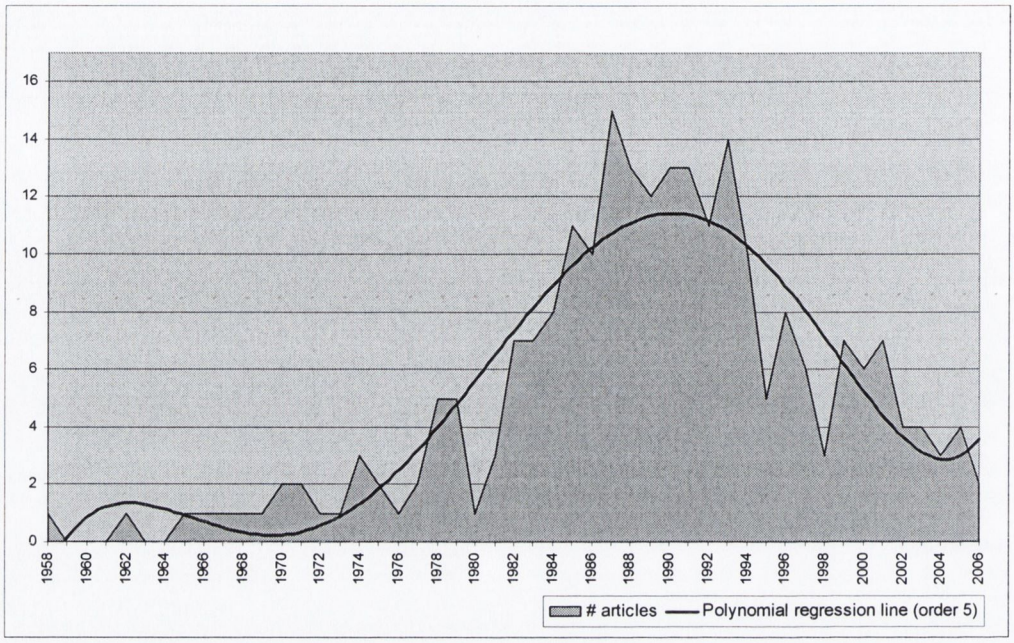


Figure 2.10: Number of articles in ISSP literature review per year

2.8 Conclusion

During ISSP, numerous benefits and advantages can be accomplished (Premkumar and King 1994); for example, it is believed that performing an IS strategic planning process will favourably influence future events, focus attention on problematic areas, obtain organisational involvement in IS projects, and even assist with resource control (O'Connor 1993). Nevertheless, "the usefulness [of IS strategic planning] should not be exaggerated. It would be a mistake to view it as the panacea for all ills" (Pye 1992 p.51). Since several publications can be found about common problems or barriers when developing IS strategies, it implies the complexity of the topic and demonstrates the considerable analysis needed to encompass every aspect. Independently of its drawbacks and despite the fact that the area still needs to grow, its importance and relevance have not lessened: IS strategies remain vital to help organisations use IS efficiently to reach their business goals and effectively exploit information resources (Hartog and Herbert 1986). However, a condition to achieve this is that the IS strategies have to be strongly synchronised with the business strategies. Therefore, using this chapter as its foundation, the next chapter further expands on this connection.

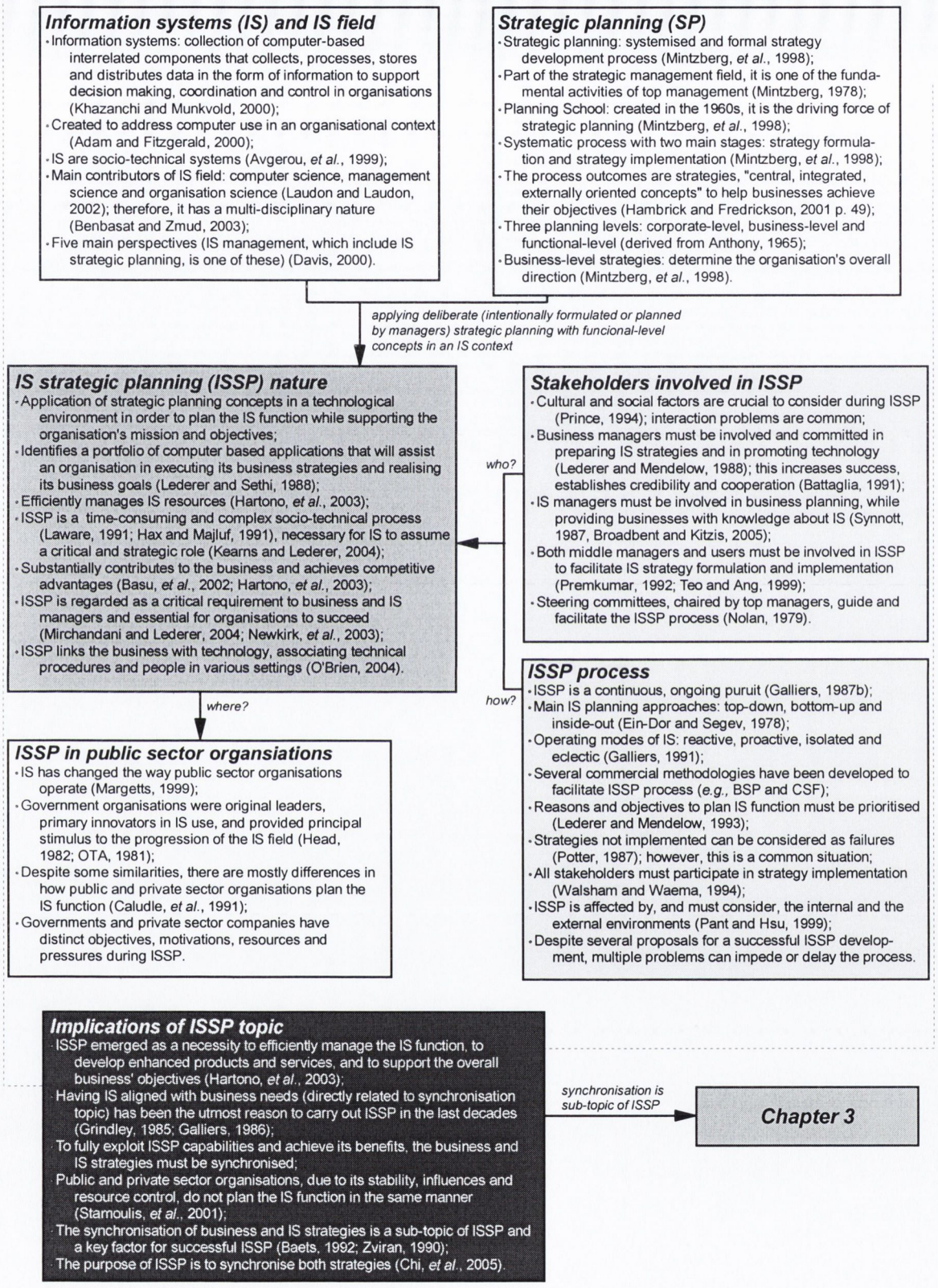


Figure 2.11: Summary and key issues of Chapter 2

CHAPTER 3

SYNCHRONISING BUSINESS AND IS STRATEGIES

> *"If we are out of synch with ourselves, everything is out of synch for us."*
>
> Johann Wolfgang von Goethe
> German poet, dramatist (1749–1832)

3.1 Introduction

As described in the last chapter, organisations plan the IS function to prepare for the future (Kriebel 1968/1969), to enhance their products and services (Andersen *et al.* 1994), to best support and transform their business objectives and goals with technology (King and Teo 1997), and to improve the management of their IS resources (Galliers 1986). Nevertheless, in order for the IS function to achieve these goals, there has to be a connection that allows the IS and business functions to actively communicate and cooperate with each other (Lederer and Sethi 1988), interaction that is enabled by their strategies.

The relationship between business and IS strategies, which is based on the premise that all IS resources and objectives should contribute toward the business's objectives (King and Zmud 1981; Lederer and Mendelow 1986b), gained maximum awareness when business managers realised the importance of the IS area and its products (McFarlan 1971). Without this connection not only may the IS area develop incompatible applications or implement an incapable infrastructure that could delay the attainment of the business goals (Nath 1989), but the business may not take full advantage of existing and novel technological resources and thus lose valuable enhancements. Considered as the number one objective for successful IS strategic planning (Galliers 1986; Grindley 1985; Peak *et al.* 2005) and mentioned throughout surveys as a key concern for business and IS managers (Luftman and McLean 2004; Papp 1999), this connection, the *synchronisation* of business and IS strategies, remains a complex and necessary concept in all public and private organisations (Chan *et al.* 1997; Lederer and Mendelow 1986b; Peak *et al.* 2005)

This chapter has the objective of portraying the nature of the synchronisation of business and IS strategies, research topic of this thesis and central principle in the theory and practice of IS strategic planning (Galliers and Newell 2003). As seen in Figure 3.1, the chapter is organised around the research topic. However, in order to fully comprehend the concept, first its definition, origins and theoretical bases are described in Section 3.2, followed by the role and involvement of main stakeholders in Section 3.3. The next two sections are directly related to the thesis' main objectives as guided by the research question. Despite a lack of theoretical bases, Section 3.4 concentrates on describing *how* the process is carried out by means of phases or stages. In addition, it incorporates guidelines for the successful achievement of the connection between business and IS strategies. Then, Section 3.5 focuses in the *why* part, that is, benefits, main reasons and importance of developing this process, highlighting numerous surveys which ranked this topic as highly significant. This section concludes with evidence of insufficient popularity among organisations, including barriers during the development of the process and problems that emerge when a strong synchronisation is not achieved. Finally, Section 3.6 discusses the importance of both the chapter and the synchronisation topic in this thesis. Moreover, it identifies issues related to the literature review in general as well as areas for further enquiry.

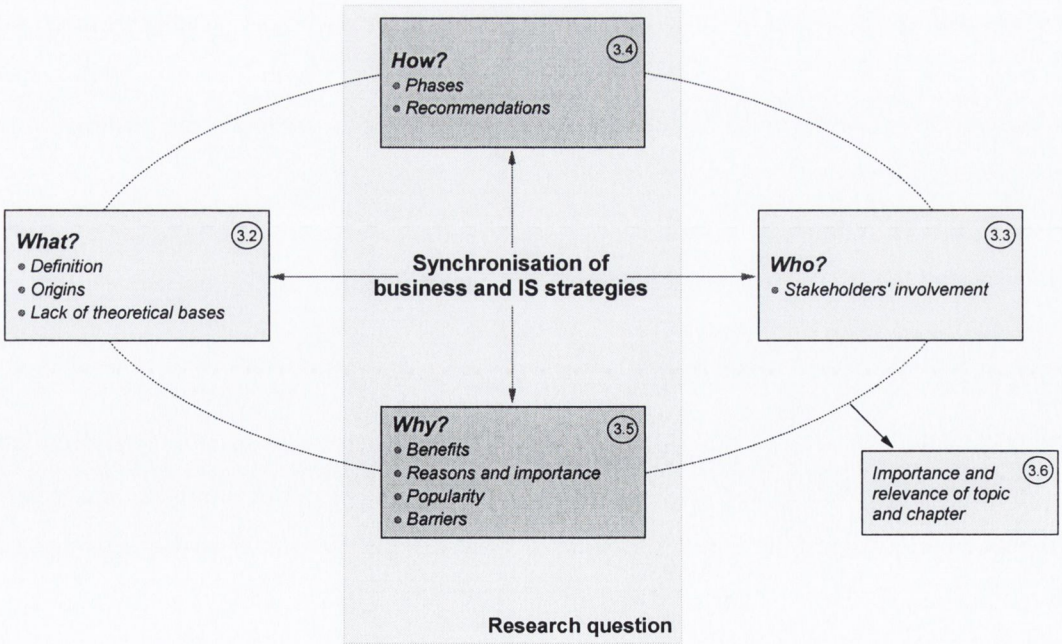


Figure 3.1: Organisation and structure of Chapter 3

3.2 Classification and evolution of synchronisation

The study of the connection between information, technology and the business function is fundamental to understanding the role and effects of IS in private and public sector organisations (UKAIS 1999). IS can impact the business in distinct degrees according to several factors related to the planning of the IS function such as the analysis of internal and external environments, the adaptability to IS developments, and top management support to the IS function. However, due to the fact that technological investments are often decided on the basis of the IS strategy and are guided by the firm's objectives as expressed in the business strategy, the analysis of the relationship between business and IS strategies is necessary to fully acknowledge the impact of technology in organisations. In line with this notion and based in both a gap in the literature and a research need (Papp 1999; Smaczny 2001), a research question was designed about *why* and *how* this influence or synchronisation between the business and IS strategies is carried out, particularly in the public sector.

The objective of this section is to describe the background of the main research topic: the synchronisation of business and IS strategies. First, its definition and comparison with other general concepts are presented. Then, the evolution of the influence between the business and IS strategies since the 1960s is described, progression analogous to the synchronisation phases portrayed in Section 3.4.1 and significant in the understanding of the thesis outcomes. Finally, arguments for the need for more research due to a lack of theoretical bases are outlined.

3.2.1 Definition of synchronisation

As outcomes of the IS strategic planning process, strategies that guide the IS function in line with the business mission, objectives, and the internal and the external environments are produced (Chan 2002). Moreover, during business planning, a business strategy (explained in Section 2.2.2 and also known as 'overall plan' in some industries or as 'strategy statement' in the Irish public sector) generally is created. Given that this strategy contains the goals and objectives of the business, several authors agree than it has to be linked to the IS strategy with the purpose of efficiently incorporating technology into the operation of the organisation, enhancing business performance, and increasing its productivity, thus leading to organisational success (Chan and Huff 1993b; Hirschheim and Sabherwal 2001; King and Zmud 1981; Lederer and Mendelow 1986b; Teo and King 1996). Consequently, organisations need an IS function to technologically enable their requirements, to help in the attainment of their

objectives, and to improve the management of their IS resources. Likewise, the IS area requires the business's direction and experience to develop efficient systems and manage the business resources effectively. The concurrent influence between the strategies of both functions (Chan 2002; King 1978; Laware 1991; Reich and Benbasat 1996) is what in this thesis is referred to as *synchronisation*.

It has been suggested that the synchronisation of business and IS strategies is a key aspect for successful IS strategic planning (Henderson and Venkatraman 1993; Kunnathur and Zhengzhong 2001; Reich and Benbasat 1996), where the goals and activities of the business are in harmony with the systems that supports them (Woolfe 1993). If the two strategies are developed independently of each other, considerable differences may exist in the basic assumptions upon which each is built (Matthews 1992). But on the other side, a strong synchronisation supports and transforms the business goals and activities at every level (Lederer and Mendelow 1989), ensures that IS investments properly sustain the firm's objectives (King 1978; Porter and Millar 1985), and increases the likelihood of attaining the necessary funding and implementation approval for IS applications (especially novel developments) (Kearns and Lederer 1999). Nevertheless, even though this synchronisation is a key factor for achieving organisational objectives (King 1978; McFarlan 1984), it is not always accomplished to a considerable extent in both private and public sector organisations due to its complexity and the substantial resources involved in its execution and implementation.

A number of articles and books have been published on the influence that exists between the business and IS strategies; however, due to the number of categorisations and terms used to denote the same notion, confusion has prevailed about what is the essence of the concept. As identified in Avison *et al.*, (2004), some designations include fit (Porter 1996), integration (Weil and Broadbent 1998), bridge (Ciborra 1997), harmony (Luftman 1996), fusion (Smaczny 2001) and linkage (Henderson and Venkatraman 1992). In this thesis, synchronisation is defined as the influence that the business and IS strategies have on each other, which is considered different although related to the concepts of integrating information technology (IT) into the business's processes (Scott-Morton 1991), linking IS resources with an organisation (Reich and Benbasat 1996), or coordinating IS and business managers towards the integration of technology (Lederer and Mendelow 1989). Related to this, the most widely used term and the one that most resembles the notion of synchronisation is *alignment* or *strategic alignment* (Henderson and Venkatraman 1991). However, throughout the years theorists and practitioners

have used these two labels to characterise so many different IS-related happenings associated with the integration of technology that it has become difficult to isolate its real meaning (Pastore 2005). Consequently and with the objective of adding clarity to the IS field, the term 'synchronisation' was conceived to symbolise even further than other designations how the business and IS strategies should work together as hinges, coordinating and shaping the business and IS functions, stakeholders at every level, and all divisional and functional areas towards the efficient achievement of the organisation's objectives by means of technology[1].

The first step in synchronising the business and IS strategies is recognising the necessity to do so (Brown 1994; Kantrow 1980). In line with this, the IS area should be familiar and comprehend the business's needs so it can positively contribute to the organisation's success (Rosser 1996). Likewise, the business should acknowledge how and to what degree the IS area might enable and support its operation. The reasons and outcomes for performing this connection are many; however, methods for accomplishing them are considered complex and time-consuming. Built on these premises, synchronisation is defined in this thesis as explained by the following arguments:

- Synchronisation starts to take place the moment that the organisation prepares a business strategy and an IS strategy. Having only one of these requirements is not enough.
- Synchronisation is not a single event or a steady state, but a process of continuous adaptation and change (Burn 1996; Henderson and Venkatraman 1993).
- The synchronisation of strategies involves, besides the business and IS plans, the business function, the business staff, the IS function and the IS people (the six 'agents' mentioned throughout this thesis).

3.2.2 Origins and evolution: from the 1960s to the present day

The formal origins of synchronisation can be traced back to the 1960s. However, initially the relationship between business and IS strategies was unidirectional (McLean and Soden 1977), exclusively from the business towards the IS area. At that time, even though long-range IS plans (as IS strategies were firstly called) were merely a list of technical projects, it was already acknowledged that influences from the business strategy were necessary for a meaningful and relevant content (Kriebel 1968/1969). Also, academia started to notice the importance of a

[1] To distinguish notions, in this thesis 'alignment' is used to portray the association of the IS function as a whole (including its strategy) with the business, and 'integration' is used to portray the incorporation of technology into the business function.

correlation between a company's ability to develop an effective IS plan and its business planning process. According to Kriebel (1968/1969 p.9), the long-range IS plan provides the tools to answer questions such as "how much of this resource should we have now and in the future?", or "how do we manage our computer effort optimally in the face of the competition?" Consequently, it was argued that when this relationship is strong enough, three advantages will accrue (McFarlan 1971): (1) the IS area happens to be aware of the company's objectives; (2) business managers become aware of the IS area's operations; and (3) IS planners take advantage of the corporate planners' expertise and experience. Even practitioners were encouraging this link, considering the identification of goals in the business plan as the first step in the IS area's long-range plan (Collard 1971). But in spite of the returns offered by a successful relationship (Ein-Dor and Segev 1981), at first it was not widespread (Soden and Tucker 1976), especially because not all companies possessed or wanted to share their business strategy.

In the late 1970s, King (1978) developed the *strategy set transformation model* (see Figure 3.2), the first theoretical framework to synchronise the IS strategy set (objectives, constraints and design strategies) with the organisational strategy set, consisting of mission (*i.e.*, duty), goals (*i.e.*, objectives for fulfilling the mission) and strategies (*i.e.*, intended procedures for achieving the objectives). The purpose of this model was to develop IS as an integral part of the organisation via the interaction between managers and analysts. Even though the model was considered unstructured and subjective, it was possible to achieve a long-range IS plan with ample influence from the business strategy (Bowman *et al.* 2002). This model came into widespread use when it was adapted by IBM as a foundation for its Business System Planning methodology (King and Zmud 1981). Some years later, King modified the original model to include a feedback channel (which was the first step to have a business strategy influenced by the IS strategy), acknowledging that IS should also be considered during business planning in order to accomplish, among other advantages, competitive advantages (King 1985; King and Zmud 1981). Around this time, Davis and Olson (1985) developed a second framework: *the derivation of an information systems strategy from an organisational plan.* This approach, similar to King's first framework, established IS objectives and strategy after identifying the business objectives, ensuring that these correspond to the organisation's mission, vision and goals.

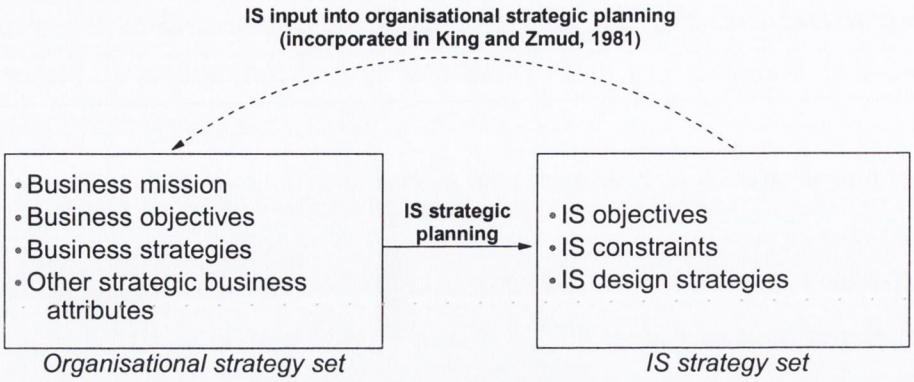


Figure 3.2: Strategy set transformation model (King 1978; King and Zmud 1981)

During the 1980s, the synchronisation of business and IS strategies became a crucial issue (Emberton 1987; Galliers 1987a; Head 1983) and a top priority for academics and practitioners alike (Hefferon 1988; Lederer and Mendelow 1986a). While IS efficiency and productivity improvements were now a main concern for managers, technology was becoming an essential element in the delivery of products and services (Pyburn 1983). Consequently, the uni-directional relationship of the 1970s became a two-way liaison, with business and IS plans influencing each other (King and Zmud 1981). In addition, while the participation of business managers became key to the success of the synchronisation in this decade (Lederer and Mendelow 1989), it was acknowledged that IS managers required an understanding of the business's objectives to maximise the contribution of IS to the firm (Lederer and Mendelow 1988). Also during this time, practitioners became aware that an involvement of IS staff in the development of business strategies was essential. This is because this participation recognises the strategic potential of technology, gives IS managers more avenues of exploration, and reduces the development time of new applications (Vitale *et al.* 1986).

Therefore, in just a few years, even though its realisation was never considered an easy task, the impact and popularity of the synchronisation of business and IS strategies became widespread. Initially, the notion of synchronising strategies conveyed a reactive mode for an IS strategy. However, when this concept was extended to a more proactive approach, it allowed emerging technologies to influence the strategic direction of the firm (Henderson and Venkatraman 1991). As mentioned in Chapter 2, approaches like IBM's Business Systems Planning (IBM Corporation 1975) and Rockart's (1979) Critical Success Factors surfaced as mechanisms to aid in the development and implementation of synchronised IS strategies. Additionally, the appointment of an IS manager, the dispersal of IS resources, and the conversion of the IS

function into a profit centre were practices recommended by consultants to enhance the influence between both strategies (Lodahl and Redditt 1989). Nevertheless, the complexity of synchronisation meant that numerous organisations did not pursue it (Litecky 1981). Furthermore, while sometimes the planning effort was still not seen as effective (McFarlan *et al.* 1983), on a number of occasions there was no business strategy at all to link to, or its mission, objectives and priorities were not clearly defined (Lederer and Mendelow 1986b; Lederer and Mendelow 1989).

In the late 1980s, a number of models were developed to assess the extent of the connection between the business and IS functions, supporting the association of IS resources with corporate and business unit structures (Henderson and Sifonis 1988; Henderson and Venkatraman 1991; MacDonald 1991). Henderson and Venkatraman's strategic alignment model or SAM (1991) has been the most widely adopted and popular or these frameworks and the basis for much of the research in IS strategic planning. It is based on the premise that strategic planning concepts were needed in the traditional functional linkage model of business-IS planning. SAM provided a dynamic fit between external and internal domains, linking business and technology at strategy, infrastructure and process levels (Luftman *et al.* 1993; Miller 1993) by means of four domains (*i.e.*, business strategy, IS strategy, organisation infrastructure and processes, and IS infrastructure and processes). In addition, it included four strategic perspectives, reflecting interplay among the four key domains: competitive potential, technology potential, business value and service levels (Venkatraman 1991). Baets (1992) mentioned that a limitation with this framework is that it should be extended to synchronise the business and IS strategies into a broader model of information needs and even define both strategies in parallel.

While during the 1980s the focus was on the mutual influence between business and IS strategies, the 1990s were dominated by measures, such as the fact that organisations with stronger synchronised strategies aimed to further exploit technology to change the way the business was carried out (Galliers *et al.* 1994). Confirmed by MIT's *Management in the 1990s* study (Arthur Young International 1989) which forecasted the impact of IS on business management, the synchronisation of business and IS strategies was considered a key concept for the new decade. Furthermore, the report ensured that technology would only provide sustainable competitive advantages when it is integrated with an organisation's processes and structure (Henderson *et al.* 1996; Scott-Morton 1991).

Nowadays, despite firms continuing to demonstrate limited influence between the business and IS strategies (Chan 2002), the synchronisation topic is still a relevant issue facing top managers (Luftman and McLean 2004). However, as discussed in the next section, insufficient research implies that there are still several avenues to explore, particularly about how organisations achieve the synchronisation process (Hirschheim and Sabherwal 2001).

3.2.3 Lack of theoretical bases

Analogous to the IS strategic planning topic where prescriptive contributions about *what should* been done predominate rather than empirical investigations on *how* it is achieved (Grover and Segars 2005), it is recognised that the majority of the research on the synchronisation of strategies lacks empirical or theoretical bases (Bakos and Treacy 1986; Jarvenpaa and Ives 1990), especially regarding how to accomplish the process (Hirschheim and Sabherwal 2001; Luftman and Brier 1999). Burn (1996 p.3) mentions that even though synchronisation was ranked as an important issue for IS research agendas throughout the 1990s, this gap in the literature is "understandable given the longitudinal nature of research required to study strategies and the interaction of IS and organizational change."

Table 3.1 lists most of the existing empirical investigations related to the synchronisation topic (some comprise related topics, such as the integration of IT with the business, the alignment of the IS function with the business goals, and the association of technology with the business objectives). As the table shows, the amount of research in this area is limited (four publications are interpretivist, nine are positivist and three are a combination of both), especially in European countries and public sector organisations. This implies that further research is required and several subjects are still pending to be explored. As portrayed in the 'research focus' part of the table, the main topics investigated include critical success factors in the synchronisation process (*i.e.*, recommendations for a successful synchronisation), the importance and role of top managers in the process, synchronising effects, measurement of the synchronisation process, nature and importance of synchronised strategies, and synchronisation difficulties. Other empirical investigations not shown in Table 3.1 (Brancheau *et al.* 1996; Galliers 1991b; Segars and Grover 1998; Smits *et al.* 1997; Watson *et al.* 1997) considered synchronisation or a related theme as part of a broader survey or as an element of a more extensive investigation.

Table 3.1: Empirical research related to the synchronisation topic

Research years	Countries	Sample size	Method			Size of firms			Sector		Data collection				Research focus						References
			Surveys	Interviews	Case studies	Large	Medium	Small	Private	Public	IS managers	Business managers	Users	Secondary data	Synchronisation difficulties (problems and barriers)	Nature and importance of synchronised strategies	Measurement of the synchronisation process	Synchronising effects	Importance and role of TM in the process	Synchronising CSF	
1987	USA	62	♦			♦			♦			♦	♦							♦	Nath (1989)
1988	USA	52	♦			♦			♦		♦	♦				♦	♦	♦			Tavakolian (1989)
1989	USA	20		♦		♦	♦		♦	♦	♦				♦				♦		Lederer and Mendelow (1989)
1990	Israel	131	♦	♦		♦	♦	♦	♦		♦	♦				♦					Zviran (1990)
1991 - 1992	USA & Canada	164	♦			♦	♦		♦		♦	♦	♦			♦	♦	♦			Chan and Huff (1993a)
1991 - 1995	USA	226	♦			♦	♦		♦		♦	♦	♦			♦		♦			Sabherwal and Chan (2001)
1992 - 1997	USA	+ 500	♦	♦		♦			♦	♦	♦	♦	♦							♦	Luftman and Brier (1999)
1993	Australia	4			♦	♦			♦		♦			♦						♦	Broadbent and Weill (1993)
1994	USA	244	♦			♦			♦			♦						♦			Sabherwal and Kirs (1994)
1995	New Zealand	88	♦			♦		♦	♦			♦			♦	♦					Tan (1995)
1997	USA	213	♦			♦	♦	♦	♦		♦	♦					♦				Gupta, *et al.* (1997)
1999	Singapore	169	♦			♦	♦	♦	♦	♦	♦								♦	♦	Teo and Ang (1999)
2000	Canada	10		♦		♦			♦		♦	♦		♦		♦				♦	Reich and Benbasat (2000)
2000	Hong Kong	88	♦	♦		♦	♦	♦	♦		♦	♦							♦	♦	Burn and Szeto (2000)
2000	Canada	120		♦		♦				♦	♦			♦			♦			♦	Hartung, *et al.* (2000)
2001	USA & Canada	8		♦		♦	♦	♦	♦		♦	♦			♦		♦	♦		♦	Chan (2002)
2004	USA	301	♦			♦	♦		♦	♦	♦									♦	Luftman and McLean (2004)

Before the 1990s, most of the research carried out in this topic was anecdotal. The immaturity of the research area and the need for greater rigour and more conceptual approaches led to several empirical investigations being conducted, for example, to test the relationship between IS and organisational objectives (Zviran 1990), to validate interdependencies between IS and business strategies (Burn 1993), and to clarify the nature of the synchronisation arrangement (Reich and Benbasat 1996). Furthermore, a grounded, integrated relationship was explored, where both the business and the IS strategies were developed concurrently (Goldsmith 1991). Nevertheless, corroborating the need for more research on the process of IS strategy formation, Allen and Wilson (2003), Grover and Segars (2005), Hirschheim and Sabherwal (2001) and Papp (1999) argue that it is still not clear *how* to achieve a successful synchronisation and what the impact of not having this relationship might be. This is due to the complicated nature of the process, the inadequate interaction between the business and IS managers, the treatment of technology as a 'cost centre', and the insufficient research conducted on how synchronisation is achieved and sustained over time.

This section described the nature of the synchronisation of business and IS strategies, which is the primary research topic of this thesis. Since its evolution, it has undergone a transformation from a unidirectional arrangement where only influences from the business to the IS strategies were present, to accomplishing concurrent developments and an efficient exchange of information between both strategies. Moreover, as the next section describes, the role of the people involved has progressed from only implicating IS staff to the current participation of the whole organisation. Nevertheless, demonstrated by the number of previous empirical investigations and reiterated by several authors (Allen and Wilson 2003; Grover and Segars 2005; Luftman and Brier 1999), there is still a need to comprehend *how* the process is actually accomplished, especially in European organisations and in the public sector.

3.3 Stakeholders involved in process of synchronisation

The synchronisation of strategies is not a single event or approach (Luftman and Brier 1999). On the contrary, it has been described as a superset of multiple, simultaneous and ongoing activities of continuous adaptation and change, where the IS and business strategies influence each other at multiple levels (Chan 2002; Henderson and Venkatraman 1993; King 1978). Due to the broad scope necessary to carry out the synchronisation, there are several stakeholders

directly and indirectly involved in the process, *e.g.*, business managers, IS managers, IS staff and users. Even though some of their functions overlap with each other, each stakeholder has specific characteristics that are worth considering.

Even though throughout the years IS managers and consultants have agreed that a successful synchronisation necessitates a significant commitment and involvement of business managers (Galliers 1987b; Kearns 2006; Kearns and Lederer 1999; Potter 1987; Vitale *et al.* 1986), this has not always been the case (McLean and Soden 1977). Initially recognised in the 1980s, the importance of business managers' participation was identified when organisations acknowledged that IS should be aligned with the business (King and Teo 1997). In addition, a study reported that the number one and number two ISSP critical success factors were business management involvement (*e.g.*, executives taking part in the synchronisation endeavour via interviews or prioritising) and top management support (*e.g.*, backing up the process and verifying its output) (Earl 1990). By the late 1980s, evidence of top executive participation was already being noticed when a study in the UK and Australia estimated that the number of business managers involved during IS strategic planning had doubled from the previous years (Galliers 1987a). However, even though top managers might have claimed that they were engaged in the planning of the IS function, the quality of that involvement and the extent of their commitment may be called into question (Mentzas 1997). More recently, it was demonstrated that the contribution of top managers in ISSP encourages the involvement of other business managers in the process, leading to more effective use of information resources and a higher implementation rate of IS applications (Kearns and Lederer 1999).

Repeatedly surveys have demonstrated that synchronising the IS strategy with the business strategy is a priority for most top managers (Brancheau *et al.* 1996; Galliers *et al.* 1994; Prewitt and Cosgrove 2006; Tallon *et al.* 2000) and a predicament for the IS personnel. Initially, when synchronisation was exclusively a unidirectional process from the business to the IS function, the IS area had a limited role in the process. But as soon as technological issues increased in importance, together with the necessity of having an IS infrastructure that supported the business goals, the IS people became more involved and the IS function heightened its stature in the organisation (Kunnathur and Zhengzhong 2001). It was soon recognised that IS strategic planning had to be integrated with business planning rather than be simply the domain of an IS group working in isolation (Raghunathan and Raghunathan 1991; Rosser 1996). Moreover, to mostly facilitate the synchronisation process, it was suggested that while the IS area need a

broad knowledge of the business, the IS people should interact with top managers during business planning (Chi *et al.* 2005). Not only this increases the knowledge of the IS area about the internal and external environments (Jones *et al.* 1995), but exposes the IS people to the processes used during business planning and thus enhances the development of IS strategies by means of the same techniques (Goldsmith 1991).

Having a strong synchronisation between business and IS strategies requires not only the support and participation of business managers during the planning of the IS function (Martino 1983), but also close working relationships between these executives and the IS manager (Broadbent and Weill 1993; Smaczny 2001). So while business people should contribute to the preparation of the IS strategy and support technological innovations, IS managers should participate in business strategy developments (Luftman and Brier 1999). In other words, "the role of the company strategist, normally associated with CEOs, is now shared between CIOs and CEOs" (Smaczny 2001 p.800). This is because both IS and business managers should be aware of the benefits of this cooperation and thus maintain a close working relationship during strategy formulation (Campbell *et al.* 2005; Kearns and Lederer 1999; Luftman and McLean 2004).

In line with this, it has been demonstrated that the role of the IS manager is crucial for the success of the synchronisation process (Teo and Ang 1999). The IS manager is one of the few executives who operates across the whole organisation and who has some understanding of how all parts of the business fit or should fit together (Broadbent and Kitzis 2005). Moreover, IS managers should comprehend the technology's potential to affect the business (Karimi 1996) and perform as the organisation's technological leaders (Rockart 1988). However, to enable these tasks, the IS manager has to be part of the top management team (Hirschheim *et al.* 1988). As a member of this group, he/she should understand, communicate, educate and demonstrate to business managers how information and technological solutions can effectively help the organisation achieve its business goals (Laware 1991; Synnott 1987). Therefore, the participation of the IS manager in the business planning process not only improves the synchronisation of business and IS strategies (Jarvenpaa and Ives 1991), but bridges the IS and business planning processes, leads to the IS manager's understanding of the business objectives, and facilitates better choices for IS investments (Lederer and Burky 1988; Premkumar and King 1994). Currently, it is considered that a quarter of IS managers are not members of the top management team (Prewitt and Cosgrove 2006).

To facilitate the synchronisation process, some essential characteristics for IS managers have been identified: strong leadership skills (Luftman and McLean 2004), ample knowledge about the business (Karimi 1996), and willingness to participate in the corporate planning process (Lyles 1979). Furthermore, Earl (1989) listed four leadership styles that IS managers needed to practise if they were to successfully link the IS function with the business: (1) business leadership, for incorporating technology to the business; (2) technology leadership, for shaping technology policies for the firm; (3) organisational leadership, for making IS arrangements work; and (4) functional leadership, for managing the IS function.

Traditional planning approaches produced IS strategies under the control of business managers and with limited user participation. However, these strategies generally failed to be implemented due to user resistance and an inadequate scope. Therefore, a shift occurred by means of a continuous learning cycle, where a proactive stakeholder's participation became essential to enhance the planning knowledge (Reponen 1994), causing every person in the organisation to be influenced by IS initiatives (Tapscott and Caston 1993). With this, the whole organisation started to be involved in the development of both business and IS strategies, identifying where the business was and where it should be going.

Enhanced interaction between stakeholders ensures that business and IS capabilities are aligned effectively with the business (Rockart *et al.* 1996). Therefore, several communication channels between these individuals have been identified when integrating technology into the business (Pyburn 1983); for example, the personal-informal (verbal and informal interactions), personal-formal (between highly structured planning and informal planning), and written-formal (formal procedures based on written documents and corporate-mandated processes). Notwithstanding this method, a successful synchronisation process requires the full involvement of business managers knowledgeable about the strategic use of IS, and IS managers who are familiar with business issues facing organisations (Ruohonen 1990).

This section presented the role of the main stakeholders during the development of the synchronisation of business and IS strategies: the business and IS managers, the users, and the personnel of the IS area. These roles basically are ISSP activities but focused to the close interaction between the business and IS strategies. Due to variations in the functions of each stakeholder, their involvement in the synchronisation process has evolved throughout the years; however, this does not mean that currently all public and private sector organisations are

following the latest proposals published by academics, practitioners and consultants. As described in the next section, which corresponds to the *how* part of the process, there are differences and thus multiple recommendations on how organisations carry out the process and influence its development.

3.4 Process of synchronisation: phases and recommendations

Agreement between authors exists about the importance of having the business and IS strategies strongly synchronised (Galliers 1987a; Neo 1988; Rosser 1996); however, how to achieve it, which steps organisations have to follow, and how the process might be measured are issues not widely considered (Chan 2002; Pyburn 1983; Smaczny 2001). Furthermore, it is still not clear how to sustain this process and what the effects of poor synchronisation might be (Papp 1999; Papp and Fox 2002; Papp and Luftman 1995). In line with this, the present section focuses on the process dimension, corresponding to what is known about how organisations have carried out the necessary activities in order to realise and maintain their business and IS strategies strongly synchronised with each other.

Synchronising business and IS strategies is one way of ensuring that the technological resources are integrated with the organisation's objectives. However, as discussed in Section 3.4.1, this can be attained in distinct degrees, levels and stages during IS strategic planning. Then, despite the lack of general rules or widely accepted regulations that guide the process, Section 3.4.2 describes recommendations and procedures published by academics and practitioners to help facilitate its execution.

3.4.1 Elements and phases constituting the process of synchronisation

The development of synchronising business and IS strategies can be characterised by three dimensions: content, personnel and timing (Lederer and Mendelow 1989; Shank *et al.* 1973). Content refers to the consistency between the two strategies, achieved by including relevant portions of the IS strategy into the business strategy and vice versa. The personnel dimension, due to the synchronisation's social nature, refers to the people involved in the development of one strategy that can and should also participate in the creation of the other. Nevertheless this 'link' has to be enhanced in situations where the business strategy is informal, when business

managers are unaware or unfamiliar of the IS function, and when environmental turbulence affects products, customers, competition, suppliers or production methods (Vitale *et al.* 1986).

Regarding the timing dimension involved in synchronisation, historically there have been several perspectives on how to synchronise both strategies. Based on the occurrence of the IS strategy, it can be created after (the business strategy influences the IS strategy and ultimately affects the IS area's operating processes), before (the IS strategy, which is the driving force, shapes the business strategy and its managerial activities) or during the development of the business strategy (the optimal alternative for some authors, where both strategies influence each other simultaneously) (Hirschheim *et al.* 1988; Smits *et al.* 1997). Traditionally, the development of IS strategies has been viewed as being dependent on business strategies, since these are the ones which normally drive the organisation (Henderson and Venkatraman 1992). However, a major shift occurred in the late 1970s and early 1980s when it was noted (Cash *et al.* 1988; King 1985; King and Zmud 1981; Porter and Millar 1985) that the business strategy could be led by IS, rather than IS resources following on from an organisation's strategic direction. Hence, IS became a powerful business driver by becoming interdependent with business strategies and even requiring planning approaches which supported their role as main leaders of business strategies (Thurlby 1993).

In line with these ideas, several authors have divided the synchronisation process (and the integration of technology with the business function) into distinct phases or levels by altering the content, timing and personnel dimensions of the influence between the two strategies (Hirschheim and Sabherwal 2001). As seen in the various sequential approaches listed in Table 3.2, when the business and IS strategies start to influence each other, they will evolve through several stages from having independent strategies to achieving a complete integration. The models portrayed in the table, rather than being identified by empirical data, reflect the authors' theoretical experiences and understanding about how the business and IS strategies relate to each other in private companies and adapt in competitive, ever-changing and dynamic environments.

Table 3.2: Phases or stages related to synchronisation (based in previous research)

References	Description	Phases
Earl (1986)	Three distinctive modes for formulating IS, which can imply three manners for developing an integration between IS and the business.	• *Infrastructure-led.* IS transactions underpin business operations (*e.g.*, banks); • *Business-led.* Business strategies require the support of technology for their implementation (*e.g.*, automobile sector); • *Mixed.* Specific technologies provide new strategic business opportunities (*e.g.*, manufacturing and service sectors).
Synnott (1987)	Five levels of planning that a company could adopt.	• *No planning.* No formal planning takes place; • *Stand-alone planning.* A business or an IS strategy; not both; • *Reactive planning.* A business strategy is prepared and the IS function reacts to it; • *Linked planning.* Business strategy is 'interfaced' with IS strategy. IS resources are matched against business needs; • *Integrated planning.* Both strategies occur interactively and concurrently. They are indistinguishable.
Chan and Huff (1993b)	Organisations pass through three levels when linking business and IS strategies.	• *Awareness.* Recognising that IS has to be closely associated with the business; • *Integration.* When the IS strategy and the business strategy are somehow linked between each other; • *Alignment.* An integration is performed between IS, the business strategy and core competencies.
King and Teo (1997)	Business planning – IS planning taxonomies.	• Stage 1: Separate planning with *administrative* integration; • Stage 2: One-way linked planning with *sequential* integration; • Stage 3: Two-way linked planning with *reciprocal* integration • Stage 4: Integrated planning with *full integration.*
Reich and Benbasat (2000)	Converged a list of five generic types of IS planning, assessing how synchronised the business and IS strategies can be. Each level denotes a progressively higher 'connection level'.	• *Isolated.* IS and business strategies are developed separately; • *Architected.* IS strategies are developed from data and application architectures; • *Derived.* IS strategies are developed during a top-down analysis starting with business objectives and involving business and IS participants; • *Integrated.* IS strategies are developed and ratified at the same time as the other business objectives. Business and IS executives are both present in the planning; • *Proactive.* IS objectives precede the formulation of business objectives and are used as input to their development. IS are considered to be significant in changing the basis of competition.
Luftman (2004)	Established a model of alignment maturity with five conceptual levels.	• *Initial/Ad Hoc process*. Business and IS functions are not aligned; • *Committed process*. The organisation initiates commitment of becoming aligned; • *Established focus process*. Strategic Alignment Maturity established and focused on objectives; • *Improved/Managed process*. Reinforcing the concept of IS as a 'value centre'; • *Optimised process*. Integrated and co-adaptive business and IS strategies.

As portrayed in Table 3.2, Earl (1986) created the first classification of the integration of IS with the business, separating the occurrences according to the leader of the process: the business, the IS area or both. Some years later Earl (1993) increased the number of approaches to five (business-led, method-drive, administrative, technological, and organisational); however, due to their nature, rather than being characterised as synchronisation approaches per se, they correspond to approaches about integrating technology with the business. Synnott (1987) was the first author to describe five possible profiles that the synchronisation process can follow, from a state with no planning and no strategies, to an integrated position where both strategies are unified Six years later, Chan and Huff (1993b) argued that organisations pass through three levels when synchronising strategies, from recognising that a connection is necessary to a full integration. In 1997, King and Teo (1997) identified four evolutionary phases of business-IS planning, from separated strategies to a full integration. Finally, a fourth categorisation was proposed by Reich and Benbasat (2000), grading five generic types of planning styles. These range from isolated plans to proactive, that is, from separated plans to IS strategies influencing the development of the business strategy. More recently, Luftman (2004a) published a model to measure the alignment of IS and business strategies; however, although somehow related to synchronisation phases, its main focus is the integration of technology with the business function. A further discussion of these frameworks is found in Section 7.5.1 when the outcomes of this investigation are criticised and compared with other models.

This section detailed what is currently known about *how* the synchronisation process is carried out. As described, the development of synchronisation is characterised by three dimensions: content, personnel and timing. Therefore, by combining these dimensions (*i.e.*, the people involved, the content of the strategies and the moment in time when the strategies were generated), distinct courses of action are produced that indicate the required activities and stakeholders' roles necessary to achieve noticeable influences between the business and IS strategies. In line with this, four different frameworks have been formulated concerning distinctive approaches of how both strategies are synchronised (Chan and Huff 1993b; King and Teo 1997; Reich and Benbasat 2000; Synnott 1987). Nevertheless, as expanded in Section 3.6, these frameworks have some limitations. Moreover, one thing is how the process is done, but another topic is how it *should be* done. Therefore, the next section introduces several recommendations for a successful synchronisation.

3.4.2 Recommendations for a successful synchronisation

Recommendations for success (*what should* be done) embrace a considerable part of the published literature related to the synchronisation topic. These articles and papers present suggestions and important considerations of what practitioners should do in order to achieve a strong synchronisation. Some examples include: clear communication and effective relationships between IS staff and their business colleagues, transfer of senior people between business and IS functions, integrate the strategy development process as an on-going activity, and accomplish more experience in the management of IS (Chan 2002; Galliers 1991a; Johnston and Carrico 1988; Luftman and Brier 1999; Sabherwal and Kirs 1994). Furthermore, inadequate synchronisations manifest themselves when business managers cannot clearly articulate their IS needs or when the IS people have limited business vision or knowledge; when IS investments are likely to be costly and yield low returns; and when high potential IS applications may not be identified (Chan 2002). Therefore, an incomplete or problematic association will only cause resources to be wasted and opportunities to be missed. For example, even though organisations might heavily invest in IS with the purpose of competing more effectively, firms might continue to experience sub-optimal performance. This section expands these ideas, including which activities enable and inhibit the synchronisation process.

Initially, authors emphasised that certain factors that favourably influence the synchronisation process include the style of senior management, the volatility of the business environment, the complexity of the IS organisation, and the education that both IS and business executives receive about each other's functions (Nath 1989; Pyburn 1983). Furthermore, as described in Chapter 2, approaches such as Critical Success Factors (CSF), Business System Planning (BSP) and Martin's (1986) Strategic Data Planning Method (SDPM) have been suggested to facilitate the completion of the process (Grover *et al.* 1994; King 1988; Segars and Grover 1998). However, as said before, the synchronisation is not a straightforward managerial activity (Chan 2002), especially because it intends to efficiently combine human and technical aspects.

As expected, most of the synchronisation suggestions for success have a social nature, especially concerning top managers' commitment and participation. Teo and Ang (1999) conducted a survey to identify critical success factors in the synchronisation process. Unsurprisingly, the top three aspects found were business management commitment to the strategic use of IS (also considered key to the success of the process (Wilson 1989)), IS management knowledge about the business (Codington and Wilson 1994), and top executive

confidence in the IS area. For that reason and in order for the synchronisation to succeed, it is recommended that IS people should be familiar with the business function, business people should be familiar with IS, the IS area should communicate in business terms, and IS managers should focus their technical knowledge to identify business opportunities appreciated by business partners (Luftman and McLean 2004). In one study, IS executives who did not report difficulties in the synchronisation process were distinguished from IS executives who did by having business managers who coordinated the development of the IS strategy (Lederer and Mendelow 1989). Consequently, it has been demonstrated that the involvement of business managers is critical to attain feedback from top executives during IS strategic planning, to set IS priorities, and to encourage business managers to query users about their needs and requirements (Lederer and Mendelow 1989).

Some issues that cause poor synchronisation are business managers that cannot clearly describe their IS needs, IS personnel with partial knowledge of the business, the lack of a formal planning process, and a business strategy ambiguously defined (Chan 2002; Chan *et al.* 2006). Furthermore, these issues can cause sub-optimal performance, diminished returns on IS investments, loss of market position and even business failure (Avison 2003; Calhoun and Lederer 1990; Wang 2001). Therefore, to reduce difficulties in the synchronisation process, some preconditions that business managers need to pursue are encouraging participation of business executives in both IS and business planning, establishing an IS plan, and closely interacting with IS managers (Broadbent and Kitzis 2005; Lederer and Mendelow 1989). In addition, Burn and Szeto (2000) describe a set of perspectives that both business and IS managers should understand and recognise to increase the chances of success: business managers should act as 'prioritiser', finding the best ways to allocate resources within the organisation; the role of the IS manager should be one of 'executive leadership', leading the IS function to achieve strategic roles; and the performance criteria for strategy execution should be based on a 'cost/service centre', to measure expenditures and benefits. Finally, Brown (1994) lists some organisational problems that can reduce or impede the value of synchronisation, such as a highly centralised and isolated IS area, poor understanding of IS among business managers, and middle managers' reluctance to propose changes. The author mentions that these factors have to be sorted out as the first step towards moving from an isolated use of IS to a more integrated approach. However, even after these structural impediments are solved, cultural and social issues may persist (Brancheau *et al.* 1996).

From a practitioner point of view, some methods recommended for building a stronger synchronisation include the involvement of the IS manager in the planning of the business, the use of a management committee to prioritise IS projects, build trust between IS and business managers, and ensure that IS people understand business objectives (Ang *et al.* 1995). Also, according to a Deloitte Consulting (2004) report, some characteristics that organisations with strong synchronisation exhibit are executive agreements on both the role of technology and on the right priorities and focus areas for technology. In the public sector, not only the above recommendations should be considered to achieve a strong synchronisation of strategies, but also political and legal rationalities should be addressed to be perceived as legitimate. If this is not accomplished, civil servants, stakeholders and political appointees might stop or slow any technological innovation (Ramnath and Landsbergen 2005).

As a final point about the process of synchronisation, the endeavour is influenced by a number of internal and external factors, causing its delay or facilitating its completion. A study was carried out in 1997 – and replicated in 2003 – to identify enablers (factors that positively influence the ability to exploit information resources) and inhibitors (detriments to the firm's ability to exploit information resources) of business-IS alignment (Luftman and Brier 1999; Luftman and McLean 2004). Drawing on these results, the emerging factors can be applied to the synchronisation process, increasing its chances of success and even producing defendable, long-term business and IS strategies (Table 3.3). The authors mention that even though rankings differ, the same factors – communications, value measurements, governance, partnership, technology scope and skills – emerged in both studies, thus reinforcing their importance (Luftman and McLean 2004). Furthermore, a six-step approach was proposed to maximise the effects of enablers and minimise inhibitors (Luftman and Brier 1999 p.115):

1. Set the organisational goals and establish a team.
2. Understand the business-IS linkage.
3. Analyse and prioritise the gaps between the current and future states.
4. Specify the actions necessary to carry out recommendations.
5. Choose and evaluate success criteria by revisiting the strategic goals and selecting measurements to assess the implementation of the project plans.
6. Sustain the synchronisation throughout effective IS governance.

Table 3.3: Business – IS alignment enablers and inhibitors (1993-2003)

Study	Enablers	Inhibitors
2003 study (Luftman and McLean 2004)	1. IS understanding of firm's environment	1. Lack of senior executive support for IS
	2. Close partnership between IS and business	2. Lack of influence of headquarter's leadership
	3. Senior executives support for IS	3. Lack of business communication with IS
	4. Connection between IS and business plans	4. Lack of business commitment of budgets for IS investments
	5. IS demonstrating strong leadership	
1993-1997 study (Luftman and Brier 1999)	1. Senior executive support for IS	1. Business/IS lack close relationships
	2. IS involved in business strategy development	2. IS does not prioritise well
	3. IS area understands the business	3. IS fails to meet its commitments
	4. Business/IS partnership	4. IS does not understand business
	5. Well prioritised IS projects	5. Senior executives do not support IS
	6. IS demonstrates leadership	6. IS management lacks leadership

As seen in this section, related to the content, timing and personnel dimensions of the synchronisation of business and IS strategies, there are several phases that denote how both strategies influence each other. Moreover, even though there are multiple recommendations and suggestions of how the process should be carried out, there is no perfect solution or flawless methodology to perform this set of actions. Only time, dedication, a deep understanding of the business and an examination of the possible barriers that may inhibit the process will dictate which are the acceptable steps to pursue. These issues not only facilitate the achievement of strong influences between the business and IS strategies, but also provide more information about its execution. However, event though the real impact can only be perceived after the process is measured, it remains a complicated, multifaceted concept that is difficult to appraise (Chan *et al.* 1997; Hackney *et al.* 2000; Tan 1995). As described in the next section, there are several reasons why organisations invest resources in the synchronisation process; nevertheless, due to several difficulties that delay or impede the process, not all companies are carrying out the required activities.

3.5 Significance of synchronisation

As mentioned in Chapter 2, some of the reasons for planning the IS function are to enhance the organisation's performance (Chan *et al.* 2006; Lederer and Salmela 1996), to achieve business value from technology (Teo and King 1996), and to accomplish better IS exploitation (Goldsmith 1991). However, in order to realise these benefits, several authors agree that the business and IS strategies have to strongly influence each other (Baets 1992; Henderson and

Venkatraman 1993; King 1978; King 1988; Zviran 1990). Nonetheless, this mutual-influence process is not comprised of straightforward activities (Teo and Ang 1999), causing that not all organisations experience the same outcomes or maintain the same interest in having their business and IS strategies strongly synchronised (Chan *et al.* 2006).

This section presents an overview of why, despite its complexity, it is recommended to have business and IS strategies that strongly influence each other. First, some identified benefits that emerged from this process are described in Section 3.5.1. Then, the reasons to synchronise and an account of several investigations that demonstrate the importance of the process are presented in Section 3.5.2. After this, evidence corroborated by surveys that not all organisations are strongly synchronising their strategies is portrayed in Section 3.5.3. Finally, barriers that impede the process are described in Section 3.5.4.

3.5.1 Benefits achieved after synchronising business and IS strategies

The synchronisation of business and IS strategies might be regarded as a convoluted, time consuming, and costly operation (McFarlan 1971). However, as Table 3.4 shows, not only does a strong synchronisation pays off (Johnston and Carrico 1988), but multiple benefits can emerge when a synchronisation to this degree is performed (Wallace 1987); for example, an enhancement of business performance, greater technological maturity, the realisation of value from IS investments, and business managers with superior knowledge of technology (Avison *et al.* 2004; Henderson and Venkatraman 1992). As pointed out by Hackney *et al.* (2000 p.4), "it is inappropriate to assume that IS strategic alignment [*i.e.*, the synchronisation of business and IS strategies] will automatically improve the chances of IS effectiveness and improved organisational performance." Nevertheless, since in essence technology can alter the basic nature of a business or its directions, it has been proposed that an effective and efficient exploitation of these resources requires a strong synchronisation of business and IS strategies (Luftman *et al.* 1993; Papp 1999). Moreover, to achieve most benefits, it is necessary to remove barriers imposed by corporate culture, existing management processes and the skill levels of staff (Nath 1989; Scott-Morton M.S. 1988).

According to recent research, practitioners have acknowledged that an IS strategy strongly synchronised with the business strategy is the most important principle for effectively implementing technology (Feld and Stoddard 2004). The reason for this is that it has been demonstrated that organisations that synchronise business and IS plans outperformed those who

did not (Ball and Harris 1982; Teo and Ang 1999). Furthermore, a significant relationship was found between synchronisation, IS effectiveness and business performance (Chan and Huff 1993a; Kearns and Lederer 2000), which means that companies with enhanced synchronised strategies operate in an improved manner and with fewer problems (Chan 2002; Chan *et al.* 1997; Henderson and Venkatraman 1993). Therefore, business managers have considered the synchronisation process an essential aspect for their firm's efficient operation (Brancheau and Wetherbe 1987). Nonetheless, since the complexity of the IS strategic planning effort amplifies as the complexity of the business increases (Chan 2002), maintaining a strong synchronisation between business and IS strategies also becomes more challenging.

Table 3.4: Benefits achieved by strongly synchronising business and IS strategies

Benefits	References
Achieve top management's desired benefits	Lederer and Mendelow (1989)
Enhance business performance	Kearns and Lederer (2000); Lodahl and Redditt (1989); Sabherwal and Chan (2001); Teo and King (1996); White (1986)
Enhance organisational success	Hirschheim and Sabherwal (2001); Sabherwal and Chan (2001)
Full exploitation of IS resources	Karimi (1988)
Identify opportunities for the strategic use of technology	Avison, *et al.* (2004); Earl (1993); Lederer and Sethi (1991); Motjolopane and Brown (2004)
Increase business managers' awareness of IS	Johnston and Carrico (1988); Lederer and Mendelow (1988); Lodahl and Redditt (1989)
Maintain professional IS and systems standards	Lodahl and Redditt (1989)
Maximise IS investments and achieve greater profitability	Avison, *et al.* (2004); Papp (1999); Papp and Fox (2002)
Perceive IS success	Sabherwal and Kirs (1994)
Provide differentiated services to different clients	Lodahl and Redditt (1989)
Reduce IS strategic planning problems	Teo and King (1996)
Successful implementation of interfunctional and interorganisational business processes	Grover, et al. (1994)

Emanating directly from the IS strategic planning literature, the synchronisation concept facilitates the acquisition and deployment of IS that are congruent with the organisation's competitive needs, rather than existing patters of usage within firms (Bowman *et al.* 2002; Segars and Grover 1998). However, the effectiveness with which IS can support the organisation's information needs and enhance its processes is dependent on the IS area's role, position within the organisation, and strategy (Galliers *et al.* 1994; Wyman 1985). Moreover,

every company has managerial, cultural and technical differences, so its responsiveness to the synchronisation process and any generated effects, positive or negative, will differ among organisations (Tan 1995), industries, and even between countries (Palvia and Palvia 2003; Segars and Grover 1998). Thus not every business will achieve the same benefits or experience the same problems.

As described in this section, it has been empirically demonstrated that multiple benefits can be achieved by having a strong influence between the business and IS strategies. Nevertheless, since most of these investigations were carried out in private organisations, further research in the public sector is necessary to demonstrate if these benefits, and as the next section describes, the reasons to synchronise, are exclusive to private companies or if alternative outcomes can be identified in government organisations.

3.5.2 Reasons and importance of synchronisation

In the last chapter, Table 2.1 listed the most important reasons for planning the IS function. As portrayed, the alignment of IS with business needs, which is directly enabled by the synchronisation between business and IS strategies, was not only a relevant issue for top managers (Brancheau and Wetherbe 1987; Hartog and Herbert 1986), but has also been the most important objective for planning IS since the 1980s. In line with this and enhanced by success stories from other firms (Bruce 1998), a significant reason for pursuing the synchronisation process is that it facilitates the identification of areas critical to the success of the organisation and the development of systems to support its business objectives and goals (Grover *et al.* 1994). However, in order to be effective, previous research into the synchronisation process found that it is necessary to have (1) enhanced communication and understanding between users and IS people; (2) linked business and IS missions, priorities and strategies; (3) interconnected business, IS planning processes and resulting plans; and (4) users' commitment to IS issues and initiatives (Chan 2002 ; Lederer and Mendelow 1987; Reich and Benbasat 1996).

Since the early 1980s, surveys of business and IS managers have consistently shown the synchronisation of business and IS strategies to be a highly-ranked organisational objective (see Table 3.5). Nevertheless, even though it is an issue more critically judged by IS managers than by their non-IS counterparts, their views converge regarding its future status (Galliers *et al.* 1994). As seen in this table, the relationship of IS to business needs in the USA, UK and

Australia was the number one concern and objective for IS strategic planning in the 1980s (Galliers 1987a; Ward 1987). Also, related to the issue of synchronisation of strategies, Earl (1990; 1993) found not only that the number one objective for IS strategic planning was the alignment of IS with business needs, but also that this procedure reaped the greatest benefits. In another survey, Flynn and Goleniewska (1993) found that IS strategies synchronised with business strategies was the most positively rated planning objective. Furthermore, the majority of the respondents (83% of 18 organisations) referred to the synchronisation as the primary focus of their business's planning technique. More recently, two large-scale surveys of IS management concerns in the USA revealed the synchronisation of business and IS strategies to be the top issue facing IS managers (CSC 2001; Luftman and McLean 2004).

Table 3.5: Importance of synchronisation process and related topics as revealed in surveys

Year	Synchronisation of strategies was considered the...	References
1980	... ninth most important issue to IS managers.	Ball and Harris (1982)
1983	... seventh most relevant concern to IS managers.	Dickson, et al. (1984)
1986	... second most important issue to 63 IS managers.	Hartog and Herbert (1986)
1986	... fourth concern to top managers.	Lederer and Mendelow (1986a)
1986	... second most important concern to middle managers.	Lederer and Mendelow (1986a)
1987	... number one organisational objective.	Ward (1987)
1987	... number one objective for IS planning.	Galliers (1987a)
1987	... fifth issue in importance to IS managers.	Brancheau and Wetherbe (1987)
1988	... major factor to use IS applications for strategic purposes.	Neo (1988)
1990	... number one objective for IS strategic planning.	Earl (1990); Earl (1993)
1992	... top issue for IS managers in Australia and New Zealand.	Broadbent, et al. (1992)
1993	... most positively rated planning objective.	Flynn and Goleniewska (1993)
1996	... most important issue to IS managers.	Rosser (1996)
2001	... top critical IS issue for businesses in North America.	CSC (2001)
2004	... top issue facing IS managers..	Luftman and McLean (2004)

Other surveys, even though not reporting synchronisation as the top-most objective, showed equally relevant results. For example, in the 1980s Lederer and Mendelow (1986a) identified the need to coordinate IS priorities with the business plan as the fourth-ranked concern of top management; however, for middle managers, the synchronisation of strategies was recognised as their second-most important issue (Hartog and Herbert 1986). Then, in the 1990s, the process was listed among the top three objectives of senior IS executives (Henderson and Venkatraman 1991). Brancheau, *et al.* (1996) argue that even though synchronisation might

have declined in importance in past studies, this does not imply that its significance has diminished but only that executives participating in the study are more focused on implementation and delivery than on planning.

Much has been written about the necessity of maintaining a connection between the business and IS strategies; however, in reality this linkage often takes place in relative isolation from each other. In the early 1990s, Galliers (1992) explained this by the difference in the nature of the two plans. Complemented by tactical decisions, business strategies generally emerge from an innovative and creative organisational process. On the contrary, IS approaches are mechanistic, rational and with too much attention paid to technological detail. Nowadays, as portrayed in Table 3.5, there is general agreement to consider the synchronisation process as a significant issue. Nevertheless, its complexity will increase in accordance with the nature of the industry and/or its dependence on technology (Burn and Szeto 2000). Moreover, based on views published recently (Chan 2002; Luftman and McLean 2004; Papp 1999), synchronisation continues to be of vital interest to academics, business executives and IS managers. However and as described in the next section, there are still numerous organisations with business and IS strategies that only partially influence each other.

3.5.3 Lack of widespread synchronisation

Despite the benefits listed in Table 3.4, surveys have uncovered that there is a large number of public and private sector organisations with business and IS strategies that do not, or only partially, influence each other (Ciborra 1997; Deloitte 2004; Hartung *et al.* 2000; Lederer and Mendelow 1987). While this situation causes several advantages to be overlooked (Chan 2002; Chan *et al.* 1997; Henderson and Venkatraman 1993), it can also give rise to numerous problems (Rucks and Ginter 1982).

One survey conducted in the 1980s found that while 10% of organisations had a very strong connection between business and IS strategies, 43% had only slightly related strategies, and in 16% of cases, the two strategies were completely separated (Galliers 1986). Another investigation found that 58% of the organisations surveyed stated that their IS strategic plans were only vaguely associated with their business plans (Galliers 1987a). In the 1990s, a survey of the UK insurance industry found that 46% of companies had a formal IS strategy; nevertheless, only 35% of these companies reported that their IS strategy was related to their business strategy (Codington and Wilson 1994). In the same decade also, Ernst and Young

(Willcocks 1992) found only two of the 86 organisations they surveyed with strong synchronised strategies. And even in 1999, an analysis found that 50% of executives believed that their strategies were weakly synchronised or unsure if an IS strategy even existed in their organisations (Luftman and Brier 1999).

More recently, despite it being widely known that a strong synchronisation of business and IS strategies is critical for organisations (Rathnam *et al.* 2004/2005), there is still a substantial number of firms with only a weak influence between their business and IS strategies. For example, a recent study reported that only 50% of business managers and 60% of IS managers indicated that a complete synchronisation between business and IS strategies had been achieved (Burn and Szeto 2000). In addition, a survey by Deloitte Consulting (2004) found that 55% of companies had been 'very' successful in synchronising business and IS strategies. However, only 10% of the respondents reported that their enterprises had been 'extremely successful' in achieving the process. This survey found that some reasons for this situation included an unclear definition of technology's role in the organisation, lack of detail in top management's plans and shifting time lines.

As implied by these surveys, a significant connection between business and IS strategies is not easy to accomplish (Ciborra 1997). Moreover, between corporations disparities in IS implementations exist because generally IS investments are not reflected in immediate productivity gains or in significant performance increments (Martinsons and Martinsons 2002). For that reason, while executing a system might cause particular benefits in one organisation, another can have contrasting results (Tan 1995). Nevertheless, the lack of a strong synchronisation may result in both the business or the IS strategies to be reactive and tactical, making any strategic opportunity a matter of chance (Earl 1988). The next section presents some barriers that impede the process of synchronisation, reasons why there are so many organisations with inadequately synchronised strategies.

3.5.4 Barriers obstructing process of synchronisation

According to the multiple benefits that can be achieved and the problems that can be omitted, a strong synchronisation of business and IS strategies is critical in all organisations (Galliers 1987a; Galliers 1987b; McLean and Soden 1977; Pyburn 1983; Ward 1987). Nevertheless, since surveys have uncovered that fewer than 50% of companies have a business strategy strongly synchronised with an IS strategy (Luftman and Brier 1999; Wilson 1989), this implies

that there are barriers that prevent making a successful connection between the two (Rucks and Ginter 1982); for example, lack of communication between business and IS people, the absence of IS executives from the business planning process, and inadequate business management commitment to IS planning (Baets 1992; Galliers 1986; King and Teo 1994; Lederer and Mendelow 1991).

The figures for synchronisation quoted in Section 3.5.3 ring true because despite recommendations, even today a large number of IS managers are still excluded from business planning sessions (Luftman and McLean 2004), and organisations still develop tactical plans which show limited mutual influences. Possible explanations for these issues include the lack of a suitable business strategy (*e.g.*, it might not exist or might be composed solely of financial targets) or that this document is regarded as confidential, restricting access to anyone outside the top management team (Bowman *et al.* 2002; Lederer and Mendelow 1986b). More recently, a study by Deloitte Consulting (2004) found that 65% of respondents considered the ineffective communication of business strategy and goals between business and IS managers a barrier to synchronisation. Other reasons given by practitioners include that IS managers are not part of the top management team, a lack of business understanding by IS people, and weak support from senior business managers to IS initiatives (Ang *et al.* 1995; Deloitte 2004).

Who is involved in the synchronisation process and how much planning experience they have are crucial issues to its successful execution. It has been demonstrated that stakeholders with less knowledge in business planning have more severe problems than those with more experience. Likewise, organisations with less participation by the IS area in business planning have more struggles than organisations with greater involvement (Lederer and Sethi 1988). Also, due to its nature and implications, when one aspect of synchronisation is altered, it is necessary to revise all facets of the process (*e.g.*, business strategy, role of business and IS managers, IS strategy, and IS area) to ensure that an association between strategies is still maintained. However, organisations rarely do this, typically only modifying one component while neglecting others (Hirschheim and Sabherwal 2001).

As discussed in detail in this section, despite the benefits that can be achieved and the reasons that organisations have to maintain a strong synchronisation between their business and IS strategies, the process is not easy to realise and sustain. Moreover, corporate culture and social barriers are considered two of the biggest obstacles (Wyman 1985), which is the reason why

special attention should be paid to the social dimension of the process (Reich and Benbasat 2000). Moreover, Ciborra (1997) recommends that when synchronising business and IS strategies, neither strategy should be taken for granted; instead, they should be regarded as problematic. Strategy is not a clear concept of practice and the use of technology is characterised by improvisations of various kinds and by many unexpected outcomes; however, business and IS strategies with strong influences between them are necessary for the smooth operation of the organisation and for an efficient exploitation of technological resources.

3.6 Importance of synchronisation topic

As described throughout this chapter and supported by Chapter 2, the synchronisation of business and IS strategies corresponds to a critical and contemporary topic of inquiry part of the IS field. As a result of coming across a large number of distinct variations that define in one way or the other the linkage between both strategies, in this thesis the term *synchronisation* was conceived. It is defined as the concurrent influence that exists between the business-level strategies (or overall business plans) and the IS area's functional-level strategies. Not only it is carried out by ISSP procedures (Motjolopane and Brown 2004), but it is the number one objective for a successful IS strategic planning (Galliers 1986; Grindley 1985; Peak *et al.* 2005) and is mentioned throughout surveys as a key concern for business and IS managers (Luftman and McLean 2004; Papp 1999). Moreover, despite decades of research, the synchronisation of business and IS strategies has continued to acquire attention among academics and practitioners, mainly due to the practical challenges it presents (D'Souza and Mukherjee 2004). According to the timing, personnel and content dimensions of both strategies, this influence can be accomplished in distinct degrees, thus generating diverse effects such as full exploitation of IS and the enhancement of business performance (Karimi 1988; Sabherwal and Chan 2001). However, demonstrated by surveys that expose a generalised shortage of organisations with strong synchronised strategies (Burn and Szeto 2000; Deloitte 2004), it is implied that the process corresponds to a challenging endeavour and will continue to be so in the foreseeable future (Broadbent and Kitzis 2005).

Despite it remaining a complex process, difficult to realise and to measure (Chan *et al.* 1997), its outcomes and effects demonstrate how essential it is to complete the synchronisation process. Moreover, authors have stated that in case of a poor synchronisation, not only can IS

evaluation practices become separated from business needs and its strategy (Willcocks 2003), but the business may fail to realise value from technological investments (Henderson and Venkatraman 1993). Therefore, since the extent and impact of the synchronisation's effects are more evident as the influence between both strategies becomes stronger, the process produces distinct benefits and outcomes according to specific business' characteristics such as IS strategic planning experience and top management commitment to IS issues (Scott-Morton M.S. 1988). However, as described in Section 3.2.3 and portrayed in Table 3.1, due to a lack of theoretical bases it is still unclear *how* the process is carried out, *how* organisations follow these activities, and especially *how* this is accomplished in the public sector. In other words, the research on the synchronisation of business and IS strategies is not complete and further research is needed, particularly in identifying industry-specific characteristics on how the process is achieved (Chan *et al.* 2006).

The literature review in Chapters 2 and 3 has detailed what is known about the synchronisation of business and IS strategies by means of academic, practitioner and consultant publications. As summarised in Figure 3.3, several points emerged from this literature review and accordingly shaped the research question (see 'identified synchronisation issues' box in figure). Basically, this question emerged due to a need to know more about the process. Moreover, there are no previous attempts to investigate why and how organisations in the public sector synchronise their business and IS strategies. As described in Section 3.4.1, four empirical investigations were identified that divide the synchronisation process in phases; however, on the one hand, all of these were recognised in private companies; and on the other hand, they portray a limited to complete sequential integration that is not possible to attain in a straightforward way. Additionally, even though it has been acknowledged that it is possible for the IS function to influence the business objectives, directions and strategy (Cash *et al.* 1988; Porter and Millar 1985), only Reich and Benbasat's (2000) model explores the possibility of having a business strategy influenced by the IS strategy.

3.7 Conclusion

Ciborra cited in Chan (2002 p.98) stated that the synchronisation of business and IS strategies "is not a state, but a journey – one that is not always predictable, rational, or tightly planned". For several years it has been one of the leading areas of focus among business and IS managers;

nevertheless, it has undergone severe criticisms and due to its complicated nature, it is still common to find companies with limited synchronised strategies.

Since IS have changed how companies compete (Porter and Millar 1985), a method for coordinating and complementing IS strategies with business strategies was required not only to efficiently manage the technological resources that were costing companies substantial amounts of money, but also to find enhanced and innovative ways to operate. As shown throughout this chapter and complemented with Chapter 2, there is a lack of information in the literature as to how organisations synchronise their business and IS strategies, a key concern for business and IS managers (Papp 1999). Despite its importance has been documented for more than a decade (King 1985a; Luftman 2004), it is still not clear how to achieve the synchronisation and what is the real impact of not having a strong connection between business and IS strategies (Allen and Wilson 2003; Hirschheim and Sabherwal 2001; Papp 1999; Pyburn 1983), since most of the publications around this topic have been normative and prescriptive (Hann and Weber 1996). Consequently, further research is needed to identify how organisations achieve this synchronisation and what are the realised benefits. Moreover, with the majority of existing research focused on the private sector, more knowledge is required about how public sector organisations carry out the process.

As described in Section 3.6, Chapters 2 and 3 encompassed the background information and literature review of the main investigative topic, the synchronisation of business and IS strategies. Starting with the next chapter, the research course of action to answer the research question (*i.e.*, why and how public sector organisations synchronise their business and IS strategies) is described. Accordingly and prior to present the research results, the following two chapters encompass the thesis' methodology, particularly detailing the method followed (*i.e.*, case studies) in Chapter 4 and the data collection and analysis procedures in Chapter 5.

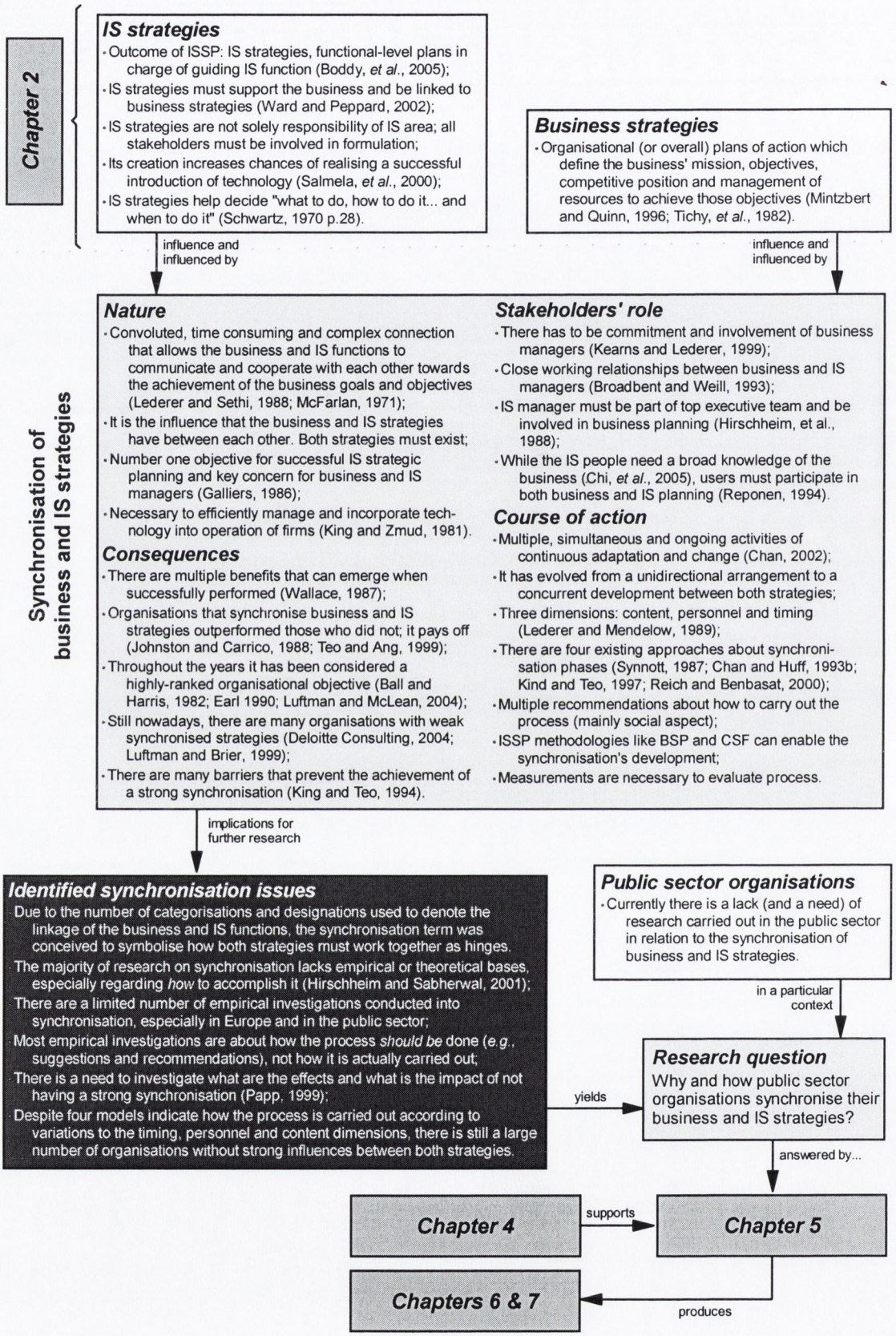


Figure 3.3: Summary and key issues of Chapter 3

CHAPTER 4

APPROACH TO ENQUIRY

> *"The ideal engineer is a composite ... He is not a scientist, he is not a mathematician, he is not a sociologist or a writer; but he may use the knowledge and techniques of any or all of these disciplines in solving engineering problems."*
>
> N.W. Dougherty, 1955

4.1 Introduction

Journal articles, theses, conference papers and research reports generally apply one or several methods to carry out their investigations. Among the possible positivist and interpretivist techniques that can be employed, all of which have advantages, disadvantages or are best suited for particular situations, case studies have been acknowledged as a popular and well-documented method. Considered as the favoured approach to investigate IS issues in organisations by some academics (Benbasat *et al.* 1987), it is especially appropriate when investigating a contemporary phenomenon within its real-life context, when boundaries between happenings and reality are not clearly evident, and when using multiple sources of evidence (Yin 1989; Yin 1994). Among its features, case studies are strong when carrying out detailed and in-depth investigations, often with data collected over a period of time in one or more organisations. Furthermore, it can provide a 'real-time' analysis of the context and processes involved in the phenomenon under study (Hartley 1994). Despite their importance as a teaching device and as a research method, in the early 1990s there was still not a great amount of literature that dealt spe- cifically with how to use this technique (Smith 1990). Moreover, the most common textbooks on social science of that time hardly mentioned case studies (Smith 1990; Yin 1993). Nevertheless, in the last 15 years this has been evolving to the point that nowadays it is considered a common research strategy in psychology, sociology and business investigations (Yin 2003).

This thesis, as expressed in the last chapters, is focused in investigating *why* and *how* public sector organisations synchronise their business and IS strategies. Due to the need for more

rigorous investigations that contribute to the IS field, an exploratory research was carried out that analysed the synchronisation between the business and IS strategies in several public sector organisations. The importance of this research lies in providing to practice more information about the process and thus increasing the number of organisations with business and IS strategies strongly synchronised, together with enhancing the knowledge that theorists have about this topic that was formed by combining IS and strategic planning concepts. As stated throughout this chapter, one or several methods could have been used to tackle the research challenge; nevertheless, case studies were selected as the method that would best achieve the investigation's objectives.

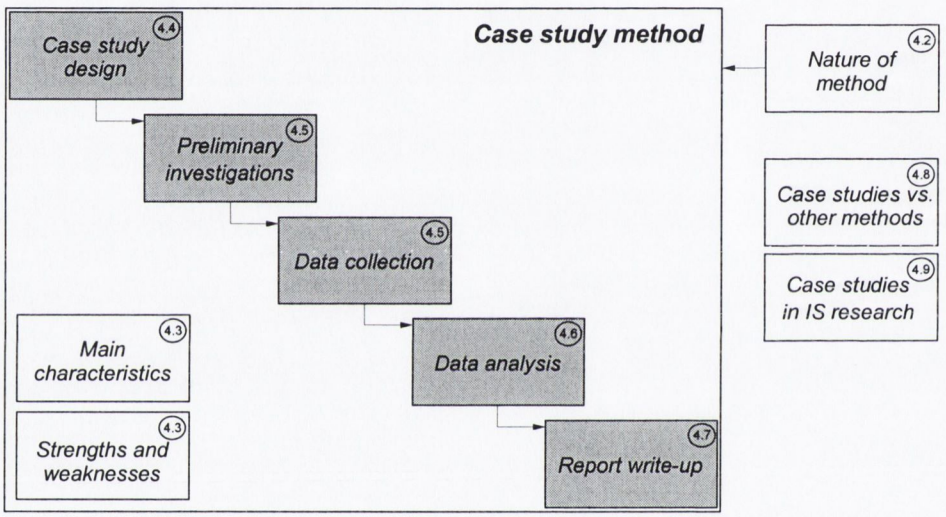


Figure 4.1: Organisation and structure of Chapter 4

The objective of this chapter is to justify case studies as a wide-ranging approach to enquiry, while introducing it as the preferred investigative technique of the present thesis as expressed in the study's methodology in Chapter 5. The next sections are organised in the following way (see Figure 4.1). Section 4.2 discusses the philosophical nature of case studies and outlines other methods that could have been used to carry out the present investigation. Then, Section 4.3 presents the main characteristics of case studies, together with their strengths and weaknesses. The next five sections correspond to the cases' development phases. Section 4.4 addresses the main issues of a case study, detailing overall design, types, approaches, number of cases, propositions and units of analysis. Next, preliminary investigations and data collection are described in Section 4.5 by explaining how an investigator should enter the field and gather data, together with some ethical issues and the role of pilot studies. Subsequently, one of the most laborious parts is explained in Section 4.6, *i.e.*, the analysis of data. Even though this task varies

according to the case design and expected outcomes, some general features are outlined. Following this section, some ideas on how to complete the investigation and write the reports are examined in Section 4.7. This is followed in Section 4.8 by a comparison of the case study method with other techniques such as experiments and grounded theory. Finally, as part of justifying the method, some issues relating to the development of case studies in IS research are explained in Section 4.9.

4.2 Nature of the approach to enquiry

Even though some authors disregard "many, if not all, of the alleged metatheoretical differences between positivism and interpretivism" (Weber 2004 p.10), it is necessary to describe these two epistemological paradigms to understand the traditional categorisation of research methods. The positivist perspective, the philosophical assumption that has dominated IS research at least in North America in the past and still does to some extent today (world region where the majority of the empirical publications in the topic come from), is rooted in the natural sciences (Chua 1986; Orlikowski 1991; Orlikowski and Baroudi 1991). In these investigations, the ontological assumption is that reality is objectively given and can be described by measurable properties which are independent of the researcher (Myers and Avison 2002). Moreover, the epistemological assumption is that there are unidirectional cause-effect relationships identified and tested through the use of hypothetic-deductive logic and analysis (Khazanchi and Munkvold 2000). Since positivist investigations generally attempt to test theory in order to increase the predictive understanding of phenomena, experiments, questionnaires and field studies are the preferred research methods (Weber 2004). Positivism holds that facts and values are distinct and scientific knowledge consists only of facts (Archer 1988). Therefore, data analysis mainly consists in statistically analysing large amounts of empirical data (Weber 2004).

Contrasting with positivist approaches, interpretivist investigations require that the researcher "collects facts and data describing not only the purely objective, publicly observable aspects of human behaviour, but also the subjective meaning this behaviour has for the human subjects themselves." (Lee 1991 p.347) Based on the ontological assumption that reality is a social construct and that people develop and sustain their own organisational realities (Gioia and Pitre 1990), instead of generalising in the statistical sense (Ansari 1991), an interpretative investigation intends to deeply understand the sought phenomenon (Darke *et al.* 1998; Orlikowski and Baroudi 1991) by an iterative process of data collection and analysis while

expanding, revising or abandoning any initial theories (Walsham 1995). In this way, instead of formulating *a priori* constructs, an interpretative researcher aims to understand a phenomenon from the participants' direct involvement with the unit of analysis (Cavaye 1996; Khazanchi and Munkvold 2000). Techniques include a breakdown of their own words and images used to describe, interpret, analyse and understand the social world from their own perspective (Glaser and Strauss 1967). Since interpretivist investigations access reality through social constructions such as language, consciousness and shared meanings (Myers and Avison 2002), case studies have been regarded as their preferred research method (Weber 2004).

There are several techniques sufficiently general to be common or significant to all sciences, facilitating the procedures to make observations, predictions and measurements (Kaplan 1964). Setting aside the possibility of having alternative outcomes, other possible methods that could have been used to execute the inquiry of the present thesis are (these options are proposed from the research question; see Section 4.8 for more information about the following techniques and Chapter 5 for more details about the methodology actually used):

- A questionnaire-based study. Key individuals in several public sector organisations could act as respondents in a questionnaire or series of surveys about how the business and IS strategies are synchronised;
- Action research in one public sector organisation. The researcher could collaborate with an organisation during the development of business and IS strategies in order to analyse the synchronisation process;
- Observations. The researcher could participate in meetings and monitor the main actions that business and IS managers followed when developing the business and IS strategies in one or several public sector organisations;
- Case studies. The researcher could carry out a multiple or a longitudinal case study investigation in one or several public sector organisations. In the case of a unique case, the evolution of the process could be longitudinally examined throughout time. Moreover, grounded theory method practices could be used to assist data analysis and interpretation; and
- Triangulation of sources. Combine several techniques in order to attain the advantages of each method and complement its outcomes.

As said above, the choice of a philosophical perspective and the research strategy is driven by the researcher's own worldview and matched to the nature of a particular research project (Blaikie 1993). Case study research is a method which seeks to describe, translate or otherwise come to

terms with meanings, not frequency, of naturally occurring phenomena in a social environment (Van Maanen 1983). Moreover, it is a method recommended when investigating an IS contemporary occurrence such as the synchronisation of strategies, within its real-life context, for example, discussing the influence of business and IS strategies with managers in public sector organisations. In addition, it is an acceptable method when carrying out detailed and in-depth investigations of 'real-time' data throughout several multiple sources of evidence. Therefore and as justified throughout this chapter, the case study method was selected as the preferred approach of the present thesis. While other techniques may also be helpful in tackling the research challenge and answer the research question (especially the grounded theory method, that as described in Section 4.8 they share many similarities with the case study method), case studies were selected as the best suitable approach to enquiry due to the researcher's interests, the investigation's objectives and the resources available. Commencing with the next section, the case approach is detailed, starting with its origins and general characteristics.

4.3 Characteristics, advantages and weaknesses of case studies

Case studies have been used to develop and test research hypotheses since the 1800s. Early case studies were carried out in psychology and political science (Naumes and Naumes 1999); nonetheless, the case study method did not gain wide recognition until it came to be understood that it provided an opportunity to extend hypotheses and concepts (in a given sequence of events) without relying on self-reported data, such as surveys. Its main value and interest lay in its ability to study an organisation or group of individuals and interactions over time, allowing researchers to determine, through different environmental forces, the patterns of these interactions and the behaviours of subjects (Naumes and Naumes 1999).

The quest for a scientific study using experimental and survey investigations caused the decline of case studies in the late 1950s (Bryman 1989; Mitchell 1983). The main reason for its disapproval was the difficulty of generalising results derived from only one or two cases. Additionally, case studies were viewed as lacking rigour and objectivity when compared to other social research methods (Rowley 2002). However, after two decades of struggles, they regained importance in the late 1970s (Hartley 1994) as their approaches, strengths and weaknesses were systematically addressed. Also, researchers understood that cases offer insights that might not be achieved with other techniques (Rowley 2002).

Nowadays, case studies are considered as a widely accepted and well-documented method for theory generation. Compared to other techniques, case studies can be useful depending on the research situation, the objectives expected and the resources available. Therefore, while there are multiple documented benefits, there are also some weaknesses that have to be considered. This section discusses these issues, starting with the general characteristics and functions of case studies.

4.3.1 Case studies: characteristics and functions

In its widest sense, case studies can have three different academic functions (Remenyi *et al.* 2002). First, as a *teaching device*, illustrating established theories by exploring and understanding distinct business situations (Argyris 1980; Berger 1983; Dooley and Skinner 1977; Reynolds 1978). Second, as an *outline*, collecting and documenting evidence about a specific phenomenon. In this situation, instead of analysing precise characteristics of the case in question, the researcher seeks models and generalisations. And finally (the type employed in this thesis and the only kind that will be discussed from here on), as a *research objective*. This type allows a researcher to comprehend in detail what is happening in each case *per se*, while focusing on one or on multiple units of analysis, in similar or dissimilar cases.

Table 4.1: Characteristics of case study research

Characteristics	References
A phenomenon is examined in its natural setting.	Benbasat (1987); Naumes and Naumes (1999)
Changes in site selection and data collection methods could take place as the investigator develops new hypotheses.	Benbasat (1987)
Examination of one or few entities.	
Focus on contemporary events.	
No experimental controls or manipulation are involved.	
Results derived depend on the investigators' integrative abilities.	
Research aims not only to explore certain phenomena, but also to understand them within a particular context.	Yin (1994)
Research uses multiple methods for collecting data.	Benbasat (1987); Yin (1994)

As Table 4.1 shows, the case study method has several characteristics; for example, it examines phenomenon in its natural setting and uses multiple methods for collecting data. As its main feature (Stake 1995), case research allows an investigator to understand what is occurring with rich detail in a specific organisation (or group of organisations). Additionally, it provides an opportunity for capturing specific facts of organisational behaviour by asking penetrating

questions (Gable 1994). Therefore, it is characterised as a comprehensive "examination of an event (or series of related events) which the analyst believes exhibits (or exhibit) the operation of some identified general theoretical principle" (Mitchell 1983 p.192). Furthermore, case studies are valuable when controls such as those in a laboratory are not feasible and not even justifiable (Miles and Huberman 1994; Remenyi *et al.* 1998).

Despite convincing strengths (see Section 4.3.2), case studies cannot be used in every research situation. As shown in Table 4.2, there are some conditions that have to prevail when using particular methods; for example, the identification of the type of question being asked, the control over behavioural events, and the focus on contemporary occurrences. As indicated in the last row of the table, case study research is considered to have a distinct advantage when a *how* or *why* question is being asked about a contemporary set of events over which the investigator has little or no control (Rowley 2002).

Table 4.2: Relevant situations for different research strategies (Yin 1994)

Strategy	Form of research question	Requires control over behavioural events?	Focus on contemporary events?
Experiment	How, why	Yes	Yes
Survey	Who, what, where, how many, how much	No	Yes
Archival analysis	Who, what, where, how many, how much	No	Yes/no
History	How, why	No	No
Case study	How, why	No	Yes

Theory is analytically, not statistically generalised (Yin 1989b). Therefore, the objective of case studies is to generalise from a particular set of results to a broader theory, thus using this theory as a template against which to compare the empirical results. Each case should be viewed as an experiment, not as a case within an experiment (Rowley 2002). Consequently, if two or more cases are shown to support the same theory, replication may be claimed and evidence to support the theory will be present; however, this does not necessarily prove it definitively (Firestone 1993). Thus the aim of case studies is not to infer global findings from a sample to a population, but rather to understand and articulate patterns and linkages of theoretical importance (Amaratunga and Baldry 2001).

4.3.2 Strengths and criticisms of case studies

Case study research is a well-built and mature technique with numerous strengths; for example, its novelty, testability, empirical validity (Eisenhardt 1989), and the richness of its detailed understanding of reality (Amaratunga and Baldry 2001). In this manner, a case study can investigate an actual situation in a realistic setting, allowing a researcher to determine not only what happened, but also why it happened (Naumes and Naumes 1999).

Case studies often unearth new issues, insights and directions which can serve as a basis for further research needs. Since the findings of case study research are widely accepted by industry, this approach might help bridge some differences between theorists and practitioners. Furthermore, while cases provide an opportunity to use many different sources of evidence (Yin 1994), the use of interviews allows the researcher to gain rich insights into issues which are normally not amenable to questionnaires (Simon *et al.* 1996). Some other advantages include its replication logic (coding schemes and reports allow other researchers to repeat the investigation); the inclusion of different time periods in the study, enabling the analysis of patterns of complex phenomena over time (Remenyi *et al.* 2002); and the closing of traditional research gaps, such as those between quantitative and qualitative methods, and positivist and interpretative approaches (Larsson 1993). Consequently, when researching modern phenomena that are not supported by a strong theoretical base (*e.g.*, the synchronisation of business and IS strategies) in a real-life setting (*e.g.*, in a public sector organisation), a case study provides all necessary instruments. Nonetheless, it is not a perfect solution and some limitations have to be considered.

Although considered as a rigorous and effective technique of research, some criticisms and practical difficulties are also present in the case study method (Darke *et al.* 1998; Smith 1990). The most common drawbacks (Bryman 1989; Gummesson 1991; MacNealy 1997; Naumes and Naumes 1999) of case studies refer to its lack of transferability (generalisation) and its lack of statistical weight. For example, it is said that not only their outcomes are difficult to measure (Berger 1983), but that their results cannot be easily generalised since only a small number (not representative of any population) of organisations were selected to develop the research (Stake 1995). Additionally, other weaknesses found in case study research include the considerable resources needed to complete an investigation and the difficulty of gaining access to organisations (see Table 4.3 for more examples).

Some limitations, such as case study research being potentially expensive in terms of time and resources, are difficult to avoid. Nevertheless, suggestions have been made to diminish some challenges and achieve a successful investigation. For example, regarding its generalisability, cases must be carefully selected (without statistical principles) to allow the study to fulfil its objectives. Also, anecdotalism might be prevented by reporting in a managed, concise and summarised way. Moreover, even though data collection might be performed at a particular moment in the life of the organisation, its design must not only capture the background of the unit of analysis, but also predict future actions. Additionally, written documents may provide evidence of what happened in the organisation during the past and what was expected. Finally, the researcher must attempt to prevent any bias in interviews and reporting, as well as develop and maintain confidentiality and privacy agreements to preserve an ethical relationship between investigators and subject.

Table 4.3: Criticisms of case studies

Criticisms	References
Anecdotalism: tendency to be overly descriptive in writing and lacking academic rigour.	Simon, *et al.* (1996); Smith (1990)
Case studies can be used to generate theory, but without the simplicity of the overall perspective.	Eisenhardt (1989); Gummesson (1991)
Cases capture the experience of an organisation only at a particular period in time.	Simon, *et al.* (1996)
Difficult and expensive in terms of time and cost.	Naumes and Naumes (1999); Yin (1994)
Ethical problems between researcher and subject.	Simon, *et al.* (1996)
Generalisation issues.	Naumes and Naumes (1999); Yin (1994)
Inability to combine case studies with other methods.	Bryman (1989); Gummesson (1991); MacNealy (1997); Naumes and Naumes (1999); Yin (1994)
Lack of controllability and deductibility.	Galliers (1992)
Lack of rigour and presence of researcher bias during interpretation of social reality.	Lee (1989); Galliers (1985); Jankowicz (2000); Naumes and Naumes (1999)
Largely descriptive and usually portrays positive aspects.	Amaratunga and Baldry (2001); Scapens (1990); Yin (1994)
Limited number of cases available for specific research questions.	Scapens (1990); Simon, *et al.* (1996)
Selection of unrepresentative cases.	Larsson (1993)

As said above, case studies are a relevant tool for generating theory; however, it is only part of the research process (Remenyi *et al.* 2002). Development wise, the case study process can be divided into stages or phases. Several authors have developed their own classification (Eisenhardt 1989; Hussey and Hussey 1997; Scapens 1990; Weerd-Nederhof 2001), which can be carried out sequentially, iteratively or even in parallel. Nevertheless, a common pattern can be distinguished: (1) case study design; (2) preliminary investigations; (3) data collection; (4) analysis of data; and finally (5) reporting. The following five sections correspond to these phases. The first part, case study design, describes the research purpose and defines the style which will be followed to carry out the investigation.

4.4 Case study design

Case design links the beginning and end of the study, associating data to be collected and conclusions to be drawn to initial research considerations (Rowley 2002; Yin 1989b). An appropriate design organises the research activity (including data collection) and ensures that there is a clear view from the start of what is to be achieved by the case study (Easterby-Smith *et al.* 1991). In addition, it guarantees that data is not collected outside pre-established research boundaries.

Even though the quality of the design is a critical ingredient for a well-developed case study, its role is often underestimated. Case studies, just like other methods of empirical inquiry, can be modified as the study progresses; nevertheless, it is recommended to have a comprehensive design as early as possible. Yin (1989b; 1993) states that a good research design should illustrate how the methods used are in harmony with the articulated objectives and questions of the study. In addition, the design should identify critical evidence that will support major hypotheses, stipulate relevant techniques for analysing evidence, and provide clear direction for the generalisation of results to other cases.

The quality of any case design and its conclusions can be judged according to certain tests with regard to various levels of research validity (Yin 1994). Nevertheless, Lincoln and Guba (2000) believe that qualitative and positivist investigations cannot be judged in the same manner to establish empirical validity and rigorous inquiry. Therefore, due to these differing epistemological worldviews, qualitative researchers have come to rely on the interpretative

criteria of confirmability, dependability, credibility and transferability (Gasson 2004; Miles and Huberman 1994). These criteria, described next, allow qualitative researchers to maintain empirical rigour and validity:

- *Confirmability*: Relative neutrality and freedom from unacknowledged researcher bias. Conclusions depend on subjects and conditions of the study rather than the researcher.
- *Dependability*: Demonstrating that the operations of a study can be repeated with the same results. In other words, maintaining consistency and stability over time across researchers and methods. This ensures dependable and authentic findings by establishing clear and repeatable procedures for the research.
- *Credibility*: Establishing a causal relationship, whereby certain conditions are shown to lead to other conditions. It is associated to the 'true value' or credibility of the findings, and should be related to the significant elements in the research context/situation.
- *Transferability*: Establishing the domain to which a study's findings can be generalised, transferred to other contexts, or connected to broader theories beyond the immediate study.

Since the research design is the logic that links the data to be collected to the initial questions of the study, it is essential to have a well-established plan. Broadly, the main parts or phases of the design are research questions, relevant data, collection of data and analysis of results (Yin 1994). In line with this, the next sections focus on specific features of the research design. First, case study types are described in greater detail in Section 4.4.1. Then, the various forms of paradigms that dictate how the investigation can be conducted are described in Section 4.4.2. After that, the importance of the research question and the development of propositions are illustrated in Section 4.4.3. Subsequent to this, Section 4.4.4 describes the identification of the unit of analysis and how many cases should be selected. Finally, Section 4.4.5 explains how appropriate cases should be chosen.

4.4.1 Types of case studies

Although case studies (as a research objective) can be classified according to their purpose (Yin 1994), these groupings are not well defined and even some overlapping can exist (Hussey and Hussey 1997). Nevertheless, several authors use the following categories to define the nature of the investigation, even though the researcher's intention is the one which determines an appropriate classification (Scapens 1990):

- *Exploratory*: Used when there are few theories or a deficient body of knowledge (Hussey and Hussey 1997). The aim is to **develop theory** rather than test or confirm previous notions. Only broad features of the design are determined ahead of time.

- *Descriptive*: The main objective is to **describe** current phenomena as it happens (Scapens 1990). It is generally used to identify and obtain information on the characteristics of a particular problem or issue (Hussey and Hussey 1997). Nevertheless, a 'theory' that covers the scope and depth of the case must be identified. This theory, which must be openly stated ahead of time, will serve as the 'design' for a descriptive case study (Yin 1993);

- *Explanatory*: Existing theory is used to **understand and explain** what is happening in the case under study (Scapens 1990). Therefore, theory is tested by discovering and measuring causal relations among occurrences (Hussey and Hussey 1997). It consists of an accurate rendition of the case facts, some consideration of alternative explanations of evidence, and a conclusion based on a single clarification that appears most congruent with the facts (Yin 1981b). Sometimes it is considered as an extension of descriptive research; and

- Other types: *predictive*, which aims to find generalisations by predicting certain phenomena on the basis of hypothesised, general relationships (Hussey and Hussey 1997); *illustrative*, which attempt to illustrate new and possibly innovative practices adopted by particular organisations (Scapens 1990); *experimental*, which examines ground-breaking ways in which organisations operate and evaluate its outcomes (Scapens 1990); and c*oincidental or accidental*, which studies cases that arise by chance (Otley and Berry 1994).

Table 4.4: Phases of case study research (Benbasat *et al.* 1987)

Traditional phases of knowledge accrual	Yin's (1994) framework	Bonoma's (1985) framework	Number of cases
Exploration	Description	Drift	Single or multiple case(s)
Hypothesis generation	Exploration	Design	Multiple cases
Hypothesis testing			
- Confirmation	Explanation	Prediction	Multiple cases
- Disconfirmation	Explanation	Disconfirmation	Single critical case

In summary, case studies can be mainly used to develop theory in a somewhat exploratory manner (the type that will be employed in the present thesis), to test theories, or to provide description (Bryman 1989; Eisenhardt 1989). Both Yin (1994) and Bonoma (1985) discuss the usefulness of the case approach under these types (see Table 4.4). Bonoma (1985) suggests that the case strategy could play a relevant role in both hypothesis generation and conjectures, remarking that case studies can design, predict or disconfirm theories. Similarly, Yin (1994) classifies them as description, exploration and explanation.

There is a continuing debate taking place between authors who only consider case studies useful either for exploratory (Yin 1994) or explanatory research (Gummesson 1991). Van der Zwaan cited in Weerd-Nederhof (2001) talks about the link between aim (exploration, description, explanation and testing) and strategy (experiments, case studies, comparative research, evaluation and action research), stating that as testing and experiments suit each other, case studies can only be fit for exploration and description. Therefore, despite classifying case studies according to their purpose, the exploratory (Yin 1994) or design (Bonoma 1985) type has been suggested as the most significant for Ph.D. theses since it can produce an original contribution to knowledge by creating novel insights.

4.4.2 Inductive vs. deductive approaches for data collection

Extending the discussion of Section 4.2, there are two major approaches taken in theory development (Amaratunga and Baldry 2001; Perry 1998): deductive theory testing (represented by the positivist paradigm) and inductive theory building (represented by the interpretative or phenomenological paradigm), both of which have been the subject of a long-standing debate in the sciences.

Deductive approach (positivist)

The positivist approach adopts the view that the world is external to the researcher (Perry 1998); therefore, only observable phenomena can and should be independently examined (see first column of Table 4.5). The phenomenon under analysis is measured through objective methods rather than being inferred subjectively (Amaratunga and Baldry 2001; Remenyi *et al.* 1998). At the beginning of the research, strong theoretical foundations, specific research questions and/or hypotheses are established (Hussey and Hussey 1997). Moreover, the researcher should focus on facts, look for causality and fundamental laws, and reduce phenomena to the simplest elements (Easterby-Smith *et al.* 1991).

Table 4.5: Assumptions of deductive and inductive approaches (from Jankowicz 2005)

Deductive (positivist)	Inductive (interpretative)
Phenomena can be analysed with pre-defined variables.	Phenomena can be analysed in terms of issues.
Data are collected by a dispassionate external observer.	Data are collected by participants and observers.
Given evidence, what is true can be distinguished from what is untrue.	Truth cannot be determined in any absolute way.
Purpose of enquiry is to test theories.	Purpose of enquiry is to gain sufficient understanding to predict future outcomes.
When developing theories, these should be applied to productive purposes.	No need to apply theories; understanding and prediction are already theory-in-action.

As seen in Figure 4.2, deductive studies generate hypotheses from theoretical assumptions and substantiate them against empirical observations (Otley and Berry 1994). The researcher may modify previously established theories when new evidence becomes available, so it is based on prior logical reasoning (Ticehurst and Veal 2000). Positivism searches for casual explanations and fundamental laws, generally reducing the whole into its simplest possible elements in order to facilitate analysis (Remenyi *et al.* 1998). Its ontological assumptions (Jankowicz 2000) are that events exist out there and data pertaining to them can be found by anyone who follows the same procedure. This is because the truth exists independently of the people who seek it, uncovered through logical deduction or through data collection. In addition, as the world is external to the examiner, epistemological assumptions indicate that personal beliefs, feelings, intuitions and emotions do not count as evidence (Jankowicz 2000). Some authors (Rowley 2002) are inclined only to use a positivist approach since it provides a firmer foundation not only for understanding and managing issues such as validity and reliability, but also for structuring data collection and analysis.

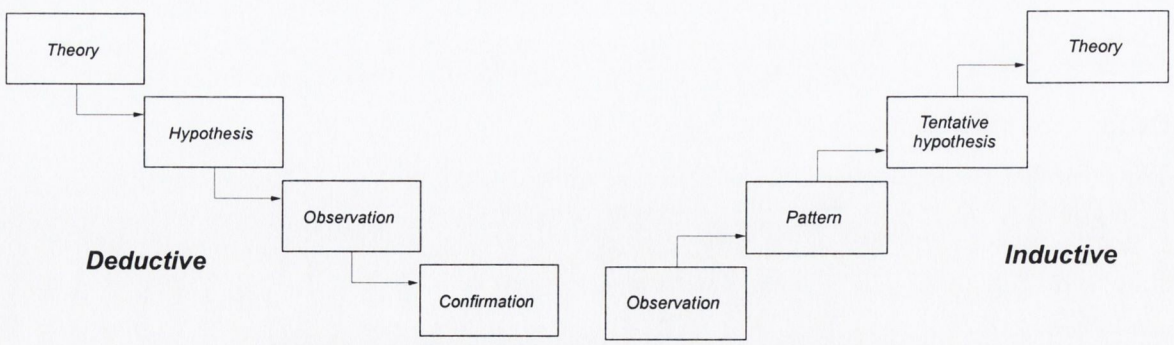


Figure 4.2: Deductive and inductive approaches

Inductive approach (interpretative)

In contrast, the inductive or 'direct' approach takes the view that the world is socially constructed and subjective, with no reality outside of people's perceptions (see Figure 4.2 and second column

of Table 4.5). Since science is driven by human interests, the researcher is part of the research process. This person relies on the people being studied, providing their own explanation of their situation or behaviour (Ticehurst and Veal 2000). The researcher needs to focus on meanings, trying to understand what is happening, and should look at the totality of each situation while developing ideas through data induction (Amaratunga and Baldry 2001). In this situation, it is recommended that data be analysed during their collection (Mintzberg 1979).

The inductive approach develops generalisations inducted from data (Hussey and Hussey 1997; Ticehurst and Veal 2000), resulting in theoretical statements which attempt to explain the occurrence of observed phenomena (Otley and Berry 1994). Some authors consider this approach the only method for developing novel theory (Eisenhardt 1989). Nevertheless, because induction and deduction are formed by opposing characteristics (see Table 4.5), they can be linked or seen as complementary (Remenyi *et al.* 1998), enhancing the analytical generalisations of findings (Miles and Huberman 1994; Otley and Berry 1994; Ticehurst and Veal 2000). Case study research includes some deduction based on prior theory, although inductive theory building is more prominent (Perry 1998).

4.4.3 Establishing research questions and propositions

Having a research question is essential when building theory from case studies. Besides functioning as a guide of how, where and what data will be collected, it can predict outcomes (Eisenhardt 1989). Verschuren cited in Weerd-Nederhof (2001) describes the research question as a knowledge gap which has to be filled in order to solve the research problem and achieve the research goal. Furthermore, an appropriately developed question not only facilitates data collection, but also reflects the level at which the generalisation of case study results will occur (Yin 1989b).

From the literature review, gaps in theory and unsolved problems may emerge, which may then provide potential research areas (Amaratunga and Baldry 2001; Naumes and Naumes 1999). If a research problem is identified, it is recommended to be a *how do* instead of a *how should*, because case study research is concerned with describing real-world phenomena rather than developing normative decision models (Perry 1998). Furthermore, it is also suggested to identify the target audience at this stage, since the questions and propositions may fit specific readers (Yin 1993).

When building theory, some authors advocate starting with no considerations or hypotheses to test because predictable propositions or theoretical constructs may bias or limit the outcomes (Eisenhardt 1989). Other authors explicitly mention the evaluation of past theory as an essential step prior to the conduct of any data collection (Rowley 2002; Yin 1989). Therefore, when performing a case study investigation, it has been suggested to carry out "a comprehensive literature analysis... to understand the existing body of research literature within the research area and position the research question within the context of that literature" (Darke *et al.* 1998 p.280).

The sub-questions, or propositions, are a way in which to break-up the main research question, especially in explanatory and descriptive studies (Rowley 2002). They direct the researcher's attention to something that should be examined within the scope of the study (Yin 1989b; Yin 1994). Moreover, emergent theory is likely to be testable with constructs that can be measured and hypotheses that can be falsified (Eisenhardt 1989).

4.4.4 Unit of analysis and number of cases

After establishing research questions and propositions (when applicable), it is necessary to quantify the specific variables or phenomena to investigate. In order to do this, it must be decided if it is going to be a single or a multiple case study investigation. And in the case of the latter, how many cases should be included. In relation to the case design, Yin (1994) distinguishes two basic types (see Table 4.6), *i.e.*, single and multiple case studies. Either type may be further categorised by its unit of analysis, which can be holistic (*i.e.*, single) or embedded (*i.e.*, multiple).

Table 4.6: Case study designs (Yin 1994)

	Type of case design	
Type of unit(s) of analysis	*Single case designs*	*Multiple case designs*
Holistic (single unit of analysis)	Type 1	Type 3
Embedded (several units of analysis)	Type 2	Type 4

The *unit of analysis* is the specific event, place, activity, process, relationship or person which encapsulates the research. It is the focus for the collection and analysis of detailed information in order to obtain in-depth knowledge about the subject (Hussey and Hussey 1997). Additionally, the unit of analysis will delineate sources of evidence (Rowley 2002) related to the way initial research questions were defined (Yin 1994). Research questions often indicate an appropriate unit of analysis (Benbasat *et al.* 1987); nevertheless, it can be difficult to identify (Rowley 2002).

The units of analysis can be divided into two types, holistic and embedded (Rowley 2002). In a case study with a single unit of analysis (*i.e.*, types 1 & 3 in Table 4.6), the case is examined as one unit. In the case of several units of analysis (*i.e.*, types 2 & 4), a number of subunits must be identified, each of which is explored individually. However, a problem with the latter type is that it might consider the subunits the sole focus of the study and ignore the context, *i.e.*, the characteristics of the organisation as a whole (Yin 1994).

As stated above, there are two types of case studies (Gummesson 1991): the single case study (which seeks to achieve specific conclusions regarding a single case) and the multiple case study (which attempts to derive general conclusions from a limited number of cases). When employing a multiple case design, the question of how many cases should be selected will receive varying answers, depending on the specific research and the investigator's preferences. The next sub-sections expand these types.

Single case designs

Single case designs are useful in specific instances (Yin 1989); for example, during a *revelatory* case study, during a *critical* case study that tests a well-formulated theory, and during an *extreme* or *unique* case study. When working with this type of design, the case selected must be significant, complete (at least have a sense of completeness), must consider alternative perspectives, and must display sufficient evidence (Yin 1994). Nevertheless, this type of design has been criticised since it forgoes the opportunity of cross-case pattern analysis that is advantageous for theory generation (Eisenhardt 1989) and theoretical generalisation (Yin 1994). Multiple case studies can overcome these drawbacks (Larsson 1993); however, they consume more resources and require intensive research.

For some authors, a single case study might be a feasible option for research if resources or opportunities preclude a wider study. Also, if there is a well-formulated theory and the major research issues are clearly defined, it may be possible to select a critical case which addresses those issues (Scapens 1990). One difficulty of using only one case is identifying what is unique to that organisation from what is common to all organisations (Hartley 1994). Therefore, adding a second case may strengthen the research.

Multiple case designs

A multiple case design is desirable (see Table 4.4) when the research intent is description, theory building or theory testing (Benbasat *et al.* 1987). It is especially appropriate when the same phenomenon is thought to exist in a variety of situations (Yin 1981a). Its objective is to compare organisations with each other in a systematic way while exploring research issues (Rowley 2002). Similar cases might be selected to reproduce the findings or theoretical explanations of previous studies, and dissimilar cases might be selected to extend theoretical explanations to a wider set of circumstances (Scapens 1990). Replication logic and not sampling logic should be used for multiple case studies, since the sample should be regarded as multiple experiments and not as multiple respondents in a survey (Yin 1994). Case study research, when examining more than one site, often comprises its own replication logic (Bryman 1989).

The major strength of a multiple case design is that it allows cross-case analysis (see Section 4.6), used for richer theory building (Benbasat *et al.* 1987; Perry 1998; Rose 1991). This type of design strengthens the results by replicating pattern matching, thus increasing confidence in the robustness of theory (Amaratunga and Baldry 2001; Naumes and Naumes 1999). When selecting organisations (see Section 4.4.5), they should be carefully chosen so that they either produce similar results (literal replication) or contrasting results for predictable reasons (theoretical replication).

Even though a case study investigation is constituted by a limited number of cases, as portrayed in Table 4.6 multiple combinations can be put together according to the number of units of analysis and the number of cases involved. Multiple case studies are considered more compelling and more robust (Amaratunga and Baldry 2001); nevertheless, the decision of how many cases to use will depend on the overall design and the objectives of the investigation.

Number of cases

Since "there are no rules" for sample size in qualitative research (Patton 1990 p.181), how many cases should be selected is a topic not comprehensively discussed in the literature. Not only does every study have different features and outcomes that have to be considered, but the final decision is left to the investigator's preferences, resources and time available.

Similar to grounded theory (Goulding 1998), some publications suggest adding cases until a theoretical saturation is achieved or until the incremental improvements to theory are minimal

(Eisenhardt 1989; Lincoln and Guba 1985). However, some authors prefer to specify beforehand how many cases should be used. Eisenhardt (1989) suggests between four and ten. Perry (1998) states that if using less than four cases, it is difficult to generate convincing theory. Regarding a maximum number, Miles and Huberman (1994) recommend not employing more than 15 cases since the study can become unmanageable. Nevertheless, more than the number of cases, the validity and meaningfulness of the research process depends on the quality of the cases selected and the researcher's analytical and investigative abilities (Perry 1998).

4.4.5 Selection of cases

Following the identification of the unit of analysis and the number of cases, the next step is the selection of the organisations that will shape the study. Since just a few firms will be chosen, their choice should involve discretion and judgement (Amaratunga and Baldry 2001). However, contrary to statistical sampling, they have to be picked specifically for their contribution to the overall investigation (Stake 1995).

When selecting cases, random sampling should not be used (Eisenhardt 1989). On the contrary, the selection should include information-rich cases and involve replication logic (Perry 1998). Yin (1994) recommends that they should either predict similar or produce contrary outcomes. Pettigrew cited in Eisenhardt (1989) suggests choosing extreme cases and polar types when the researcher wants to extend a theory to cover a wide range of circumstances.

Because the choice of an appropriate population controls extraneous variation and helps define the limits for generalising findings, Eisenhardt (1989) recommends paying particular attention to case selection. Therefore, researchers may begin site selection by considering the nature of their topic (Benbasat *et al.* 1987). After this, it is recommended that they establish the population of organisations that fit the research objectives. Using contacts in academia, industry and friendship circles can be helpful (Hartley 1994). It must be considered that not all cases will work well, so early progress assessments must be made to see if any case should be replaced (Stake 1995).

Once the possible organisations that might participate in the research are identified, the next step is to gain access. This phase is part of the preliminary investigations stage, which is described next.

4.5 Preliminary investigations and data collection

Data collection is actually conducting the case studies. Since researchers are active agents in the process (Rowley 2002), their abilities will determine how well the investigation is accomplished. Moreover, it is recommended that researchers collect information from several sources of evidence (Yin 1994), and as Section 4.4 shows, several criteria must be followed to maintain empirical rigour and validity. In this section, preliminary investigations are first described, including suggestions made about how to enter the field and some ethical considerations. Then, the role of pilot studies is introduced. Finally, the process of data collection is explained.

4.5.1 Gaining access and ethical issues

Establishing contact is the first step after identifying the possible organisations that could be useful for the investigation. This might seem an easy assignment; however, unless meeting appropriate prerequisites, companies may limit access or even deny any right of entry. Additionally, some ethical considerations must be taken into account even before gathering data.

The first step in gaining access is determining who to contact. Eventually the individual with the most authority to approve the project must be reached (Benbasat *et al.* 1987). Gaining access can be enhanced in two ways: first, being introduced through a third party with contacts inside the organisation; and second, conducting a broad-range interview with senior managers to explore issues relevant to the research (Hartley 1994). Researchers should also seek assurances that essential data will be made available to them (Benbasat *et al.* 1987). Yin (1994) advises forwarding a copy of the research protocol along with a letter of introduction. Also, it is recommended to deliver a brief summary proposal, a biography of the researcher, and a description of what the company will gain from participating in the research. Additionally, it is necessary to specify at the outset the amount of time, effort and people required.

Two points needing to be clarified before gaining access are the benefits to the organisation and any ethical concerns. Advantages to the firm may include learning more about the business, obtaining feedback, possible new insights from an outside party, and even developing a trustworthy relationship with an academic institution. Ethical issues are more complex and involve more preparation. For example, since some of the data which the researcher will access might be confidential, if necessary an agreement must be prepared, signed and delivered in advance to the organisation, stating that all records used will be solely for the investigation

(Bryman 1989). Additionally, if an organisation does not authorise the disclosure of its identity, it will be essential to use pseudonyms and disguise the firm's distinctiveness in the written report.

Miles and Huberman (1994) state that there is still no widely accepted set of ethical guidelines used by researchers. Nevertheless, they identified a series of issues and questions that may be addressed. Some are worth considering before starting the research: the worthiness of the project (*e.g.* is the contemplated study worth doing?); competence boundaries (*e.g.* do the researchers have the expertise to carry out a study of good quality?); informed consent (*e.g.* do the people involved have full information about what the study will involve?); and anticipated benefits, costs and reciprocity (*e.g.* will both the researcher and the organisation involved gain equitable benefits?). Also, a number of issues should be considered as the project develops: harm and risk (*e.g.* will the study hurt the people involved?); honesty and truth (*e.g.* is there a relationship of mutual confidence and trust?); privacy, confidentiality and anonymity (*e.g.* how will the information be guarded, and how identifiable are the individuals and organisations studied?); and intervention (*e.g.* what will the researcher do if harmful, illegal or wrongful behaviour comes about?). Finally, some guidelines will emerge later during the investigation: research quality (*e.g.* is the study being conducted carefully, thoughtfully and correctly?); data ownership (*e.g.* who owns the field notes and analysis?); and the use of results (*e.g.* does the researcher have an obligation to use the findings appropriately?).

Even though some of these actions can be considered as given when the researcher has a good relationship with an organisation, they are valuable for opening more doors and delivering a struggle-free investigation. Moreover, besides protecting privacy and honouring confidential and ethical agreements, it is recommended that before publication, a copy of the written report be handed in to the key contact(s) for evaluation.

4.5.2 Role of pilot studies

Pilot studies are the final preparation for data collection and as described in the next section, an integral part of developing an interview protocol (Yin 1994). Their purpose is to uncover how the constructs identified in the literature review are operationally used. In addition, they aid in the understanding of the context within which the research takes place (Amaratunga and Baldry 2001). Because it is difficult to take into account every single aspect during the case design, a pilot study will facilitate the identification of any drawbacks or missed features that have to be included in the main plan. Generally convenience, access and geographic proximity are the main

criteria for designing a pilot study (Yin 1994). Moreover, together with the literature review, it is deemed to be the first step in the theory-building process of an exploratory case study research (Perry 1998).

During an exploratory investigation, a single case may be useful as a pilot study (Benbasat *et al.* 1987), which will help to determine the appropriate unit of analysis and familiarise the researcher with the phenomenon in its context. Even so, one or two pilot studies should always be developed before the major data collection stage, especially in research based on large-scale structured questionnaires (Clark and Causer 1991). By doing this, inadequacies in the initial proposal might be revealed (Yin 1989), or even issues might be identified that could require modifications to the research design.

4.5.3 Conducting case study research

Data collection may be a one-time effort for every case to be studied (*e.g.*, conducted in a short number of days), or a more extended collection period (*e.g.*, taking a year or more), in which true longitudinal data can be gathered (Yin 1989b). The main hazard during data collection which can influence the respondents' answers is researcher bias (*i.e.*, the interviewer asks or leads the line of enquiry in a way that the interviewee's responses are manipulated or influenced); nevertheless, a systematic collection reduces the probability of this (MacNealy 1997). Suggestions exist to achieve successful data gathering; however, the success of these processes will mainly depend upon the researcher's capabilities.

Before gathering data, the researcher must decide what type of data is more applicable to the investigation (and the methodology followed). Contrasted with quantitative research that not only focuses in objective, observable events and facts (Gorman and Clayton 2005), but that its data is measured by statistical tests (Hussey and Hussey 1997; Stake 1995), qualitative investigations examine perceptions in order to gain an holistic view of social and human activities (Hussey and Hussey 1997; Miles and Huberman 1994), generally in a real-life context (Gorman and Clayton 2005). Therefore, the ultimate goal of qualitative research is to understand those being studied from their point of view without distorting reality (Gorman and Clayton 2005). On the contrary, quantitative researchers push for explanation and control, perceiving phenomena in terms of descriptive variables and representing happenings with scales and measurements (Stake, 1995). Some advantages of qualitative data include (Miles 1979; Miles and Huberman 1994): its focus on naturally occurring, ordinary events; its richness and holism;

its preservation of chronological flow where important; and its possibility for understanding latent, underlying, or nonobvious issues. Although the terms 'qualitative research' and 'case study' were treated as synonyms for a while (Bryman 1989), it was alleged that this is an inaccurate perception since case studies can either be qualitative, quantitative or even a combination of both approaches (Yin 1981a; Yin 2003).

Since positivists claim that their methods are the only scientific ones (*i.e.*, based in the natural sciences), approaches to collect qualitative data have received extensive criticisms. For example, Kerlinger (1986) talks about three major weaknesses of qualitative research in general: inability to manipulate independent variables, risk of improper interpretations and lack of power to randomise. Nevertheless, the advocates of qualitative approaches counterclaim by saying that studying people and their institutions call for methods altogether foreign to those in the natural sciences (Lee 1991).

When preparing case studies, quantitative and qualitative methods (or a combination of both) are used to collect data (Hartley 1994; Hussey and Hussey 1997; Yin 1989); for example, via interviews, direct and participant observation, surveys, and secondary data such as archives and documents (see Table 4.7 for strengths and weaknesses of these methods). Nevertheless, specific data to be collected will depend on the research question(s) and unit(s) of analysis (Benbasat *et al.* 1987). It is recommended that researchers triangulate methods to have greater accuracy from multiple viewpoints (Jick 1979), which can be achieved using multiple sources of data, methods, interviewers or theoretical perspectives (Bryman 1989; Yin 1981b; Yin 1994). During triangulation, generally quantitative methods are used to support the validity of findings and to uncover formal relationships between constructs (derived from qualitative research). This combination of methods will provide a more comprehensive view of an issue, support research findings and reduce the possibility of biases (Benbasat *et al.* 1987; Eisenhardt 1989; MacNealy 1997; Miles and Huberman 1984). Nonetheless, the investigator has to determine if the evidence from different sources converges on a similar set of facts (Jick 1979).

Table 4.7: Strengths and weaknesses of interviews and secondary data methods (Koulikoff-Souviron 2005)

Method	Strengths	Weaknesses
Interviews	• Targeted: focuses on case study topic; • Insightful: depth and detail; • Provides perceived casual inferences; • Can suggest sources of corroboratory evidence and initiate access to these sources.	• Researcher or respondent-induced bias; • Reflexivity: the interviewee gives what the interviewer wants to hear; • Problem of poor recall or articulation; • Lack of factual details.
Secondary data	• Provides facts; • Exact names, references, and dates; • Stable: can be reviewed repeatedly; • Unobtrusive: not created as a result of the case study; • Broad coverage: time, events, settings.	• Elective deposit and survival hence low retrievability; • Biased selectivity if incomplete; • Access may be deliberately blocked; • Reporting bias: reflecting unknown bias from author.
Direct observations	• Reality: covers events in real time; • Contextual: covers context of events.	• Selectivity unless broad coverage; • Reflexivity: event may proceed differently if observed.
Surveys	• Describes the incidence or prevalence of the phenomenon; • Allows statistical generalisation; • Can indicate relationships not obvious from qualitative data.	• Lack of in-depth analysis of the phenomenon.

There are several techniques that might enhance the data collection effort; for example, a case study protocol, the use of multiple sources of evidence, and the creation of a case study database. The use of a case study protocol increases reliability by guiding the investigator in carrying out the case study (Remenyi *et al.* 2002; Yin 1994) and reducing the possibility of bias (MacNealy 1997). It contains an overview of the case, procedures, questions and general rules that the researcher needs to keep in mind during data collection. Also, the protocol may specify a minimum amount of data to be collected to ensure that similar procedures are carried out from one case to another (Yin 1981a). The use of multiple sources of evidence is a major strength of case study research since the outcomes of the investigation will be more accurate and convincing if they are based on several sources (Yin 1989). Finally, the aim of creating a case study database is to develop a formal, retrievable record, so other investigators can directly review the evidence, thereby increasing the transparency of findings. The researcher's goal should be to collect data in such a way that another researcher could immediately understand and work with them (Benbasat *et al.* 1987).

How to interview individuals is an issue widely discussed in the literature (for an excellent example see Kvale (1996)). In order to eliminate any possibility of bias (Naumes and Naumes

1999), it is important to gather information without leading an interviewee in their responses. To achieve this, it is recommended to prepare probes (*i.e.*, important topics that need to be investigated or followed through during the dialogue) as part of the interview protocol in semi-structured and unstructured questions (Yin 1994). These probes are used to provide a reliable framework for cross-case analyses of data. In addition, it has been suggested that researchers use a team of two or more people during the interview process (one conducts the interview while the others record responses); however, due to limited resources, this might be difficult to arrange (Naumes and Naumes 1999). Also, multiple investigators have the advantage that they may improve the creative potential of the study and enhance confidence in its findings through the convergence of observations from various sources (Eisenhardt 1989). Finally, tape-recording and transcribing recordings of interviews (when allowed) is also widely advocated, since they provide stronger evidence that there is no researcher bias when notes are taken during interviews (MacNealy 1997).

As seen in this section, data collection is considered the central part of the investigative effort. Since the researcher might only have one opportunity to collect data from an informant, the interview outline or protocol must be well-developed and sufficient background information should be prepared about a case study site before setting off (Darke *et al.* 1998). Additionally, it is recommended to use multiple sources of data. The objective of qualitative research is to build theory, while the aim of quantitative research is to provide further evidence to support emergent theory (Amaratunga and Baldry 2001). Therefore by combining, for example, surveys with interviews, the reliability and completeness of the findings might increase. Nevertheless, raw data is useless, and so, as the next section explains, data analysis is necessary to extract, recognise and substantiate any useful information for theory building.

4.6 Data analysis

Data analysis is considered the most difficult and least documented part of the process (Eisenhardt 1989). It is based on examining, categorising and tabulating evidence to build theory or to assess whether facts corroborate or otherwise support the propositions of the study. One of the strengths of the case study method is the ability to cover both a contemporary phenomenon and its context. However, only few statistical methods, if any, will be relevant for analysing qualitative data. This is because once the context is incorporated into the study, the number of

variables of interest will inevitably be of an order of magnitude greater than the number of data points (Yin 1981a).

Some authors (Eisenhardt 1989; Hartley 1994; Miles and Huberman 1994) recommend overlapping data analysis with data collection from the start, since this speeds up the analysis process and reveals necessary adjustments to the data collection process. Moreover, to enhance the research validity, emergent theory might be tied to a theoretical framework identified during the literature review phase.

When using multiple case studies, two types of examinations can be normally used, *i.e.*, within-case and cross-case analysis (Amaratunga and Baldry 2001). Within-case analysis consists in internally scrutinising each case as a stand-alone entity. Some possible procedures include detailed case study write-ups for each site, simple descriptions, and longitudinal graphs and tabular displays (Eisenhardt 1989). Additionally, it is recommended to distinguish note-taking from writing narratives, to tabulate meaningful events, and to build explanations where case studies attempt to explain a phenomenon (Yin 1981b). This process should always precede cross-case analysis (Miles and Huberman 1994), since unique patterns will emerge before generalised patterns become apparent across cases (Eisenhardt 1989).

Cross-case analysis uses replication logic or pattern matching. It forces investigators to go beyond initial impressions with the objective of enhancing the probability that they will capture novel findings which may exist in data (Eisenhardt 1989). Some tactics include looking for within-group similarities coupled with intergroup differences, selecting pairs of cases and then listing similitudes and contrasts between each pair, and even dividing data by source (Eisenhardt 1989). Likewise, Yin (1981b) suggests two potential approaches to cross-case analysis: a case-survey approach (by coding single factors and establishing cross-case patterns) and a case-comparison approach (by comparing relevant similarities and differences case by case).

Some other techniques for data analysis are statistical examinations (for quantitative data) and tabular displays and graphs (for qualitative data), which can be used to manage and present data without destroying their meaning (Miles and Huberman 1994). Through this, methods of explicit coding, categories (concepts or relationships) and their properties are identified and analysed as they occur within data. Moreover, although not widely supported, content analysis may be used to transform what is essentially qualitative evidence into some sort of quantitative form

(Remenyi *et al.* 2002). And similarly, interpretative techniques such as hermeneutics or linguistic analysis may be used to understand evidence collected while scrutinising the situations studied. Furthermore, although interviews start as inductive, the analysis may be deductive on the basis of prior theory identified by the researcher (Perry 1998).

The final phase of the theory building process and a way to increase credibility and transferability is to compare and contrast analysed data with extant and conflicting literature (Gasson 2004). Also, when employing propositions, the results must be compared with these proposals (Eisenhardt 1989; Simon *et al.* 1996). Therefore, the central idea is to constantly put side by side theory and data to achieve a good fit and yield an empirically valid and grounded theory. Regarding hypotheses shaping, constructs must be refined and evidence that measures the concept in each phase must be built to converge on a single, well-defined idea.

Between academics, a general perception is that case study research is about skills. Novice investigators are especially likely to have a troublesome experience (Yin 1994); however, the process will become easier as more cases are developed. Once the data is analysed, the last step is to write up the story. So as the next section shows, several styles exist, mainly depending on who is the target audience.

4.7 Final stage: writing-up the story

The reporting phase, which is the result of the investigation, is regarded as one of the most laborious stages of the research process because a story has to be written (Remenyi *et al.* 2002). Yin (1994) recommends continuously drafting portions of the case report during analysis rather than waiting until the end of the process. The importance of these narratives lie in the fact that the researcher has to demonstrate via the story or case study why the theoretical assumptions are correct and how they are enacted in real-life situations; nevertheless, every reader might impose his or her own interpretations (Remenyi *et al.* 2002). Therefore, the resolution of these challenges is equivalent to producing findings.

The typical case study report is a complex and lengthy narrative. This can be prevented by replacing the story with a series of answers to a set of open-ended questions. Similarly, where cross-case analysis is the major research goal, instead of a single case report the outcome can

consist of brief summaries of individual cases, followed by a cross-case analysis (Yin 1981b). Even when examining cases simultaneously, its comparisons, contrasts and themes can be described in an analytical way (Simon *et al.* 1996). There are several approaches which can be used to communicate the wealth of the information and understanding acquired: descriptive (Bryman 1989; Yin 1989b); combining analysis and portrayal (Bryman 1989); a researcher's view of coming to know the case (Stake 1995); relying on theoretical propositions (Yin 1989b); and specific compositional structures (*e.g.*, linear-analytic, comparative, chronological, theory building, suspense and unsequenced (Yin 1994)).

For the exposition of a case study, Benbasat, *et al.* (1987) recommended that a clear chain of evidence must be established while the contextual and data richness of the study is being presented. In addition, they said that the researcher's reasoning in confirming cause and effect or drawing out hypotheses should be clearly stated and defended. Moreover, Yin (1994) suggests the following five characteristics to create an exemplary case study: the case must be (1) significant; (2) 'complete'; (3) consider alternative perspectives; (4) display sufficient evidence; and (5) be composed in an engaging manner.

This section concludes the discussion of the process of developing a case study. In summary, more than being a technique for data gathering (Smith 1990), case studies focus on understanding a phenomenon by studying the dynamics present within a single setting (Eisenhardt 1989; Ticehurst and Veal 2000). This method has been identified as strong for empirical inquiries that use multiple sources of evidence, and that investigate a contemporary phenomenon within its real-life context and without clear boundaries between phenomenon and reality (Yin 1989; Yin 1994). Additionally, it is particularly useful when research phenomena are not supported by a strong theoretical base or when research subjects or events cannot be controlled or manipulated during the course of the project (Benbasat *et al.* 1987). Moreover, the process was said to comprise of the following steps: (1) case study design; (2) preliminary investigations; (3) data collection; (4) analysis of data; and finally (5) writing up the report. In the next section, case studies are compared with other popular methods.

4.8 Comparing case studies with other methods

Compared to other methods, case studies have advantages and disadvantages. Since each research strategy is best suited to a particular set of conditions, the perfect method appropriate to every investigative situation is non-existent (Benbasat *et al.* 1987). Therefore, some methods are likely to be favoured whenever particular conditions prevail (Yin 1981a); for example, a case study is appropriate when research and theory are at their early stages (Eisenhardt 1989), when actors' experiences are important, and also when the context of action is critical (Bonoma 1985). In line with this, it is more a method than a methodology (Otley and Berry 1994; Scapens 1990), so the researcher's epistemological and methodological position will decide whether it is the suitable method in a given situation.

In this section, a general description of the main and most popular methods used in the social sciences and its comparison to case studies are presented. It must be remembered that depending on the research conditions, questions, hypotheses and expected outcomes, some methods might produce better results than others.

Questionnaire-based investigations: This is one of the most popular approaches used in management research (Ticehurst and Veal 2000). The objective is to obtain respondents' opinions about their behaviour, attitudes, thoughts or intentions at a particular point in time. Subsequently, by means of statistic tools, useful information is extracted (Lucas 1991). Questionnaire-based investigations are particularly helpful for sampling a relatively large number of people on the same issues, often by posing the same questions to all respondents (Jankowicz 2000). The major criticisms of this method concerns its lack of context and difficulty in developing valid theory (Lucas 1991). This is because this quantitative method should only be used when numbers and figures are required concerning a specific population (Ticehurst and Veal 2000). Nonetheless, they are appropriate in exploratory and descriptive investigations (Marshall and Rossman 1989). Questionnaire-based research and case studies show that they should be used under different research conditions. It is said that case studies capture reality in even greater detail than is possible with a questionnaire-based study (Galliers 1985). Some authors (Attewell and Rule 1991; Gable 1994) emphasise the need of combining case studies and questionnaire-based investigations, stating that each method is incomplete without the other since many of the strengths of one method compensate for the other's weaknesses.

Action research: During action research, the investigator, instead of being an independent observer, becomes part of the arena being studied for the purpose of solving organisational problems (McDonagh 2004). Therefore, the process of change becomes the subject of research (Benbasat *et al.* 1987; Cavaye 1996). Action research has two main objectives, namely, to solve a problem for a client and to contribute to science, with researcher and client learning from each other and developing their respective competences (Gummesson 1991). A weakness of this method is the potential lack of objectivity stemming from the researcher having a stake in effecting a successful outcome for the client's organisation. Furthermore, generalisations about other situations where the intervention technique is applied by people less knowledgeable than the researcher may be difficult. Most action research is based on cases (Bryman 1989); nevertheless, during case investigations, the clear objective is the conduct of the research. Moreover, the research questions are specified prior to the study by the researchers rather than by the participants (Benbasat *et al.* 1987).

Grounded theory method: Developed in the 1960s, the grounded theory method (GTM) is currently considered as an established and rigorous approach focused in theory generation (Eisenhardt 1989; Goulding 2002). As seen in the right hand part of Table 4.8, without any pre-formed notions or theory in mind the grounded theory researcher gathers data in a systematic way from social constructs and behaviours (Bryant 2002; Glaser and Strauss 1967). Then, by a continuous interplay between data collection and analysis (Glaser and Strauss 1967; Strauss and Corbin 1990), theories and models emerge grounded in empirical observations (Ticehurst and Veal 2000). Grounded theory investigations are mainly used when the objective of the study is to build theories while inductively exploring data. Moreover, mainly qualitative evidence is collected from a single case or a small number of cases that is/are analysed with highly structured guidelines.

Demonstrated advantages of this method comprise its relevance for IS investigations (Bryant 2002), its focus for theory building (Goulding 2002), and its weight when no prior theory appears relevant. Some weaknesses, which are analogous to the case study method, include the difficulty of dealing with a considerable amount of data, risk of researcher bias and the complexity of generalising findings (Hussey and Hussey 1997; Miles 1979). However, the grounded theory method is considered a mature technique for collecting and analysing data for building theories that has been successfully applied in many investigations (Laws and McLeod 2004).

Case studies and the GTM can complement each other or be applied as distinct methodologies. However, both have similarities and differences; for instance their emphasis upon theory development, the value placed on the contextual setting, and the importance of the researcher's interpretations (Laws and McLeod 2004). As seen in the lower part of Table 4.8, both are good for answering the same type of questions, emulate the scientific method, employ multiple methods for data collection and use similar techniques to report results. Due to their dissimilarities, both methods can counterpart each other. For example, it is possible to use the grounded theory method without producing a grounded theory. In this situation, case study research investigators can adopt GTM practices to assist data analysis and interpretation (Miles and Huberman 1994; Yin 2003).

Table 4.8: Comparison of case studies and the grounded theory method

		Case studies	Grounded theory method
Diversities between case studies and GTM	**Prior knowledge**	Theory development prior to the collection of any case study data is essential.	No *a priori* theory or assumptions should be collected.
	Purpose of study	Exploratory, explanatory, descriptive	Exploratory
	Relationship with theory	Theory building and theory testing	Exclusively theory building
	Type of data	Qualitative and quantitative data	Mainly qualitative, but can also gather quantitative data
	Number of cases	One or multiple cases	The study of multiple cases is possible, but stronger during single and longitudinal studies
	Data collection approach	Inductive and/or deductive	Mainly inductive (deductive can occur through constant comparison of data)
	Analysis of data	Several techniques; the decision of which to use is open to the researcher	Highly structured guidelines to analyse data based on open, axial and selective coding
Similarities between methods	**Prior knowledge**	Interpretative	
	Research questions	Good for answering 'how', 'who', 'what', and 'when' questions.	
	Knowledge expansion	Both emulate the scientific method for investigating phenomena and acquiring new knowledge.	
	Theoretical sampling	Future data collection is decided by previous data (*i.e.*, theories, protocols and constructs can be modified as data is gathered)	
	Data collection methods	Multiple methods such as interviews, observations and secondary data	
	Reporting results	Similar techniques are adopted to produce narratives and stories.	
	Theoretical saturation	Researcher stays in field until saturation occurs (*i.e.*, the same concepts continue to emerge)	

In this thesis, since (1) a 'how' research question was formulated to guide an interpretative exploratory investigation; (2) the objective of the study is to develop novel theory; and (3)

qualitative data is inductively collected by means of interviews and secondary-data, both the case study or the grounded theory methods could have been applied. However, because (1) several organisations are being used to analyse how the unit of analysis behaves in multiple situations; (2) theory was *a priori* gathered to build a protocol to guide data collection; (3) the researcher's interests and abilities; and (4) the resources available, it was opted for multiple case studies. Moreover, as detailed in the next section, there is a strong case study tradition in the IS field. Chapter 5 provides more information about why this was the preferred method.

Observations: This method is capable of presenting a perspective on a situation that is not apparent to the individuals involved (Ticehurst and Veal 2000). Its main advantage is that observations are unobtrusive (*i.e.*, gathering information about people's behaviour without their knowledge). Therefore, this technique is appropriate when knowledge of the presence of the researcher may lead to an unwanted modification of the subjects' behaviour. Observations can be a data collection method in case study research (Hussey and Hussey 1997); nevertheless, richer insights are generated when they are combined with other methods during case development (Bryman 1989).

Experiments: Although generally associated with the natural sciences in laboratories, it is possible for some experiments to be conducted in the social world (Ticehurst and Veal 2000). In essence, the researcher controls all relevant variables in the experiment (independent variables) while measuring effects on subjects (dependent variables). It is required that the researchers have to be sufficiently familiar with the situation under study and the events involved, while identifying variables that impact on each other (Jankowicz 2000). Contrary to experiments, case study researchers may have less *a priori* knowledge of what the variables of interest will be and how they will be measured (Benbasat *et al.* 1987). Additionally, not only may experiments not be appropriate for answering research questions about past processes, but if the experiment fails, it might be difficult to reverse the measure to the way it was originally. Furthermore, it is said that laboratory settings generally do not reflect a real-life environment (Hussey and Hussey 1997).

As shown, the perfect method for doing research is non-existent. Case studies can be applied in several situations; however, depending on the investigation's objectives, nature, participants, time available, resources and existing data, other methods can also be used. Nonetheless, case studies constitute a mature, comprehensive and successful approach, which is recommended by

several authors and widely used. The final section of this chapter discusses how case studies have been employed in IS investigations.

4.9 Using case studies in IS investigations

Among social scientists, the fundamental epistemologies which mainly guide IS research are twofold: positivist and interpretivist. Traditionally, positivist approaches have dominated IS research; nevertheless, in recent years interpretive research has emerged as an important enquiry element in the IS field (Walsham 1995). Interpretive research, which include case studies and action research as data collection methods (Wynekoop and Russo 1997), "can help IS researchers to understand human thought and action in social and organizational contexts" (Klein and Myers 1999 p.67). Moreover, it has the potential to produce deep insights into IS phenomena including the management of IS and IS development. Consequently, IS research can be classified as interpretive if the knowledge of reality is gained by social constructions and through the understanding of the meanings that people assign to phenomena (Klein and Myers 1999). Nevertheless, IS researches generally use a mixture of positivist and interpretivist research approaches according to the information sought and the type of enquiry being undertaken.

When carrying out research in the IS field, multiple quantitative and qualitative methods can be used; nevertheless, there is a strong case study tradition (Galliers 1985; Lee 1989). Originally, this method was considered by IS researchers to be one of the least systematic; nevertheless, its popularity grew in the 1980s when the usefulness and methodological soundness of this approach started to be evaluated (Dubé and Paré 2003), recognising that it is particularly well-suited to the nature of IS investigations. Nowadays, case study research has achieved a considerable reputation as a valid research strategy within the IS research community (Klein and Myers 1999).

Case research is considered appropriate to IS investigations because the object of the discipline is the study of IS in organisations and "interest has shifted to organizational rather than technical issues" (Benbasat *et al.* 1987 p.382); because it allows the researcher to access and report real-life IS experiences; because it suits the complex and ubiquitous interactions among organisations, technologies and people; and finally, because it opens the way to new ideas and lines of reasoning, identifying the opportunities, challenges and issues facing IS specialists and managers (Dubé and Paré 2003). Additionally, Benbasat, *et al.* (1987) list three strengths of case study

research, which even though they are not unique to the IS field, show *why* it is a popular method of inquiry:

- The researcher can study IS in a natural setting, learn about the state of the art, and generate theories from practice;
- The method allows the researcher to answer *how* and *why* questions, that is, to understand the nature and complexity of the technological process taking place; and
- Valuable insights can be gained into new topics emerging in this rapidly changing field.

Especially in the IS discipline, researchers usually learn by studying innovations put in place by practitioners, rather than by proposing bases for these novel ideas. Therefore, case study research is a reliable tool for capturing the knowledge of organisations and developing theories from it (Benbasat *et al.* 1987). For example, Yin (1993) relates how a Harvard professor considered the case study strategy as the only method that could capture how MIS systems could affect the operation of an organisation. On a diverging view, Lee (1989) identifies four issues that may cause problems while developing IS case studies: making controlled observations, making controlled deductions, allowing for replicability, and allowing for generalisability. For those reasons, he adds that an IS researcher is unlikely to observe the same set of events unfold again in the same way, so the manner of verification must be indirect rather than direct.

To demonstrate the popularity of this method, several studies investigated how many articles published in selected IS journals (*e.g.*, European Journal of IS, MIS Quarterly, and Information Systems Research) reported research that had taken a case study approach. As shown in the second column of Table 4.9, even though there has been a slight increase in recent years, the number of such studies has been relatively stable since the 1970s (Hamilton and Ives 1982). Nevertheless, other authors say that this number has ultimately reached 36% of the studies (Chen and Hirschheim 2004) and even that case study research is the most widely used qualitative research method in IS research (Darke *et al.* 1998; Orlikowski and Baroudi 1991).

Table 4.9: Approaches to enquiry used in IS investigations throughout the years

Years of study	Case studies	Survey-based	Action research	Experiments	References
1970-1979	12%				Hamilton and Ives (1982)
1977-1983	15%	29%		21%	Vogel and Wetherbe (1984)
1983-1988	14%	49%	0.6%	30%	Orlikowski and Baroudi (1991)
1984-1990	17%	29%		11%	Lending and Wetherbe (1992)
1985-1996	17%	32%		12%	Farhoomand and Drury (1999)
1990-1999	15%				Dubé and Paré (2003)
1991-1999	19%	43%	3%	2%	Brown (2004)

Case studies correspond to a thorough method of carrying out research in the IS field; however, it is not the only one. Traditionally "the IS field has a distinctive research perspective that embraces both qualitative and quantitative research" (Baskerville and Myers 2002 p.5); nevertheless, positivist and survey-based (or questionnaire-based) investigations have usually dominated IS research (Orlikowski and Baroudi 1991). As shown in Table 4.9, despite IS research has lately been increasing its concentration on case studies (Rademacher 2001), and due to recent doubts about transferring the principles of the natural sciences to the realm of social science, "there is growing interest in alternative paradigms such as interpretivism and action research" (Khazanchi and Munkvold 2000 p.31).

Case study research, which is well suited to understanding the interactions between IS-related innovations in organisational contexts, is considered by some authors as *simple* and *straightforward* because without any previous preparation, the investigator can proceed directly into the field to collect real-life data (Benbasat *et al.* 1987). However, the selection of the unit of analysis is crucial, since it will become the main analytical level of the case being studied. Some examples of units of analysis in IS research include a workstation, a local area network, information flow within an organisation, and a collaborating set of organisations (Yin 1989b). Furthermore, as in all case study investigations, an extensive groundwork is needed to successfully realise the investigation.

4.10 Conclusion

Even though several conditions have to be present for case study research to be particularly successful, it is considered a reliable and popular method, especially within IS investigations and during the study of *how* and *why* research questions (Benbasat *et al.* 1987 p.370). However, some authors consider its development as the consummation of a work of art (Stake 1995), implying that it is a difficult endeavour to complete and that its success mainly depends on the investigator's ability to do a good job (Yin 1994). Even so, there is considerable evidence of satisfactory results and it is still one of the main methodologies used.

As portrayed in Figure 4.3, the overall process can be divided into five phases: design, preliminary investigations, data collection, data analysis and write-up. Of all the stages in the process, the focused identification of the research question on substantive concerns is considered the most important step (Yin 1993). And even before the actual development of the case takes place, a detailed and comprehensive design has to be completed. This chapter has offered details not only on how to develop the design, collect and analyse data with the case study method, but also on how to write up the report and select appropriate case. Nevertheless, every detail has to be customised to the specific research project that is going to be pursued. Therefore, the next chapter details exactly how the methodology of the present thesis was designed, the research carried out and the data analysed.

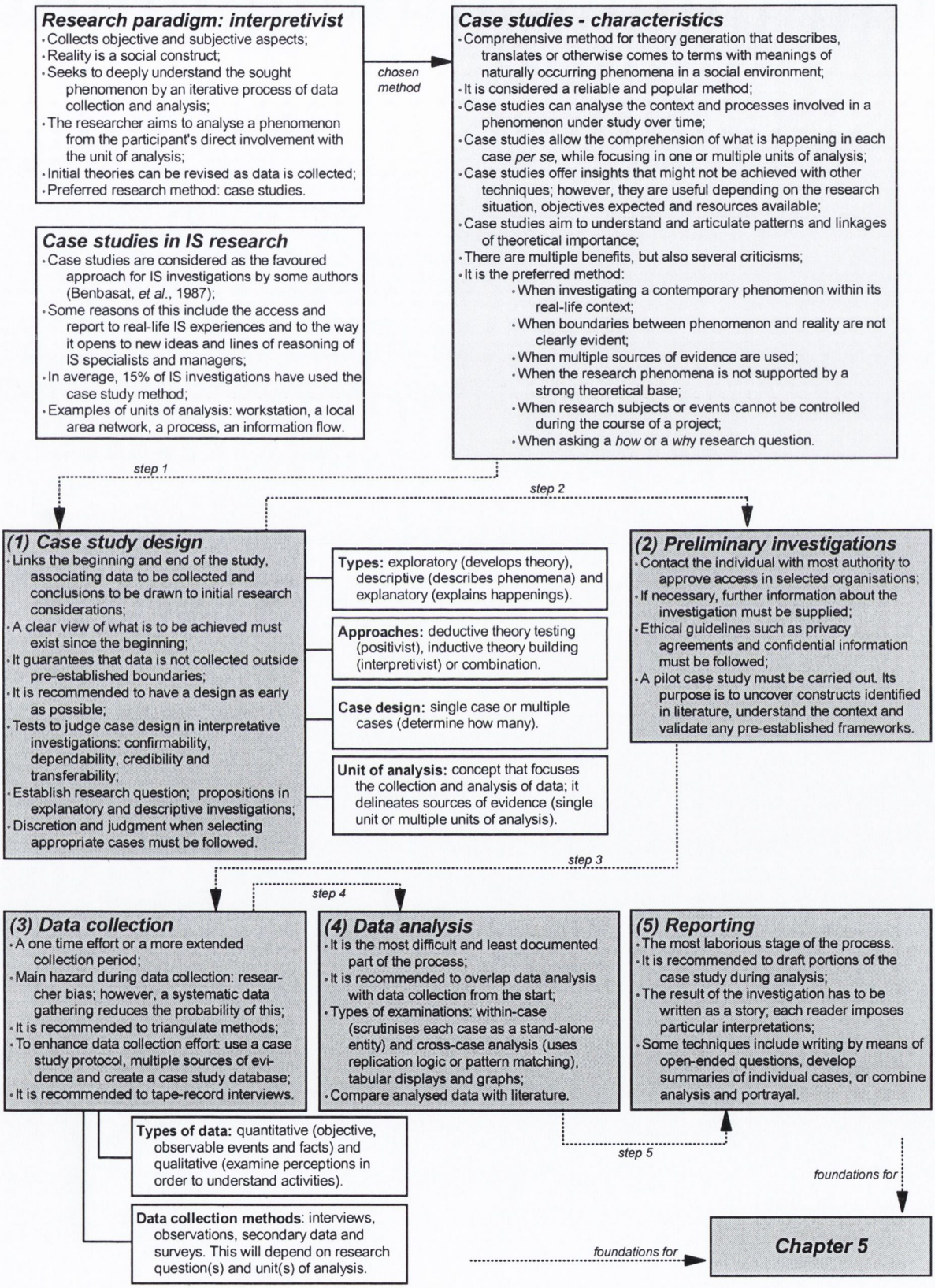


Figure 4.3: Summary and key issues of Chapter 4

CHAPTER 5

RESEARCH METHODOLOGY AND ANALYSIS

> *"It is common sense to take a method and try it; if it fails, admit it frankly and try another. But above all, try something."*
>
> Franklin D. Roosevelt
> 32nd president of the United States (1882-1945)

5.1 Introduction

As discussed in Chapter 4, several methods could have been used to answer the research question (*i.e.*, why and how public sector organisations synchronise their business and IS strategies). Nevertheless case studies, a mature, well-developed and widely used technique to empirical investigations in social science research was the approach to enquiry selected due to the fact that it facilitates the understanding of complex social phenomena (*e.g.*, the influence that the business and IS strategies have on each other) and embraces holistic and meaningful characteristics of events in its real-life setting (*e.g.*, in government departments and offices) (Yin 2003). In line with this, the purpose of this chapter is to describe how the empirical investigation of this thesis was actually conducted, describing the steps that were followed from case design to data analysis.

This chapter is organised in the following way (see Figure 5.1). First, the case study design and initial considerations are described in Section 5.2, including the details of the methodology employed, the case study protocol and the pilot study. Following this, the gathering of data is described in Section 5.3, outlining the data collection methods and ethical considerations. Finally, the data analyses that lead to the emergence of the theoretical framework and other findings are explained in Section 5.4.

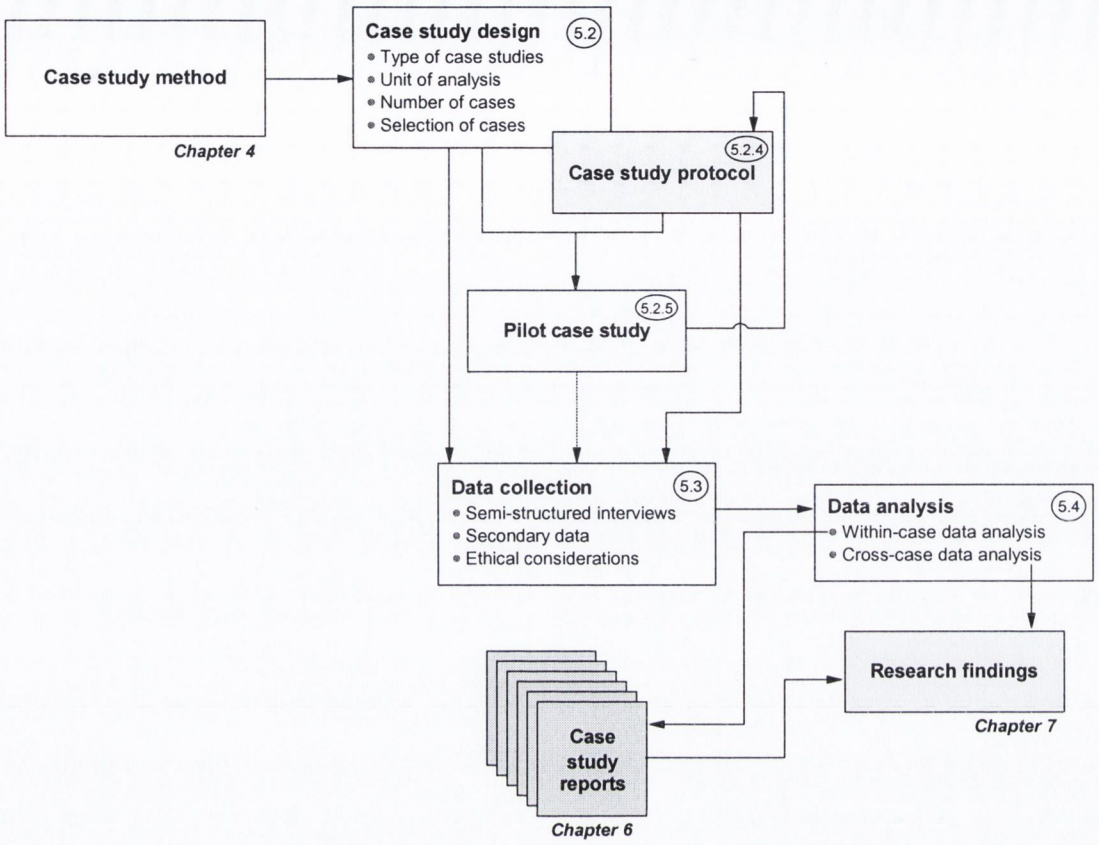


Figure 5.1: Organisation and structure of Chapter 5

5.2 Methodology and initial considerations

Before collecting the data, but once the research question and the investigation's objectives had been defined (*i.e.,* why and how public sector organisations synchronise their business and IS strategies), the case study method was chosen as an appropriate approach to enquiry to carry out the research. Following the nature of interpretive investigations, case studies were selected due to the purpose of the study, the research question, the researcher's abilities and the resources available (Amaratunga and Baldry 2001). There are several types of case studies. However, the kind employed in this thesis is exploratory since the final objective of the research is to develop theory and contribute to the IS field body of knowledge, rather than testing or confirming previously established hypotheses. Furthermore, since this style is recommended when there are few theories or a deficient body of knowledge (Hussey and Hussey 1997), no prior hypotheses or propositions were postulated or submitted to testing. Moreover, based on the ontological assumption that the world is socially constructed and only understood by examining the perceptions of human actors, an interpretative paradigm was followed and qualitative data was inductively gathered.

A technological process without a substantial theoretical base was investigated from an organisational point of view in its real setting, a situation that according to Benbasat, *et al.* (1987) could be best explored by means of a structured program of multiple case studies. In line with this and as described below, a case study design was thoroughly developed in order to set the guidelines for the methodology and to meet all the necessary requirements for data collection. The next sections are portrayed in the following order. First, the unit of analysis is described in Section 5.2.1, which is where the focus of the investigation lies. Then, how many and which cases were selected are detailed in Section 5.2.2. This is followed by the description of the case study protocol in Section 5.2.3, which guided the data collection effort. Finally, the development of the pilot study is outlined in Section 5.2.4.

5.2.1 Unit of analysis and type of case design

As mentioned in Chapter 4, a case study is characterised by having one or several units of analysis. These units, which are determined by its sources of evidence, are the focal points that guide the collection and analysis of relevant data (Rowley 2002). In this investigation and based on the research question, only one unit of analysis was required. It is formed by a process, which is the synchronisation of the business and IS strategies – that is, the influence that these two strategies have on each other. Furthermore, due to the firm's role, people involved, and particular circumstances of the organisations studied, this unit of analysis is unique to each firm.

Due to several reasons, it was opted that multiple case studies were needed to carry out this investigation. First, it is documented that this type is more reliable, compelling, and robust than single-case studies (Remenyi *et al.* 2002). Also, since it adds a valuable dimension to the study, the analytic conclusions derived from two or more cases are considered more powerful than those coming from a single case. Additionally, employing a unique, critical, extreme, representative or revelatory case was not an ideal solution for the present thesis since evidence in the literature indicated that organisations can synchronise their strategies under several approaches (Luftman 2004; Reich and Benbasat 2000; Synnott 1987). Consequently, several organisations were needed for the empirical investigation in order to answer the research question, build richer theory (Benbasat *et al.* 1987; Perry 1998; Rose 1991) and increase the finding's confidence and robustness (Amaratunga and Baldry 2001; Naumes and Naumes 1999).

In strategic planning, the term 'process' is defined as a sequence of individual and collective events, actions, incidents and activities that unfold over time (Ferlie and McNulty 1997; Pettigrew 1997; Van de Ven 1992). Therefore, since process theory seeks to explain how an organisational entity (*i.e.*, unit of analysis) changes and develops throughout time (Van de Ven and Poole 1995), researchers look for relationships and patterns between the past, the present and the future (Ferlie and McNulty 1997; Pettigrew *et al.* 2002), assuming action and movement while treating strategy as a process, not as a state (Pettigrew 1992). Moreover, it takes an historical developmental perspective, focusing on incidents that unfold over the duration of a subject's existence (Chakravarthy and Doz 1992).

IS strategic planning is a process, not an observable outcome or document (Pyburn 1983). Therefore, to describe the synchronisation of business and IS strategies, it is necessary to examine what organisations and their people *do*, rather than what they produce (Pyburn 1983). As described in Section 4.2, this can be attained by several methods; for example, by the use of an intensive, comparative and longitudinal case study, analysing *if* and *how* changes occur over time (Van de Ven 1992). In this case, the recommended data collection methods are real-time observations (regularly scheduled and intermittent), repetitive surveys, interviews in different periods and informal discussions with the people involved.

Other method, which is the one used in the present thesis, is via an interpretive multiple case investigation carried out through semi-structured interviews and secondary data analysis. With this technique, the synchronisation process was explored in several organisations at a particular point in time[1], comparing and contrasting how several firms have accomplished the process based on the interpretation of the main actions and outcomes. It was decided that a cross-sectional tactic would better answer the research question due to the fact that the literature indicated that the synchronisation can be attained in distinct degrees. Therefore, by exploring the unit of analysis, together with the activities, outcomes and people involved in the process in one moment in time, a better picture could be obtained about *why* and *how* the analysed organisations synchronise their business and IS strategies. Furthermore, as Chapter 7 demonstrates, this facilitated the emergence of a framework with distinct approaches to how public sector organisations synchronise their strategies. Consequently, the study *per se* was not

[1] In the case reports (within-case analysis), past documents and archives were gathered to extract information about the organisation's background, its technology integration history, and the bases of how currently the organisation is synchronising its business and IS strategies.

process research since it was not designed with the purpose of evaluating how its activities unfold over time.

5.2.2 Number and selection of cases

Since the case design comprised of more than one organisation, it is essential to consider the number and selection of organisations necessary to complete the investigation. In this case, due to the nature of the research question, the underlying logic for case selection was based on literal and theoretical replication, since the idea was to produce similar and contrasting results that will explain in a cross-sectional approach several scenarios of why and how public sector organisations synchronise their business and IS strategies.

Regarding the number of cases in the study, since there are no precise guides on how many cases to include, "this decision is left to the researcher" (Romano 1989 p.36). Given that Perry (1998) proposes an average range between two and ten based on the recommendations of several authors (Eisenhardt 1989; Hedges 1985; Miles and Huberman 1994), it was decided that six cases (in government departments and offices) would constitute an adequate amount. Time constraints would not have allowed the development of additional cases. After concluding the pilot study (see Section 5.2.4), it was determined that according to the quantity and quality of data collected, the number of cases initially recommended was reasonable to support the investigation's objectives and to complete the thesis.

The present research is funded by the Information Society Policy Unit (ISPU) through the Information Society Fund and by the Centre for Management and Organisation Development (CMOD). The Information Society Policy Unit has overall responsibility for developing, co-ordinating, and driving implementation of the Information Society agenda. Furthermore, its aim is to ensure that Ireland develops as a fully participative, competitive, knowledge-based information society. The School of Business in the University of Dublin, Trinity College, succeeded in obtaining support from the ISPU for research in the Irish public sector. Therefore, due to its importance in the funding of the investigation, the Department of the Taoiseach was instrumental in influencing case selection. After notifying the number of required cases and the objectives of the investigation, senior officials in the Department suggested six distinct organisations that would constitute a representative sample (but by replication logic, not sample logic) of the actual circumstances regarding the integration of technology throughout the Irish Government. It was necessary that these organisations had a broad range of characteristics in

relation to the integration of technology and IS strategic planning experience (*i.e.*, that produce contrary outcomes). After reviewing the strategy statements (*i.e.*, business strategies) of the recommended organisations, the six original suggestions were accepted by the researcher. These are (see Tables 5.1 and 5.2 for details about their business and IS functions):

1. Land Registry and the Registry of Deeds;
2. Department of Social and Family Affairs;
3. Department of Communications, Marine and Natural Resources;
4. Office of the Revenue Commissioners;
5. Department of the Environment and Local Government; and
6. Department of Agriculture and Food.

From an IT perspective, the organisations within the Irish civil service can be classified into the following three categories (Clince *et al.* 1992): (1) those which formulate and monitor policy which is implemented via other agencies (i.*e.*, the Department of the Environment and Local Government, and the Department of Communications, Marine and Natural Resources); (2) those which have significant direct contact with the public (*i.e.*, the Department of Social and Family Affairs, the Office of the Revenue Commissioners and the Department of Agriculture and Food); and (3) those which have specialised technological requirements (*i.e.*, the Land Registry and the Registry of Deeds). Therefore, the selected organisations constituted a good representative sample since it contained departments and offices from the three groups.

In order to initiate communication and request the cooperation of these departments and offices, a group email was sent to all Secretaries General and IS managers of the six organisations (see Appendix 1). Its content included an explanation of the research objectives, methodology and information sought. Subsequently, a further email was sent to IS managers in order to schedule the first interview. Initially, while all IS managers granted full cooperation, only a certain majority of the business managers acknowledged their full involvement; however, after a follow up, eventually all business managers agreed access to their organisations.

Table 5.1: Business characteristics of the six organisations in investigation

Case	Number of staff	Year established	Expenditure 2004 (million €uro)	Functions
Case 1 - Land Registry and the Registry of Deeds	660	1707/1892	33.3	Registration of title and ownership to land; property and title-related services.
Case 2 - Department of Social and Family Affairs	4,700	1947	5,972.7	Social protection policies; delivery of statutory and non-statutory social and family schemes and services.
Case 3 - Department of Communications, Marine and Natural Resources	750	2002	153.6	Communications, energy, marine and natural resources.
Case 4 - Office of the Revenue Commissioners	6,364	1923	328.0	Collect tax and duties, deter and detect tax evasion, import and export controls, and drug control.
Case 5 - Department of the Environment and Local Government	2,262	1924	685.3	Environment, heritage, planning, local government and housing.
Case 6 - Department of Agriculture and Food	4,580	1900	724.5	Rural development issues, food quality, consumer demands, environmental management, animal health and welfare.

Table 5.2: IS characteristics of the six organisations in investigation

Case	IS Expenditure 2004 (million €uro)	Year IS area established	Staff in IS area	Ratio employees per IS staff	IS manager - strategic position in business?	IS strategy in organisation?
Case 1 - Land Registry and Registry of Deeds	3.7 (11.1% of total expenditure)	1991	15	44.0	Yes (Senior Management Team)	Yes (2005)
Case 2 - Department of Social and Family Affairs	N.A.	1960s	300	15.7	Yes (Assistant Secretary)	Outdated. New IS strategy in development
Case 3 - Department of Comm., Marine and Natural Resources	10.0 (6.5% of total expenditure)	2002	45	16.7	No (Head of a technical function)	Yes (developed 2003)
Case 4 - Office of the Revenue Commissioners	23.6 (7.2% of total expenditure)	1960s	379	16.8	Yes (Assistant Secretary)	Yes (2004-2005)
Case 5 - Department of the Environment and Local Government	6.5 (0.9% of total expenditure)	1998 (before depended from Finance)	30	75.4	No (Principal Officer)	Outdated. New IS strategy in development
Case 6 - Department of Agriculture and Food	26.4 (3.6% of total expenditure)	1960s	205	22.3	Yes (Assistant Secretary)	Yes (2004)

5.2.3 Case study protocol and interview instrument

The case study protocol is a document that acted as an instrument to guide the collection of data, the conduct of each case study, and to keep the researcher focused on the subject of the study. It includes the general rules, procedures and information that guided the interviewer during data gathering, anticipating problems or issues that might emerge throughout the investigation (Yin 2003). Additionally, it is considered as an important tool for increasing the dependability of case study research. Basically, it contains four sections (see Appendix 2 for the initial and final versions of the protocol):

1. *Overview of the study*. Covers background information about the project, the issues being investigated, the people involved and its sponsors;
2. *Field procedures to be followed*. These procedures delineate the steps to be pursued during data collection, including how to gain access, who to interview, how to gather relevant information, procedural reminders and general sources;
3. *Interview questions*. The central part of the protocol is a set of questions reflecting the inquiry; nevertheless, since the method consisted of semi-structured interviews, these questions functioned only as a guide for the researcher concerning the information to be collected. In order to facilitate the interviews, the questions were depicted in a diagram, including probes that were followed during each query; and
4. *Guidelines for the research report*. These rules facilitated the collection of relevant data in the appropriate format and reduced the possibility of needing additional visits to the same organisation.

The protocol was initially developed during the case design, based on the research question and the literature previously reviewed. It was originally shaped around the development of the IS and business strategies, together with synchronisation issues and reasons (see Figure A2-1 in Appendix 2). However, after each interview of the main data collection effort, the protocol was further refined to fit the investigation. Eventually it was shaped around the six synchronisation agents (already introduced in Chapter 1: business and IS strategies, business and IS managers, business and IS functions), thus each time yielding a more focused protocol for investigating the research question. This implies that the data started to be analysed before the interviews finished. Before the execution of the pilot case study (described in the next section), the protocol was validated with two IS executives at AIB (Allied Irish Bank) and ESB (Electricity Supply Board), each of whom made recommendations about its content and structure.

5.2.4 Pilot case study

As explained in Chapter 4, the development of a pilot case study is recommended to determine the appropriate unit of analysis, familiarise the researcher with the context of the problem, and articulate specific substantive or methodological issues. Several organisations of different sizes (including the ones already selected as part of the main investigation) were evaluated (*i.e.*, reviewing webpages and browsing through their strategy statements) to develop a general idea of their technology-integration status. However, it was determined that due to its long standing IS function, small and manageable size, core settings in a setting not too complex, IS planning experience and availability of documents, the Land Registry and the Registry of Deeds (also known as the Registries) would comprise an excellent pilot case. Moreover, as said by Yin (1994), convenience, access and geographic proximity are the main criteria for selecting a pilot case.

Analogous to another Ph.D. investigation where the pilot case study was extended to a full case study (Koulikoff-Souviron 2002), the Registries was eventually used as part of the main investigation. The main reason for doing this is because after finishing the pilot case and once starting the main data collection phase, the researcher acknowledged that the Land Registry and the Registry of Deeds was the most advanced case with respect to the existing synchronisation between the business and IS strategies of the organisations chosen and thus critical to answer the research question. Nevertheless, to fully attain this, further data was collected and any initial analyses were disregarded.

For the development of the pilot study, documents were gathered and two interviews were conducted in June 2004 (one with the IS manager and one with the Chief Executive of the Registries). In order to extend the case from pilot study to a case study that was part of the main investigation, further documents were collected and a third interview was carried out in December 2004 with an additional business manager. Moreover, the data analysis of the pilot was not as comprehensive as the one carried out in conjunction with the other cases.

Overall, it took three months to finish the pilot case study. Its development is considered key to the progression of the thesis since it helped the researcher to prepare for the main data collection effort, to complete the interview protocol and to ground some findings identified in the literature review. Furthermore, its outcomes provided evidence of where the investigation was heading and helped clarify the context of the research.

5.3 Data collection procedures

Due to the nature and components of the unit of analysis (*i.e.*, the synchronisation process), the events and activities were indirectly explored by interviewing the people involved in the process. In order to corroborate and complete this information (a data source triangulation), past documents and archives, which internally shape the process, were also examined. In line with this and as expanded in Sections 5.3.1 and 5.3.2, data collection in this thesis consisted of semi-structured interviews and secondary data (documents and archival records). Then, some ethical considerations considered throughout the investigation are outlined in Section 5.3.3.

5.3.1 Semi-structured interviews

In interpretative investigations like the present one, interviews are regarded as the primary data source. This is because through this method, the researcher can best access the participants' opinions regarding the actions and events that had taken place around the unit of analysis (see Table 4.7 in the last chapter for strengths and weaknesses of interviews). To meet the research objectives it was necessary to interview (with a semi-structure technique and guided by the research protocol) individuals directly involved and knowledgeable about *why* the synchronisation of business and IS strategies is an engaging issue and/or *how* the organisation synchronised its strategies. IS managers were regarded as the key contact (except in the Department of Social and Family Affairs where it was the Assistant Director General) because it is believed that these individuals are the most knowledgeable in the organisation to assess IS strategic planning, its impact and success (Premkumar and King 1992). However, business managers with an understanding in business and IS planning were also interviewed. Furthermore, since each organisation is structured differently, in each case different people in various roles were contacted (*e.g.*, Secretaries General, Director Generals and Principal Officers).

The number of interviews was not a fixed figure. Besides the IS manager, it was necessary to meet with at least one top-level business manager in order to acquire both the business and IS points of view. Except in the Department of Agriculture and Food (where four business managers were interviewed) and the Department of the Environment and Local Government (where only one business manager agreed to take part in the investigation), two business managers were met in every organisation. Overall nineteen different people were met (*i.e.*, four Secretaries General, six IS managers and nine distinct business managers), yielding a total of 25

interviews (five IS managers and one business manager were visited twice). It was decided not to interview additional individuals because on the one hand some degree of saturation was being noticed (*i.e.*, after fifteen meetings the insights received were being reiterated), and on the other hand the researcher determined that the required data to achieve relevant findings had being attained. Appendix 3 contains a list of all the people met, including their role, date of interview and duration.

In order to schedule the meetings, initial contact was established either by email or phone, directly with the interviewee or through their personal assistant. At first, five of ten meetings were recorded (only when allowed); however, later the researcher decided only to take notes due to the fact that the interviewees gave the impression of being more open when the conversation was not being recorded. Furthermore, it seemed that there were no major content differences in notes taken with or without a recording.

When an interview was scheduled with an IS manager, the time requested for the meeting was from 45 minutes to an hour; however, for the business managers the time suggested was half an hour. Therefore, during the interview, it was attempted to limit the length of the meeting to the time initially agreed, although in some cases the interviewees stretched that time. Furthermore, whenever the protocol was not finalised in the allocated time, permission was asked to send unanswered questions by email.

After every interview, further notes were taken and in the case of recorded meetings, the interview was transcribed for the purpose of completeness and accuracy. Also, an email was sent to the interviewees expressing appreciation for their time and the insights received, and in some cases, to remind them about requested documents or to ask any pending or unanswered questions.

5.3.2 Gathering of secondary data

Secondary data constituted an extensive part of the data collected (see Table 4.7 for strengths and weaknesses of secondary data). Nevertheless, this information was triangulated with and complemented by the interviews to develop a more holistic picture (Jick 1979). Some documents were brought together before the interviews to customise the protocol and provide the researcher with a more complete overview and background information of the organisation, especially in regard to the use of IS (*e.g.*, strategy statements and recent annual reports). Other

documents were collected between meetings to complement the protocol by including questions about specific issues or events (*e.g.*, IS strategies and consultant reports). Finally, some documents were reviewed post-interview to corroborate the information gathered and to include any missing pieces of information in the written report of the case study (*e.g.*, annual reports and customer service action plans).

Appendix 4 includes, for each case, the list of documents that were collected and analysed. In total 143 different publications were gathered, including strategies, reports and business plans. Consequently, every single document that could provide evidence of how and why the synchronisation of business and IS strategies is carried out was sought after and collected. In many cases, the documents were found on the department's webpage; nevertheless, it was also necessary to contact people in the department for specific documents, search in libraries for archival data, and even write to the Freedom of Information office to request past records. The majority of the documents were easy to find; however, some publications took more time to gather due to the fact that they were printed more than 50 years ago. Moreover, if a document collected was in electronic format, a paper copy was acquired in order to maintain a hard-copy database.

5.3.3 Ethical considerations

During the investigation, all activities performed were carried out observing moral principles, and always respecting the organisations' confidentiality and privacy agreements. During the development of this thesis, several ethical considerations were followed; for example, only involving people with their consent, recording interviews when permitted, and not publishing or distributing the content of documents regarded as restricted. Furthermore, confidentiality concerning the interviewee's insights was guaranteed, anonymity and discretion were maintained throughout the written reports, and the true nature of the research was never withheld. Additionally, the information and results presented throughout the thesis are authentic, and through the guidance of the case study protocol and by having multiple sources of evidence, an effort was made to have the least amount of bias.

In order to maintain the interviewees' responses confidential, two options were identified: (1) conceal the organisation's name and use attributions to function (*e.g.*, 'the IS manager said…', or 'according to the chief executive…'); or (2) identify the organisation but refrain from using direct quotes in the case study reports. Due to the fact that there is a limited number of

government departments and offices in Ireland, and all with very specific functions, there was no possibility of real anonymity for each site. Even using pseudonyms, it was easy to associate statements with particular individuals. Therefore, after discussing the possible alternatives with several informants, the researcher decided on the second option. Consequently, the cases were written in such a way to protect the interviewee's identity.

5.4 Data analysis

Data analysis was the first step in the theory development process and essential to make sense of the gathered data. In line with the nature of exploratory investigations, instead of starting the fieldwork with a well-defined set of constructs, frameworks or instruments to measure social reality, the results were derived from the field by in-depth examination and exposure of the unit of analysis (Orlikowski and Baroudi 1991). Then, by a cycle of interpretation and reduction of data collected from interviews and documents, concepts and categories emerged in order to make sense of the raw data and ultimately yield novel insights. Two techniques were mainly used: within-case analysis to develop an analytic case description and recognise the main synchronisation activities in each organisation, and cross-case analysis to identify patterns and extract high-level concepts from the data throughout the cases. The following sections expand on these procedures.

5.4.1 Within-case data analysis

Within-case analysis was the first data analysis method used. It consisted of scrutinising the unit of analysis (*i.e.*, the synchronisation process of business and IS strategies) in each organisation as a stand-alone entity, while creating individual write-ups for each case study (Eisenhardt 1989).

For their development, after interviewing each informant or collecting pertinent documents, all relevant information was reviewed and transcribed. Then, the specific synchronisation procedures and related characteristics of every organisation were identified. From these data, individual reports were created with the purpose of describing the unit of analysis in each organisation (see Sections 6.3 to 6.8). Its structure was designed around the business and IS functions and included background information about the organisation, the business and IS strategies, the main activities performed when synchronising these strategies, and main IS projects.

After finishing the report, a copy was sent to all key contacts for the purpose of validation and content confirmation (see Appendix 5 for a copy of the letter signed by these managers corroborating the authenticity of the case reports). A final meeting was held with these managers (except in case 2, where an e-mail exchange was held with the Assistant Director General) to discuss the case and clarify any outstanding issues. Finally, after completing the last modifications, the definitive version of the report was again forwarded to each key contact. The six cases plus the research context constitute Chapter 6 of this thesis.

5.4.2 Cross-case data analysis

During cross-case analysis, the data was reduced and structured from a raw format to a high-level configuration, selecting, focusing, simplifying, abstracting and transforming the original data into theoretical concepts (Miles 1979; Seidel and Kelle 1995). This data reduction was performed to condense field notes, documents and interview transcripts mainly using matrices of categories (Miles and Huberman 1984) and intergroup similarities (Collins and Hussey 2003). In order to clarify the process and guided by Figure 5.2, the next section describes how the data was summarised and coded. Then, since no *a priori* theoretical framework was formulated on the basis of the literature review, it is explained how the data was structured as concepts emerged. Finally, it is portrayed how the data was reduced even further as the concepts were condensed into categories.

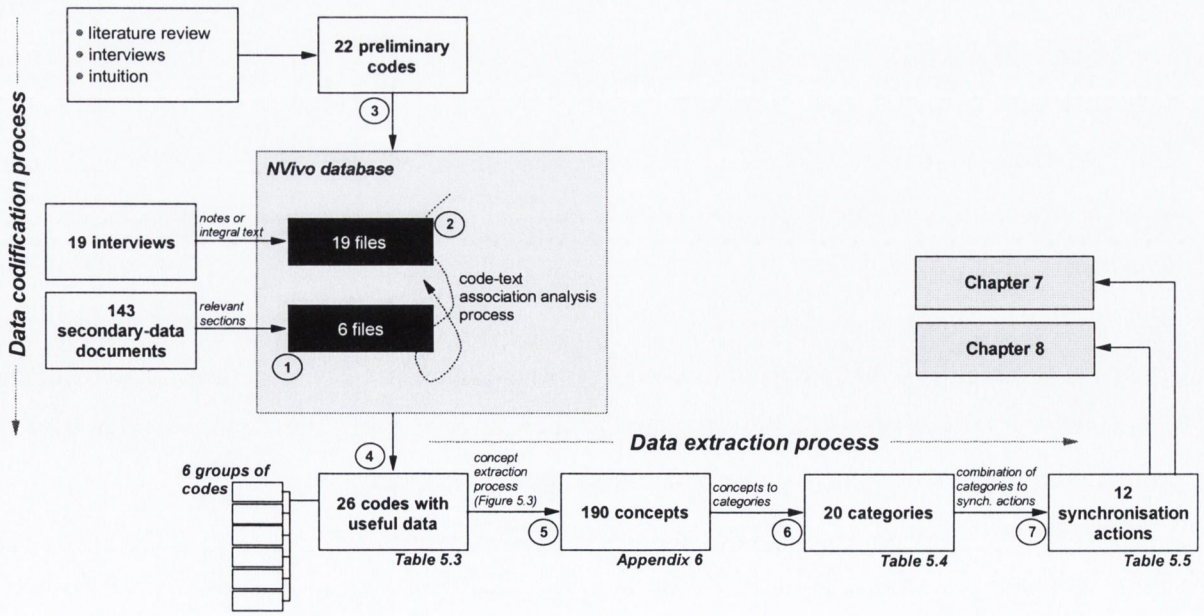


Figure 5.2: Cross-case data analysis process

Code identification

Codes are tags or labels for assigning units of meaning to the raw data compiled during a field study (Miles and Huberman 1994). In order to facilitate this process, computer-assisted qualitative data analysis software (*i.e.*, NVivo) was used to store, organise, retrieve, sort and code data. First, relevant sections of each reviewed document were transcribed into NVivo with the purpose of facilitating information handling (number 1 in Figure 5.2). Therefore, for each case, a file was assembled that included parts of all secondary publications. Then, the integral text of the interview (when the meeting was recorded) or the annotations (when only notes were taken during the interview) were also imported into the software (number 2 in figure). As a result, a small database of 25 different files (one for each of the 19 interviews and one for each of the 6 case studies) of raw data was assembled in NVivo.

Before reviewing the data, based on the researcher's intuition, previously assessed literature, and in what he identified during the interviews, 22 preliminary codes were created, associated with *why* and *how* the organisation synchronises its business and IS strategies (number 3 in figure). These included 'business strategy characteristics', 'role of IS manager', 'synchronisation advantages, 'role of consultants' and 'e-government issues'. Creating a list of codes before starting the data analysis has been recommended as a useful way of beginning the scrutiny process since they work as an initial guide to how the raw data will to be organised. As discussed by Miles and Huberman, (1994) these codes came from key concepts, literature review and the research question

The first step in the cross-case analysis consisted in carefully going through each file. Whenever a word, sentence or paragraph fitted into one of the already identified codes, the text was then associated with this code in NVivo; however, it was also possible to link parts of this text to different codes. Also, on several occasions new codes, which were previously not recognised, emerged directly from the data. However, whenever a new code was uncovered, the procedure of file reviewing had to be done all over again to distinguish which of the already evaluated text could be linked to this new code.

After finishing reviewing all files, 26 codes with useful data (*i.e.*, at least associated with 10 different statements – number that the researcher considered to be sufficient for a code to be relevant) were obtained (see number 4 in Figure 5.2 and Table 5.3). Throughout this process, some of the *a priori* codes did not gather sufficient evidence, so they were not part of the final

list. Only for classification purposes, the 26 codes were combined into six groups: business function (including issues related to business managers), business strategy, IS area (including issues related to IS managers), IS strategy, synchronisation of business and IS strategies, and external influences.

Table 5.3: Final list of codes with useful data

Groups of codes	Codes
Business function	Business managers (role in synchronisation)
	Users (role in synchronisation)
	MAC issues
Business strategy	Business strategy – Development
	Business strategy – Characteristics
	Business strategy – Content
	Business strategy – Evaluation
	Business strategy – Reasons
	Business strategy – Requirements
	Organisation – Mission & objectives
IS area	IS manager (role in synchronisation)
	IS Steering Committee (role in synchronisation)
	IS area – Mission and objectives
IS strategy	IS strategy – Reasons & objectives
	IS strategy – Content
	IS strategy – Development (how?)
	IS strategy – Evaluation
	IS strategy – Characteristics
	IS strategy – Requirements and CSF
Synchronisation of business and IS strategies	Synchronisation reasons – Advantages
	Synchronisation reasons – Disadvantages
	Synchronisation – How
	Synchronisation – CSF
External influences	Consultants (influence to synchronisation)
	e-Government issues (influence in synchronisation)
	Public sector (influence to synchronisation)

Emergence of concepts

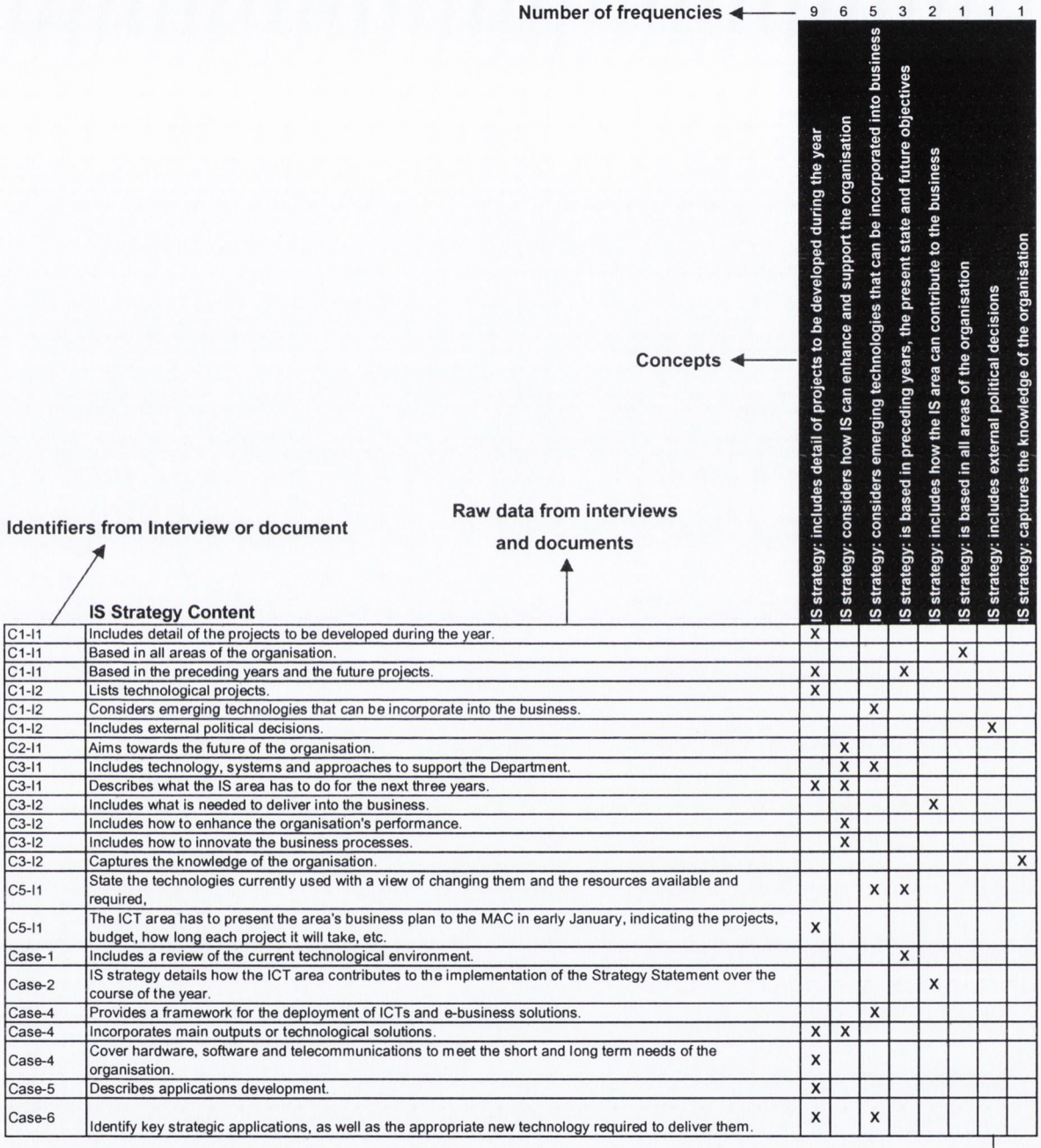
Concepts correspond to a higher degree level of coded data. They identify an emergent theme, configuration or explanation. These concepts are necessary to summarise the raw data into a more concise, meaningful and focused format. Therefore, the objective of this step was to extract relevant concepts from each code.

In NVivo it is possible to individually review each of the 26 codes to determine which segments of each document, words, paragraphs or sentences were linked to that code. For

example, when reviewing the 'IS strategy – Content' code, a list is displayed that portrays every reference (as well as the document where it was found) from each file in the NVivo database that matches up to the content of IS strategies.

Using electronic spreadsheet software as a data handling tool, six files were developed (one for each group of codes: business function, business strategy, IS area, IS strategy, synchronisation of business and IS strategies, and external influences). Each file had several worksheets, one for every code. With the objective of uncovering concepts, the next step in the analysis consisted in transcribing the data that was part of each code into a worksheet. An example of one of these worksheets can be seen in Figure 5.3 (portion of the original data table of code 'IS strategy content'). The image can be divided in three sections: the first column contains an identifier to associate the raw data to its source (*e.g.,* C1-I1: interview 1 in case 1; Case-6: text from secondary-data in case 6). However, since each piece of data can be coupled with several codes, it is possible that this sentence or fragment can be found in a number of worksheets. The second column is the raw data itself, words spoken by an interviewee or text found in a document. Finally, the third column is divided in two: while the upper part includes the emerging concepts, the lower part is used to tabulate the number of times the concept was uncovered in the raw data. Using Figure 5.3 as an example, the first concept from left to right refers to 'IS strategy: includes detail from the projects to be developed during the year'. Adding together the number of Xs in the lower part, it can be seen that there are nine individual data elements (see uppermost row) that jointly produce that concept (from seven different sources: C1-I1, C1-I2, C3-I1, C5-I1, Case 4, Case 5 and Case 6). Therefore, these nine rows of data, which reflect what was said by different people or found in different documents, can be summarised into one high-level concept.

This step was repeated for each of the 26 codes (number 5 in Figure 5.2). Since for the next phase only the concepts associated with two or more data statements from different sources were used, not all codes yielded utilisable concepts (*e.g.*, only the first five concepts of the 'IS strategy content' code (shown from left to right) portrayed in Figure 5.3 were taken to the next step). In total, 190 distinct concepts were extracted from the 26 codes (see Appendix 6 for a list of all concepts). Therefore, this list of concepts can be considered a high-level summary of all data collected. Even though not all of these concepts were eventually useful for answering the research question, they helped the researcher to comprehend the gathered data and to have a broader panorama of the synchronisation process and related concepts in all organisations.



	IS Strategy Content	IS strategy: includes detail of projects to be developed during the year	IS strategy: considers how IS can enhance and support the organisation	IS strategy: considers emerging technologies that can be incorporated into business	IS strategy: is based in preceding years, the present state and future objectives	IS strategy: includes how the IS area can contribute to the business	IS strategy: is based in all areas of the organisation	IS strategy: includes external political decisions	IS strategy: captures the knowledge of the organisation
	Number of frequencies	9	6	5	3	2	1	1	1
C1-I1	Includes detail of the projects to be developed during the year.	X							
C1-I1	Based in all areas of the organisation.						X		
C1-I1	Based in the preceding years and the future projects.	X			X				
C1-I2	Lists technological projects.	X							
C1-I2	Considers emerging technologies that can be incorporate into the business.			X					
C1-I2	Includes external political decisions.							X	
C2-I1	Aims towards the future of the organisation.		X						
C3-I1	Includes technology, systems and approaches to support the Department.		X	X					
C3-I1	Describes what the IS area has to do for the next three years.	X	X						
C3-I2	Includes what is needed to deliver into the business.					X			
C3-I2	Includes how to enhance the organisation's performance.		X						
C3-I2	Includes how to innovate the business processes.		X						
C3-I2	Captures the knowledge of the organisation.								X
C5-I1	State the technologies currently used with a view of changing them and the resources available and required,			X	X				
C5-I1	The ICT area has to present the area's business plan to the MAC in early January, indicating the projects, budget, how long each project it will take, etc.	X							
Case-1	Includes a review of the current technological environment.				X				
Case-2	IS strategy details how the ICT area contributes to the implementation of the Strategy Statement over the course of the year.					X			
Case-4	Provides a framework for the deployment of ICTs and e-business solutions.			X					
Case-4	Incorporates main outputs or technological solutions.	X	X						
Case-4	Cover hardware, software and telecommunications to meet the short and long term needs of the organisation.	X							
Case-5	Describes applications development.	X							
Case-6	Identify key strategic applications, as well as the appropriate new technology required to deliver them.	X		X					

Figure 5.3: Example of how concepts emerged from raw data

Build-up of categories

Since the number of concepts was too large to be in a manageable form, it was necessary to perform another round of data extraction. Therefore, in order to identify a high-level list of categories, which are aggregations of concepts, the distinct concepts were transcribed into a comprehensive list. Then, by carefully reviewing these records, similarities were found between the concepts, thus yielding a collapsed arrangement of different categories (number 6 in Figure 5.2). The outcome of this process was a list with 20 categories, which can be considered a very

high-level view of the raw data (see Table 5.4). As displayed in the second column of Table 5.4, an identifier for the concepts in the first four tables in Appendix 6 allows each row to be backtracked to the statements that jointly formed that category. Not all concepts in Appendix 6 were used to form the categories since some resulted to be indirectly related to the synchronisation of business and IS strategies.

Table 5.4: List of categories with source concepts

Categories	Codes from concepts that form each category (see Appendix 6)
Business managers are involved in the IS area's operations.	A1, A3, A6, A7, A17, A21
Business managers have commitment, confidence and support in IS area.	A1, A2, A3, D48
Business managers have good knowledge about IS their effects.	A4, A6, A24, D11
Business managers participate in development of IS strategy.	A1, A5, A6, A17, D48, D51
Business strategy influences development of IS strategy.	B25, B30, C6, D18, D27, D28, D41, D47
During IS strategy formulation and implementation, business managers, IS managers and clients are involved.	A5, A17, D30, D31, D36, D42, D49
IS manager and his/her staff are involved in business strategy formulation.	B1, B8, B24, C21, C22
IS steering committees can be used to link IS strategic planning with business planning.	C7, C8, C9, C10, C11, C12, C13, C14, C15
The business strategy details technological projects.	B7, B9, B14, B15, B23, B29
The users, since they understand the technology's effects, propose IS projects.	A10, A12, A13, A14
The current requirements of the organisation direct IS area's activities.	B27, D29, D33, D43
The IS manager discusses IS requirements with managers of all divisional areas.	A21, C1, C3, D42
The IS manager is actively involved in the running and planning of the business.	A19, A20, C1, C3, C4, C5
The IS manager promotes new IS projects to users.	C2, C7, C22, D20
The IS people continuously research process enhancements through emerging technologies.	B7, C18, C16, C22, D6, D14, D15
The IS people have good knowledge about the business.	C19, C20, C21, D37
The IS strategy has a key role in the running and planning of the business.	A17, A22, B26, D3, D4, D8, D17, D23, D34, D40
The IS strategy influences development of business strategy.	B3, B6, B10, B11, B12, B30, D1, D2, D28
Users' opinions and requirements are considered during IS strategy development.	A8, A9, A11, A14, A15, A16, D21, D26, D32
When planning operation changes, the business first checks its viability with IS area and IS strategy.	A23, B9, D7, D38, D39

Each category portrayed in Table 5.4 corresponds to actions that were recognised as to how organisations collectively synchronise their business and IS strategies. However, because this synchronisation is achieved by the concurrent influence between the two strategies, together with direct and indirect involvement from the business and IS functions and the business and IS managers, the actions are twofold: an influence on the business function or an influence on the IS function. Therefore, it was possible to combine some of these categories (fusion identified to as 'synchronisation actions') in relation to its agent (*i.e.*, business function, business strategy, business managers, IS function, IS strategy and IS managers) and to the direction of their influence, which can be from the business function on the IS function, or from the IS function on the business function (number 7 in Figure 5.2). Table 5.5 displays these combinations sorted by their agent. The first column corresponds to the agent. Then, the second column is the grouped category or synchronisation action (stated in the passive voice), which was formed by combining several of the 20 categories listed in Table 5.4. Finally, its influence is indicated in the last two columns. Consequently and due to its influence, each grouped category refers to an activity or action of actually how a public sector organisation synchronises its business and IS strategies. As described in Chapter 7, these synchronisation actions were used during the development of the theoretical framework and constitute the first finding of the investigation.

5.5 Conclusion

The purpose of this chapter was essentially to explain how the investigation was performed and to prepare the reader for the next chapters, which portray the actual cases and then the thesis results and outcomes. In summary, the objective of this research is to explore *why* public sector organisations engage in the synchronisation of business and IS strategies and to understand *how* they have accomplished this. This chapter focused on detailing the main investigative instrument (see summary in Figure 5.4), which are six holistic, exploratory case studies, and the emergence of data, which was carried out by within-case and cross-case analyses. Furthermore, other relevant issues contemplated throughout the chapter were which cases were selected, where the data was obtained and the ethical considerations observed during data collection.

Table 5.5: Grouped categories (synchronisation actions) and its influence

Synchronisation agent	Grouped-categories (synchronisation actions)	Influence	
		Business on IS	IS on business
Business function	IS projects are proposed and managed by the business, since it understands technology and its effects.	♦	
	When planning operation changes, its viability is first checked with IS area and IS strategy.		♦
Business strategy	IS strategy development is influenced by business strategy.	♦	
	Technology, its advantages and projects are described in business strategy.		♦
Business managers	Business managers are deeply involved in IS area operations and planning.	♦	
	Business managers have commitment and support in IS area and projects.		♦
IS function	IS area activities are directed by current organisational requirements.	♦	
	IS people are knowledgeable about the business; there is continuous research on processes innovations.		♦
IS strategy	During IS strategy formulation and implementation, the whole organisation is implicated.	♦	
	Development of business strategy is influenced by IS strategy; IS strategy has key role in running and planning of business.		♦
IS manager	IS requirements are discussed by IS manager with business managers of all divisional areas; an IS steering committee is used to link business and IS planning.	♦	
	IS manager is part of top management team; this manager promotes new IS projects to organisation in general.		♦

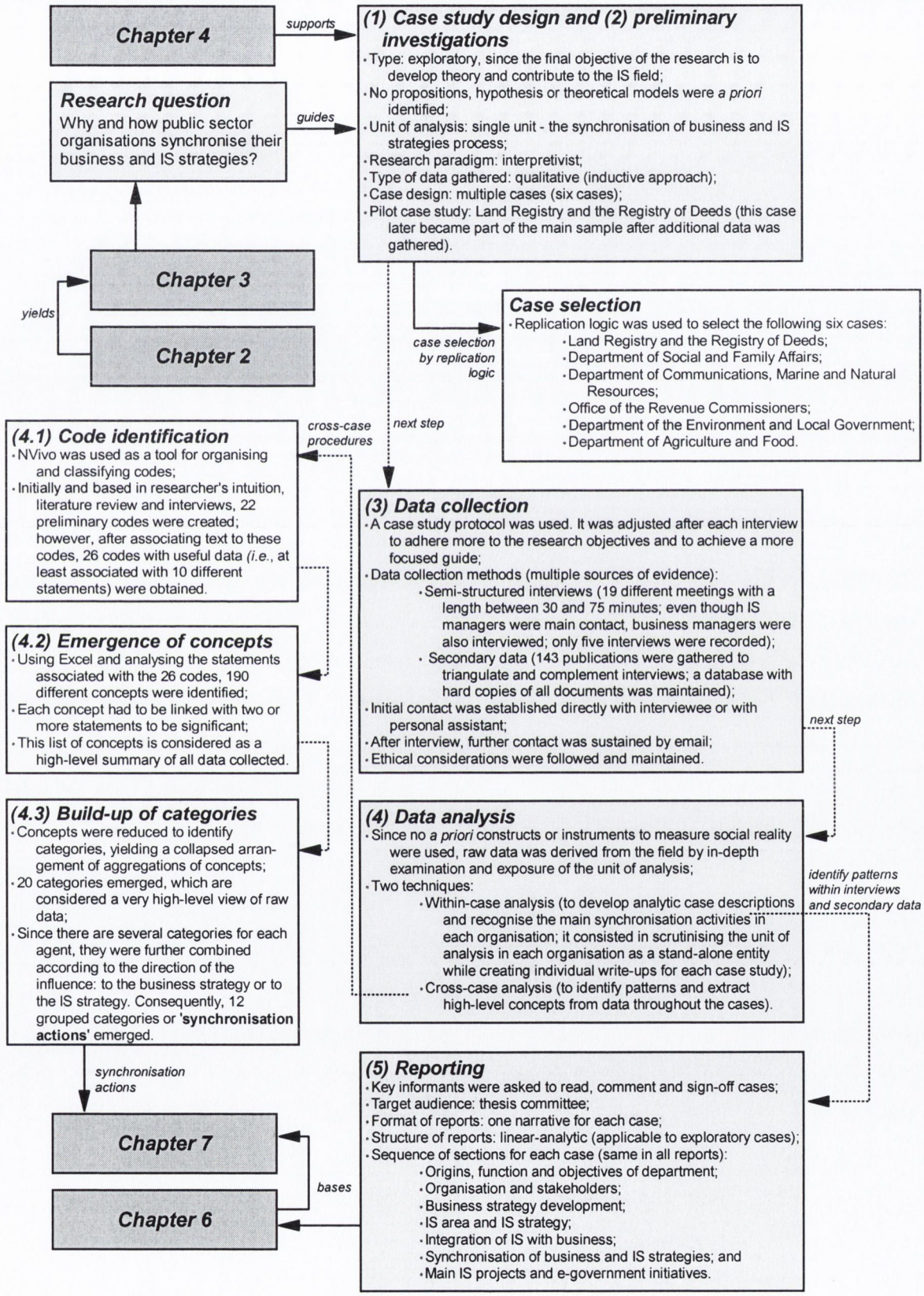


Figure 5.4: Summary and key issues of Chapter 5

CHAPTER 6

CASE STUDIES AND RESEARCH CONTEXT

> *"The nine most terrifying words in the English language are, 'I'm from the government and I'm here to help'."*
>
> Ronald Reagan
> 40th President of the United States (1911-2004)

6.1 Introduction

As delineated by the methodology described in Chapter 5 and complemented by the method portrayed in Chapter 4, case study research was selected in this thesis as the most appropriate method of enquiry to answer the research question. As stated, individual cases were developed in six government departments and offices with the objective of exploring *why* and *how* these organisations synchronise their business and IS strategies. In line with this, the objective of this chapter is to present the actual cases investigated (within-case analysis), while situating them in their research context. For these reasons, this chapter is crucial to realise where the results presented in Chapter 7, especially the theoretical framework, were derived from.

This chapter is organised in the following way. First, the research context is portrayed in Section 6.2, discussing how strategic management has evolved in the Irish Government and what effects it has had in government departments and offices. Therefore, it includes information about the importance of strategy statements (business strategies), IS strategies, the role of technology and the emergence of e-government. After this, the complete text of the six cases is described in Sections 6.3 to 6.8 in the following order:

Case 1 – Land Registry and the Registry of Deeds

Case 2 – Department of Social and Family Affairs

Case 3 – Department of Communications, Marine and Natural Resources

Case 4 – Office of the Revenue Commissioners

Case 5 – Department of the Environment and Local Government

Case 6 – Department of Agriculture and Food

With the objective of facilitating the analysis and comparison of each case, six individual reports were developed with exactly the same structure. In order to present the information in the best possible way, a descriptive style was adopted. As a result, the information is organised in a top-down approach and focused around the synchronisation of strategies. As seen in Figure 6.1, first a brief portrayal of the organisation' origins is presented (x.2). Then, its function and objectives are described (x.3), including its mission, business areas, organisational chart and main stakeholders (x.4). Following this section, the first of the main elements of the synchronisation of strategies is introduced, the business strategy (x.5). It describes who is involved in its preparation, how it is developed and an overview of its content. The IS area is presented next, including its organisation, the role of the IS manager and main functions (x.6). Subsequently, the second main element of the synchronisation is introduced, the IS strategy (x.7). Similar to the business strategy, it describes how it is developed, who is involved in its creation and content. How the firm integrates technology with the business is then explained (x.8), including its incorporation history, use of resources and infrastructure. Following this, the synchronisation of business and IS strategies is addressed (x.9). This section is based in the preceding parts in order to present a panorama of how the strategies are synchronised while understanding why the organisation has attended to this challenge. Finally and with the objective of presenting further detail about how the organisation makes use of IS, the main IS projects and e-government initiatives are listed (x.10).

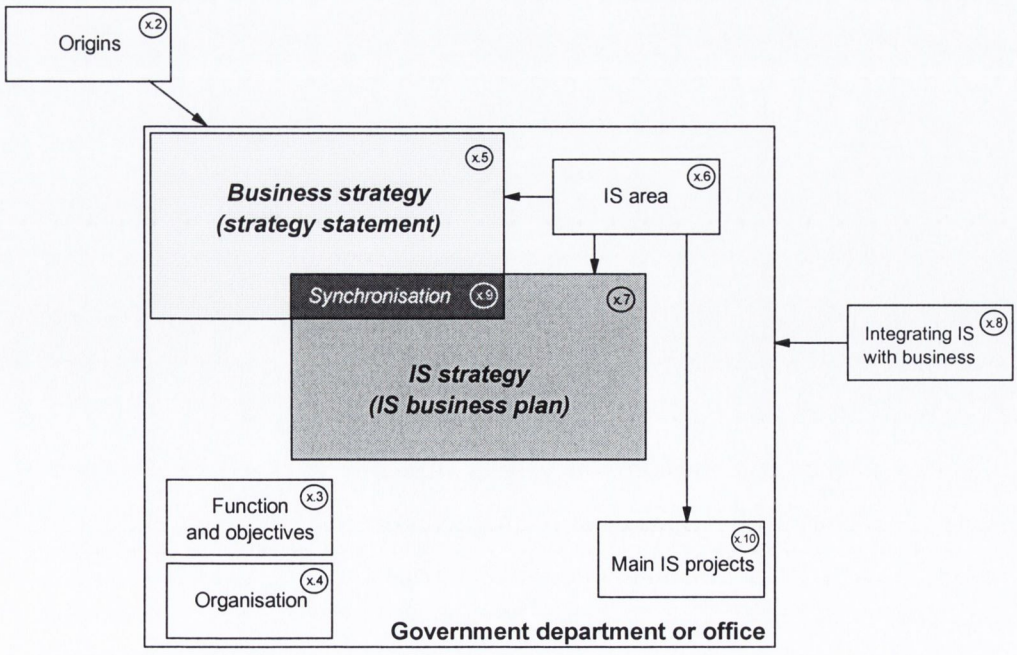


Figure 6.1: Organisation and structure of case studies (Sections 6.3-6.8)

The composition portrayed in Figure 6.1 was adopted with the objective of facilitating the cases' comprehension and comparison. Due to the fact that the six cases correspond to organisations with completely different functions, size, IS strategic planning experience, budget and age, instead of producing a single report with summaries of individual cases, it was decided that discrete accounts were necessary to grasp their dissimilarities, especially in the way they synchronise their business and IS strategies. Furthermore, as seen in Chapter 7, by treating each case individually and carrying out cross-case analyses, the necessary information to develop the theoretical framework is better structured.

As said above, the organisation analysed and described in each case report has unique characteristics, functions, managerial style, importance given to technology, size and number of staff; consequently, the methods used to synchronise their business and IS strategies vary from case to case. To better comprehend how this synchronisation is performed, each organisation is scrutinised under the six synchronisation agents: business function, business strategy, business managers, IS function, IS strategy and IS managers. Each agent comprises specific indications and detail of how the synchronisation activities are carried out. Consequently, based on these agents, after each case study a summary table provides the key characteristics of how each organisation synchronises its business and IS strategies, which is useful information for the emergence of the research results discussed in Chapter 7.

6.2 RESEARCH CONTEXT

Even though there was a significant attempt to modernise the public services since the early 1970s, Ireland fully committed to the modernisation and change of its public service from the mid-1990s (McDonagh 2004). So for more than ten years, strategic management, a field of study that was already established and acknowledged in the private sector, has been gradually introduced into the Irish public sector while transforming the way all government departments and offices have been traditionally working. Concepts such as business strategies, identification of missions, resource management and the establishment of objectives are now widely known to all civil servants. Therefore, by means of this modernisation programme, Irish government departments and offices are now more efficient, have a better administration of their resources, and finally are providing customer services that in some cases even surpass the ones offered by private companies in terms of quality.

The research context section, which is a requisite to better comprehend the case studies, has the purpose of presenting an overview of how the strategic management programme emerged in Ireland, including what noticeable effects have surfaced and changes have caused (Section 6.2.1). With this background, it is intended to clarify not only how government departments have been developing business strategies (*i.e.*, strategy statements) and business plans (*i.e.*, divisional strategies such as the human resources strategy and the IS strategy) (Section 6.2.2), but also the role of technology in these organisations and the importance of planning the IS function (and thus creating IS strategies) (Section 6.2.3). Consequently, this section sets for the research results discussed in Chapter 7.

6.2.1 Strategic management in the public sector

In line with its nature, strategic management enables public sector organisations to plan for the future by analysing the present state, their expectations and the available resources to achieve this desired situation. However, this is not a once-off or static exercise since strategies created should be flexible enough to respond to a constantly changing internal and external

environment (Department of Agriculture and Food 2003). Previously the strategy of a public organisation was inferred by the decisions it took (Marsh 1988); nevertheless, it is now a requirement from Central Government that every department and office formulates and implements clear objectives and realistic goals that will impact the whole organisation.

In Ireland, strategic management was formally established in 1994 with the publication of the *Strategic Management Initiative*. This document, described below, was responsible for transforming all government departments and offices into better managed and more effective ones. Two years after the publication of the Strategic Management Initiative, the report *Delivering Better Government* (Department of the Taoiseach, 1996) was issued, functioning as a vision for the civil service and incorporating the role of technology into the strategic management programme. Both documents have been the critical drivers for governmental change in the last few years, in part responsible for making it a requirement for all government departments and offices to carry out strategic planning procedures, develop business strategies and also to plan the IS function (PA Consulting Group 2002c). The following two sections detail these documents.

The first formal guideline: the Strategic Management Initiative (SMI)

Based on strategic management recommendations and guidelines, a formal programme was necessary to initiate the modernisation endeavour of the civil service. Therefore, in 1994, the Strategic Management Initiative (SMI) was formulated with the objectives of improving the quality of services delivered to the public, to contribute to national economic and social development, and to make the most efficient and effective use of resources (SMI Division 2001).

In essence, the SMI is about the delivery of high quality public services to customers as cost effectively as possible (PA Consulting Group 2002a). It develops suitable organisational structures and management processes to ensure that the public service is capable of meeting the challenges that it is currently facing and likely to confront over the next few years (Doyle 2001). To achieve this, emphasis has been placed on acknowledging the particular service needs of Government and its customers (internal and external). Furthermore, it has been essential to improve corporate support functions like human resources and finance (the management of IS resources was not formally taken into account for two years until the Delivering Better Government report was published).

After the introduction of the SMI, significant benefits, such as the development of a more open, transparent and accountable business environment were noticed in the quality of services delivered by public sector organisations (Humphreys et al. 1999). The primary responsibility for its implementation rested with each department. However, the central departments (Finance and Taoiseach) played an important role in developing policy frameworks and guidelines.

Vision and role of information technology: Delivering Better Government (DBG)

In 1996, a report called Delivering Better Government (DBG) (Department of the Taoiseach 1996 p.1) was published by the Co-ordinating Group of Secretaries in response to the SMI. While the Strategic Management Initiative did create a 'space for change', the DBG report introduced a vision for the civil service and the role of technology. Its objective was to achieve "an excellent service for the Government and for the public as customers and clients at all levels, building on the good service that is provided at present" (Department of the Taoiseach 1996 p.1). Therefore, it aimed to create a more customer-focused civil service that was not only efficient, effective and internationally competitive (where appropriate), but also one that provided a more satisfying and rewarding place to work (Tuohy 1997).

The main emphasis of the DBG report was on improving the departments' capability to provide high-quality services in a flexible and cost-effective way (SMI Division 2001). This has been achieved through initiatives focused on improving policy planning, implementation and the delivery of services. Therefore, recommendations were made to ensure that the civil service was efficiently and effectively managed to achieve the objectives set for it by Government. Additionally, the DBG report stated that the conditions necessary for achieving the vision included, among other requirements, the effective use of IS (Murray 2001) at local, regional and national levels (Humphreys 1997). The proposal was designed to set mechanisms to facilitate and mandate change. As a result, special emphasis was placed on the role of Secretaries and Heads of Office in leading the change process and in preparing proposals for the specific elements of the programme.

In relation to IS, despite in 1996 almost all departments and offices already experienced widespread usage of basic IS services, the DBG report noted that most public sector organisations were not fully exploiting the opportunities presented by IS to re-design long-standing work processes. It added that to achieve benefits already common in the private sector, such as efficiency gains, and enhancements in decision-making and service delivery, further

implementations were needed, complemented by innovative changes in reporting structures, work processes and information management practices. Therefore, the report recommended a review of the use of IS in all the civil service to maximise the benefits achieved and ensure that its use was driven by business priorities and needs (Department of the Taoiseach 1996). Since then and after considerable investments, a noticeable change can be perceived in most government departments and offices. Consequently, organisations like the Office of the Revenue Commissioners and the Department of Agriculture and Food have more sophisticated IS implementations and IS planning procedures than many private companies.

6.2.2 Strategy statements and business plans

A document required in every government department and office, and a central element in the development of the strategic management programme, is the strategy statement (or business strategy). Strategy statements, which are three-year period documents, are intended to embed the strategic management process into the day-to-day running of the organisation, providing a link between the goals and objectives of Central Government to the related strategies needed to ensure the achievement of successful outcomes. Furthermore, these documents identify key areas that contribute to the delivery of high-quality services to all clients.

In this section, the strategy statements in government departments and offices are introduced. First, a description of their origins and development processes is given, followed by the main elements that constitute their content. Finally, the importance of planning the business function in the public sector is discussed.

Emergence and development of strategy statements

Strategy statements were first formally mentioned in February 1994 in a speech about strategic management in the Irish public service by the then Taoiseach (*i.e.*, the Prime Minister), Albert Reynolds, TD (Boyle and Fleming 2000). They were referenced again in both the Strategic Management Initiative and Delivering Better Government publications. But it was not until 1997 with the publication of the *Public Service Management Act,* that the production of a strategy statement became a requirement in every department and office. Its emergence added impetus to the SMI and established the condition that all government departments and offices must produce a strategy statement, setting out key goals, the strategies to achieve them, and indicators of output against which performance might be assessed.

During its preparation, rather than represent individual notions, strategy statements must collect in partnership the views of all stakeholders in each department or office, from senior management to low-level staff (Boyle and Fleming 2000). This encourages both a widespread ownership and understanding of goals, objectives and strategies, while also reflecting the strategic concerns and views of the organisation (Department of the Taoiseach 2002a). Additionally, since the Ministers of State have responsibility for policy formulation, this is reflected in the plans. Furthermore, civil servants identify and select strategies which produce a set of outputs which will in turn deliver the required policies (PA Consulting Group 2002b).

When the strategy statement is finished, the Secretary General, the person appointed as principal officer or chief accounting officer of the Department (Department of the Taoiseach 1997), passes it on to the Minister for approval with or without amendments. Later, the Minister places the strategy statement before the Oireachtas (*i.e.*, the national parliament of Ireland), thus opening a means of dialogue between these three stakeholders. Moreover, their creation is not a one-time matter. The Public Service Management Act obliges Secretaries General to review and update their strategy statements no later than three years after the last statement was prepared or within six months of the appointment of a new Minister. Furthermore, it stipulates that Annual Progress Reports must be developed by each department and office as an opportunity for reviewing and updating, if necessary, the statements.

Content of strategy statements

Departments and offices develop strategy statements to provide better service to citizens by considering how the organisation's goals will be addressed in terms of its structures, systems and resources. Basically it is a document that serves as a framework for action that meets the circumstances of the individual organisation, while preserving flexibility to meet the changing environment (Department of the Taoiseach 2002a). Its preparation and presentation are based on a common understanding of essential elements by the Minister and the Secretary General. Furthermore, it is linked to an effective business planning process.

Every strategy statement must be prepared in accordance with a broad set of guidelines provided by Government and the Co-ordinating Group (Department of the Taoiseach 1997). Its content must include key objectives for the major divisions of the Department, 3-5 year goals stated in outcome terms, and related strategies (including use of resources). Additionally, under the clear vision, leadership and direction from senior executives it must include the strategic

planning process undertaken during its preparation, the Department's mandate, and a clarification of the 'business' of each Department with reference to current national programmes (Murray 2001).

The Department of the Taoiseach, through a document called *Guidelines for Secretaries General and Heads of Office on the Preparation of Strategy Statements*, stipulated the elements that must be included in each strategy statement (Department of the Taoiseach 2002a). Some of the fourteen elements identified are: mission statement, environmental analysis, goals, objectives, performance indicators, and financial resource allocation issues. Moreover, since one of these topics is about the Information Society and e-Government, strategy statements should also reflect the role of technology in the Department together with all three aspects of electronic government: the online delivery of public services, the e-enabling of policy formulation, and the internal administration within the public service.

With respect to cross-departmental issues, these guidelines mentioned that strategy statements must include government initiatives that will cut across some or all departments and offices (*e.g.*, the National Anti-Poverty Strategy, the National Children's Strategy, and New Connections). Therefore, all stakeholders involved in a particular cross-departmental issue should be consulted during the statement's preparation (Department of the Taoiseach 2002a). For major initiatives and as outlined in DBG, the emphasis should be on moving from coordination to collaboration among policy makers and service providers, between Government agencies, and between central and local levels. Furthermore, with the cross-cutting nature of IS management, a strong central leadership on IS and e-government is required (PA Consulting Group 2002c).

Importance of planning the business function in the public sector

The main objective of a strategy statement is to set out how individual departments and government offices aim to achieve their goals (Department of the Taoiseach 1996). Also, they can be seen as a useful means of releasing information to stakeholders on achieved progress (Boyle and Fleming 2000). Furthermore, throughout these reports, planned and actual performance can be compared (PA Consulting Group 2002b). Therefore, since its introduction, each department has prepared strategy statements (covering the whole organisation) and business plans (at divisional level) which support a clearer sense of 'customer' (PA Consulting

Group 2002c). Moreover, performance measurements have been included, which evaluate the progress in achieving the stated goals and purposes.

In February 2000, the Programme for Prosperity and Fairness (Stationery Office 2000) re-emphasised the key role of strategy statements in the modernisation of the civil service. Particular attention was given to the role of these strategies in informing detailed business planning, while providing the means of managing performance and improving the standard of service delivery. Therefore, by means of their strategy statements, departments now possess an improved capacity to analyse their business environment, to evaluate strategic alternatives, and to present their analysis in a cogent and readable form.

Strategic planning and the development of strategies should not be regarded as isolated or one-time events. It has been said that it must be deemed as a constant process of re-examination and adjustment (where necessary) in response to changing environmental or business needs (Simpson 1998). Generally, strategy statements cover a three-year period; nevertheless, it is recommended that annual reviews be carried out to ensure their continuing relevance. Furthermore, an essential element in the implementation of strategy statements is progress reporting. So at divisional level, most Departments produce monthly reports which link the development of business plans with the organisation's objectives and targets.

6.2.3 The incorporation of technology into the Irish Government

PA Consulting group (2002b), in a review of the impact of strategic management across the public service, concluded that the Irish Government in 2002 was much more effective than it was a decade before. Many of the enhancements achieved can be attributed to the initiatives listed in SMI and DBG; nevertheless, technological innovations played a crucial part.

As mentioned above, the provision of excellent customer services is one of the cornerstones of the SMI (Boyle and Fleming 2000). However, this would have been impossible to accomplish without IS (Department of the Taoiseach 1996). For example, IS have played an important role in the enhancement of the Departments' business processes, in the facilitation of organisational and management effectiveness, and in the development of more efficient work processes. As seen in Figure 6.2, IS management is one of the core themes within SMI/DBG and vital in the successful implementation of the strategic management programme.

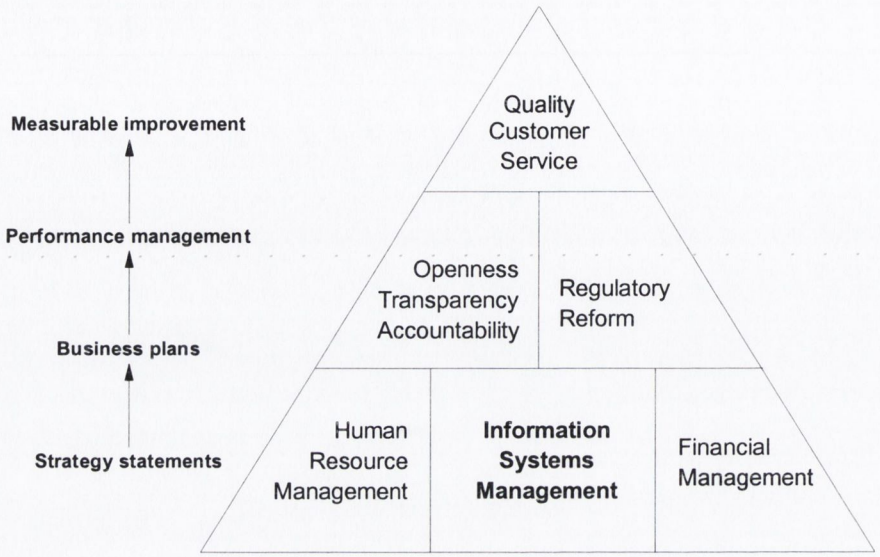


Figure 6.2: The six components of SMI/DBG (PA Consulting Group 2002c)

In the public sector, technology has radically transformed not only the quality, but also the nature of the services that are delivered (Humphreys et al. 1999). Therefore, IS have been an integrator of data sources and services in order to break down functional boundaries and thus enhance the nature and range of services provided to customers (Bellamy 1996). In Ireland, this has been accomplished through the Information Society programme (described below), which encourages public servants to apply the benefits of IS, to keep themselves abreast of developments in their area, and to identify how the business and IS strategies can be synchronised. After this, the role of IS strategies and their synchronisation with strategy statements are detailed. Finally, the emergence of e-government in Ireland is outlined.

The Information Society in Ireland

Technology in the Irish civil service started to evolve since the early 1960s (even though the Office of the Revenue Commissioners used basic technology before then, its first real computer was acquired in the mid-1960s, followed by Land Registry in the mid-late 1960s). Some of the first undertakings included the automation of large-scale and structured tasks such as income tax collection and payroll, to the development of an Information Society which, among other projects, incorporated online systems to enhance organisational effectiveness and performance (Clince et al. 1992; Pye 1992). For Central Government, an Information Society is necessary in order to develop new opportunities and challenges, to improve the country's economy, and to achieve social inclusion though IS. Therefore, to transform Ireland into an Information Society,

an Action Plan was developed in 1999, setting out a range of measures and responsibilities to achieve this desired state (Department of the Taoiseach 1999). This plan addressed a number of areas such as infrastructure, awareness, access, promotion of e-commerce and the development of e-government. Furthermore, the Action Plan pointed out that public servants are "encouraged to apply the benefits of ICTs and keep themselves abreast of developments in this area and how they can be integrated into their business plans" (Department of the Taoiseach 1999 p.7).

To strengthen the engagement with the Information Society agenda, the Government created a specialised Cabinet Committee, an e-Strategy Group at Secretary General level, and established the Programme for Prosperity and Fairness (Stationery Office 2000). These initiatives had the objective of accelerating Ireland's transition to an Information Society with increased economic competitiveness, employment, social inclusion and participation. Also, a new Information Society Commission was appointed, drawing high-level representations from businesses, social partners and the Government itself. All of these structures are coordinated through an expanded Information Society Policy Unit (ISPU) in the Department of the Taoiseach.

New Connections (Department of the Taoiseach 2002b), the Government's most recent Action Plan for realising the potential of the Information Society, was published in May 2002. Basically it sets out the Government's strategies to ensure that Ireland establishes itself as a world-leading location for e-business and knowledge-based economic activity. It is constituted by three key, wide-reaching areas (Department of the Taoiseach 2002b): telecommunications (developing the necessary capacity for delivery of advanced telecommunications services), legal and regulatory environment (ensuring a secure legal framework for electronic transactions), and e-government (key leadership role for Government in driving wider engagements with IS).

In the Irish public sector, information systems have generally evolved in isolation, created for specific purposes and without much commonality (Bannister 2001). Some reasons for the predominance of discrete systems include the uninfluential position of IS managers in some departments, the political control of these public organisations, internal politics, and the size and breath of the range of services offered. With reference to IS managers, since in some large departments these executives are only at Assistant Principal or Principal Officer level, their "ability to resist political pressure for short-term solutions in the interests of longer term thinking is limited" (Bannister 2001 p.71). Therefore, not only must business managers be

involved in the planning of the IS function, ensuring that a strong synchronisation exists between high-level business objectives and IS strategies as set out in strategy statements, but IS managers must have a relevant position in the business and be involved in business planning (Broadbent and Weill 1993; Smaczny 2001).

IS strategies and their synchronisation with strategy statements

While strategy statements set out the business high-level goals and strategies of public sector organisations, IS strategies (or IS business plans in the Irish government) determine the IS area's objectives and main activities. These IS strategies have been identified as a crucial link between strategy statements and IS action (Hackney 1999). In 1998, the *Implementation Group Guidelines for the Preparation of Business Plans* stipulated that IS strategies, which support the achievement of organisational goals, must be close to the organisation's operations and describe how specific IS deliverables will be produced within a defined timeframe. Also, the guidelines mentioned that these documents should identify how the IS area's objectives are matched with the department's or office's goals and strategies, which are contained in the strategy statements (Department of the Taoiseach 1998).

A white paper published in 1985, *Serving the Country Better* (Government of Ireland 1985), was the main impetus for a customer-responsive public service (Butler 2002) and the first time IS initiatives received palpable Ministerial support (Pye 1992). Among its recommendations, it stated that government departments have a need for IS strategies for the introduction, development and support of office automation. Moreover, it proposed setting up a special fund to enable major new directions in the application of technology. Therefore, this paper gave a valuable boost to the exploitation of technology by means of creating IS areas where absent, formulating and implementing IS strategies, and carrying out IS strategic planning activities. In addition, it enabled the trail to stronger synchronised arrangements by coordinating the civil service's strategic efforts with regard to the use and exploitation of new technology, by requiring business managers to examine information as a resource, by identifying appropriate technical solutions, by meeting the business needs with technology, and by providing an improved basis for dialogue between IS and business managers. Moreover, in some departments it provided a valuable stimulus for business managers in assessing their objectives and identifying needs for the future (Pye 1992).

Since the publication of the *Implementation Group Guidelines for the Preparation of Business Plans* document, each public functional area is mandated to prepare business plans (*i.e.*, functional-level strategies) that translate the goals and objectives of the strategy statement into divisional objectives, and ultimately, into individual and team activities (Department of the Taoiseach 1998; Department of the Taoiseach 2002a). Moreover, the Centre for Management Organisation Development (CMOD), part of the Department of Finance, established guidelines for the use of technology in government. This incorporated the development of IS strategies as pre-requisites to getting delegated sanction for spending their IS budget. Developed under senior management review and approval, these IS strategies should include the objectives of the IS area, resources, activities required to achieve these outcomes, identification of responsibilities, implications and performance indicators. Even though the majority of the departments and offices produced detailed IS strategies to guide the IS function (Humphreys et al. 1999), CMOD's ability to control the formulation of IS strategies has been limited, especially because large public sector organisations have considerable autonomy in IS strategic decision making (Bannister 2001). Furthermore, it was acknowledged that the usefulness of the IS strategies depended in the support provided by senior managers to the realisation of the identified goals (Pye 1992).

e-Government initiatives in Ireland

Electronic government is the access by citizens, business and even other public sector organisations to all services provided by Government through electronic methods (PCs, mobile phones, kiosks and DTV). The Gartner Group (2000) defines e-government as the "continuous optimization of service delivery, constituency participation and governance by transforming internal and external relationships through technology, the Internet and new media." Ideally, only one portal for all the applications must exist, making the internal communication between government departments invisible to the customer. This main idea focuses on the concept that repetitive tasks (*e.g.*, reporting an address change can involve contacting nine departments in the U.K.) should only be made once ('one-stop shopping'), avoiding that the user individually contacts all departments involved. Furthermore, it is capable of reducing costs and achieving higher efficiencies, better services and opportunities.

Since 1999, e-Government has evolved in Ireland as a major aspect of public service modernisation. In 2000 all departments and offices were mandated to produce an e-Strategy for the delivery of online public services. These strategies, which complement IS strategies in

aspects related to the electronic delivery of services, identified and prioritised the systems which were going to be e-enabled during the remaining lifetime of the Action Plan for the Information Society. Later, in 2002, the eStrategy Group of Secretaries General agreed that strategy statements should also include the Information Society initiatives (*e.g.*, the Public Service Broker). According to a PA Consulting Group report (2002b), while 19 out of 23 departments and offices had IS strategies, 16 out of 23 had e-Strategies, implying that at least 3 departments had formal IS strategic planning procedures but still not engaged in revolutionising their services into e-services. Additionally, the report found out that incorporating e-government initiatives into IS strategies caused noticeable increases in technology support as a work enabler throughout the organisation.

The Public Services Broker, a Central Government initiative, is integrating all services of central and local government through a single point of contact: the REACH Services Portal[1] (McDonagh 2004). Several integration schemes such as the Integrated Social Services System (ISSS) launched in the early 1990s in the Department of Social Welfare (former name of the Department of Social and Family Affairs) led directly or indirectly to the concept of the Public Services Broker (Bannister and Walsh 2002). It was originally scheduled to go live in 2003, but it has been continuously delayed due to a number of complex factors one of which was the absence of a 'champion' with sufficient authority to ensure its delivery. While this deferral has more deeply affected the small departments and offices with limited IS capacity, significant examples of successful implementations can be noticed; for example, the Revenue Commissioner's Revenue Online Service (ROS) and the Land Registry's Electronic Access Service (EAS) (PA Consulting Group 2002b).

When the Action Plan for the Information Society was implemented in 1999, it stated that all departments and offices had to operate websites with relevant information, including forms, leaflets and links to other sites (Department of the Taoiseach 1999). Additionally, this plan maintained that email would have to be a normal contact method. Furthermore, unique databases which provided electronic public service information in a client-centred manner – one for citizens and one for business needs – were commissioned: OASIS (On-line Access to Services, Information and Support) was developed on a cross-cutting basis to citizens; and

[1] REACH is an agency established by Central Government to develop a strategy for the integration of public services and to develop and implement the framework for e-government. The Public Services Broker, a set of process and procedures to provide a standard means of access to e-services, is responsibility of REACH.

BASIS (Business Access to State Information and Services) was developed to ease the interaction of businesses with Government. Progress in these services has been recognised by the European Commission when Ireland was placed first for web-based delivery of electronic public services in 2001 (PA Consulting Group 2002b). Despite the importance of online services in Ireland and the resources invested throughout the last years in all government departments and offices, a recent report states that Ireland's e-government performance relative to other European countries slipped to mid-table in 2006 (CapGemini 2006).

Since the strategic management programme was officially implemented in Ireland, several positive effects and benefits can be identified in all government departments and offices. Nevertheless, the most important advantage, seen from an IS perspective, is the requirement of a formal business planning process: strategy statements (or business strategies) leading and influencing business plans (*e.g.*, IS strategies), and the prospect of having business plans leading and influencing strategy statements. Furthermore, the impact of the strategic management programme on the IS function is more to do with ways of thinking about IS and its contribution to the business than with issues of technology as such. Moreover, regarding the synchronisation of business and IS strategies, when the strategic management programme made it a requirement for all government departments and offices to develop strategy statements and IS strategies, it instigated the first step of the synchronisation process, whose multiple benefits can already be noticed as described in the next six sections.

6.3 LAND REGISTRY AND THE REGISTRY OF DEEDS

(CASE STUDY 1)

6.3.1 Introduction

The Land Registry and the Registry of Deeds have been in operation for more almost three centuries. Their primary function is the administration of a complete system of registration which protects property rights and facilitates financial transactions. The volume of records this Office holds has been continuously growing since its establishment. Therefore the retrieval, processing and provision of data and information require an efficient operation and administration based on Information Systems (IS). Since identifying this need, new technologies have allowed alternative ways of delivering services like the storage of maps and the digitalisation of official records.

Nowadays, "the Registries" – as they are collectively known – are among the most technologically advanced public offices in the Irish Government. The first transactional e-government system in the country is attributed to them. However, in order to maintain this status, with the top managers' full support, the Office annually reviews and updates an IS strategy whose mission and objectives are strongly synchronised with the strategy statement's objectives and targets.

6.3.2 Origins

There are two separate systems for recording property transactions in Ireland, both under the Registrar of Deeds and Titles: the system of registration of title operated by the Land Registry and the recording of deeds operated by the Registry of Deeds. For administrative purposes these functions were merged into one organisation and are collectively referred to as the Registries.

The Registry of Deeds was constituted in 1707 when the necessity for a system of voluntary property registration was recognised. At that time, property represented one of the major shares

of wealth for individuals, businesses, institutions and public bodies. Later, in 1892, the Land Registry was established to provide a comprehensive, simple and secure system of title Registration for agricultural tenants wishing to purchase their holdings under the Land Purchase Act. Nowadays, approximately 90% of all property in the country is registered in the Land Registry.

Under the 1964 Registration of Title Act, the Registries were obliged to be self financing. Since September 1990, they have been transforming into a semi-state organisation, thereby removing themselves from the Civil Service structure. However, alternative models have been reviewed to achieve the purposes of greater autonomy and flexibility. This is being done not only to operate in a commercial, market-oriented environment, but also to achieve the flexibility, structure and necessary technology to provide fast, efficient and up-to-date services to the public. From a technology perspective, the Registries will have greater autonomy and freedom to develop new information systems.

6.3.3 Function and objectives of the Department

In a country with one of the highest incidences of home ownership in the world (extended throughout 2.6 million land parcels and 1.6 million dwellings), land constitutes the major share of the nation's wealth. Since for the majority of the people the acquisition of a home, farm or business will be the biggest purchase they will carry out during their lives, it is essential that such valuable assets are accompanied by adequate safeguards. Therefore, it is necessary to have a secure and reliable State guaranteed system of title registration. In Ireland, the bodies responsible for providing this service are the Land Registry and the Registry of Deeds.

The two functions are guided under the Office's mission: "safeguarding the legal, social and economic fabric of property ownership." The oldest one, the Registry of Deeds, provides a system for recording (nowadays electronically) the existence of deeds and conveyances affecting titles which are not registered in Land Registry. These recorded deeds will have a legal priority over unregistered deeds and over deeds registered later in time. For security, the original documents are returned to the owners; the record filed is a memorial which essentially is a synopsis of the deed and some statutory requirements. The complementing organisation, the Land Registry, has the main purpose of registering property titles, recording subsequent transactions on such titles, and offering a greater governmental guarantee. Individual folios are created which include a description of the property registered, information about the owners, burdens and even maps of the land.

As seen above, the Registries' core business is the examination of legal titles and the registration of their effect or existence. Therefore, some of the services provided by both bodies are the supply of title evidence, the maintenance of accurate registers, the retrieval of records and maps, certification and enquiry service, and the facilitation of amendments in case of boundary disputes. The total number of customer transactions (*i.e.,* registrations, searches, copies and inspections) handled annually by the Registries now exceeds one million (in excess of 4,000 customer transactions processed each day). Therefore, constant pressure is placed in the technology area for a rapid and efficient delivery of services. Nevertheless, as Section 6.3.8 describes, this has already been achieved and several of the main operations are now fully automated.

6.3.4 Organisation and stakeholders

The Registries is a multi-disciplinary organisation with a staff of approximately 660 people comprising legal, technical and administrative personnel. It operates under the aegis of the Minister for Justice, Equality and Law Reform. They are distributed in five separate locations, which have given rise to some administrative problems, additional costs, and some restrictions in the roll-out of coordinated IS systems. The Senior Management team (Figure 6.3) – which is responsible for the running of the Office – reports to the Chief Executive and is representative of all functional areas, including IS.

Due to the nature and functions of the Registries, there is a wide range of internal and external stakeholders: the Minister and the Department for Justice, Equality and Law Reform; the Minister for Finance; Houses of the Oireachtas; the Ombudsman; the Information Commissioner; the Courts Service; the Office of Public Works; and staff of the Registries. Furthermore, some of the main clients are the general public, genealogical researchers, government departments, the legal profession, and statutory and local authorities. Since the Registries play a pivotal role in the property market, it is necessary that they have a profitable interaction with others who also have influences in this area.

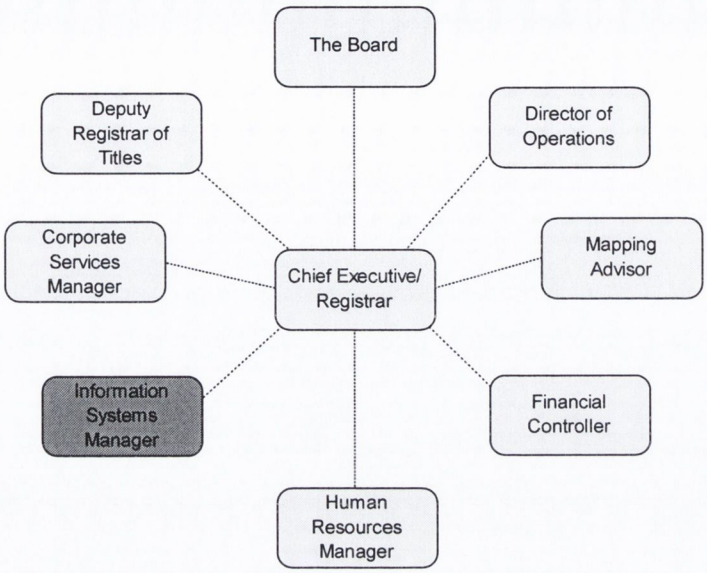


Figure 6.3: Land Registry and the Registry of Deeds' senior management team

6.3.5 Business strategy development

In the Registries, as in all public sector organisations, there is a strategy statement which outlines the Office's general information, objectives and goals. This strategy is developed every three years; however, because the business is changing continuously, at the end of its lifetime it might reflect a different picture. For that reason, the Corporate Services Manager has the function of producing annual reports which provide ongoing progress reports on how successfully the strategies reach their objectives. Every area is involved in the process through a combination of top-down and bottom-up approaches. It is not common, but this organisation combines a strategy statement and an overall business plan in one document. They integrate and develop both plans together because the Registries not only consider that they have to be related, but that they are the same thing.

Nowadays, the Registries comprise of a mature organisation with considerable experience in business planning. Nevertheless, in the beginning this was different. When the first statement was developed eight years ago, people could not quite understand its purpose. Despite only short term tactical decisions were agreed, planning had been traditionally performed by managers during meetings. Regional managers met with their local staff and afterwards discussed the results of these meetings between each other. However, they soon realised how all units fitted into an overall organisational plan and eventually realised that a strategy was needed to address organisational barriers. After some years, the staff learned to forecast and to comprehend what has to be done differently or additionally when goals could not be met.

Currently the Registries' strategy statement is supported by detailed plans from all business units. Each unit (in total there are more than 40) prepares an annual business plan, which is considered as the essence of how they perform. They are developed by divisional managers (*i.e.*, middle managers) in consultation with their staff, and are reviewed and updated on an ongoing basis to measure progress against targets set. These divisional business plans are in turn supported by individual staff members from whom key deliverables and critical success factors are agreed in respect of their personal performance, and on whom the success of the objectives set down in the plan is dependent on these agreements.

In the early 1990s, it was impossible for businesses to anticipate external factors like the growth of the Irish economy and the surge of the Internet. The Registries took advantage of their strategy as a tool to help them with the unexpected and to overcome sudden changes like these. Furthermore, the organisation has successfully adapted to more formal business planning and it now follows stated business goals in the way it works; for example, providing all services within defined response times. Since each plan is prepared, implemented and reviewed with a strong focus on outputs, performance management has a significant weight. Furthermore, the Registries plan and implement co-ordinated and complementary strategies with particular emphasis on a far-reaching modernisation programme that makes best use of enhanced IS.

6.3.6 The Department's IS area

At the head of the IS unit is the IS manager, who is responsible for planning and controlling every IS activity in both the Land Registry and the Registry of Deeds. He directly reports to the Registrar to ensure that IS are focused towards the business. The IS Unit has its own mission statement, which is to provide a customer-focused, high quality and effective service to the organisation by delivering IS which support the attainment of the business objectives.

In 1990, with only seven full-time staff and no formal structure to guide the introduction of IS at organisation-wide level, a new IS strategy was developed which, among other things, recommended the establishment of an IS Steering Committee. Since then, this group has been comprised of the Chief Executive, the Director of Operations, the Deputy Registrar, the IS Manager and other heads of function. Its functions include guaranteeing management commitment, ensuring the direction of IS, prioritising IS projects, establishing budgets, appointing project boards, and mandating the performance of post implementation reviews.

Nowadays, the IS unit is an efficient, mature and experienced area, responsible for positioning the Office in the vanguard of professional service providers, and an enabler of the delivery of e-government services. Not only the Registries' business mission is central to the unit, but the IS people have influenced some of the organisation's objectives into a more contemporary direction. Operationally, an outsourcing approach is followed where the majority of the projects are externally developed and where just a small number of internal business analysts and software developers are maintained. Also, every project has its budget, time and productivity gains closely evaluated by the business.

6.3.7 IS Strategy

Unlike the majority of the Irish government departments and offices, the Registries developed its first IS strategy in the early 1990s. This endeavour marked an initial clear link between structure, technology and business goals. It had the purpose of understanding the business, identifying organisational issues, and conducting a preliminary analysis of information needs. Furthermore, it even designed some organisational processes, some of which are still used today.

Before the development of the first IS strategy, the Office was already contemplating the advantages that technology could bring to the organisation. Nevertheless, at that time they did not have the necessary expertise to develop a strategy that could integrate IS into the business. Consequently, external consultants (Price Waterhouse) were contracted to aid in the task. These consultants worked in co-operation with staff, training and helping them so they could learn and repeat the process in the future. The work methodology involved regular meetings and the output was a document with 33 technological projects. There was also bottom-up consultation with users about their requirements, capturing ideas on how to enhance their work processes. Today, all of these systems have been developed except for one, a new digital mapping system, which commenced in June 2005 and will take five years to complete.

Every year an annual IS strategy is developed. It affects all areas of the organisation by computerising tasks and providing technology to support decision making and the delivery of services. Its structure is still centred on the 1991 strategy and it is redone, rethought and updated every year to reflect new priorities and legislation. For its development, staff, customer and user interviews, workshops, and questionnaires are extensively used. Also, it includes an analysis of how things are done in the organisation and how technology can help, support and

enhance work processes by establishing which systems can be used as a base for future IS strategies. Furthermore, both the external and the internal environments are considered.

The organisation identifies many benefits that have been achieved by producing an IS strategy; for example, staff productivity improvements (tangible), and raising of staff morale and job satisfaction by using more technological solutions (intangible). To measure their success, performance indicators were acknowledged; for example, improved operating levels throughout the organisation, the effective functioning of all systems with minor or few problems for users, and staff confidence in the reliability of IS systems.

Moreover, in line with wider e-government initiatives, it was decided that an e-strategy was necessary to enable the organisation to provide more and better electronic customer services. In 2001, the Registries created an e-government strategy with the objective of outlining the main services to provide, their benefits and future projects. Additionally, it included a review of the business objectives.

6.3.8 Integrating IS with the business

Throughout the years, the Registries have progressed into an organisation with a high degree of technological integration. Consequently, any intended change, new service or product has to be communicated and consulted beforehand to all areas in order to evaluate its impact (*e.g.*, customers, staff issues, financial and technical issues). The purpose and benefit of computerisation in the Registries does not greatly differ from other organisations, public or private. The aim is to provide services which depend on the supply of information. Therefore, the key to effective technology delivery is the identification of information itself and the recognition of the opportunities for sharing that information across the organisation. In this way, technology is a means to an end, and the emphasis must be on information.

In the Registries, IS are a key component in the provision of information-based services. Continuously, the Registries have been implementing leading-edge IS, which is one of the reasons why the organisation enjoys an elevated reputation among its customers. Technology is not only applied in order to address customer needs, but the Registries are persistently working to exceed their clients' expectations and to improve the quality of customer service delivery. Furthermore, because of the integration of technology, the work processes that have been used for more than a hundred years can now be accomplished more efficiently, at a lower cost and

with better results (*e.g.*, clients previously waited for three days to receive a document; now, in the majority of the cases, the delay is seconds).

Integration of IS into the business is not only considered relevant, but also necessary. Even though there are some constraints in funding and structures, it has yielded good value for money. Moreover, since 1998, impressive productivity gains have been achieved while drastically increasing the number of the processed applications. However, the Office acknowledges that it is not good to have a big dependence on IS since technology might bring complex problems of its own; for example, unavailability of information and strong reliance on disaster recovery plans. Therefore, one way technology has been integrated into the business is by analysing where and how these advancements can help the organisation work more efficiently. This evaluation generally comes from top managers, but by involving the entire organisation, several ideas have emerged from other stakeholders. Furthermore, some measures that have been used to analyse the quality of the integration of technology are customer queries, analyses of client satisfaction levels and return on investment considerations.

6.3.9 Synchronising business and IS strategies

The Land Registry and the Registry of Deeds have successfully integrated technology with business processes for more than ten years. With the volume of transactions that are requested every day, it would be impossible to effectively deliver their services without this successful integration. This achievement comes from a strong synchronisation of business and IS strategies, which in turn has been accomplished as a result of deep commitment and involvement of top managers. Therefore, an increased level of investment and a continued commitment to strategic management is necessary to facilitate further developments of advanced IS systems in order to ensure continued support for the Registries' business objectives.

The Office of Land Registry and Registry of Deeds has its strategies synchronised in such a way that there are strong reciprocal influences from the business to the IS area (see Table 6.2 at the end of this section). But this is because technology is both a driver and an enabler in the implementation of change. In the Office, the business objectives are based on the secure storage and efficient retrieval of accurate and reliable information. They are also based on the provision of information to the customers in a format which satisfies their needs and expectations. Therefore, while IS offer opportunities for innovation and improved productivity, at the same

time it poses increased challenges for management and staff in a constantly evolving working environment.

Through the *Strategic Management Initiative* and the *Delivering Better Government* plan, the organisation has been actively seeking innovative ways of making information available in the most speedy, convenient and effective manner. For this, a key strategic business objective has been to increasingly improve the quality of services offered to its fee-paying customers. Therefore, this objective, like some others, has been assigned to the IS area to find ways of turning it into reality; for example, focus on projects to decrease the reliance on paper records, reduce turnaround times on services, and increase the quantity and quality of registrations that could be provided on-line. The key to achieving this lies on the strategy statements. When preparing these documents, an analysis of what the organisation does and how technology can fit into its processes is discussed. During the first strategy statement, it was difficult to incorporate technology for the reason that computers were mainly used for in-house projects (*i.e.*, the agencies were the ones interacting with the clients). However, since then, the Office has worked to get people to use technology both internally and externally. This was not an easy accomplishment as in the majority of the cases employees were required to modify their work practices, many of which were long-standing.

In the Registries, the integration of technology became a necessity. The volume of transactions and processing work started to grow considerably, while operations were still done in a manual way. Also there were other problems, for example, when several clients wanted to access the same document at the same time. Consequently, the business was in need of technology to enhance its processes. Nevertheless, by having both strategies strongly synchronised, the right technology was identified and implemented into the business function.

Since then, emerging technologies are constantly being considered. For example, public access to the Internet was not widely available in 1991; however, later it became a key technology in the functioning of the Registries. Also, IS had to be taken into account when political and organisational decisions were determined, like the conversion to a new structure and the decentralisation of functions to Waterford. Therefore, when a new technology is identified that can help the organisation, its impact is considered on different levels. For example, how it can be best incorporated, what are its effects and what secondary implications might have (*e.g.*, with staff and customers). In addition, it is ensured that whatever is developed or set up must be

sensitive to the operational needs of those who will use it. Moreover, constant talks are carried out with users about their needs, requests and problems, and workshops are continuously organised to train these users in new system enhancements. So even though they may not be familiar with technology, they might have some ideas of how their work can be enhanced. Therefore, not only a top-down approach is performed, but also a bottom-up.

Ten years ago it was very difficult for the Registries to obtain the necessary funding to implement technology. However, today this is completely different. Not only an appetite and understanding from top managers exist towards IS, but their commitment and involvement is extraordinary. As a result, technology has become both the business essence and imperative. Currently, it would be difficult for the business to survive or function effectively without it.

There are several instances that show how synchronised the business and IS strategies are. For example, in the second strategy statement (1999), the use of effective IS was identified as a key strategy for the fulfilment of the Registries' business goals. The need for this emerged since the Office became aware that the implementation and successful operation of key IS was critical to the delivery of services in a timely manner. Another recent synchronisation example can be found in the IS unit's mission statement, which emphasises the delivery of IS in support of the attainment of the business goals.

6.3.10 Main IS projects and e-government initiatives

The Department of Lands, which is a predecessor of the Land Registry, had a computer back in the 1960s. But it was until 1982 that the Registries took its initial step of incorporating technology with a system designed to support the storage and retrieval of folios for the county and city of Dublin. Later, in 1986, it was extended to the Western seaboard counties via a telephone dial-up facility. In the intervening years, computerised support for monitoring fee refunds was introduced and in September 1990, a system was installed in the Registry of Deeds to digitise paper-based records. Since then, the Office has been continuously enhancing its processes by integrating IS, every time becoming more efficient and providing better services to its clients. Nowadays, IS play an increasingly pivotal role in the delivery of public services and are of particular strategic importance in the context of the Registries' business objectives.

For the past decade, the Registries have already had a strategy in place for providing electronic services. Nonetheless, with the help of the Information Society Action Plan, the organisation became the first government office to 'go live' with an e-government project. Then, ITRIS

(Integrated Title Registration Information Systems) was created in 1998 with the purpose of computerising folios on a nationwide basis and reducing the turnaround time on applications. Furthermore, a major element in the plan was the delivery of high quality and productive customer services.

EAS (Electronic Access System), the customer interface element of ITRIS, is one of these first e-government systems. Also, it was acclaimed as an Information Society flagship project three years ago and won two prizes at the Public Sector Times e-government 2005 awards. Basically it enables remote access through the Internet to search computerised indices, view, locate and print electronic folios, track the progress of cases, and request copies of certified documents. It also delivers on the electronic government initiative in making services available to customers through the Internet.

EAS has been a success, and this can be demonstrated by looking in Table 6.1 at its growth rate throughout the years. In 2000, there were almost 2,000 registered users. Two years later, in 2002, the number of subscribers grew to 4,400, which represented 60% of the Land Registry's potential customer base. Over 70% of all applications were made on-line rather than through traditional channels. In 2003, with an annual intake over €2.2m, the number of users increased to 6,120 and the number of transactions grew 81% from the previous year. Finally, by 2004, more than 80% of the customers were accessing data through the electronic channel and 3,500 external transactions were made every day (representing 90% of applications for some on-line services).

Table 6.1: Electronic Access System (EAS) usage

	2000	2001	2002	2003	2004
No. of subscribers	1,700	2,900	4,400	6,120	7,500
No. of annual transactions	123,943	159,807	274,561	497,560	769,058

By generating benefits, an information system will give confidence to people and more customers will start using it. In EAS, such growth is a tribute to the effectiveness of the system. Therefore, its benefits are derived from the increased flexibility, additional convenience and overall enhanced quality and speed of service which clients are already experiencing. The anticipated benefits for the Land Registry relate to improved customer satisfaction, and over time, expected lower costs derived from providing the services electronically rather than

manually. Furthermore, it is foreseen that there will be an increased demand for the organisation's information services and additional income in the future.

Since the introduction of the new systems (*e.g.*, ITRIS and MIDAS), substantial improvements have been evident in productivity and in customer service. Also, in order to improve the delivery of folios and maps, a considerable investment in infrastructure was made in 'state of the art' printers. These machines immediately print any request sent electronically. Later, documents are collated, checked, certified, addressed and in the majority of the cases, posted that same day. Other relevant IS systems include the Document Imaging Project, which was successfully concluded in August 2004. In 2000 there were 350,000 electronic folios from an estimated total of 1,500,000 records. Therefore, this initiative converted the existing paper records into electronic format. Basically it involved the scanning and indexing of approximately 6.4 million pages to be available online to EAS customers. Each day, between 10,000 and 12,000 new images and index records were added to the online database. Furthermore, a major benefit of this project was the development of a complete back-up of all title records.

6.3.11 Conclusion

The Land Registry and the Registry of Deeds are characterised by being an efficient organisation that constantly anticipates the benefits of new technology and explores new ways of operating. It is a good example of a flourishing government office that has enhanced its business processes in order to provide better services to its clients. Its successful deployment of IS systems is due not only to the good level of coordination and synchronisation between the business and IS strategies, but also to the efficient communication channels between business managers and the IS area.

In the Registries, this synchronisation commenced in 1991 when the first IS strategy was developed. Constant improvements in the way they have been working can be noticed since then. Today, the organisation could not successfully operate or even survive without technology. Nevertheless, with the support and commitment of top managers, together with the involvement of the whole organisation, this synchronisation will be maintained and more IS projects that enhance the business will be implemented.

Table 6.2: Key synchronisation characteristics of Land Registry and the Registry of Deeds

Agent	Business characteristics	Agent	IS area characteristics
Business function	• IS have evolved into the business' essence and imperative. • The business constantly anticipates the benefits of new technologies, explores new ways of working and provides enhanced services that even exceed their client's expectations. • Before any intended technological change, new service or product is implemented, it is sent to all areas for impact evaluation. • Whenever a relevant technology is identified, its influence is considered on different organisational levels. • It is ensured that whatever system is developed or set up, it must be sensitive to the operational needs of those who will use it. • The organisation queries users about their needs, requests and problems, since they might have some ideas of how their work can be enhanced by means of technology.	IS function	• The IS area is a mature, efficient and experienced unit. • The IS area has its own mission statement which is to provide a customer-focused, high quality and effective service to the organisation by delivering IS which support the attainment of the business objectives. • The IS area is central for the achievement of the business objectives. • There is a reciprocal influence from the business function to IS area. • By constantly considering emerging technologies, the IS area has innovated some of the organisation's processes. • The IS area continuously tries to find ways for transforming business goals and activities into modern and more efficient arrangements. • An IS Steering Committee directs technology developments, prioritises IS projects and establishes budgets.
Business strategy	• The business strategy has helped the organisation anticipate external environmental factors. • The use of effective IS has been identified as a key strategy for the fulfilment of the business goals. • The business strategy is formulated and supported by detailed plans from all business units, which are developed by divisional managers in consultation with their staff. • Annual reports provide progress reports on the success of the business strategies in reaching objectives. • An analysis of what the organisation does and how technology can fit into the business' processes is performed.	IS strategy	• The IS strategy impacts every area of the organisation by computerising tasks, providing technology to support decision making, and in the delivery of services. • The IS strategy includes an analysis of how things are done in the organisation, and how technology can support and enhance work processes. • During the IS strategy's annual review, consultation with users about their requirements and process enhancement ideas is carried out. • For its development, the whole organisation is involved. • The IS strategy's mission and objectives are fully synchronised with the business strategy's functions, objectives and targets.
Business managers	• Business managers have good knowledge and understanding about technology. • Together with the whole organisation, business managers analyse how IS can help the business work more efficiently. • There is deep commitment and involvement of business managers to IS issues and to the development of the IS strategy. • By working in cooperation with the IS manager, the right technologies are identified and implemented into the business.	IS managers	• The IS manager is part of the top management team to ensure that technology is focused towards the business and that the business best exploits IS. • The IS manager has full support in the development of IS endeavours and is responsible for planning and controlling every IS activity in the organisation. • The IS manager and his staff continuously seek innovative ways of making information available in the most speedy, convenient and effective manner.

6.4 DEPARTMENT OF SOCIAL AND FAMILY AFFAIRS

(CASE STUDY 2)

6.4.1 Introduction

In Ireland, even though significant changes have been experienced over the last few years like unprecedented economic growth and higher levels of employment, not all citizens have been in a position to avail these benefits. The Department of Social and Family Affairs was created almost 60 years ago in order to aid government to support individuals, promote social inclusion and assist the needy. Since its origins, the Department has been committed to the welfare improvement of every Irish citizen, working in the delivery of social services to those who depend on it. Furthermore, it is also involved in other issues like the promotion of a caring society, combating poverty and assistance to the old and unemployed.

The Department, due to the large volume of transactions carried out each month, could not operate without IS. Therefore, ever since modern technologies were incorporated, internal and external processes have been enhanced and noticeable benefits have been achieved, including the provision of efficient customer services. Nevertheless, and despite the way the business is managed, a formalised and documented IS strategy does not currently exist and cannot therefore be an enabler of change.

6.4.2 Origins

Throughout the 1940s, health insurance and social welfare issues were the subject of widespread debate, fuelled in particular by the 'Beveridge' scheme in Britain. This was closely watched by politicians in Ireland, while they examined the cost factors and social implications of implementing a nation-wide welfare system. As a result, the Department of Social Welfare was established in 1947 after taking responsibility for various social services formerly administered by a number of other Departments. It became fully functional in 1952 with approximately 1,300 staff members. In July 1997, the government re-named the organisation to Department of Social, Community and Family Affairs, reflecting a wider remit that has been

evolving in recent years, and the fact that a more comprehensive attitude has been adopted in its approach to tackling disadvantages and promoting social inclusion.

6.4.3 Function and objectives of the Department

With a budget of almost 30% of the gross governmental expenditure, the Department of Social and Family Affairs impacts the lives of almost every person in the State. It is responsible for the delivery of a wide range of social insurance and assistance schemes, including pensions, benefits, allowances and other aids. Its mission is to "promote a caring society through ensuring access to income support and related services, enabling active participation, promoting social inclusion and supporting families."

Originally the Department provided a limited range of income supports, comprised of insurance-based and social assistance payments, and associated secondary and child benefits. However, over the past twenty years the role of the Department has expanded in order to sustain further areas, including assistance for people returning to the workforce, family support services, and the cooperation with other departments and agencies in the delivery of the National Anti-Poverty Strategy. Nevertheless, income support remains by far the largest element of the Department's business, and the one which impacts most individuals in the State. Due to the diverse services provided, payments are classified in three groups: Social Insurance (financed entirely by the Exchequer, these payments are made on the basis of Pay Related Social Insurance – PRSI – contributions; *e.g.*, Disability Benefit); Social Assistance (payments which are made on the basis of satisfying a means test: *e.g.*, Prisoner's Wife's Allowance); and Universal payments (imbursements which are not part of the other two groups; *e.g.*, Child Benefit, and Household Benefits such as free electricity and free travel).

The Department provides services and information to a diverse list of customers, including the unemployed, older individuals, the sick, people with disabilities, families and communities in general. In line with this, its main products or schemes are categorised as:

- Retired and elderly (*e.g.*, Retirement Pension);
- Widows, widowers and one-parent families (*e.g.*, One-Parent Family Payment);
- Child-related payments (*e.g.*, Maternity Payment, Adoptive Payment);
- Illness, disability and caring (*e.g.*, Disability Benefit, Blind Pension);
- Occupational injuries benefit (*e.g.*, Injury Benefit, Funeral Grant);
- Unemployment and employment support services (*e.g.*, Unemployment Benefit);

- Basic income support (*e.g.*, Supplementary Welfare Allowance); and
- Miscellaneous benefits, allowances and services (*e.g.*, Rent Allowance).

6.4.4 Organisation and stakeholders

With approximately 4,700 staff, the Department of Social and Family Affairs is one of the largest employers in the Civil Service. It is structured on Aireacht/Executive lines with headquarter offices in Dublin, Dundalk, Letterkenny, Longford, Sligo and Waterford. This arrangement has been in place since 1985 when a major reorganisation was performed in line with a programme of modernisation and computerisation of the Department's outputs. Additionally, service delivery is organised on a 10-region basis, including a network of 58 Social Welfare Local Offices (SWLOs) and 69 Branch Offices (SWBOs). Furthermore, there are over 400 locally based social welfare inspectors who carry out a range of investigative duties.

As seen in Figure 6.4, the main structure of the Department is divided in:

- *Aireacht.* Responsible for the overall management of the Department (*i.e.*, personnel, finance, facilities management and internal audits) and in charge for advising the Minister on matters of social protection and related policies;
- *Social Welfare Services (SWS).* Executive arm and largest element of the Department. It is responsible for the day-to-day administration and management of social welfare schemes and services through a network of local, regional and decentralised offices. The IS Division is part of SWS; and
- *Social Welfare Appeals Office.* Independent office responsible for determining appeals against decisions on social welfare entitlements.

Despite a very wide and diverse customer base, the Department concentrates on the development of policies for the support of children and families. Furthermore, the Department helps individuals who have specific requirements or seek income assistance which is supplied by other state services. Consequently, in order to facilitate these issues, the Department benefits from the help of several support offices under its aegis:

- *Comhairle.* Responsible for the provision of independent information, advice and advocacy services for all citizens throughout the country;
- *Family Support Agency.* Responsible for the provision of a family mediation service, and the supply and dissemination of information about parenting and family issues;

- *Combat Poverty Agency*. Provides advice, research, information and action in relation to poverty in Ireland; and
- *Pensions Board*: Oversees the implementation of the Pensions Act.

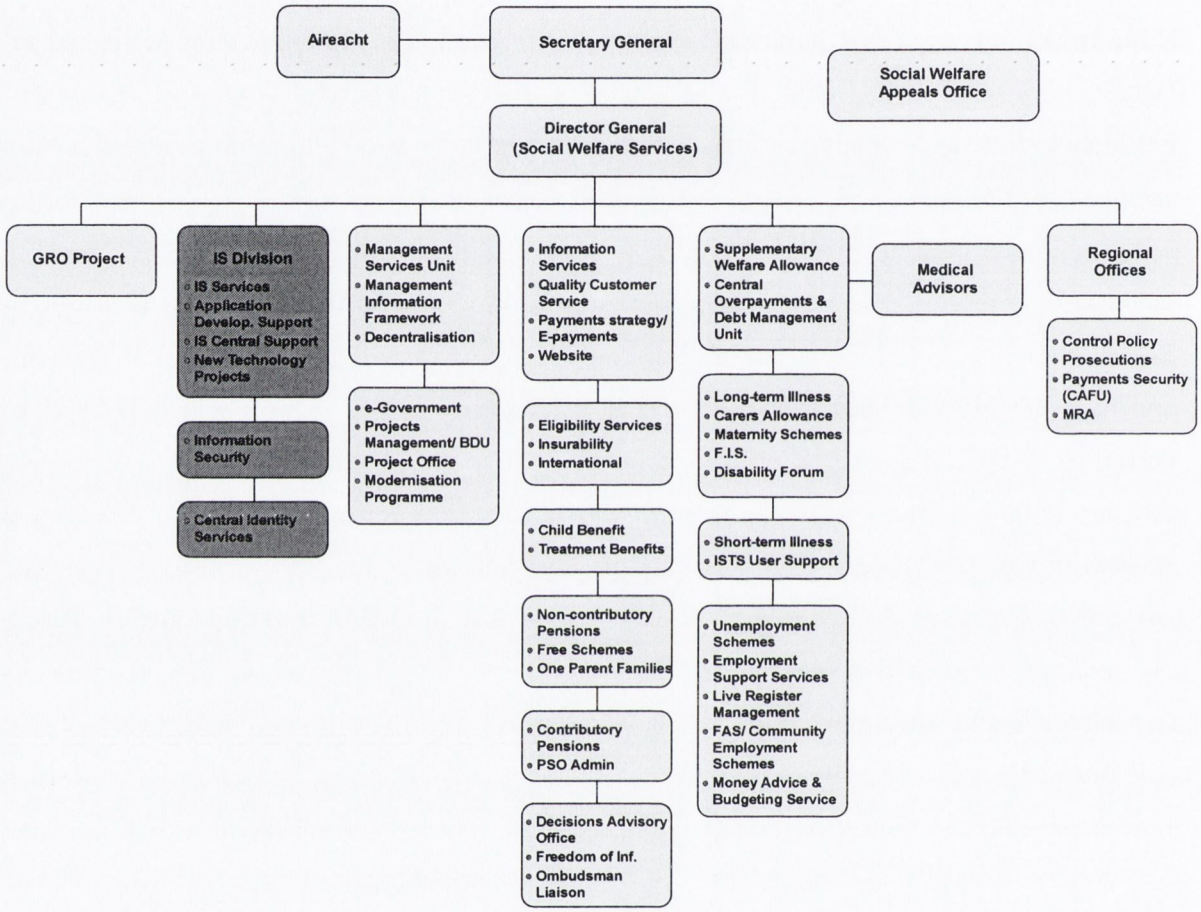


Figure 6.4: Department of Social and Family Affairs' organisational chart

6.4.5 Business strategy development

Strategy statements are high-level plans that guide the organisation in the achievement of its objectives. The last strategy developed includes the Department's overall goals, values and strategic action programmes. Its structure is divided in six sections:

- *Income support*: provides adequate, secure and sustainable income support, delivering appropriate services to the highest standards;
- *Support to work*: facilitates and encourages people in receipt of income supports to return to the active labour market;
- *Families*: supports disadvantaged families, families in conflict, one-parent families and families on low incomes;

- *Poverty and social exclusion*: provides support to those affected by poverty and social exclusion;
- *e-Government*: promotes the use and development of integrated services in line with the development of the e-government agenda; and
- *The Department and its staff*: develops an effective, adaptable and capable organisation and a culture of pride, innovation and performance with a high level of involvement and participation by people at all levels.

For its development and as mandated by Central Government, there was a wide-range consultative process within the Department at all levels. Since the 1996 strategy statement, it has been emphasised that the development of the plan must include consultation with customers, representative groups, the voluntary and community sector, and internal staff. Therefore, a series of working groups were set up to examine different business' elements and to develop appropriate objectives, strategies, outputs and performance indicators. Furthermore, through a partnership process (partnership steering committee and partnership groups), staff members were able to contribute to the discussions and to take part in the major 'building blocks' of the statement. The reason for this is because the Department aims to achieve a client-centred organisation which delivers high quality products and services, taking account of best practice standards of leading customer service organisations. This information has been a defining feature of the Department and has been vital in determining its services and future directions.

Complementing the strategy statements, business plans must be prepared in each area (including the IS division) in a consultative manner between management and staff. Although its progress is monitored on a monthly basis, these plans contain specific targets to be achieved by that area during the year. These commitments are based on the content and direction of the strategy statement, the customer action plans, and the internal customer service plan. Furthermore, it is through these documents that the strategy statement can be customised in terms of activities through which individual and unit performance is managed in relation to identified objectives and deliverables. Due to these reasons, complications surface when business plans are not completed.

6.4.6 The Department's IS area

The Department is committed to deliver services of the highest quality to customers, taxpayers, social insurance contributors and to Central Government. Therefore, the IS Division has a key role in the support and exploitation of technology to provide a high degree of excellence in each of the 59 million transactions that are dealt with each year. Furthermore, the Division is organised in a flexible way and is considered to be in the position to respond to environmental changes as they arise internally and externally.

Headed by the IS Director, which is at Assistant Secretary level and part of the top management team, the IS area not only has responsibility for the provision and support of all computer applications, telecommunications and IS within the Department, but also for the maintenance of the Department's production environment (*i.e.*, ensuring that on-time and accurate payments are issued to the correct clients, while also guaranteeing that the infrastructure supporting this is error-free, extended and securely operated). In addition, it deals with technology issues and carries out longer-term development work so as to extend and improve the functionality of the systems in line with user requests.

The Department's IS are an integral part of the business since technology is extensively needed to process claims and payments, provide information, and enable collaboration throughout the organisation and with external stakeholders. The level of dependency of these systems is such that without IS, it would be impossible for the Department to operate. Furthermore, many areas of the organisation could not function without the availability of robust IS. Therefore, the primary requirement for the IS Division is that these systems are available at all times. So in order to ensure this, the applications and infrastructure on which they run must be maintained and extended, as appropriate, to support changes in the Department's functional requirements.

Ever since their creation the systems and applications which support the social insurance and assistance schemes have been maintained practically without major modifications. However, in 2000, the IS Division implemented a new technical architecture and designed novel requirements in order to prepare the organisation for the new Service Delivery Model (SDM). These far-reaching initiatives, which are transforming the way the Department handles information and the way customers are dealt with, are making significant organisation-wide changes, together with major adjustments to the way the Division has traditionally performed. Furthermore, with the Government's Information Society Action Plan, the IS people have a key

role in the development of public service interfaces for sharing information and access to integrated services.

6.4.7 IS Strategy

IS initiatives, aimed at improving the overall efficiency and quality of customer services, have been introduced over the years to deliver the various schemes and services. For example, technology has played a major role in the development of the control programme which keeps fraud and abuse to a minimum and eliminates incorrect payments. Furthermore, the use of IS is maximised to ensure that the potential of IS are realised with particular regard to the accessibility of information to those with special needs. Nevertheless, because of the way the Department is managed and the IS Division operates, these developments have mainly been achieved without the guidance of a formal IS strategy.

In 1983, the first multi-year IS strategy was created. However, throughout the years, these strategies have never had a significant role in the organisation's operation. During the last two decades, due to their complexity, available resources and design, not only computer systems that have been developed in a patchwork fashion, but some services are still executed in mainframes. Additionally, because of the absence of any formal mechanisms for integrating the user's or the business managers' strategic input to the IS business plan development process, these systems have been envisioned according to current necessities and to meet the customer's short-term requirements. In consequence, the outcome has been an array of incompatible systems with no communication between each other and with limited updating capacity. Nonetheless, the Department is aware of this and the first steps to evolve to an integrated approach have already been taken by the development of the Service Delivery Model (see Section 6.4.10).

Nowadays, the current IS business plan is outdated; nevertheless, influenced by the strategy statements, a new strategy is being prepared. Business managers recognise that a plan to guide IS developments in support of the business is needed to achieve more efficient results and to enhance the Department's and the IS area's operation. Also, with the implementation and preparation of the Service Delivery Model, a strategy will be necessary to guide future modifications and enhancements.

Besides the current development of an IS strategy, an information services strategy was designed to maximise the use of new technology, and an e-government strategy was developed in 2001 to set out the plans for the creation of electronic services and participation in cross-departmental programmes such as REACH and the Civil Service Modernisation Programme (GRO). These initiatives offered opportunities to enhance the quality of customer services, reduce costs and improve business processes.

6.4.8 Integrating IS with the business

IS, which provide client based, internal administrative and managerial applications, play a critical role in supporting the Department's service delivery systems. By 1992, almost all schemes were already computerised and all headquarters, regional and local offices had access to the central computer systems and email via the Department's communications network. Nevertheless, after the introduction of the Strategic Management Initiative in 1996, an investment plan was developed to achieve productivity benefits, disseminate information, provide better services to customers, develop effective measurement systems, and reorganise the IS Services Division into a modern, service-oriented business unit. Some of the benefits achieved were improved services, enhanced security, more choice of delivery and better-quality management information.

The department started a detailed feasibility computerisation study as early as 1966, indicating that the introduction of technology would be practicable and economic. However, due to authorisation delays from Central Government, the Department's first computer was set up in the Dublin headquarters until 1972. Two years afterwards, the Department's first automated application was completed, the Disability Benefit scheme. Some time later, further advances in the Social Security system, particularly with the introduction of pay-related unemployment benefits, maternity and pension schemes, instigated the need to introduce more sophisticated computer systems, while taking advantage of the most modern administrative tools available. Therefore, in order to achieve this and to aid in the calculation of rates, issue of payments and cheques, two Honeywell 716 computers, one Honeywell 316 and 36 visual display terminals were incorporated into the Department. In the early 1980s, notable technological advancements were achieved; for example, sophisticated computers were implemented, and terminals were placed in offices outside the main building in order to make instant access available to information on several claims and benefits. In the same decade, problems with the way

information was handled caused changes to how IS were managed. Nevertheless, in the following years the business and the IS area started to have a good and close relationship.

By 1983, with a view of improving the Department's services to the public, it was necessary to integrate and incorporate further technology. Therefore, in cooperation with consultants, the first multi-year IS strategy was developed to implement an integrated telecommunications and computer network that covered all services. Later studies identified the best way of making progress with the Department's IS objectives and ensuring improvements over the next few years. By this time, 18 offices (6 in Dublin) were provided with information services. Furthermore, with the aim of offering a more localised service to clients, it was decided to have a 'one-stop shop' in every social welfare office. Consequently, a significant amount of information on claims was digitalised and a telecommunications network, INFONET, was implemented to link all locations around the country.

As said above, consultation with customers is an integral part of the Department's business. By obtaining the views of these clients the Department can more efficiently identify areas of improvement and understand the customers' needs and expectations so that policies and services reflect, and are responsive to these requirements. In line with the Customer Service Programme, a variety of consultation methods are used to get a wide view of the Department; for example, kiosks with a touchscreen technology to deal with customer feedback, including comments and complaints through fast, efficient, cost-effective and user-friendly systems were installed. Also, radical transformations of service delivery using modern technology and business models have been successfully implemented, aided by the adoption of a partnership approach between staff, management and unions.

In the Department, IS are considered critical not only to internally supporting the Department with office systems, email and networks, but also in automating processes, improving customer service, and achieving greater control of fraud and abuse. Some other benefits include money savings, enhanced business management, and flexibility towards a changing environment. Furthermore, it is regarded that with more advanced technologies, users might have more information at their disposal, and a greater number of decisions could be taken by front-line staff. Some issues associated in the integration of technology into the business function are the need to constantly upgrade the hardware and software, and social difficulties due to the fact that users do not like to see changes in the systems they are using.

6.4.9 Synchronising business and IS strategies

The Department has well-organised and efficiently managed business planning procedures; nonetheless, it is not comprehensive. Strategy statements outline, at a high level, the role, direction and priorities of the Department. The overall business plans, which are annually produced by the Aireacht, Social Welfare Services and the Social Welfare Appeals Office, detail how each area of the Department should contribute to the business objectives over the course of the year. And also, each business area produces monthly reports in which performance indicators and targets are monitored. However, there is currently no formally documented IS strategy which is wide-ranging, constantly reviewed and developed by managers and users to guide the IS function or to formally link IS developments to the business objectives.

Due to the way IS support the organisation, the Department is well aware that business and technological processes must be integrated. Not only is there a strong leadership position, but sophisticated systems have been developed with a vision to integrate the business. So while developments in technology have implications for the management and organisation of the business, modifications on how the business is run affect the IS Division's operations. Also, the Department recognises the immense potential that exists when using new technologies to help integrate public services. Therefore, it is regarded that IS have to be aligned with the business strategy, but in particular, that applications must be developed to support workflow processes through the integration of transaction processing and office applications.

Ever since 1976, the introduction of technology into the Department contributed to a more effective and efficient up-to-date administration. Its combined advantages meant there was better retrieval and communication of information when dealing with individual cases. Also, it improved the Department's capacity to produce management information, statistics and analyses for policy and planning purposes. Nevertheless, throughout the years, the Department has been committed to using modern technology to significantly improve the services provided. In addition, the Department's requirements for its IS systems have been shifting to promptly reflect changes in the environment, to provide more agile and error-free systems, to develop more productive systems for its staff, and to facilitate the delivery of services through the Internet. Nevertheless, while there are still some old systems in operation, some others are not integrated with each other.

Currently there is a new IS strategy under development. The existing strategy is not formally documented, is outdated and does not have a relevant position in the organisation's business planning; furthermore, business managers are unaware of the content of the present strategy. Nevertheless, the Department has an efficient IS area which supports effective systems that comply with the business' objectives. In the Department, IS have no function in itself: its nature is to support the business. Therefore, the IS area receives the business needs and requirements that have to be supported by IS. Notwithstanding, the IS area educates managers and staff about the possibilities and opportunities that IS can open up.

In the Department, the business drives the IS area (see Table 6.4 at the end of this section for synchronisation characteristics). Nevertheless, when something is going to be implemented, it needs concurrent interest from the IS Division, the users and the business in general. Top managers from the business and the policy sides, together with the IS Director, identify the organisation's technological needs and discuss ways of enabling them. Therefore, senior managers (*i.e.*, the IS manager and business managers) have a close working relationship and constant communication at administration, requirements and policy development levels. However, it has taken more than 20 years for this dialogue and relationship to achieve this level. Also, business managers have a positive standpoint on IS, together with some understanding of technology and its effects.

The Department could not work without technology. IS are essential to successfully deliver all schemes and to enable on-time payments to customers. Currently, the Department has a broad technological infrastructure; however, due to its size and resources available, there are some limitations that are going to be addressed in the near future. For example, local offices with only 1 or 2 PCs for 20 to 30 staff members and the prevailing use of dumb terminals. In addition, originally the systems were developed on an independent stand-alone basis. However, the emphasis has lately been on systems integration across schemes and to provide a common user-interface for processing all payments. Accordingly, as expressed in the Customer Action Plan, all IS systems must be fully integrated with each other and aligned with the business objectives; but in order to realise this, an up-to-date IS strategy will be indispensable.

6.4.10 Main IS projects and e-government initiatives

The extensive use of IS over the last 15 years has facilitated major improvements in customer service and streamlined the development of schemes and services. With this, claim processing

has become more efficient and more flexible in terms of payment methods. Therefore, IS have enabled the Department to provide enhanced services, better management of information, and achieve greater control of fraud and abuse.

Table 6.3: Main IS projects as described in the Annual Reports of the Department of Social and Family Affairs

IS Projects	Annual Reports
Online facility for the registration of births	Annual Report 2003
On-line notification of Unemployment Benefit	Annual Reports 2003, 2001
Civil Registration Service Modernisation Programme	Annual Reports 2003, 2001, 2001
Inter-Agency Messaging system	Annual Reports 2003, 2002
Service Delivery Model	Annual Reports 2003, 2001, 2001, 1999
Euro transition	Annual Reports 2001, 2000, 1999
ISTS (Integrated Short Term Schemes) project	Annual Reports 2000, 1999, 1998 & Reports 1994-1995, 1992-1993
Y2K compliance	Annual Reports 2000, 1999, 1998 & Reports 1996-1997, 1994-1995
Kiosk-based Integrated Multimedia Service Access for Citizens	Reports 1996-1997, 1994-1995
Central Records system	Reports 1994-1995, 1992-1993, 1989-1991
INFOSYS	Reports 1992-1993, 1989-1991
Pensions computer system	Reports 1987-1988, 1985-1986, 1983-1984, 1981-1982, 1979-1980
Treatment benefits computer system	Reports 1987-1988, 1985-1986, 1983-1984
Unemployment services computer system	Reports 1985-1986, 1983-1984, 1981-1982, 1979-1980, 1976-1978, 1972-1975
Disability Benefits system	Reports 1985-1986, 1981-1982
Children's Allowances computer system	Reports 1983-1984, 1981-1982, 1979-1980
Family Income Supplement computer system	Report 1983-1984
General Benefits system	Reports 1981-1982, 1979-1980, 1976-1978, 1972-1975
Calculation and issue of salaries	Reports 1981-1982, 1979-1980, 1976-1978

Due to the diverse means by which information is now accessed by customers and stakeholders, new and innovative ways to deliver information have been developed, such as web-based systems. The Department's website, launched in 1996, has the objective of enabling the Department to provide full, concise and timely access to information. Furthermore, the site is being progressed so it can release more interactive, transactional and integrated services. In

October 2001, after an analysis of the percentage of basic public services available on-line, the Department's website received the highest score among the Social Security sites in the 15 EU member states in an eEUROPE benchmarking exercise.

Nowadays, the Department is taking account of e-government goals and targets in relation to service delivery, access, payments, technical infrastructure and architecture, data sharing and integrated service delivery. Also, due to commitments to the REACH Agency and its programme of work, the Department has developed a number of significant initiatives in conjunction with other agencies that address the Information Society agenda. For example, through the Personal Service Identity (PSI) service, departments and offices will be able to securely validate their customers' Personal Public Service (PPS) number in real-time and allow for the provision of more efficient customer services.

In the Department, all major schemes have been computerised in the last 15 years. These applications have basic functions, but they accomplish their purposes. Nevertheless, with the Service Delivery Model initiative, the systems are being transformed into modern, efficient and better integrated solutions, delivered by emerging technologies and with maximum access and quality of service. Many of the IS projects in the Department, including some which are not used anymore, are listed in Table 6.3; however, the following are two of the most important:

- *Service Delivery Model (SDM).* The Department has a wide range of customers with specific needs, depending on their own circumstances and the type of assistance sought after. A programme of change, known as the Service Delivery Model, was approved by Central Government in July 2000 to represent a unifying vision, across all areas of the organisation, of putting the customer at the centre of services. It aims to modernise the way in which the Department delivers services to its customers and to be more flexible in responding to changes in government policies and client needs. It includes a broad range of individual projects related to IS, business processes and organisational issues that will support its achievement. Some IS features include automated transactions and the use of the Internet as a primary delivery channel. To realise the SDM, it has been necessary to invest in a new technological architecture and to develop a new generation of systems that will facilitate a more customer centred service. The first scheme (phase 1), implemented in November 2002, was the re-design of the Child Benefit system. With this, the online registration of the birth of a child sets in motion the allocation of a PPS number and the automated initiation of the Child Benefit claim and/or subsequent payments. Phase 2 was

initiated in 2003 for Retirement/Old Age Contributory Pension schemes, related allowances and Bereavement Grant schemes. This phase will be implemented on an iterative basis.

- *Civil Registration Modernisation Programme (GRO).* The Civil Registration Service has remained largely unchanged for 150 years. Therefore, there is a clear need for a modern, properly structured and efficient civil registration service to meet the needs of the 21st century. Together with the introduction of new technology, design and development of a new organisational structure and business processes, and capture and retrieval in electronic format of historical records, it takes advantage of up-to-date technologies while having the support of a coherent body of legislation. In order to achieve this, the Civil Registration Modernisation Programme was created as a joint project together with the Department of Social and Family Affairs and the Department of Health and Children. This is a major undertaking, since every year there are over 110,000 registered life events (*e.g.*, births, deaths and marriages), 500,000 certificates issued and 1.2 million records retrieved. The first phase of the project, which involved the electronic registration of life events and the electronic production of certificates, has already been implemented.

6.4.11 Conclusion

The Department of Social Family Affairs was created almost sixty years ago with the objective of providing monetary and informative assistance to thousands of people in the Irish Republic. However, since the Department was formed, there have been few radical changes in the way it does business, meaning that the computer systems that support these schemes have rarely needed fundamental modifications. Currently the organisation is going through a phase of radical transformation of its operations, where its schemes and services are being redesigned in order to integrate them with each other. Nevertheless, the Department is not making the best use or enjoying the benefits of a strong synchronised arrangement between the business and the IS strategies. Therefore, in order to receive the best advantages of the new technology and applications, exploit information and corporate knowledge, provide more efficient e-services and customer services, and maximise IS investments, it will be necessary to further incorporate the planning of the IS function into the business and issue a more relevant role to a formalised and documented IS strategy.

Table 6.4: Key synchronisation characteristics of Department of Social and Family Affairs

Agent	Business characteristics	Agent	IS area characteristics
Business function	• The business would be impossible to operate without IS. • Many of the organisation's processes have been unchanged for many years, prompting the idea that an IS strategy is no longer critical for the daily running of the organisation. • In the last years there have been some technological innovations, but these projects are driven by the business. • Sometimes the business wants more from the IS area than is possible.	IS function	• The IS area is an efficient unit which supports effective systems that comply with its objectives. • The IS area has an important role in the Department because its running depends on having efficient support and exploitation of IS. • The main objective of the IS area is that IS must be available at all times. • The IS area receives in a top-down fashion the business needs and requirements that have to be supported by means of IS. • The IS area educates managers and staff about the possibilities and opportunities that IS can open up, while looking for emerging technologies that can shape the Department's decisions to the future.
Business strategy	• When creating the strategy statement, there is a wide-ranging consultative process within the business at all levels. • The business strategies outline, at a high level, the role, direction and priorities of the organisation. • On a lower level, business plans detail how each area of the organisation contributes to the implementation of the business strategy. • In the organisation, the business strategy is regarded as more relevant than the IS strategy. • The business strategy influences the IS area's operations.	IS strategy	• There is currently no formally documented IS strategy which is wide-ranging, constantly reviewed and developed by managers and users to guide the IS function or to formally link IS developments to the business objectives. • The IS strategy does not have a relevant position in the organisation nor is an enabler of change. • Currently an IS strategy is being developed; nevertheless, past strategies are influenced by business strategies. • Several IS developments have been achieved without the guidance of a formal IS strategy. Accordingly, systems are envisioned in line with the business short-term necessities and to meet the customers' requirements. • Due to the way the IS strategy is regarded, an array of incompatible systems with no communication between each other and with limited capacity of improvement can be found throughout the organisation.
Business managers	• There is lack of support from business managers towards the IS strategy. • Business managers are unaware of the IS strategy's content, but they have some understanding of technology and its effects. • Due to the organisation's processes, business managers are aware that the business and IS functions must be integrated. • Together with the IS mangers, business managers identify the organisation's needs and discuss ways of enabling them. • Business managers have close working relationships with the IS manager.	IS managers	• The IS manager has a strategic position in the organisation. • The IS manager negotiates with business managers the organisation's IS requirements and their prioritisation. • The IS manager is involved in the planning of the business. • Due to the fact that the organisation is working well, not many innovations promoted by the IS manager and his staff are consented.

6.5 DEPARTMENT OF COMMUNICATIONS, MARINE AND NATURAL RESOURCES

(CASE STUDY 3)

6.5.1 Introduction

The Department of Communications, Marine and Natural Resources is characterised as being one of the newest government departments in Ireland. Within three years of being in service, it has brought together the communications, broadcasting and energy functions with the marine and natural resources roles. Under its aegis, there are more than 60 organisations and associations that look to the Department for leadership and policy development. Therefore, a well established strategic management function and strategy statements are necessary to guide the organisation's functions. Furthermore, a considerable degree of IS integration is essential to proficiently control the Department's affairs and to provide efficient services to its clients.

Since the Department was formed as a fusion in an era where most government departments and offices had considerable experience in business planning and also in developing IS strategies, it already emerged with business and IS strategies that influenced each other in a considerable degree. Nevertheless, as the case describes, this is not attributed to skilled or innovative planning procedures in the merged organisations, but to the vision and aptitude of business managers towards the integration of IS and to the peculiarity that the IS function is led by somebody who is a champion of Information Systems in the public sector.

6.5.2 Origins

The Department of Communications, Marine and Natural Resources (DCMNR) was established in June 2002 when the former Department of the Marine and Natural Resources was merged with the communications, energy and geological functions of the former Department of Public Enterprise; and the broadcasting function of the former Department of Arts, Heritage, Gaeltacht and the Islands. Later, it housed the forestry and the earth resources functions that

were transferred from other public offices. Nevertheless, the forestry function was returned to the Department of Agriculture and Food on January 2004.

6.5.3 Function and objectives of the Department

The mission of the Department is: "to promote the sustainable development, management and regulation of the communications, energy, marine and natural resources sectors in support of national economic and social policy objectives." This statement reflects the Department's wide range of roles and functions. More specifically, these business areas are:

- Communications (telecommunications, broadband, digital media, postal);
- Broadcasting (television, radio);
- Energy (oil, gas, electricity, peat, renewable energy);
- Maritime safety and Irish coastguard;
- Maritime transport (access and shipping), tourism and leisure;
- Seafood (sea fisheries and aquaculture);
- Coastal and fisheries infrastructure and zone management;
- Research (marine, forestry, hydrocarbons, energy);
- Hydrocarbons and minerals exploration and development;
- Geological survey; and
- Inland Fisheries

The core policy of the Department, and a key priority for Central Government, is to contribute towards competitiveness. This is because many of the Department's areas operate in an increasingly globalised marketplace. Some of the Department's sectors have played a vital role in enhancing national competitiveness through investments in state-of-the-art infrastructure, research promotion, connectivity and access. Therefore, the Department's strategic objectives include the creation of legislation that looks after the communications sector; the promotion of an increased Information Society at both regional and community-based levels; and to place Ireland on a competitive par with comparative OECD economies in terms of Internet and communications benchmarks, including price, quality and choice. One external stakeholder that has considerable influence in the Department's function and operation is the European Union (EU). The EU is pivotal in terms of setting policy, legislative, and financial frameworks across the sectors. Furthermore, the EU's role in transport, energy, communications, environment, fisheries, food safety and competition policies impact directly on the Department's responsibilities.

The energy, communications and maritime transport sectors have a vital role to play in delivering a highly competitive Irish economy. Additionally, they are invaluable for the country's development. Nevertheless, the communications area is of fundamental importance to the nation and responsible for changing part of the Department's social landscape. Furthermore, it is particularly relevant for this case study since it is the one that drives most of the technological innovations in the Department.

6.5.4 Organisation and stakeholders

The Department is quite a complex organisation, formed by a diverse range of public organisations. With an expenditure of €154 million (in 2004), the Department leads 19 commercial State companies, 27 non-commercial public bodies (*e.g.*, An Post, Electricity Supply Board (ESB) and RTE), 14 harbour authorities, and several independent regulatory associations under a corporate policy and legislation business model. It has 750 employees distributed between Dublin, Castlebar, coastal, regional and rural locations around the country. This geographical dispersal of staff and businesses presents particular corporate challenges. Consequently, an effective internal communication policy and exercise of governance across a wide spectrum of public bodies is needed. As seen in Figure 6.5, there are six areas in the Department, each headed by an Assistant Secretary General who reports to the Secretary General and the Ministers of State.

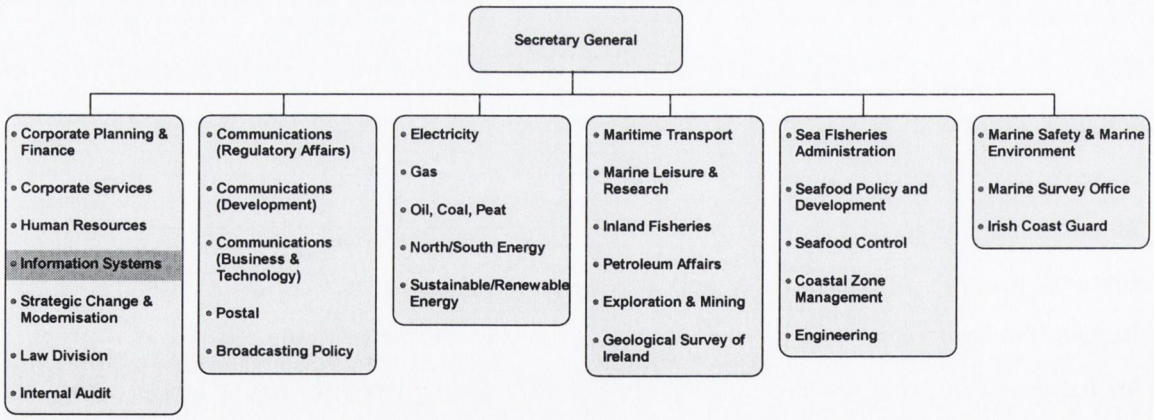


Figure 6.5: Dept. of Communications, Marine and Natural Resources organisational chart

The Department's dealings involve, directly and indirectly, a broad range of stakeholders. Due to its nature, external working relationships are maintained with other departments and offices on bilateral and cross-departmental matters. These include the Department of the Taoiseach, the Department of Finance, the Department of Environment and Local Government, the Department of Foreign Affairs, and the Office of Public Works. Additionally, close linkages are

sustained with EU member states and institutions, ensuring that EU policies take account of Irish interests and circumstances. Other stakeholders include the members of the Oireachtas, Ministers of State, local representatives, the public bodies under the Department's aegis, and international organisations. Furthermore, the Department has a commitment to operate in accordance with high standards of customer service with both external and internal customers (staff).

6.5.5 Business strategy development

The strategy statement is a key element of the SMI process, setting organisational goals and objectives across the Department's responsibilities and operations. The first statement was published in July 2003. Given that the Department was formed by merging several organisations and people, this document was structured around the relevant sections of the last three-year strategies published by the Department of Public Enterprise; the Department of Arts, Heritage, Gaeltacht and the Islands; and the Department of the Marine and Natural Resources. Furthermore, ever since the development of this high-level plan, a priority focus has been given to IS with the objective of creating a results-focused organisation characterised by developed responsibility, innovative thinking and best practice in the application of technology. It is considered that business managers have considerable commitment to IS, but still more is needed in the way of taking more ownership and not considering every problem or solution as an IS issue. Since a new Minister was recently appointed, a new strategy statement is currently being produced.

For the strategy statement preparation, there is ownership from the top, including the managing committee, the Secretary General, Assistant Secretaries and heads of division. Also, there is involvement of staff at all levels through divisional meetings and partnership groups. Additionally, each business area must present to the Management Advisory Committee (MAC) their policy goals, objectives, and performance indicators. Furthermore, while consultants may be contracted, the Strategy Innovation Group takes action, where volunteers across the Department review the organisation and the challenges it faces from a wider context. Finally, ongoing discussions are organised with stakeholders and other Departments. These internal and external organisation-wide consultations are developed due to the fact that the commitment and involvement of the entire staff is considered essential for the successful implementation of the Department's goals and objectives.

The implementation of the strategy statement is undertaken in accordance with divisional business plans which are developed by each area (including IS) at the beginning of the year. The importance of these detailed work plans was initially identified during the former Department of the Marine in order to develop a more standardised approach at functional-level. For its creation, and using the strategy statement as a guide, each area cooperates with its middle managers and staff, recognising what divisions will accomplish both in their own specific areas and for the effective discharge of the Department's objectives. Therefore, divisional planning is considered as an integral part of the strategic management process in the Department. However, the primary responsibility for monitoring its implementation lies within heads of division and the Department's MAC. Furthermore, in order to evaluate performance, indicators have been developed to measure the delivery of service using, for example, correspondence tracking and telephone surveys.

6.5.6 The Department's IS area

When the Department of Communications, Marine and Natural Resources was founded by combining several areas, functions and roles, the IS section had to practically be recreated. This is because the former departments had immature IS areas and almost no experience in planning the IS function. For example, in 1998, the former Department of the Marine and Natural Resources had an IS section that did not provide any services directly to the public; in fact, it was part of the Personnel/Finance/IS area and only supported other divisions through the preparation of IS expenditure plans, equipment replacement, technical advice, and IS support services. Later, in 2000, an Information Systems Division (ISD) was established by reflecting the Department's commitment to the optimal use of IS in strengthening its internal capabilities and for delivering high quality customer services. Nevertheless, at the time of its fusion with other organisations, it was still underdeveloped and without considerable IS planning skills.

In only three years, the ISD of the DCMNR has evolved to accommodate all necessities, requests and innovations needed in the Department. It is part of the Corporate Services Division, which also comprises Human Resources, the Law Division and Internal Audit (Figure 6.5). The IS Division is formed by 45 people and is headed by the ISD manager. This manager is neither an Assistant Secretary nor a member of the top management team; nevertheless, besides overseeing and resourcing the unit, he is constantly involved in business planning meetings and has the facility to directly talk with any executive anytime it is necessary. Additionally, close discussions between top managers are carried out during the IS Steering

Committee's quarterly sessions. Chaired by the Secretary, this Committee was formed with representatives of each of the business sectors to ensure that top managers get involved in IS decisions. Furthermore, it guarantees a link between IS and business needs while verifying that the Department has the necessary IS initiatives and strategy to support the business. Also, this body leads the Programme Management Framework, created with the purpose of pushing technology into the business. The direction and support of the IS Steering Group is key to the successful implementation of the IS strategy; nevertheless, when quick decisions have to be made, the Secretary can authorise a project without the Steering Group's consent.

Functionally, the Division delivers to all sectors by means of four areas: e-Government, Business Systems (*e.g.*, internal applications), Technology Infrastructure (*e.g.*, disaster recovery) and Service Delivery (*e.g.*, help desk). Moreover, it consolidates and improves services in three key ways: development and availability of the Department's technical infrastructure and systems; on-going support and maintenance of existing technologies and systems; and a systems development capability for business information management solutions. Furthermore, this is being accomplished under the IS area's overall goal, which is to provide high quality IS in support of e-government and departmental priorities. To achieve this goal, three strategic objectives are followed: a technical (develop and maintain a secure, reliable and adaptable technical infrastructure with specific focus on communication technologies); IS/e-government (develop and maintain IS which deliver public services to citizens and businesses in line with the Department's e-strategy and e-government initiatives); and IS capability (maintain and enhance the internal and external capability needed to deliver IS services).

6.5.7 IS Strategy

Before the Department's creation, the last IS strategy developed by the former Department of the Marine and Natural Resources was in 1999. During the fusion, a new strategy statement was put in place as soon as the Department was established. After reviewing this strategy, an IS strategy was created in June 2003 in order to plan how the IS Division will focus the Department's technology, which systems will be developed, and what approaches must be followed to support and enable the organisation's purposes and objectives.

The IS strategy is derived from the delivery of the IS area's vision. In particular, it places special consideration on the needs of 'frontline' staff, who are the ones responsible for directly providing services to the customers. The strategy is comprised of four components, which

describe how the information will be organised, what systems will be required, how best to organise the Department's IS, and what technology is needed to run the systems. Also, it includes a description of the data, application and technology architectures, together with how the area will deliver towards the Department's objectives.

The IS strategy was developed in line with the Department's strategy statement. Nevertheless, consultants were hired to facilitate the process because it is considered that these external companies have the necessary knowledge and experience to lead these projects. Furthermore, staff responds better when consultants organise workshops, stimulate people, and gather information. For its development, the Department's strategic and operational requirements were analysed, together with the current and planned systems.

The main IS strategy objective is to define what technological systems will be needed to support the implementation of the business strategy. Its importance lies in issues like the need for high standards of service quality, the growing demand for choice of service delivery, and the rapid pace of technological change and development. Additionally, like all functional areas, the IS Division annually prepares a divisional business plan concerning the projects that the area intends to achieve. Furthermore, to review performance, this plan is tracked on a quarterly basis and constant reports are produced for the IS Steering Committee group, the management committee of the Department, and to the Department of Finance.

6.5.8 Integrating IS with the business

In the late 1990s, the former Department of the Marine had operational constraints which in part were attributed to technological weaknesses. Modern IS were not yet fully developed and major limitations existed in its infrastructure. During that time, a programme was initiated to address these particular difficulties and to position the Department to meet high standards of achievement and customer service across all its functions. Nevertheless, this was unsuccessful.

When the DCMNR was created, the IS infrastructure was almost non-existent. Therefore, considerable effort was made to develop technological systems and introduce basic services such as email. Also, IS projects like the Management Information Framework and the Knowledge Management Project were designed and initiated. Despite its short lifespan, substantial progress has been achieved in the Department's IS infrastructure; yet, it is still underdeveloped compared to other organisations in the public sector. Furthermore, even now

the IS staff needs to acquire more experience in planning the IS function, especially because technology is becoming an integral part of how the Department operates.

At the moment the people in the Department believe that there is still no good return on investment on technology because more money is being spent than observed benefits. However, the organisation has been working differently since this integration started; for example, in dealing with customers, in how work is engaged with other departments, and in the way work is being internally performed (*e.g.*, through videoconferences and wireless networks). The Department's user community appreciates technological developments and its capabilities. Therefore, under the Change Management Strategy 2003-2005, the Department has been trying to maximise IS benefits for staff, customers, and business service delivery. Furthermore, to achieve this, some recognised critical success factors are the awareness of technology, the modernisation of the public service with particular emphasis on IS as enabler of change, and the development of performance indicators to measure IS capabilities. Also, it is recommended that the IS personnel understands the business, recognises requirements at both high and low levels, becomes familiar with the technology, and knows how to procure services and manage their delivery.

Integrating IS with the business is considered as essential since diverse functional areas critically depend on the quality of the IS systems and applications in place. For instance, employees acknowledge that their work has been enhanced and that the Department has increased its productivity. Nevertheless, some problems can be presented during this integration. One is that the business generally is not very concerned about security, passwords or hackers. Business managers only take into account the costs, making the IS area responsible for dealing with these issues. Another barrier is the productivity dip: for example, if someone stops checking their emails for some days, later it will take them a considerable amount of time to go through all of them. A final problem is the loss of organisational memory. For example, when Forestry was decentralised, an area that is not part of the Department anymore, the majority of the people was replaced, loosing corporate memory and procedures. As a result, it was difficult to deal with IS issues for some time.

When analysing the Department's scale of integration, top managers have different views. Some consider that there is a medium integration, since there are still several technological developments pending to implement. Others quantify it as high, due to the capability around IS,

its people, and the strategic view of what technology can deliver based in the business strategy. Nevertheless, both points of view are correct. The Department of Communications, Marine and Natural Resources has the characteristic that only the operational areas (contrary to the ones that mainly develop policies) provide services directly to the customer. Therefore, it is here where more technological innovation, like e-government projects, can be found. So while there are areas which have already been enhanced considerably by IS, there are still other sections and divisions where more commitment to technology is required.

6.5.9 Synchronising business and IS strategies

Unlike other government departments, a noticeable synchronisation existed between the business and the IS strategies in the DCMNR since its formation. Some of the main reasons attributed to this are the backup and involvement of business managers in IS issues and the vision and commitment of the IS area in support of the business strategy.

The IS area, as part of the Corporate Services Division, has the joint goal of ensuring that the Department is managed, organised, resourced and developed to successfully deliver on its mandates. Furthermore, its key functions are to provide high quality IS in support of e-government projects and departmental priorities. Nevertheless, this is not unique to the newly formed Department. In the former Department of Transport, Energy and Communications, an Information Technology plan was developed in line with the Department's overall strategy statement. Also, when the former Department of the Marine's IS Division was conceived in 2000, it contained some strategic objectives which were influenced from the business function; for example, the implementation of IS to achieve organisational goals; the collection, management and dissemination of information to support the achievement of the Department's goals, objectives and strategies; and the deployment of appropriate technology to provide secure, reliable and modern communications based on Internet technologies.

As said above, the IS area has a key role in the synchronisation of strategies. This function is supported by its core policy goal, which is to implement IS development and investment programs in order to support the Department's business strategies. Also, IS are provided to efficiently and effectively sustain delivery of these strategies by reference to the wider modernisation programme. The Division aims to underpin a cost-effective operation and business management. Therefore, the main outputs of the Division are IS strategies which are in line with the overall business plans and the changing needs of the Department.

For the Department, it has been a priority to link the IS strategy with the business by closely considering the business objectives and to bring together the IS and the business people. When developing the business strategy every area was involved, since it is important to capture the organisation's knowledge. And during the shaping of the IS strategy, the Department's vision was identified by understanding the business drivers, the strategic and operational requirements, and applying current and emergent technology to them. These drivers emerge from Central Government, within the Department and from other stakeholders. Some of these points are that the systems adopted should be aligned with the business objectives, that the systems must be proactive, and that customers must be the focus of all services provided.

A new strategy statement is going to be finished shortly. As soon as it is published, the IS area will make sense of it and will identify where IS are needed to enable the business. Then, workshops will be organised with heads of function and a new IS strategy will be developed. The content of this IS strategy will include what is needed to deliver into the business, how to enhance the organisation's performance, and how to innovate business processes. Some of the strategic objectives of this plan are to develop and maintain a secure, reliable and adaptable technical infrastructure to meet the diverse needs of the Department; to develop and maintain IS that deliver e-public services to citizens and businesses; and to maintain and enhance the internal and external capability needed to deliver IS services. Consequently, the IS strategy enables the business strategy to be implemented. And with this, better services are provided.

In the Department, the overall business strategy is the one that drives the organisation and the one that influences the IS area and its strategy (see Table 6.6 for key points at the end of this section). However, when developing the new strategy statement, some ways of how technology can enhance the business are already being considered. This is evidence that the Department is moving into a stage where more IS weight will be present in the business operation, and where both the business and the IS strategies will further influence each other. Nowadays, the IS area's employees are encouraged to test the newest technologies and to do research on ways of enhancing the business (*e.g.*, live feedback from the congress over the Internet). Furthermore, they are familiar with the business objectives. So with these transformations, more information and better choice will be provided to internal and external customers.

Since IS drive the Department's efficiency, it is important to know what the impacts of IS in each area are. To do this, a matrix is used where all developments and technologies are

associated with a particular sector. Moreover, by asking how the Department delivers, it is identified how technology enhances the Department. Nevertheless, technology by itself is not enough: the people in the Department must know and be willing to use these developments.

6.5.10 Main IS projects and e-government initiatives

Even though all IS projects are centrally initiated, planned and controlled, a current problem that exists in the organisation is that several developments are being seen solely as an IS matter, when in fact the whole business has to be involved. For each IS project, a Project Sponsor, a Project Manager and the Project Board take part. The Project Sponsor is a senior member of staff who assumes the role of champion for the assignment. They are empowered to allocate resources to the project and are responsible for reporting progress to the IS Steering Committee. The Project Board consists of business managers from the business areas involved. They meet at an agreed frequency to assess progress, reallocate resources and support the successful implementation of projects. All operations are centrally directed by means of Service Level Agreements between the Head of ISD and the respective heads of Divisions. Finally, the Project Team, made up of ISD and business people, handles the day-to-day activities of the project.

In the case of non-project IS issues such as network problems and recurring systems support, the User Group takes part. It is chaired by a Business Manager and has representatives of both the ISD and the business. This group has two aims: resolve problems without involving the IS Steering Group and proactively engage business areas in new or established technologies.

Since the Department has been developing IS projects for a small number of years, there is still not an extensive catalogue of projects; nevertheless, lately the list has been growing. Some of the main IS projects are listed in Table 6.5, including some from the former Department of the Marine that are still being used. Additionally, in cooperation with the Information Society, e-government initiatives have been implemented (*e.g.*, Maps and the Integrative Fishery System), aimed to provide better public access to services as well as back-office efficiencies. For example, a key element of the Government's Information Society strategy, as outlined in *New Connections*, is the development of an advanced telecommunications infrastructure throughout all regions of Ireland. This promotes an increased Information Society inclusion at both the regional and community-based levels. Furthermore, a National Broadband Strategy was developed in 2002.

Table 6.5: Main IS projects as described in the Annual Reports of the Department of Communications, Marine and Natural Resources

IS Projects	Annual Reports
Prospecting Licence application for the Exploration and Mining Division	Annual Report 2003
Integrated Fisheries application	Annual Report 2003
FOI Tracking system	Annual Report 2003
Remote access capability and mobile solutions	Annual Report 2003
Establishment of a Help Desk	Annual Reports 2002, 2001
Development of MAPS (Minerals Administration and Programme Support) project.	Annual Reports 2003, 2002, 2001
Upgrade applications in the Forestry and Sea Fishery Divisions.	Annual Reports 2002, 2001
Centralised data centre	Annual Report 2001
Implementation of the Department's development and investment programme.	Annual Reports 2001, 2000, 1999
Upgrade of the Department's IT infrastructure, including a WAN and email.	Annual Reports 2003, 2000, 1999
Delivery of GPAS (Grants and Premium Administration System).	Annual Reports 2000, 1999
Year 2000 compliance	Annual Reports 1999, 1998
Financial Management Information system	Annual Reports 2003, 1999, 1998
Forestry Inventory and Planning System (FIPS)	Annual Reports 1999, 1998

6.5.11 Conclusions

The DCMNR is still a young Department but with ample experience in planning both the business and the IS function. For the moment the strategy statement is the one influencing the IS area's operations; nevertheless, there is evidence that this might change in the future, where both strategies will further influence and impact each other. An example of this can be noticed in several situations where the IS area, by introducing emerging technologies, has already enabled the organisation to do things that were not possible in the past.

The success of the synchronisation situation in the Department is attributed to the commitment and involvement of top managers in IS issues, and to the vision and disposition of the IS area in support of the business. Nevertheless, compared to other public sector organisations, there is still much to do, especially in policy areas that do not provide services directly to the public. In line with this, some of the acknowledged benefits of having the business and IS strategies synchronised are the enhancement of the Department's performance, the electronic delivery of several services, and the introduction of emerging technologies into the Department's procedures.

Table 6.6: Key synchronisation characteristics of Department of Communications, Marine and Natural Resources

Agent	Business characteristics	Agent	IS area characteristics
Business function	• Despite an IS infrastructure that was almost non-existent when the organisation was created, considerable effort was made to develop technological systems and achieve substantial progress in the integration of IS. • The business is still technologically underdeveloped compared to other organisations in the public sector. • Technology is becoming an integral part of how business is done. • While some areas are already enhanced by IS, there are still other sections where more commitment to technology is needed. • Evidence exists that the organisation is moving into a stage where the IS strategy will have more influence on the planning of the business.	IS function	• Despite the organisation's age, the IS area has accomplished numerous necessities, requests and innovations in a short period of time. • Its key functions are to provide high-quality IS in support of business priorities and to underpin a cost-effective operation and business management. • The IS area has the objective of ensuring that the organisation is technically managed, organised and resourced to successfully deliver its mandates. • Lately, the IS area's staff have been encouraged to test the newest technologies and to do research on ways of enhancing the business. • Even though the IS people are familiar with the business objectives, they still need to acquire more experience in planning the IS function.
Business strategy	• The business strategy is the one that drives the organisation and the one that influences the IS area and its strategy. • For its preparation, there are internal and external organisation-wide consultations and involvement of staff at all levels. • It is shaped by divisional plans that each area (including IS) prepares about their goals, objectives and performance indicators. • Since its creation, focus has been given to IS with the objective of creating a results-focused organisation characterised by developed responsibility, innovative thinking and best practice in technology.	IS strategy	• Derived from the delivery of the IS area's vision, the main objective of the IS strategy is to define what technological systems will be needed to support the implementation of the business strategy. • For its development, after reviewing the business strategy, it is identified how the IS area will support the organisation, which systems will be developed, and what approaches must be followed to enable the organisation's purposes. • For the formulation of the IS strategy, an analysis is performed about the business drivers, the strategic operational requirements, and what is needed to deliver into the business.
Business managers	• Business managers have considerable commitment and involvement to IS, but still more is needed in the way of taking more ownership and not considering every problem or solution as an IS issue. • By defining the organisation's goals and requirements, business managers communicate to the IS area which are the projects and applications that have to be developed in the future.	IS managers	• The IS manager guides the IS function in the entire Department. • This person is not part of the top management team; however he is constantly involved in top management meetings and has the facility to directly talk with any business manager anytime it is necessary. • Throughout the IS Steering Committee, the IS manager discusses with business managers their involvement in IS decisions. • The IS manager guarantees a link between IS and business needs while verifying that the organisation has the necessary IS initiatives and strategy to support the business.

6.6 OFFICE OF THE REVENUE COMMISSIONERS

(CASE STUDY 4)

6.6.1 Introduction

Ireland is a country with a population of four million people, including 178,000 employers, 106,000 active companies and two million tax remitting employees. Therefore, in order to manage and administer the country's taxes and customs duties, it is necessary to have an organisation capable of handling the considerable scale of operations that will impact every household and business in the country.

The Office of the Revenue Commissioners is currently considered as one of the leading tax administrations in the world with respect to the exploitation of technology. The economy of the country is vitally dependent on this Office for effective and efficient collection of government revenues which have grown almost three-fold in the last 10 years. In addition, the majority of citizens and organisations rely, as tax or duty payers, on the quality of customer service provided by the staff of the Office. Nevertheless, Ireland is undergoing change at many levels and at an unprecedented pace. Therefore, the Office must keep pace with, or stay ahead of these changes, since all social, economic, technological and demographic developments affect its business and operations in one way or another. Consequently, it is crucial to have efficient and IS enhanced processes that adapt to the ever-changing environment. Moreover, Revenue has successfully used technology to enhance the way the organisation does its business.

6.6.2 Origins

The Office of the Revenue Commissioners is celebrating 83 years of service this year, although its origins can be traced to the collection of taxes by the Normans in the 12th century. The Office was established by Government Order in 1923 with the intention of unifying the Boards of the Commissioners of Inland Revenue with the Commissioners of Customs and Excise. Originally, the Office was subject to the control of the Minister for Finance. However, this role was later clarified by stating that while the organisation will be directly responsible to this

Minister, the Commissioners will act independently of Ministerial control in regard to the liability of the individual taxpayer. During 1923, the year of its foundation, the Office was one of the State's largest employers with 1,650 staff members.

6.6.3 Function and objectives of the Department

Revenue's core business is tax collection. Therefore, its underlying philosophy and mission is "to serve the community by fairly and efficiently collecting taxes and duties and implementing import and export controls." This is accomplished by promoting voluntary compliance, delivering quality customer service programmes and through the prevention of evasion. For the Office, a key challenge every year is reaching the budget target. Nevertheless, it needs flexibility to adapt and compete in the rapidly changing public sector environment with a customer-driven approach focused on the delivery of quality services. Furthermore, there is an ongoing programme of organisational change, together with people and systems development designed to ensure that the necessary capability and adaptability exists to meet all challenges.

The Office of the Revenue Commissioners' functions are central to the well-being of the State since it collects the bulk of the funds needed for government expenditure on social and other services for the community's benefit. Also, Revenue contributes to national competitiveness through more efficient operations and minimum intrusion on legitimate businesses. In broad terms, the Office's work can be divided in:

- Assessing, collecting and managing 14 different categories of taxes and duties that account for over 93% of Exchequer revenue;
- Administering the customs regime for the control of imports and exports and collection of excises, duties and levies;
- Co-operating with other State Agencies in the fight against drugs;
- Carrying out Agency work for other departments, including the collection of PRSI for the Department of Social and Family Affairs; and
- Providing policy advice on taxation issues.

6.6.4 Organisation and stakeholders

At the time the Office was established, it employed 1,650 staff members. Nowadays Revenue is the largest of all government departments with over 6,500 staff, 113 offices countrywide, an administrative budget of €363m (2004) and the largest customer base of any civil service organisation. The Office is managed by a Board, which is made up of a Chairman and two

Commissioners. Although all three carry the rank of Secretary General, the Chairman is also the Accounting Officer. Furthermore, this person has direct responsibility for strategy development, change management and cross-organisation functions. In addition, the other two Board members deal with the day-to-day operations of the Office under the overall direction of the Chairman. They meet regularly to handle a broad range of functions including strategic direction, the setting of key corporate priorities, financial and risk management, senior management appointments, and resource deployment.

Additionally to the Board, the Management Advisory Committee (MAC) also plays an important role in the administration of the Office. Developed in 1999 to enhance strategic effectiveness in internal and external processes, it is comprised of the Board members and all Heads of Division. They meet at least once a month to monitor performance across the organisation. Furthermore, they review existing programmes and priorities to ensure that they remain responsive to emerging developments, deal with cross-divisional issues and manage corporate risk.

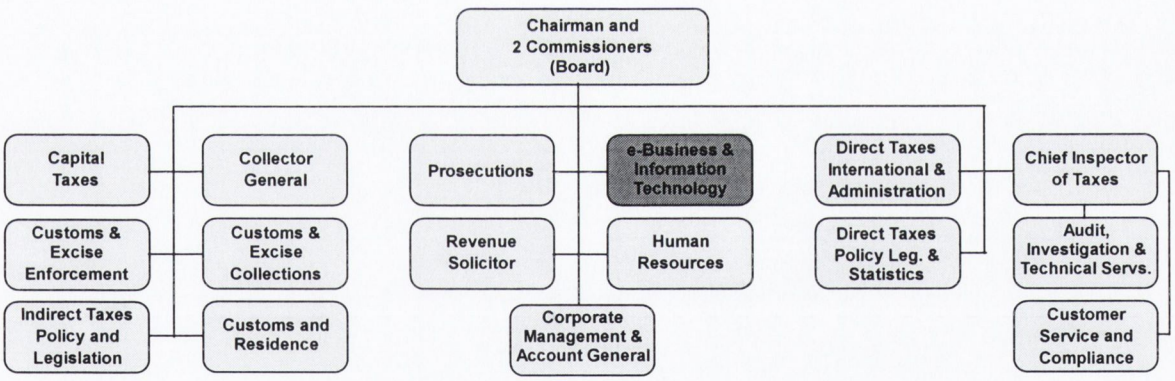


Figure 6.6: Office of the Revenue Commissioners' old structure

In the early 1990s, Revenue was performing reasonably well by the current standards and information available. Each year, the annual collection targets were exceeded with the help of the computerised transaction systems; however, since separate IS existed for each area, it was difficult to deal with evasion in a quick and comprehensive way. Another problem was that the focus was not customer oriented: the Office was organised around individual taxes, duties and functions, rather than on taxpayers or their needs (see Figure 6.6). Additionally, the deployment of resources was not in optimal alignment with the business objectives and strategies. Therefore, after a review of international best practice and structures in other leading tax and customs administrations (*e.g.*, New Zealand's tax system), it was decided that the Office's

overall structure required a major transformation in order to become 'user-friendly' (*i.e.*, with a single point of contact). Nonetheless, this was not a simple task: it was essential to design and implement a new structure making the best use of IS to provide more efficient and better customer services.

In 2003, the new Revenue structure was put into practice (see Figure 6.7). Due to its implications, it is considered the most far-reaching and ambitious programme of change ever undertaken in the Office. Moreover, serious obstacles and pressures had to be overcome, including embedded individual cultures in various parts of the organisation and six separate trade unions representing different general and specialised grades. Nevertheless, its smooth implementation was greatly facilitated by the earlier consolidation of the major computer systems and the adoption of an integrated approach.

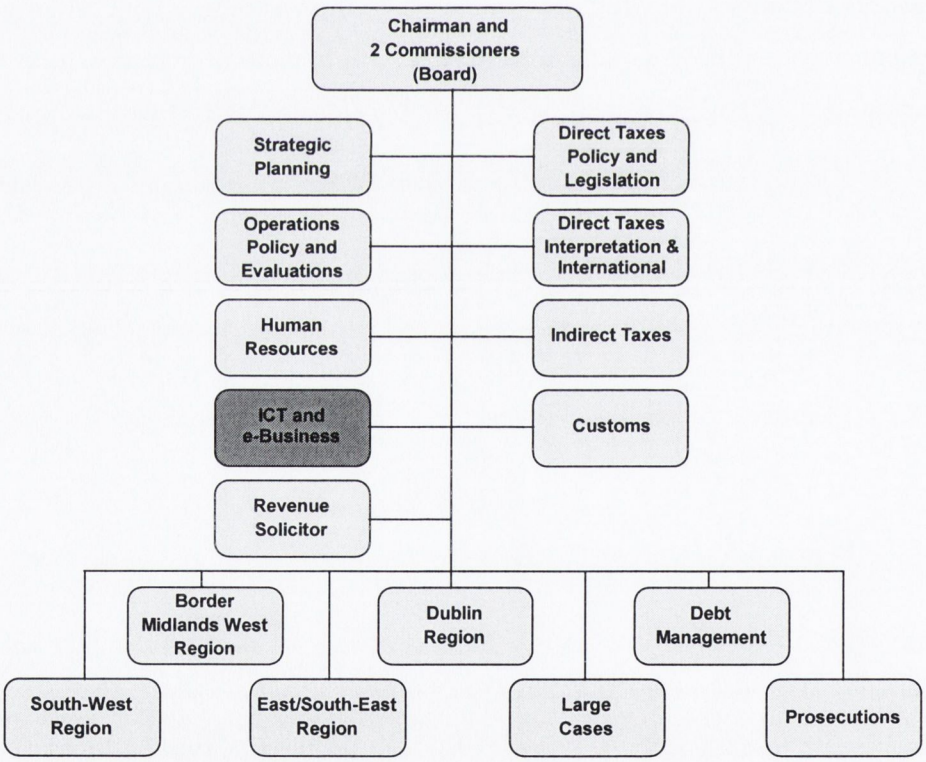


Figure 6.7: Office of the Revenue Commissioners' new structure

After the reorganisation, Revenue became a much more efficient office. Its integrated IS resources provided customer information across all tax heads. Additionally, except for large corporate organisations and high net worth individuals, the cases are now dealt by geographical areas. Some of the achieved benefits are the capacity to handle a bigger volume of business with less staff, the reduction of the debt from almost 40% in 1990 to 3% in 2003 (yielding an

additional €430m in cash), and the identification of a large number of bogus non-resident and dubious off-shore accounts that resulted in an additional €1,500m in tax, penalties and interests. Moreover, this new structure provided the IS area (*i.e.*, the Information and Communications Technology and e-Business division) with a more strategic position to impact other areas.

6.6.5 Business strategy development

The Office of the Revenue Commissioners is considered to be the first department to formally prepare an overall business plan, even before the SMI made it a requirement for every public sector organisation. Nowadays, strategy evolves through the senior management group. The development and co-ordination of strategy statements, annual business plans, and annual reports are the responsibility of the Strategy/Management Information Framework Branch, a subdivision of the Strategic Planning area. Additionally, this area reviews corporate performance and corporate planning.

In Revenue, like other public sector organisations similar in size, there are three essential elements in its strategic framework:

- A high level strategy statement which sets out the broad objectives to be achieved, the strategies to be used and the analysis behind them;
- Functional-level business plans which develop high level objectives and strategies, translating them into specific activities to give effect to the corporate plan; and
- A performance analysis programme that reviews and reports progress.

The preparation of strategy statements is performed through a combination of top-down and bottom-up approaches. Not only top managers meet to discuss strategic issues, but there are also extensive consultations with staff, particularly through focus groups on specific subjects (*e.g.*, compliance, IS and operation) set-up under the aegis of the Partnership Committee. The groups are organised with a formal structure and are chaired by an Assistant Secretary, demonstrating the importance of these meetings. Furthermore, input is received from a wide range of external stakeholders.

Revenue has a well-established annual business planning process. Since 1994, it was identified that the synchronisation of annual business plans (*e.g.*, the IS strategy) with strategy statements provides a clear, action oriented and strategic intent for guiding the Office. So based on Revenue's strategy statements, all divisions prepare their business plans every year. These

plans must be approved by the Revenue Board and reviewed on an ongoing basis. For their development, there is consultation with staff at all levels, while listing specific, focused and measurable actions designed to contribute to the achievement of the organisation's objectives and strategies. Furthermore, progress on implementation is monitored and reported on an ongoing basis to the Board and the Management Advisory Committee.

6.6.6 The Department's IS area

Given strong leadership from the top, continued investment, and a focused agenda over the last decade, Revenue remains at the forefront in exploiting technology-enabled service delivery opportunities. IS are vital components in enabling the Office to carry out its business efficiently and are critical in the achievement of its objectives: the collection and management of taxes and duties in an efficient way and at the least cost to the public. The area responsible for this is the Information and Communications Technology (ICT) and e-Business Division, which provides a wide range of specialist and corporate support services for the entire organisation. Also, the Division plays a leading role in evaluating IS trends and innovations while managing and controlling telecommunication services. Its emphasis is on improving effectiveness rather than on automating existing processes.

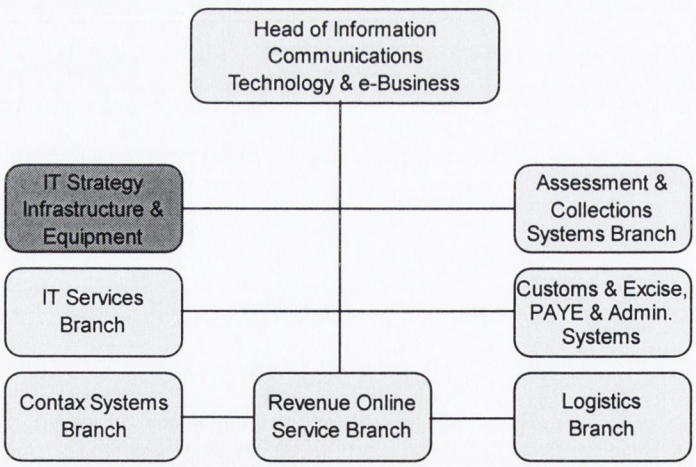


Figure 6.8: Information Communications Technology and e-Business Division organisational structure

Tracing its origins to the early 1960s, currently the Division is comprised of 379 staff and are organised as seen in Figure 6.8 (in the late 1960s, Revenue already had 120 IS staff members). It is directed by the Head of ICT and e-Business, who has been responsible for the IS operation since 1988. Given that he is an Assistant Secretary, his job is to contribute to strategy, to the overall organisational change, and since recently, to the accommodation, purchases, and

security of the Office. However, this has not always been the case: the Division began as part of the Collector General's office and later it developed its importance until it justified a separate area with an Assistant Secretary in command. Nowadays, the IS area is recognised as an important driver in the organisation. Furthermore, it would be impossible to separate technology from the way the business is run.

In 1997, an external commission recommended the creation of a high-level user group to ensure that the IS function is organised and structured to support the business objectives. Therefore, the IT Executive (ITEX) was created with the key role of monitoring emerging technology and evaluating its effective application within the organisation. Chaired by a Commissioner, this IS steering committee is formed by Assistant Secretaries representing every area of the business. Its main activities include the development of multi-year strategies, the approval and prioritisation of IS policy and projects, the allocation of resources, and the evaluation of measures and outcomes.

Throughout the years, while the total number of staff in Revenue has not been growing considerably, the volume of operations has significantly increased. So with fewer employees at the Office's disposal, these changes could only be managed with a constant review of procedures and by exploiting the use of technology to deliver quality services. Furthermore, similar to other public sector organisations, while there has been a long-term decline in internal expertise, the dependence on consultants has been rising as a result of endemic recruitment and retention issues relating to IS in the civil service. The main problem of this is that the Government has still not accepted the need to pay the rate for the job, yielding in heavy losses of high skilled workers to private companies in times of boom in the IS sector. Since this reliance will remain and is likely to grow in the coming years, it is necessary to address how to deal with these consultants and losses in order to maximise value, minimise long-term dependence, and maintain internal capacity and control.

6.6.7 IS Strategy

Notwithstanding that IS are essential in any tax and customs administration, the Office of the Revenue Commissioners remains at the forefront in the use of IS to improve the effectiveness of its operations and exploiting technology-enabled service delivery opportunities. Furthermore, the organisation has been continuously developing IS strategies since the 1990's

to guide the IS function and influence the business into becoming more technologically-oriented and efficient with better services for its customers.

Nowadays, the IS strategy is developed around the taxpayer (customers), better service and taxation. It provides a framework for the deployment of IS and e-business solutions. For its formulation, the strategy is designed by the IS area in conjunction with the IT Strategy, Infrastructure and Equipment Branch, external consultants and users, ensuring that the services provided are in harmony with their needs. Finally it is handed over to the IT Executive Group for revision.

The IS Strategy, Infrastructure and Equipment Branch (see Figure 6.8) is responsible for maintaining a strategic plan to manage hardware, software and telecommunications to meet the short and long term needs of the Office. Therefore, this area was in charge of the recently developed strategy, which includes issues pertaining to information sharing, risk assessment, knowledge management, workflow, and also replacement programmes for various internal legacy systems. Furthermore, the new strategy incorporates four main outputs: enhanced Integrated Taxation; improved Revenue On-Line Service (ROS); provision of on-line services; and the optimal use of IS to support the business needs, in particular compliance. Its main objective is to set out the actions that are required to exploit existing and emerging technologies to best achieve the business goals and objectives. Moreover, its successful execution depends on a number of critical factors like adequate funding, senior management support and commitment, skilled IS staff, robust security, and willingness to change.

6.6.8 Integrating IS with the business

During the 1960s, the introduction of IS meant shifting into a new direction which prevented a reversal to clerical systems. Furthermore, it was identified that improved technology enabled significant enhancements in customer service, decision making and creativity. In an organisation with 6,500 staff distributed in over 110 locations, a sophisticated IS infrastructure is essential. Moreover, given that in 2004 7.2% of the total expenditure was spent in IS, it demonstrates that IS have become critical in the day-to-day operation of the Office and a core competency. Without IS it would be impossible to collect the amount of taxes they do, or service the number of customers they interact with. Furthermore, investments in technology have facilitated the reduction of staffing costs and enabled the transformation of work programmes to provide flexible systems for a dynamic business environment.

Revenue's IS story began in 1957 when mechanical tabulators and sorters were introduced for the accounting area. Revenue's first modern computer (an ICL 1301) and the second computer of its type in Ireland, was acquired in 1963 by the Collector's General office. However, by 1967 the machine lost its capacity to cope with the volume of business. For that reason, it was replaced with a state-of-the-art Honeywell 1200. In 1974, a year after Ireland joined the European Economic Community, the new Revenue Computer Centre was inaugurated. Three years later, the Data Processing section achieved such importance that it became a Revenue Division on its own. Two years afterwards, the Office had a major change of direction when PCs became widely available. Then, in 1983, the Information System Division came under the ambit of the Accounting General. Revenue's decentralisation programme began in 1991 and technology achieved a successful completion without any service disruption. Finally in 1996, with the Information Society and e-developments, Revenue went global on the Internet, technology eliminated old boundaries, and the Office made the first steps towards the development of an integrated systems architecture.

Over the past ten years, Revenue has made significant investments in IS to support its core activities, to improve service to taxpayers, and to meet its business goals and objectives in an efficient and effective manner. Nevertheless, while innovation provides opportunities for change, greater efficiency and better service, historically the civil service has not been characterised as visionary. Part of the problem is that in government decisions take time and generally projects have to be outsourced in order to achieve results. Additionally, the dynamic private sector forces of business competition are absent. Nonetheless, in public organisations like Revenue this lag is now changing; especially with strategic management concepts that have been successfully applied for more than seven years.

As said above, during the 1960s Revenue was already an adopter of computer systems. Various waves of technologies were used to computerise all procedures, but on the same stove-pipe basis as the organisation's structure. However, in the late 1980s, a data study carried out by a consulting company highlighted the replication of information in the tax system. With this, awareness grew about the problems caused by having a separate data arrangement. Therefore, after waiting three years to get the project approved by the Department of Finance, a major project was initiated to integrate customer information and to redo every system in the Office on an integrative basis. Consequently, when the structure was reviewed several years later, rather than being an obstacle, technology was already in place to facilitate it.

Throughout the years, ventures guided by the IS strategy have developed a better working and more effective operating environment. Also, they have achieved benefits that could not have been possible without technology; for example, last year 87% of the people paid their taxes on-time and the outstanding debt was reduced from 40% to only 3%. Furthermore, these investments enabled the decentralisation programme and helped contain staffing costs while transforming work programmes to cope with huge volume increases. Nonetheless, even though the Office is completely dependent on technology, some identified problems related to the integration of IS can withhold its benefits, such as the pace of technology development, the dependence on consultants and situations when technology only reinforces existing structures without triggering any changes. In addition, another acknowledged difficulty arises when people do not look at opportunities in IS; for example, users might be doing their work in a particular way for so long that they cannot see how technology can enhance their job.

6.6.9 Synchronising business and IS strategies

Having completed more than 40 years at the leading edge of the IS revolution in Ireland, Revenue looks forward with confidence to making more and better use of IS innovations; for example, to provide enhanced services to citizens and businesses, to support audit and compliance programmes, and to further improve its internal capacity. Recent research has even placed Revenue in the top three tax administrations for the delivery of on-line interactive services and, globally, as one of the few authorities which has fully progressed to a customer-centric mode of operation, supported by a set of modern and flexible IS applications. However, with the unpredictability of the environment in which Revenue operates, coupled with the relentless march of technology, it is necessary to plan, innovate, adapt and evolve IS solutions while delivering a stable and reliable day-to-day service.

The Office of the Revenue Commissioners has more than ten years experience planning not only the business operations, but also an IS function which is considerably aligned with the business objectives. However, rather than developing from central (*i.e.*, Department of Finance) schemes, Revenue's IS initiatives evolved from the enterprise and support of business managers. In contrast to most public sector organisations where the IS area only supports the business, in Revenue it goes even further since the IS strategy strongly influences the business strategy (see Table 6.9 at the end of this section). Moreover, the IS area anticipates the business directions. Therefore, when the business requests a technological project, generally it is already contemplated and sometimes even completed. So the IS area is generally ahead of the business

and holds a unified view of how the organisation operates. Also, technology leads the business transformation and the awareness of technical possibilities acts as a baseline ingredient in formulating the business plan. Furthermore, since the IS area is regarded as the nerve system of the Department in which everything comes together, it was possible to develop an integrative system which initiated the modification of the structure.

One characteristic of the synchronisation of business and IS strategies in the Office is the incorporation of emerging technologies. For Revenue, it is important to be aware of the latest technological advances since these innovations can offer potential business opportunities. Also, IS are increasingly the factors which make the difference in service, competition and quality in both the public and the private sector. Therefore, the Office assesses new technologies and leads such developments to underpin the effectiveness of customer service, accounting, audit and compliance programmes. However, the staff are aware of which technologies are being contemplated since a problem with these initiatives is that they can drive the organisation into an inexplicable direction. Moreover, there would be no business without technology. In fact, since technology is at the centre of the strategy, before Central Government approves a far-reaching policy (*e.g.*, the plastic bags levy), they first have to check with Revenue's IS area to verify that its systems are able to support and have the necessary capacity to incorporate the scheme.

In order to achieve a capable, adaptable and effective organisation, advanced IS need to be developed to optimise the business' efficiency and effectiveness. Some issues might emerge that will impede these objectives. In Revenue, most of these problems have been human; for example, business people do not always know or take control of a particular technology. Therefore, the IS area has organised training and education programmes to demonstrate the capabilities and possibilities of IS, including on-line services, desktop facilities and emerging technologies.

6.6.10 Main IS projects and e-government initiatives

Revenue's IS have been critical to its success when dealing with an increased volume of business. In addition to supporting the day-to-day operations, these applications have enabled major changes in the Office's functions in a relatively seamless fashion. This is because they have been open, conform to industry standards, and have been easy to maintain and support. To add to this, they have been secure and performant, allowed reusability and reconfiguration, and

delivered clear and measurable benefits. However, since it is not possible to buy ready-made computer solutions to meet the tax administration needs, a large portfolio of applications has been custom-built which will continue to require modifications to reflect changes in the environment (see Table 6.7 for main IS projects).

Table 6.7: Main IS projects as described in the Annual Reports of the Office of the Revenue Commissioners

IS Projects	Annual Reports
Computer-based risk-assessments for audit	Annual Reports 2003, 2002, 2001
Simplified customs procedures for import/export traffic	Annual Report 2003
Integrated Taxation Processing systems (ITP)	Annual Reports 2003, 2001, 2000, 1999, 1998, 1997, 1995
Revenue On-Line Service	Annual Reports 2003, 2002, 2001, 1999, 1998
Provision of a range of on-line services in line with the "New Connections" programme	Annual Reports 2003, 2002
On-Line facility for Tax Clearance Certificate	Annual Report 2003
Electronic Funds Transfer service	Annual Reports 2003, 2002
LINKS project	Annual Report 2003
Automatic Remittance Processing system	Annual Reports 2002, 1993, 1992
Corporate Records Management System (CRMS)	Annual Reports 2002
Year 2000 compatibility	Annual Reports 1999, 1998, 1997
Euro changeover	Annual Reports 2000, 1999, 1998
Computerised Warehouse Accounts system	Annual Report 1999
VRT information kiosks	Annual Reports 1999, 1998
P35 disk exchange scheme and P35 electronic filing system	Annual Reports 1998, 1997
Automated Entry Processing (AEP)	Annual Reports 1998, 1997, 1991, 1990
Active Intervention Management (AIM)	Annual Reports 1996, 1995
CONTAX Project	Annual Reports 1994, 1993, 1992, 1991, 1990

Since Revenue is organised by reflecting the business, all key IS projects are run by a project board. These boards, which are the main drivers for change, are chaired by a business person and are supported by IS people. Nevertheless, the responsibility for its success lies within the business side, underlying the importance that IS projects have in the organisation. Some of the project boards' main functions are to appoint business personnel to coordinate the developments, system testing, and enquire with users about their requirements. Furthermore, they ensure that the necessary training, technical and IS support are provided to staff to enable them to maintain an elevated level of service.

As seen in Table 6.7, in the Office there is a wide range of computer applications to support every area of the business. Internally, the automation of routine processes has been complemented by sophisticated business intelligence and personal productivity software. Progressively, a new generation of integrated tax administration solutions have been deployed and the technical infrastructure has been modernised, such as the Customs and Excise systems. Also, the Remittance Processing System, using character recognition software, is a sophisticated application which has largely removed the need for manual entry of data. Revenue has succeeded in translating data into information. Now, the next challenge will involve the conversion of information into knowledge to better drive decision making and business processes.

Due to the nature of its business, Revenue plays a leading role in the delivery of e-government solutions. Also, the Office is participating in the REACH programme, particularly in the development of a Business Service Identifier (BSI) number that is a key ingredient of the Public Service Broker (PSB) or eBroker. As said before, encouraging voluntary compliance is essential to achieving Revenue's mission. Therefore, the Office constantly works on delivering high quality customer services, simplifying procedures, and keeping compliance costs under control. A central element in this objective is the development of electronic services, particularly through the Revenue On-Line Service (ROS).

Since the 1997-1999 strategy statement, it was planned that Revenue will encourage the electronic filing of returns and declarations. To advance this strategy, ROS was established as a secure and simple system to allow online filing. It is considered the Office's flagship project in the wider e-government agenda, and has been growing in line with the commitment of providing high quality and comprehensive payment options to customers. Also, it offers a paperless and electronic method to communicate with Revenue 24 hours a day, 7 days a week. ROS is part of a much wider government initiative to encourage e-business. Therefore, its introduction placed Revenue at the cutting edge of tax administrations (together with Singapore and Australia) in terms of conducting electronic operations. The first phase of ROS, developed in partnership with Accenture and Baltimore Technologies, was launched on September 2000.

The success of ROS is attributed to the co-operation of customers and to the staff who were instrumental in its design and marketing. Nowadays, it is recognised as a world leader in secure internet-based return filing and tax payment systems. Table 6.8 displays the usage growth of

ROS in two recent years. In 2003, nearly €6.2bn was paid through this channel, representing over 40% of all income tax self assessment returns (in comparison, Spain received 15% of payments on-line). Also, there was a 77% increase of the amount collected by ROS in 2002 and 310% of the amount gathered in 2001. The 2003 figure corresponds to 16% of the national tax take, which eliminated over 120,000 large paper tax returns from the incoming post.

Table 6.8: Customer usage of the Revenue On-Line Service (ROS)

Measures	2003	2002	% Increase
Digital certificates issued	10,222	8,175	25%
Number of payments	97,488	77,646	26%
Value of payments	€6.2bn	€3.5bn	77%
Repayments	€550m	€319m	72%
Returns	514,528	135,036	281%
Customer enquiries	814,197	279,383	191%
Total transactions	1,433,947	509,308	181%

6.6.11 Conclusion

The Office of the Revenue Commissioners is an organisation where IS are essential, especially to apply speedy and effective enforcement measures to non-compliance, together with high-quality customer services. However, its operation relies heavily on the people's expertise and commitment to achieve the Office's mission, and in the top managers' involvement in IS issues.

Due to the pace of technology and innovations that the Office requires for its operation, currently the IS area strongly influences the business's operations and directions, causing the IS strategy to be seriously considered during business planning. Moreover, this arrangement has contributed to the improved efficiency of the Office's operations. In line with this, some other acknowledged benefits of synchronising these strategies are the reduction of outstanding debt, improved customer service, reduced operative costs and lower compliance overheads to customers.

Table 6.9: Key synchronisation characteristics of Office of the Revenue Commissioners

Agent	Business characteristics	Agent	IS area characteristics
Business function	• The Office of the Revenue Commissioners remains at the forefront in the use of IS. • In the Office, IS improve the effectiveness of its operations and exploitation of technology-enabled service delivery opportunities. • IS are vital components in enabling the Office to carry out its business efficiently and critical in the achievement of its objectives. • It would be impossible to separate technology from the way the business is run. • Emerging technologies are constantly incorporated into the business. • Through project boards chaired by a business person and supported by IS people, there is ownership from the business side and it is ensured that only strategic and required applications are developed.	IS function	• The IS area is recognised as an important driver in the organisation which anticipates business directions. • It provides a wide range of specialist and corporate support services for the entire organisation, with an emphasis on improving effectiveness rather than on automating existing processes. • The IS area plays a leading role in evaluating technological trends and innovations, while managing and controlling telecommunication services. • Through an IS Steering Committee, emerging technology is monitored and its effective application within the organisation is evaluated. • Continuously, the IS area organises training and education programmes to demonstrate the capabilities and possibilities of IS.
Business strategy	• The business strategy, which sets out the broad objectives to be achieved, the activities to followed and the analysis behind them, evolves through the senior management group. • Its preparation is performed through a combination of top-down and bottom-up approaches, including extensive consultations with staff and external stakeholders. • During the development of business strategies, the IS people have extensive input on technological issues that directly and indirectly affect the organisation's operation. • Technology, which is at the centre of the strategy, leads the business transformation. The awareness of technical possibilities act as a baseline ingredient in formulating the business plan.	IS strategy	• The IS strategy strongly influences the business strategy. • The IS strategy is developed around the taxpayer (customers), better service and taxation. • This strategy is designed by the IS area, external consultants and users. It is later approved by business managers. • Its content includes issues pertaining to information sharing, risk assessment, knowledge management, workflow and also replacement programmes for various internal legacy systems. • The IS strategy's main objective is to set out the actions that are required to exploit existing and emerging technologies to best achieve the business goals and objectives. • Its successful execution depends on a number of critical factors like adequate funding, senior management support and commitment, skilled IS staff, robust security, and willingness to change.
Business managers	• Business managers encourage the IS area to test new technologies and suggest process-enhancement ideas. • These managers have strong commitment and involvement to IS issues. • These managers decide which technologies and applications will be implemented to avoid driving the organisation into an inexplicable direction. • Business managers have some understanding of technology and are aware of the IS area's activities.	IS managers	• Since the IS manager has a senior position in the organisation, he participates in business planning and in the strategic direction of the Office. • The IS manager contributes to strategy and to the overall organisational change. • The IS manager directs the IS area to assess new technologies and leads such developments to underpin the effectiveness of customer service, accounting, auditing and compliance programmes.

6.7 DEPARTMENT OF THE ENVIRONMENT AND LOCAL GOVERNMENT

(CASE STUDY 5)

6.7.1 Introduction

Directly and indirectly, the Department of the Environment and Local Government's functions and programmes affect the daily lives of every citizen in the country. With a focus on environment, housing, physical and special planning, and local government, the Department has the lead in the preservation of natural resources, promotion of the awareness of natural heritage, and the endorsement and support of regional aspects and urban development; in other words, the protection of the country's limited assets and the promotion of local progression.

The Department's main responsibilities can be traced back to the last century. Nevertheless, throughout the years, the Department has experienced several reallocations of functions, causing corporate memory loss, inefficient and incompatible IS, and communication problems between some areas. Even though the organisation possesses some efficient transaction systems, overall it does not have the systems or procedures for the sophisticated management of unstructured information. In part this is attributed to the variations in roles and functions during the combination and separation of responsibilities; however, a weak synchronisation between the business and IS strategies also plays a major part in these issues.

6.7.2 Origins

The Department of the Environment and Local Government's origins can be traced back to the passing of the Poor Relief Act in 1838, which created the first government agency with responsibility for local affairs in Ireland. In 1924, two years after the state achieved *de facto* independence, the Department of Local Government and Public Health was created. Some of its responsibilities included the administration and business of public services in connection with local government, public health, relief of the poor, care of the insane, registration of voters, housing, water services, maintenance of public roads, and registration of births, deaths

and marriages. But later, in 1947, after it was recognised that the Department had a very wide range of functions, health and welfare were transferred to other organisations. Therefore, the Department of Local Government (as it was renamed) was dominated by issues related to local government and the infrastructural programmes of housing, roads, and water/waste services. In the subsequent 30 years, the range of functions continued to fluctuate in line with changes in the economy and society. But it was not until 1977 that its title was altered to Department of the Environment, reflecting current matters in the area of environmental promotion and protection. Since then, the Department's roles have further evolved. Environment and local government are now the two main functions; however, in line with national policy and international developments, a whole new area of ecological support has come into being, together with other areas like heritage and nuclear safety.

6.7.3 Function and objectives of the Department

The Department, as its title indicates, has the key role in relation to the environment and local government affairs. Its mission is "to promote sustainable development[1] and improve the quality of life through protection of the environment and heritage, infrastructure provision, balanced regional development and good local government." Also, it maintains a renewed mandate for water, waste, heritage policy and conservation, as well as nuclear safety and Met Éireann (*i.e.*, the Irish meteorological service). Furthermore, it supplies, through local authorities and partnerships with the private sector, much of the infrastructure which the country needs to realise full development potential. Taken as a whole, the main functional areas for which the Department has responsibility are:

- Promotion of sustainable development and ensuring environmental protection;
- Increasing environmental awareness;
- Promotion and protection of the built, natural heritage and urban renewal;
- Development of water and waste water services;
- Overseeing the orderly development of the building industry;
- The electoral process;
- Developing policy in relation to local government;
- Supporting the private housing sector and the national housing programme;
- Ensuring the development of services and policy for fire protection; and
- Funding and policy framework for social housing.

[1] Sustainable development is growth that meets the needs of the present generation without compromising the ability of future generations to meet their own needs.

Local authorities are independent legislative bodies with democratically elected councils and their own management system. While they operate within a framework of legislation and statutory regulations, they are not subject, as a general rule, to the Department of the Environment's direction in specific matters. Nevertheless, the Department is responsible for developing and coordinating policy and legislation across local authorities, promoting infrastructural programmes and for providing a number of local services directly to the public such as housing grants, driving tests, vehicle registration and environmental information.

6.7.4 Organisation and stakeholders

The Department is organised in six divisions (see Figure 6.9), reflecting the distinct functional areas into which the business falls. It is supported by administrative sections and professional staff; however, there are key inter-relationships that cut across functions and which have major bearings on the achievement of the Department's goals. Each Division is headed by an Assistant Secretary, who together with the Secretary General and the Legal Adviser, form the Management Advisory Committee (MAC). This Committee has a particular role in strategic management, policy coordination, personnel and organisation matters. Nevertheless, the IS manager is not a member of the MAC; he is required if there are technological issues to discuss. Furthermore, there are 17 agencies under the aegis of the Department whose effective operation is essential for the successful implementation of many of the Department's strategies (*e.g.*, Heritage Council, Irish Water Safety Association, and the Local Government Computer Services Board).

With the changes of the Department's portfolio over the years, staff numbers have been constantly fluctuating. In 1980 the Department had 1,100 serving employees. By 1985 the number was reduced to 937, and four years later, it fell to 743. From 1992 to 1996 the figure was stabilised at approximately 800. Nevertheless, after several functions and people were incorporated, this number reached 2,300, distributed in 90 locations in and outside Dublin.

Given the diversity of activities, the Department has a wide range of customers including individual staff members, the citizens, elected representatives, local authorities (key to the delivery of the Department's policies and strategies in most areas), agencies, other partner bodies, government departments and offices, international organisations, and voluntary and representative groups.

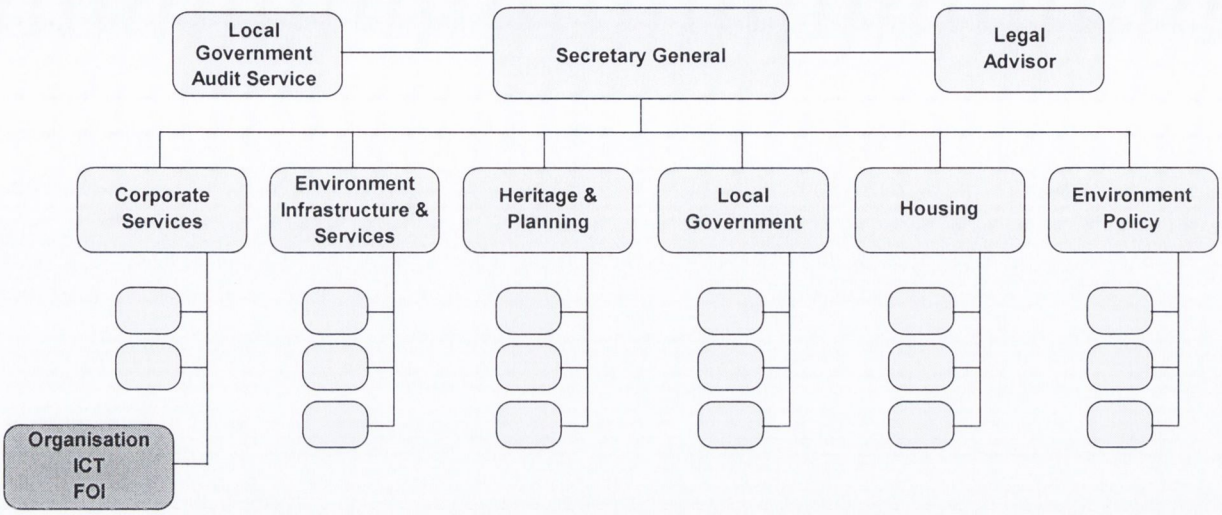


Figure 6.9: Dept. of the Environment and Local Government organisational chart

6.7.5 Business strategy development

Over the years, the Department has operated through strategic plans that relate to each of its main services (*e.g.*, Environmental Action Programme 1990, Plan for Social Housing 1991 and the National Recycling Strategy 1994). These plans and programmes provided a focus for dealing with particular policy issues. Nevertheless, with an emphasis on strategic management to cover all functions, objectives and targets, a unique systematic and overall strategy was required. Therefore in 1996, the Operational Strategy for the then Department of the Environment was published. It was formed by the sectoral strategic plans and structured around a cohesive blueprint to which the Department was already working to delivery business objectives. Moreover, it was underpinned within the Department by a business planning process involving the preparation and ongoing review of work programmes at functional-levels.

Nowadays the Department does not operate in a static or isolated environment. Therefore, it was necessary to prepare strategy statements to set out the underlying and sectoral goals of the organisation, influenced by economic, social and political developments at national and international levels. For its development, a consultation process through MAC and divisional meetings was established, encouraging staff participation and ensuring a wide ownership of the goals which have been set. In the course of finalising the statement, the draft document is made available to all staff members, offering them a further opportunity to provide input about its content.

The business planning process provides the essential links between the Department's overall strategy and the day-to-day working of each unit (*e.g.*, the IS area). Also, it functions as an essential tool in monitoring and reviewing progress at divisional level. Therefore, the business planning process requires that each unit prepares an annual work programme (*i.e.*, a business plan) which details the operational targets which flow both from the relevant sectoral goals and from the ongoing responsibilities of the division. Its aim is to ensure that each member of staff appreciates his or her role, targets and contribution to the achievement of these goals.

6.7.6 The Department's IS area

The Organisation/ICT/FOI Unit, which is part of Corporate Services (see Figure 6.9), has the lead role not only in relation to IS, but also to the Freedom of Information Act (FOI) and the organisational infrastructure (*e.g.*, office equipment and telephone systems). The emphasis of the IS area is the provision of services that reflect the business needs of the Department; but also, the improvement of the Department's telecommunications and data networks, and the supply of links to external organisations. At a local level, the Local Government Computer Services Board (LGCSB) agency – established since 1975 – deals with all regional IS issues; nonetheless this function is not part of the responsibilities of the IS area.

In the mid 1990s the Unit was led by the Finance function. Furthermore, because technology only supported some internal processes, the IS area's budget was very restricted. Anecdotal evidence suggests that at one point the Department was a leading user of IS in the Irish government. However, its IS budget fell from a peak of £600,000 (approx. €762,000) in 1992 to approximately £320,000 (approx. €406,000) in 1996. Nevertheless, when the following year a new Minister took over the Department, this situation started to change: the IS area was transferred to an independent unit of its own and further funding began to be provided. Despite this, compared to other public sector organisations similar in size or annual expenditure, currently while the Department's technological infrastructure and information management are underdeveloped, the IS area's budget is restricted.

Nowadays the IS area is comprised of 30 people and is run by the IS manager, who is a Principal Officer. This person is not a member of the MAC, but the Assistant Secretary of Corporate Services reports to the Secretary General at MAC committee meetings about the IS area's activities. Mainly, the work of the Organisation/ICT/FOI Unit is to serve internal customers (*i.e.*, the staff and sections of the Department) through the provision of a stable and

secure IS infrastructure and the operation of a help desk. However, even though business managers consider the internal projects more important than the external, the unit has the Department's lead role in the coordination of e-government initiatives and website maintenance. Also, the unit provides and maintains the information and communications systems necessary for the Department to meet its objectives. Nowadays, since almost every development is outsourced, most of the people in the IS area are project managers or systems analysts. Therefore, this has meant that IS staff co-ordinate projects and understand the business objectives a lot better than they did before.

In 1999, it was recommended that an IS Steering Committee be established to ensure that the Department's IS strategy is implemented, reviewed and synchronised with organisation's business needs. This Committee is chaired by the Assistant Secretary responsible for Corporate Services and has representatives from each Division.

6.7.7 IS Strategy

In the early 1990s, the planning of the IS function was carried out informally, built around what the Heads of Divisions required in the short-term. Consequently, the Department was not attaining full advantage of IS in support of the business. But after the incorporation of the Strategic Management Initiative in 1994 that mandated the creation of strategy statements and business plans, the IS area started to enhance its planning process in order to be in line with the business. No considerable drives were achieved until a new Minister was appointed in the late 1990s, instigating the improvement of this strategy. The new strategy identified specific and quantifiable improvements which can be achieved through the use of technology, distinguished IS and technical architectures required to deliver these enhancements, and recognised resources (human and financial) needed to implement and maintain the identified requirements in an efficient and effective way.

Nowadays, during the development of the IS strategy, the information requirements necessary to support the Department are recognised based on the main business objectives. The business critical success factors are also evaluated because sometimes these can be met through IS (*e.g.*, the provision of better information to customers on housing grants and motor tax online payments.). Therefore, the IS strategy is produced by combining the business strategy and key performance indicators, together with the systems needed to support the Department's objectives. In addition, the application and technology architectures are specified, together with

how the IS area has to be organised to successfully implement the strategy. Overall, the IS strategy has a strong technical nature and details the robustness and security of the systems.

Currently a new IS strategy is being developed. It will be a classical IS strategy: an analysis of where you are, where you want to be, and also a whole work programme of how you are going to achieve this. Additionally, it will state the technologies in use with a view of updating them and the resources available and required. A benefit that is hoped to be achieved with this new IS strategy is an improvement in the communication between the IS unit and the business.

6.7.8 Integrating IS with the business

Even though it has not been totally accomplished, the Department is aware of the need to integrate technology with the business in order to further achieve its objectives and provide high quality customer services. This integration will enable the seamless exchange of information across the sector, support strategic decision-making, minimise the impact of geographic constraints on the delivery of services, and provide opportunities to offer a wider range of services. Nevertheless, when implementing a technological system, sometimes it is decided on the most user-friendly instead of the one that provides better results.

In 1996 there were 500 computers and approximately 50 applications in the Department. All offices were connected throughout a local area network and e-mail was already available. But after an increase in staff numbers in the mid-late 1990s, not all staff had dedicated PCs and a significant amount of computers were not networked. In 1999, the Department upgraded or replaced almost 100% of its PCs and networks. This investment was justified to provide employees with the required infrastructure to operate efficiently in a modern information-based environment and to lay the foundations for further IS application developments. However, two years later staff based outside the main offices still had almost no access to IS services. Despite this situation, it was ensured that this was going to change in the near future and that efficient, stable and secure IS services were going to be provided. Since then, all staff in the Department's main offices in Dublin, Ballina and Shannon have connectivity to the basic IS services such as a telephone, a PC, e-mail and Internet.

Nowadays, the majority of functions that deal with legislation and policies only require word processing from IS services or access to the Internet. Therefore, since only a small number of areas have direct interaction with the public, IS mainly works as a facilitator. Some areas like

grants and motor tax heavily rely on efficient transaction driven systems. However, there are many information management processes still not well supported by technology or that have been operating without major modifications for the last 40 years. Consequently, there is still much to do to enhance the performance of the organisation with IS.

Many of the Department's key performance indicators relate to policy areas; therefore, they are not necessarily measurable in a quantitative fashion. In IS terms, there might be no easy or meaningful way to maintain the measurement of these indicators. However, everything that is done in the IS area supports the strategy statements, and where appropriate, performance reporting is built into the systems requirements. But not all business objectives can be linked to technology, especially some of the low-level goals. Furthermore, all major IS expenditures or projects are associated with a business requirement in order to justify its expenses.

In local government there is a huge amount of work going on in terms of IS development. Individual local authorities are achieving considerable progress: some with projects integrating across local communities, others with fully developed Intranets, and some others with sophisticated Geographic Information Systems in place. This has been happening due to the IS vision for local government which states that through the strategic use of technology, a local government system will evolve as the first choice for the delivery of a wide range of local services to all citizens, and a strategic partner with Central Government in preparing and implementing the Information Society in Ireland. However, as said above, these initiatives do not directly depend on the Department's Organisation/ICT/FOI Unit or its strategy.

6.7.9 Synchronising business and IS strategies

The Department of the Environment and Local Government has currently both a strategy statement and an IS strategy. Though there is evidence of some influences between both strategies (*e.g.*, the leadership of the strategy statement around which IS projects must be developed, and the persuasive influence that the IS unit has when upgrading equipment), these are only partially attained. Moreover, technology is not fully integrated with the business function (see Table 6.10 at the end of this section). Due to this situation, changes driven by IS needs generally take a considerable amount of time to be approved.

Generally a new business strategy promises a new IS strategy. While the strategy statement is written at a high level, the IS strategies are developed at a lower level. However, the strategy

statement is used as an input to the IS strategy and to the annual business plans. The actual IS strategy was outdated in 2003; nevertheless there is a new document under preparation. The reason for this delay is due to the changes that the Department has experienced in the last years, including considerable variations in staff numbers and modifications to the organisation's functions. However, since the IS Unit is aware that IS strategies have to be integrated with business strategies, in general these plans are developed shortly after the publication of strategy statements.

The IS strategy is mainly developed by the IS people, identifying the needs and requirements documented in the strategy statement or mentioned in close discussions with users. For its preparation, the IS unit annually receives a high-level statement from the business. Then, the IS manager translates this document into work for the IS area. Finally, business managers review the strategy and suggest changes to the document. However, a current problem in the Department is that some business managers do not have an appreciation of the possibilities and benefits of IS developments, causing a lack of commitment to IS issues and a long delay in their implementation.

Some considerations identified by the IS area which shape the IS strategy and will ultimately determine its success are that business managers must drive its implementation, that the IS strategy requires substantial investments, and that this IS business plan needs to be properly managed and resourced. Also, senior management commitment is especially critical to the success of the IS strategy. Without their sponsorship and long-term ownership, there is a substantial risk to have unexecuted proposals or deficient implementations.

The use of IS has become fully integrated into the daily working routine of the majority of the Department's staff. In view of this, the provision of a stable and secure IS infrastructure is a vital element of the Department's capacity to do business and to contribute in a substantial way to the achievement of the strategy statement's objectives. In addition to its central role in providing and supporting information and communication systems to all sections in the Department, the Organisation/ICT/FOI Unit also tries to assist in the development of systems and applications that meet the particular requirements of individual work areas.

In the Department, even though the IS manager has to annually present its business plan to the MAC explaining the proposed projects, budget and timeline, a major limitation to achieve a

strong synchronisation of strategies is that this manager is not a member of the Management Advisory Committee. In other Departments, such as the Department of the Enterprise, the IS director fought for years to get a seat on MAC, shifting from an advisor to a major influencer in organisational change. The IS manager is aware that unless this is achieved, the IS area will not be entirely integrated in the organisation and the Department may not fully exploit IS opportunities. Even so, senior business managers (*i.e.*, MAC members) are not convinced that this position will be advantageous to the Department since it is not an organisation that specialises in providing services directly to the public.

6.7.10 Main IS projects and e-government initiatives

In the Strategy Statement 1998-2001, it was recognised that the Department's IS (with the exception of the National Vehicle and Driver File) were far from adequate and in need of a substantial redevelopment and resourcing, particularly in the case of the housing grants system. Also, the distribution of IS capable of supporting modern office environments was uneven. Nevertheless, following an evaluation of the Strategic Management Initiative, a new vision of the Public Service Modernisation Programme was developed and particular priority to the development of IS was assigned. With this, substantial progress was made in relation to the upgrade of technology in the Department. In addition, the government's Action Plan to implement the Information Society called on the Department to develop on-line applications like the processing of driving test applications and the establishment of a secure Intranet between Departments and Local Authorities. Furthermore, the Department has been working in putting customer service at the heart of the business.

The supply of quality services to the Department's customers is mainly centred on e-government initiatives, which are widely considered as a prerequisite of a modern public service organisation. Even though just a few applications have been developed, considered non-strategic by some business managers, the Department is aware that the provision of electronic services will offer more accessible services, better choice and improved service delivery. Therefore, it is intended that this will enhance access and delivery of government information and services to citizens, business partners, employees, other agencies and governmental entities. To support this, several e-government initiatives have been nationally implemented, aided by the Department's e-Public Services Strategy which was published in 2002.

Table 6.10: Main IS projects as described in the Annual Reports of the Department of the Environment and Local Government

IS Projects	Annual Reports
Enhanced computer systems for Tidy Towns	Annual Report 2003
New Sharepoint system	Annual Report 2003
House price statistics computer system and database	Annual Report 2003
Penalty Points system	Annual Report 2003
Motor tax renewal	Annual Reports 2003, 2002
National Vehicle and Driver File (NVDF) system	Annual Reports 2003, 2002, 2000, 1999
CIS (Complete Information System)	Annual Report 2003, 2002
Electronic voting	Annual Report 2002
Financial Management System (FMS) for local authorities	Annual Report 2002
Driving test website	Annual Report 2001
Department-wide intranet	Annual Reports 2002, 2001, 1999, 1998

The Department works in the provision of IS by reflecting the diversity of its activities, linking with the bodies and agencies with which it shares information, and offering access to the citizens it serves. Table 6.10 includes a list of IS projects in the Department. However, the following are the most important:

- *National Vehicle and Driver File System.* The Department operates the Motor Tax Online website, one of the government's flagship e-government projects. In July 2002, the National Vehicle and Driver File system was implemented in all local Motor Tax Offices. With the capacity to support 700 users, all motor tax transactions from the Motor Tax Offices can now be carried out online (nowadays operating 25% of the annual business – aprox. €150m). Furthermore, it has facilitated the creation of a national driver and vehicle database, which forms the basis for the administration of the penalty points system.

- *Website and libraries infrastructure.* Nowadays, it is possible to access all government websites free of charge across the 300 branches of the public library service. In September 2000, the Minister launched a pilot scheme involving the installation of PC based optical scanning facilities in six libraries around the country. These facilities provide access to the Internet and other online services to visually impaired people. One year later, more than €1.6 million was paid in IS grants to library authorities. Also, €570,000 was provided for initiatives involving electronic delivery of certain library services, training of library staff in the use of the Internet, and the publication of a user's guide. By the end of 2002, Internet access to library catalogues was provided by 14 library authorities, a need identified since

1998 when the Annual Report of that year estimated that an investment of £18.5 million (aprox. €23.5 million) was needed to improve the libraries' technological infrastructure over an eight-year period.

- *Electronic voting.* For the last years, the Department has been working with the roll-out of the electronic voting and counting system. It is intended that the development and implementation of this system will ultimately provide a key impetus to the modernisation of the democratic system, providing election results within a few hours of closing the polls and improving the efficiency of the electoral administration. During 2002, the system was piloted in three constituencies at the Dáil general election and in four constituencies at the Nice referendum in October. Following its successful piloting, the government approved the use of the system countrywide for future elections. Nevertheless, due to public concerns about the system's reliability and accuracy, and also because the Commission on Electronic Voting was unable to account for these points prior to the June 2004 elections, it was not used during the European Elections of that year and it is still not clear when will it be used again.

6.7.11 Conclusion

The Department of Environment and Local Government manages several functions critical to Central Government and the country. However, due to the fact that the majority of its areas and divisions do not provide services directly to the public, the lack of appreciation and commitment by senior business managers to technology, and the non-strategic position of the IS area, the Department has an weak integration of IS processes when compared to other public sector organisations in Ireland. Moreover, there is limited influence between the business and IS strategies, causing underdeveloped IS projects, unexploited technological ideas and overlooked process enhancements. Nowadays managers are trying to integrate both functions; nevertheless, considerable work is still needed to accomplish a stronger synchronisation.

Table 6.11: Key synchronisation characteristics of Department of the Environment and Local Government

Agent	Business characteristics	Agent	IS area characteristics
Business function	• The organisation has no sophisticated technological infrastructure or advanced IS. • The business has limited dependence on IS. • Despite its limitations, the organisation is aware that technology has to be integrated with the business in order to achieve its objectives and provide high quality customer services. • When choosing a system, instead of going for the most functional, sometimes the most user-friendly is the one selected. • Many of the functions in the Department only require the most basic computing services like word processing. • Nowadays, several processes are still not supported by technology or have been unchanged for the last 40 years. • There is still much to do to enhance the organisation by means of IS.	IS function	• The IS area has an insignificant position in the business and mainly performs as a business process support for internal customers. • The IS area's main functions are to provide services that reflect the needs of the business. • Besides IS, the area is responsible for other functions like the Freedom of Information Act and organisational infrastructure. • An IS Steering Committee ensures that the IS strategy is implemented and reviewed to maintain alignment with the business needs. • When the IS area tries to introduce improvements in the business (*e.g.*, the replacement or upgrade of equipment), generally it takes a considerable amount of time to be approved.
Business strategy	• Business strategies are developed by a consultation process through the top management team and divisional meetings. Comments from all staff are welcomed. • In the business strategy, IS issues are scarcely considered. • The business strategy has limited influence on the IS strategy, but drives which IS projects must be developed.	IS strategy	• The IS strategy formation and planning process commenced since the introduction of the SMI. • The IS strategy development considers the main business objectives and the business critical success factors. • The IS strategy recognises the information necessary to support the business strategy. • After identifying the requirements of the organisation as stated in strategy statements, the systems needed to support these requests are specified. • Generally an IS strategy is written just after a business strategy is finished. • The IS strategy is developed by IS people by identifying the needs and requirements documented in the business strategy or during formal and informal discussions. • The IS strategy has a strong technical nature.
Business managers	• There is no significant commitment from business managers to IS issues. • The IS area is aware that senior management involvement is critical for the successful implementation of the IS strategy. • Business managers consider the IS area's internal projects (*e.g.*, network maintenance) more important than the external (*e.g.*, e-government). • These managers review the completed IS strategy and suggest changes. • Top managers are not convinced that having an IS manager with a senior position will be advantageous for the Department.	IS managers	• The IS manager does not have a senior position in the organisation. • The IS manager is called as required to top management meetings if there are technological issues to discuss. • The IS manager translates the strategy statement into work for the IS area. • Every year, the IS manager presents the IS area's annual work plan to business managers.

6.8 DEPARTMENT OF AGRICULTURE AND FOOD

(CASE STUDY 6)

6.8.1 Introduction

The agri-food sector, a far-reaching industry for Ireland and its economy, is based on indigenous resources and accounts for 8.4% of the country's GDP, 9.5% of its employment and around 27% of net foreign earnings from trade. Therefore, the development of a successful agri-food sector has a significant impact on national prosperity, state income, international reputation, and in particular, rural communities.

The Department of Agriculture and Food (DAF), the main player in the agri-food sector in Ireland, has the objectives of developing a sector and rural economy which supports the maximum number of farm families and rural households; competes successfully in international markets; is customer focused; offers rural dwellers attractive livelihoods; and promotes efficient and sustainable farming practices. Furthermore, the Department is responsible for high standards of food safety, animal health and welfare, and plant health. This range of activities might not be normally associated with IS developments; nevertheless, due to the way the business and IS strategies are synchronised in the Department, the organisation is positioned not only as one of the most technological-advanced government departments in Ireland, but among the most modern agriculture administrations in the world.

6.8.2 Origins

The Department of Agriculture and Technical Instruction, as it was originally called, was one of the first government department in Ireland. Founded in 1900 to improve farming standards through education, research and development, it has overseen the transformation of subsistence farming into a huge modern industry that exports food products all across the world. After Ireland became independent in 1922, 'The Department', as it is commonly known to thousands of Irish farmers, was integrated into the new State. In 1973 the Department was at the forefront

of Ireland's accession to the European Economic Community. Consequently, since that year, over €30 billion of EU funds have been negotiated and paid to Irish farmers and food processors, resulting in farmers with much higher living standards and the growth of the Irish agri-food industry to huge proportions.

A succession of government and departmental policy statements extended the Department's mandate beyond agriculture to cover food in 1987 and forestry in 1993; however, responsibility for forestry was transferred to the Department of the Marine and Natural Resources in 1997. Also, even though the Department has always been deeply involved in rural development, lead responsibility for this area was formally assigned in 1999, and the title of the Department was changed accordingly. However, in November 2001, the establishment of the new Department for Community, Rural and Gaeltacht Affairs altered the focus of the DAF in relation to the growth of rural issues. Recently, in January 2004, responsibility for the forestry sector was returned from the recently formed Department of Communications, Marine and Natural Resources.

6.8.3 Function and objectives of the Department

Agriculture is considered vital to the economic and social life of the country. It is not an industry with a single focus. With more than €2.8 billion of payments made every year, it encompasses rural development issues, food quality, consumer demands, environmental management, and animal health and welfare. The mission of the Department is "to lead the sustainable development of a competitive, consumer focused agri-food sector and to contribute to a vibrant rural economy and society." Therefore, the DAF is constantly working towards its vision, which is to achieve an agri-food sector that:

- Provides high-quality safe food for consumers, home and export markets;
- Is profitable, internationally competitive, innovative and sustainable;
- Promotes the development of a rural economy that sustains the maximum number of farm families and rural households; and
- Works in harmony with a biologically diverse environment and countryside.

With 136,300 farming families nationwide (approximately one-third of the rural population), the agri-food sector continues to play a uniquely important role in many countryside communities. Furthermore, farming, which is an activity highly dependent on exports, is regarded by Central Government as the backbone of a strong rural economy and the basis for a

quality food industry capable of competing world-wide. Therefore, unlike other sectors, there is a particularly high level of intervention from Central Government and the EU. This causes that all resources are carefully controlled and that only those activities which contribute to its mission can be considered as a priority.

The Department operates in a complex and ever changing environment, where economic, political and social developments at national, European and international level impact significantly on the achievement of its strategies and goals. This is why the organisation must be responsive in order to effectively fulfil its role in the development of a dynamic and competitive agri-food sector and a vibrant, sustainable rural economy and society. Furthermore, rapid technological change in food production, communications and other areas are also creating new challenges and opportunities for the Department at present, and this will be intensified in the future.

6.8.4 Organisation and stakeholders

The Department is organised in 11 units, each headed by an Assistant Secretary (Figure 6.10). Overall, there are more than 4,580 staff members distributed in 68 divisions. Currently, 75% of the employees are located in the 57 offices throughout the countryside. With the decentralisation programme, this number will grow in the near future since 400 staff members of the Department's headquarters are planning to move to Portlaoise.

The Department's size, the degree of decentralisation, and the wide diversity of its activities pose a major challenge in terms of ensuring uniformity of standards. Therefore, in 2001 a new structure was put in place to enhance organisational flexibility and competence. In some areas, this resulted in the separation of policy from operations and the alignment of functions to reporting arrangements. Consequently, the outcome was a new structure with four groups – policy; food safety and animal health; agriculture payments; and corporate development. Many of the Department's staff members work in more than one area. Therefore, the Department has to deliver services (*e.g.*, IS and disease control) which may cut across various functional areas and require Departmentwide co-ordination.

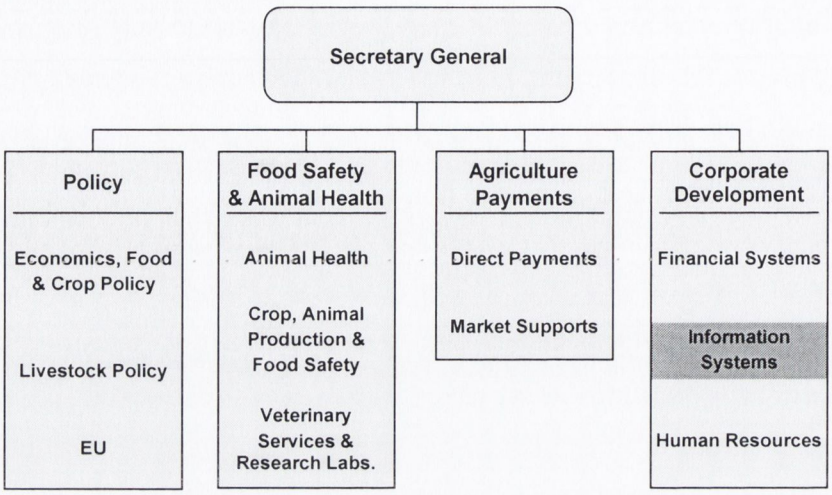


Figure 6.10: Department of Agriculture and Food organisational chart

On a higher level, the Department is regulated by the senior management team, also known as the Management Advisory Committee (MAC). This group is headed by the Secretary General and is comprised of nine Assistant Secretaries (including the IS manager or as entitled here, the IT Director), the Chief Veterinary Officer and the Chief Inspector. Its main objective is to ensure that a coherent and strategic approach is taken in the development, management and implementation of policies and goals within the Department. Its function is supported by the work of a number of boards including the e-Government Committee, the IT Steering Committee, the SMI Coordination Group, and the Partnership Committee.

The Department's customers are many and varied. They range from farmers and the agri-food industry to consumers and non-farm dwellers, together with other government departments and EU Institutions. Furthermore, unlike most of the other government departments and offices in Ireland, a significant amount of legislation is set by the EU. In most situations, schemes, rules and regulations must be implemented in accordance to decisions agreed at EU level.

6.8.5 Business strategy development

Strategy statements, which are relevant to all divisions and staff members, reflect the changing environment, both internal and external, within which the Department operates. Also, they outline the mission for the following years, identify goals and strategies, and describe the evaluation and monitoring process. At a practical level, they form the basis of all divisional business plans (including the IS strategies).

The strategy document is developed every few years. In order to achieve the required flexibility to reflect changes in the business planning environment (*e.g.*, alterations in agriculture or in the general policy arena), it is necessary to have a wide-ranging level of consultation. Therefore, an in-depth examination of the Department's work through a series of focus group meetings at Head of Division and MAC level is engaged to discuss changes and issues affecting the Department. It is in this step, as explained later, where the IT Director discusses novel technological developments and changes in the Department's operation with other top managers. Then, staff and unions are consulted through the Partnership Committee and individual staff members are invited to provide comments and observations throughout the drafting process. Concurrently, the views of the Minister and of a wide and varied range of the Department's customers are sought to assist in the document completion. Finally, an initial version of the strategy statement is discussed by the MAC and a further raw copy is published on the Intranet inviting comments from all staff. The final Strategy Statement must be agreed with the Minister, in accordance with the 1997 Public Service Management Act. Additionally, in order to achieve more consultation, the Department developed a staff suggestion scheme entitled INPUT. Through this programme, staff members at all levels are encouraged via monetary incentives to examine and suggest improvements to the Department's activities, systems and procedures.

The business planning process brings down the goals, strategies and performance indicators from the strategy statements to the operational level. It builds up a concrete annual agenda of actions with the objective of implementing strategies and achieving the Department's goals. In turn, these business plans are used as the groundwork for individual staff work-programmes and performance measurements. Furthermore, since business plans have flexibility in the strategic process, their work methods and objectives are modified according to changes in the environment. So in order to implement the strategy statement, detailed work plans are drawn from each of the 68 divisions, elaborating the goals and strategies set out in these documents and showing the contribution of each division to the overall achievement of the business objectives. Performance measurements in relation to the implementation of the Department's strategies are outlined in the Annual Reports.

By means of the Customer Service Action Plans, government Departments commit to deliver a quality service through the implementation of several principles. The Department's first Action Plan was launched in 1998. It outlined specific standards for the provision, dissemination and

measurement of a representative range of services. But it was not until the next Plan (1998-2000) that the utilisation of IS to assist in improving efficiency and effectiveness was emphasised. By then, some examples of IS developments were Aertel (*i.e.*, the teletext service of the national television network) and the website, which published the Department's activities, documents and its involvement in the REACH initiative to deliver on-line services to customers.

6.8.6 The Department's IS area

The IS area or as designated in this organisation, the IT Group, is in charge of the Department's ICT technological functions. Unlike other areas, it is a service provider and an enabler for other organisational units. Its main responsibilities are development of IS strategies, IS planning, the delivery of large business applications, and a wide range of functions like systems, database and network administration; IS security control; IS project management; IS quality control; coordination of e-government projects; and user help desk. Even though certain technological operations are performed in locations outside of Dublin, all functions are centrally managed.

The origins of the Computer Division, as it was initially called, can be traced to the Land Commission. When this organisation was merged with DAF in the 1960s, the technological expertise was incorporated into the agriculture's functions. During the next two decades, significant operational functions were implemented, including support for the cattle eradication programme (ERAD). However, due to limitations from Central Government, to a shortage of money and to a lack of vision from top managers who treated IT only as a cost rather than as a potential method of reducing cost, during this period the IT Division was underdeveloped and suffered from a critical lack of resources. This situation caused such an inadequate technological progress that even by the early 1990s the Division was not one of the key areas in the organisational structure. Moreover, a split within the information technology group in the department during much of the 1990s also contributed to the problems with IT during this period. The integration of technology was slowed down due to the re-assignment of the manager concerned with this responsibility, to its restricted authority and to the resulting absence of any commitment to computerisation at top management level. Furthermore, each business line tended to consider the IT resources working on projects in their area to be permanently assigned to them. These circumstances resulted in an inability to adequately coordinate at technological and business levels, causing replication of functionality, data inconsistency, and sometimes duplicated collections of information from customers. Also, with

a staff of approximately one hundred and fifty individuals (from 1992 to 2000 the Division had basically the same staff numbers), it was mainly a service provider to the Department's computer systems, equipment and facilities. Although dedicated and very efficient in their own areas, the pressure to provide services made it very difficult to take a higher corporate view and to carry out research into new technologies.

Nowadays and mainly after business managers acknowledged the importance of the IS area, the potential of its projects and the role of the IS manager, the Division progressed into an advanced, experienced IS planning and innovative area. It is headed by the IT Director, who is responsible for managing and directing the work of over 200 individuals. The IT Director is an Assistant Secretary, a MAC member, and directly responsible for the Division's resources. Additionally, there are five Principal Officers (POs) reporting to him, each accountable for distinct areas of IS delivery (see Figure 6.11). Furthermore, contrasting with the situation in the late 1980s, the IS area has considerable support and commitment from business managers. Its budget is established according to the resources required to deliver its work plan (in 2004, this corresponded to €26.4m).

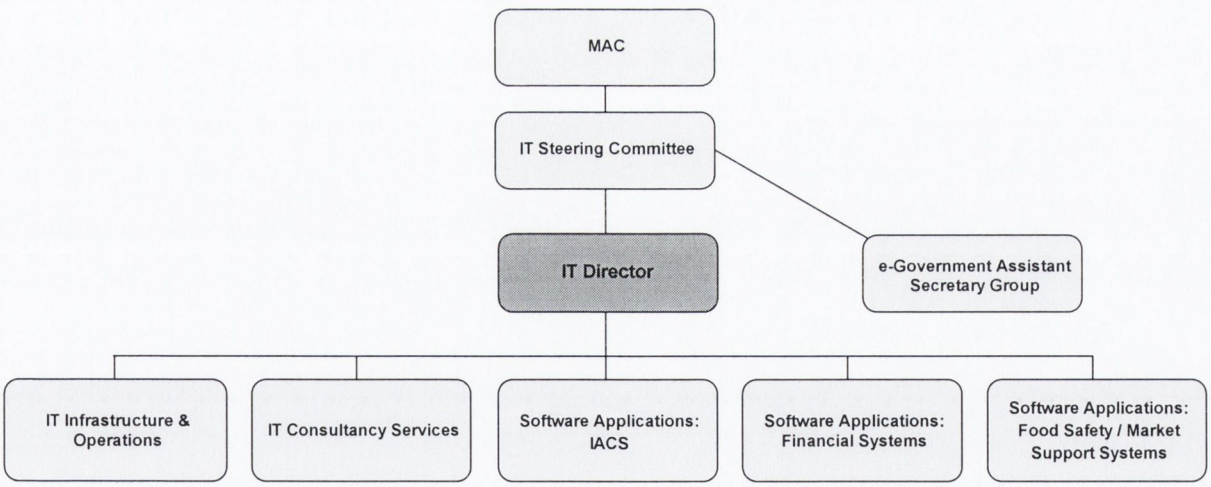


Figure 6.11: Structure of the Department of Agriculture and Food's IT Division

6.8.7 IS Strategy

For the Department, the IS strategy is a document that grows and develops over time. It is published every four years and is reviewed on an ongoing basis. It links the IT Division with the business, directs IS within the Department, and establishes approaches of how the Department can be best benefited by implementing new technologies. Furthermore, some of the recognised advantages that have resulted from having an IS strategy (synchronised with the

strategy statement) are: risk reduction (policy, financial, operational and technical risks); improved access to data, process improvements and operational efficiencies (*e.g.*, reduction of manual activity, elimination of duplicate tasks, facilitation of software development effort and reduction in systems costs); and improved service provision to users (*e.g.*, 'one-stop-shop' capability, e-government features, the life cycle and the utilisation of new technologies). Since it is regarded important to closely monitor benefits during IS strategic planning, rigorous attention is paid to analysing user feedback, technical problems and technology trends.

The first IS strategy, which was formulated by a consulting company, was developed in 1991. Although it was not business driven, for the first time some issues were documented and prioritised about what technology will do for the organisation. In 1994, a new overall business strategy was created instigating the development of a new IS business plan as a blueprint for implementing key strategic projects from a business and technology infrastructure perspectives. During this time, IS were considered exclusively as a support service. However, even though technology was deemed vital when building the Department's objectives, it was severely constrained by resource limitations.

A new IS strategy, which covered a four year period and made recommendations in the areas of applications, infrastructure and organisation/staffing of the IT Division, was completed in 2000. During its development, consultants and specialists from the Department identified key strategic applications, as well as the appropriate technology required to deliver them. Its purpose was to build an IS strategy taking into account the current status of the Department, changes in work practices, and planned and expected business challenges foreseen over its timeframe. Also, it included a mandate that stated that all significant IS initiatives should be e-enabled. Furthermore, it had to provide for strict control requirements from the EU in order to avoid a reduction in subsidies. Its implementation was regarded as highly successful: all of the key new business applications were completed in the subsequent four years and new corporate data and systems architectures were put in place. Moreover, by effectively finalising projects like the rollout of desktop PCs, staff efficiency was increased and better levels of service to customers were provided. Consequently, a perception was formed between users in the department that the IT group greatly improved its services since the IS strategy was implemented.

When this strategy was prepared, the Department was in need of a number of major applications to support its current business processes and infrastructure upgrades. At that stage, detailed user requirements were the main drivers. However, when the most recent IS strategy was developed in 2004, instead of mainly considering the users, a more top-down approach was followed, together with a rationalisation/optimisation of business processes. With this, its objectives were derived directly from the MAC and from a newly completed operational strategy. This operational strategy was established with the purpose of taking a top-down view of how to accomplish the Department's business in the medium term, to prioritise the business processes that need to be worked from a business and technical perspective, and to ensure that the IT Division is positioned in terms of technology and skills to underpin the changes that the organisation wishes to realise. Therefore, after analysing the operational strategy, the IT Division identified several strategic and environmental factors which had to be supported by means of technology, together with new technological endeavours and business requirements.

In 1999, it was recommended that the IS strategy must be reviewed every year. By means of annual plans, the IS Steering Committee evaluates the current plans and monitors their implementation. This implementation consists in the completion of major IS infrastructure projects and in the delivery of new computer systems. Nowadays, IS are being continuously promoted throughout the Department in order to create awareness about the realisation of its potential benefits.

6.8.8 Integrating IS with the business

IS developments have changed the context in which participants in the agriculture and food sectors operate. For example, technology has increased the speed of payments, has achieved efficient control of information, and has provided the capability to remotely access applications. In this day and age customers expect information in a timely, clear and simple manner to enable them to carry out their business with the Department in an efficient way. Therefore, even though in some cases there has to be approval from the EU to implement some technologies, IS and telecommunication developments are vital in an organisation like DAF with a wide dispersal of staff and distant locations throughout the country. Some disadvantages of this integration are its cost and the maturity rate of technology; nevertheless, investments are constantly being made in novel technologies like Internet, video conferencing, and kiosks to overcome the problems of distance communication and information distribution.

As said above, due to resourcing issues in the 1980s the Department was unable to exploit the opportunities for better customer service and improved scheme control by the use of technological integration. In the early 1990s, the Department's level of efficiency and effectiveness was still short of what the public sector delivery of service should provide (*e.g.*, there were very long delays when paying farmers). Additionally, on an organisation-wide level, there was a lack of appreciation for the benefits that the Computer Division could supply. Nevertheless, when the McSharry Reform (or the Common Agricultural Policy) was instituted in 1992, together with a BSE crisis and a foot-and-mouth crisis, the Department had to change the way it had been traditionally working. With new income support measures dictated by the EU, it was necessary to incorporate technology to comply with this initiative. Furthermore, in order to facilitate these changes, the IT Director role was created and a plan was approved to put a PC on every desk.

After 2000, further technological advances attained distributed corporate data, integrated systems and shared functionality (where appropriate). This directed the Department to improved customer services and the elimination of unnecessary customer transactions. Furthermore, this integration also caused a tighter collaboration with agents (*e.g.*, automating processes and communicating via electronic channels) and more efficient internal workings within the Department (*e.g.*, staff can move seamlessly between applications and have access to a single view of all relevant information on customers, land and animals).

In the latter years, the Department has transformed its IS infrastructure in order to deliver and maintain an extensive range of sophisticated solutions to support the Department's needs. This has been achieved by means of technology improvements, a coherent IT architecture, and a coordinated IS strategy. The efficient and effective use of technology is critical for the Department's performance and this is why major investments have been made (and will continue to be made) in emerging technologies. Furthermore, the Department uses technology to its advantage and to respond to crises as they arise in the sector (*e.g.*, BSE and Foot-and-Mouth diseases).

The Department carries out a range of operational functions on a scale that would not be possible without the actual degree of synchronisation between business and IS strategies, together with the extensive use of automated IS tasks. These functions are targeted at internal (staff) and external (farmers and agents) groups of people. Internal staffs are provided with the

best possible support in order to enable the delivery of enhanced customer services, including quality office facilities, communications services, IS systems, and training. Also, in order to achieve a high degree of efficiency, in 2001 a programme was launched which consisted of one of the biggest ever roll-outs of desktop PCs in the country. Furthermore, with the development of a dedicated IS audit area and other endeavours, the Department led the way in the pursuit of best practice in financial management systems.

In relation to the external customers, the Department depends extensively on agents to carry out work on its behalf, to perform controls and to collect information. In order to achieve greater efficiency, electronic links have been implemented to connect these agents with central databases. While technological developments are welcome, the Department is aware that not every citizen has access to these technologies and every effort is being made to ensure that no customers are disadvantaged due to a lack of access to a computer. Consequently, the Department has been examining ways in which it can improve countrywide service delivery through the use of new technologies.

6.8.9 Synchronising business and IS strategies

The Department is an organisation fully committed to the need of ensuring value for money in the management of resources, in focusing on service and outputs, and in the development of analyses and evaluations to new and existing business methods. In line with this, and to achieve a maximum exploitation of IS resources in order to support and enhance the business, the Department has made an effort to have an IS strategy strongly synchronised with the strategy statement, together with performance indicators and close working relationships between business people, IS staff and when needed, consultants.

For many years, cooperation and coordination between the business units and the IT Division was not as good as it could have been. Also, business managers were not fully aware of what IS people did. However, lately, technical advances and new ways of carrying out everyday work reveal strong influences from the IS strategy to the overall business strategy (see Table 6.12 at the end of this section). In addition, further technological knowledge has meant that business managers know what they want, but they may not know much about technology. Therefore, the IT Division continuously proposes technology and solutions to the business. This is possible because the IS people possess a good understanding of the business, and have the necessary technical and environmental knowledge to maintain existing solutions and to deliver new

applications. Not all offerings are accepted; the Department will not agree to a proposal if there is too much risk involved. Furthermore, if business managers are not convinced of the value of the technological project, it does not matter how good it is, it will not be implemented.

Since the Department could not work without technology, providing innovative, error-free and efficient IS are recognised as critical objectives for the IT Division. Furthermore, since technology developments offer the potential to improve information management and scheme delivery, these technologies have a strong influence on the organisation's goals and strategies. The Department's major investments in IS allow the IT Group to meet the clearly defined needs of the Department as a whole. Therefore, the IT Group has a key role in understanding how the Department operates, identifying the Department's current needs and recognising ways in which IS can further enhance the performance of each business unit.

For a successful synchronisation, it is necessary to have clear links between the strategy statement, the IS strategy, the business managers and the IT Director. Therefore, when developing the business strategy, the views and suggestions of IS staff are taken into account as far as possible, particularly in relation to the need to cohesively link the goals, strategies and technology to the practical work. Also, the business managers involved in large service areas (*e.g.*, finance or accounting) have strong support and commitment to IS, including excellent communication channels between business managers and the IT Director.

Two essential elements in the synchronisation of business and IS strategies are the IT Steering Committee and the account managers. The IT Steering Committee was created in 1991. As a subset to the MAC, its main functions are to approve project initiation, monitor progress, appoint project boards, prioritise IS projects and review the IS strategy. Also, the Committee provides direction so that the Department can obtain the best business benefits from IS investments. It is chaired by the Secretary General and comprises Assistant Secretaries and the IT Division's Principal Officers. The advantage of this arrangement is that IS and business members collaborate on the development of business cases and in the identification of technological solutions.

In relation to account managers, each senior IT Principal Officer, apart from managing their IT sub-division, acts as an account manager to a number of MAC members (and their respective business areas). They work very closely with these business areas during the development of

their systems and by addressing the various challenges that might arise. The account managers not only are knowledgeable about technology and constantly interact with each other, but also are very familiar with the current and emerging business strategies in their respective area.

Some of the identified benefits for synchronising the business and IS strategies are cost savings over time, delivering government imperatives and prevention of system failures. Furthermore, some other advantages include service improvements, the perception of the Department locally and internationally, and the linkage between the organisation and its environment in order to be flexible for future changes.

6.8.10 Main IS projects and e-government initiatives

In the 1970s and 1980s, isolated and unconnected IS predominated. However, in the last years, large amounts of resources have been invested in the development and promotion of novel IS projects. Even though the McSharry Reform introduced technological changes, the main turning point was in 1999 when it was acknowledged that IS advances were essential to increase the Department's operational efficiency. Since then, IS have been built on the basis of a strong partnership between the IT Divisions and the business. Furthermore, the necessary infrastructure has been incorporated to facilitate the day-to-day work and extend the use of email, intranet and Internet throughout the organisation.

Close relationships are maintained with the Information Society Commission, e-Europe and other cross-departmental agencies such as REACH, BASIS and OASIS. Since some of these groups have the objective of transforming the way citizens interact with government, the Department's business and information processes have been changed accordingly. For example, some years ago the Commission highlighted that one of the largest groups of late adopters of IS is the farming community, the principal clients of the Department. With this in mind, the DAF installed touch-screen Internet kiosks in various rural centres around the country. This facilitated the access to government websites and provided free printing facilities.

e-Government has transformed some of the Department's processes, including the way customers and agents are dealt with, and how the business internally operates. In 2000, it has been stated that every future project would have to be e-enabled. Accordingly, a special unit was created within the IT Division to set-up, direct and drive the implementation of e-government services. In order to provide these e-services, the Department has recently invested

in novel technologies, upgraded networks and PCs, implemented videoconferencing equipment, and redeveloped the Department's website. The first e-government system was the National Sheep Identification System.

Enhanced technological facilities are continually being developed and introduced to deliver faster and better services. Even though many of the Department's IS projects are listed in Table 6.12, the following are some of the most important:

- *Animal traceability.* IS were not widespread in the Department in 1996. However, after the BSE outbreak, a better approach was needed to have more information about the seven million cattle in Ireland. A system was created using unique ear-tag identification, allowing the opportunity to know to whom the animals belong, where they have been, and where they were born. With this, animals can be traced from birth to slaughter, and in case of a disease outbreak, it is possible to know, for example, which other animals these were in contact with and which farms were close by. Currently farmers have online access to this system.

- *iMAP.* Completed in 2002, provides an end-to-end land management facility for farmers nationwide, recording details and photographs of every land map throughout the country. The latest release provides on-line access.

- *Animal Health Computer System.* This system allows veterinary practitioners to interact with some of the Department's computer systems. Also, it provides an on-line method of inputting data through the Internet about every animal tested. In the future, it is planned that farmers will also be given access to the system in relation to their herds and animals.

- *Short Messaging System (SMS).* Given the penetration of mobile phones among farmers, text messaging or Short Messaging Service (SMS) has been used as an important communication channel since 2000. Several functions are underway via this technology; for example, it allows customers to trace individual animals, notifies clients of upcoming livestock inspections, permits farmers to check their balances, and even informs journalists of breaking stories. It is intended to extend the use of this technology in the future to enhance communications with all customers.

Table 6.12: Main IS projects as described in the Annual Reports of the Department of Agriculture and Food

IS Projects	Annual Report
Short Messaging System (SMS)	Annual Reports 2003, 2002, 2001, 2000, 1999
Animal Health Computer System (AHCS)	Annual Reports 2003, 2002, 2001, 2000
Internet Mapping and Payments System (iMAP)	Annual Reports 2003, 2002, 2001
Corporate Customer system	Annual Reports 2003, 2002, 2001
Animal Movement System (AMS)	Annual Reports 2003, 2002, 2000
Public service kiosks for customer usage	Annual Reports 2003, 2002
Videoconferencing facilities	Annual Reports 2003, 2002
Rural Environment Protection Scheme (REPS)	Annual Reports 2003, 2002
Animal Welfare Inspection System (AWIS)	Annual Reports 2003, 2001
Cattle Movement Monitoring System (CMMS)	Annual Reports 2003, 1999
National Genotype Programme (NGP)	Annual Report 2003
Electronic Fund Transfer (EFT) to farmers, staff and suppliers	Annual Report 2003
Pig Tracing and Identification System (NPITS)	Annual Report 2002
Computerised Accounts system	Annual Reports 2001, 1999
Area Aid system	Annual Reports 2000, 1999
Year 2000 compliance programme	Annual Report 1999

6.8.11 Conclusion

The Department of Agriculture and Food has a diverse variety of activities that range from food quality and animal welfare, to plant health and farm development. Until recently, the organisation operated with inefficient and unintegrated systems, causing data redundancy and slow customer services. Mainly due to external forces and in order to adapt to an ever-changing environment, in the last five years the Department has transformed itself into a very modern organisation that cannot subsist without technology.

Several factors influenced this change; however, the most significant is the approach taken to synchronise the business and IS strategies. With business managers' full support and commitment to IS, close working relationships between the IT Direction and MAC members, and an innovative and business-knowledgeable IT Division, this transformation has been possible in a short time. The Department's clients now benefit from enhanced services, its staff from efficient work processes, and Central Government from having a resourceful organisation responsible for a critical sector in its economy. In the Department, IS do not dictate how the Department must operate, but they bring an important dimension into the business. In line with this, IS enhance work methods that would not have been possible to accomplish with clerical systems.

Table 6.13: Key synchronisation characteristics of Department of Agriculture and Food

Agent	Business characteristics	Agent	IS area characteristics
Business function	• IS developments have completely changed the way the organisation operates. • The organisation carries out a range of operational functions on a scale that would not be possible without an extensive use of IS. • IS have a strong influence on the organisation's goals and strategies since technology developments have improved the management of information and scheme delivery. • The organisation's major investments in IS clearly meet the defined needs of the business as a whole. • The organisation promotes IS to create awareness about the realisation of its potential benefits.	IS function	• The IS area is an advanced, experienced IS planning and innovative service provider and enabler for the organisation. • Providing innovative, error-free and efficient IS are recognised as critical objectives for IS area. • The IS area promotes business commitment, which is what makes the area successful. • IS staff have good knowledge of the business. • The IS area has a key role in understanding how the organisation operates so that IS are able to support the business' current needs. • The IS area identifies ways in which IS can further enhance the performance of each business unit. • The IS area sells technology to the business. • An IS steering committee reviews the IS strategy and provides direction so that the organisation can obtain the best business benefits from technological investments.
Business strategy	• The business planning process brings down the goals, strategies and performance indicators from the strategy statements to the operational level. • For its preparation, the views and suggestions of staff in all areas are taken into account, particularly in relation to the need to cohesively link the goals, strategies and technology to the practical work • The business strategy, before publication, is reviewed by the top management team.	IS strategy	• The IS strategy influences the business strategy. • The IS strategy links the IS area with the business and takes into account the current status of the organisation, the changes being implemented in work practices, and the expected business challenges foreseen. • The IS strategy is a dynamic document developed by top managers. • The IS strategy directs IS within the organisation and establishes approaches to how the business can be best benefited by implementing novel technologies. • For its development, an analysis of the organisation's needs, requirements and vision is carried out under the operational strategy. • Also, specialists identified key strategic applications, as well as the appropriate technology required to deliver them.
Business managers	• Business managers involved in large service areas have strong support and commitment to IS. • Business managers generally know what they want from IS, but they do not know much about technology or how it can be accomplished. • When implementing a technological project, business managers must be convinced of its use and implications. Not all offerings are accepted. • Business managers have very good communication with the IS manager.	IS managers	• The IS manager is responsible for managing and directing the work of the IS area. • The IS manager has a strategic position in the organisation, participates during business planning, and is a member of the IS Steering Committee. • The IS manager continuously tries to sell technology to the business. • Good communication channels exist between IS and business managers.

CHAPTER 7

RESEARCH FINDINGS AND DISCUSSION

> *"Insanity: doing the same thing over and over again and expecting different results."*
>
> Albert Einstein
> US (German-born) physicist (1879-1955)

7.1 Introduction

Demonstrated by the six cases, every organisation has distinct characteristics, reasons and procedures for synchronising their business and IS strategies. For example, this may extend to the difference in top managers' commitment in the introduction of technology, the people implicated in the development of the business strategy, and even the resources allocated to the IS function. All of these actions impact in distinct ways the process of strategically planning the IS function, thus producing a variety of effects and particular synchronisation features in each organisation. Based on these actions, the objective of this chapter is to present the results gleaned from the case studies, grounded in the literature previously reviewed and organised around the research question.

The chapter is structured as illustrated in Figure 7.1. In Section 7.2, the theoretical framework that emerged from the data analysis is presented, detailing its development and components as emerged from to the six case studies. Then, in Section 7.3, the key characteristics of the framework are explained, including its attributes and content. Next, Section 7.4 introduces the reasons for synchronising business and IS strategies that also became evident in the field study. Finally, a discussion of the results, linked to the literature review to demonstrate their groundedness and novelty are presented in Section 7.5.

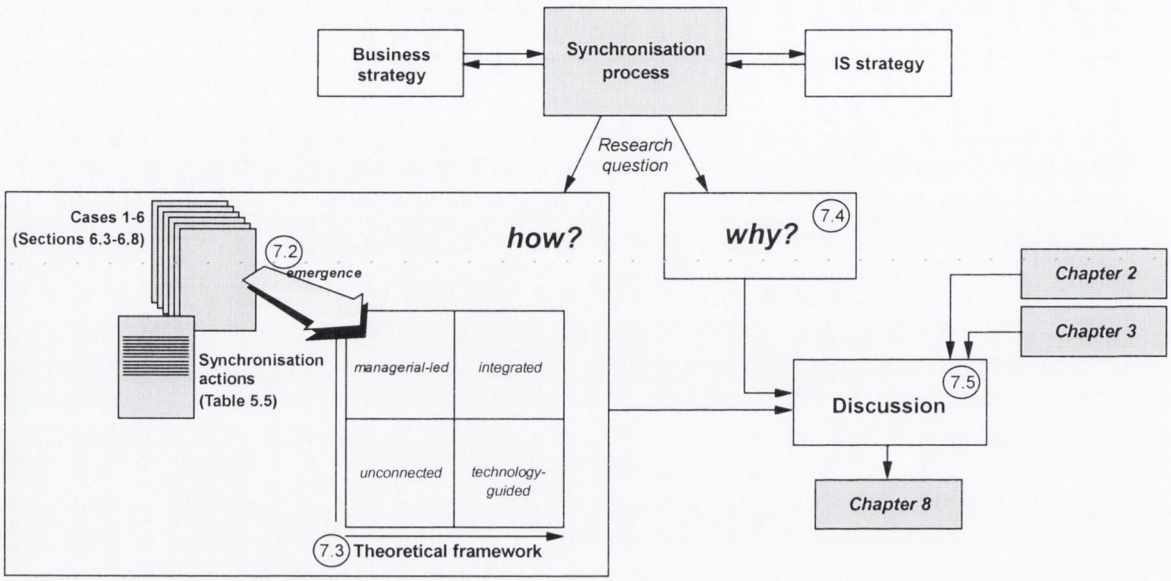


Figure 7.1: Organisation and structure of Chapter 7

7.2 Development of theoretical framework

After completing the six case studies presented in Chapter 6 and analysing the gathered data as described in Chapter 5, a framework was constructed that portrays several synchronisation types, specifying how public sector organisations synchronise their business and IS strategies. Therefore, in this section the emergence of the framework is first described, identifying the influence that one strategy has on the other. Then, with the objective of recognising its content and main characteristics, a correlation between the six cases and their approaches is explained, an association that was facilitated by the twelve grouped categories or synchronisation actions that were extracted from raw data (see Table 5.5).

7.2.1 Emergence of theoretical framework

As Chapter 5 explained, 20 categories were identified after extracting raw data and combining concepts. But after some categories were collapsed as displayed in Table 5.5, 12 synchronisation actions emerged from the data as specific actions of how public sector organisations have synchronised their business and IS strategies. Moreover, these are classified according to the influence the business strategy has on the IS strategy, or the IS strategy on the business strategy. However, since organisations have strategies synchronised in distinct degrees, it was necessary to classify these actions according to the nature of the influence either type of strategy has on the other. Consequently, centred around how the six organisations in the

investigation synchronise their strategies; to the influence that one strategy has on the other; to the synchronisation's content, process and timing dimensions (Lederer and Mendelow 1989; Shank *et al.* 1973); and based in the distinct phases detected by Synnott (1987), Chan and Huff (1993b), King and Teo (1997) and Reich and Benbasat (2000), which go from having independent strategies to the achievement of a complete synchronisation (see Section 3.4.1) – four possible combinations of influences between business and IS strategies (or four distinct synchronisation types) were identified:

a) Limited influence between business and IS strategies;
b) Considerable influence from business strategy on IS strategy, but limited influence from IS strategy on business strategy;
c) Considerable influence from IS strategy on business strategy, but limited influence from business strategy on IS strategy;
d) Considerable influence between business and IS strategies.

Accordingly, these four combinations were arranged in a 2x2 matrix with the influence of the business strategy on the IS strategy on one axis, and the influence of the IS strategy on the business strategy on the other. Together they yield four distinct types of how the business and IS strategies are synchronised (Figure 7.2). In other words, a framework was constructed that portrays four different approaches to synchronisation corresponding to the influence that exists between the business and IS strategies. Instead of a 2x2 model, a 3x3 or larger size model could also have been used with their respective ranges; however, for practical reasons four approaches were considered adequate by the researcher to represent the existing synchronisation situations.

As seen in Figure 7.2, while the horizontal (or 'X') axis portrays the degree of influence the IS strategy has on the business strategy, the vertical (or 'Y') axis portrays the degree of influence the business strategy has on the IS strategy. Furthermore, both axes are quantified from 'limited influence' to 'considerable influence', indicating how much one strategy impacts the other strategy in shaping and guiding it. Due to the intricacy of distinguishing 'no influence' from 'limited influence', and also because as explained in Section 6.2 with the importance given by Central Government through the DBG report to technology and IS investments currently every public sector organisation maintains at least some degree of synchronisation between the two strategies (King and Teo 1997), a measure of 'no influence' was impractical and unnecessary.

To differentiate the cells, a unique label is given to each approach: unconnected, managerial-led, technology-guided and integrated. The reason for choosing these particular categorisations is explained later in the chapter after describing the specific characteristics of each approach.

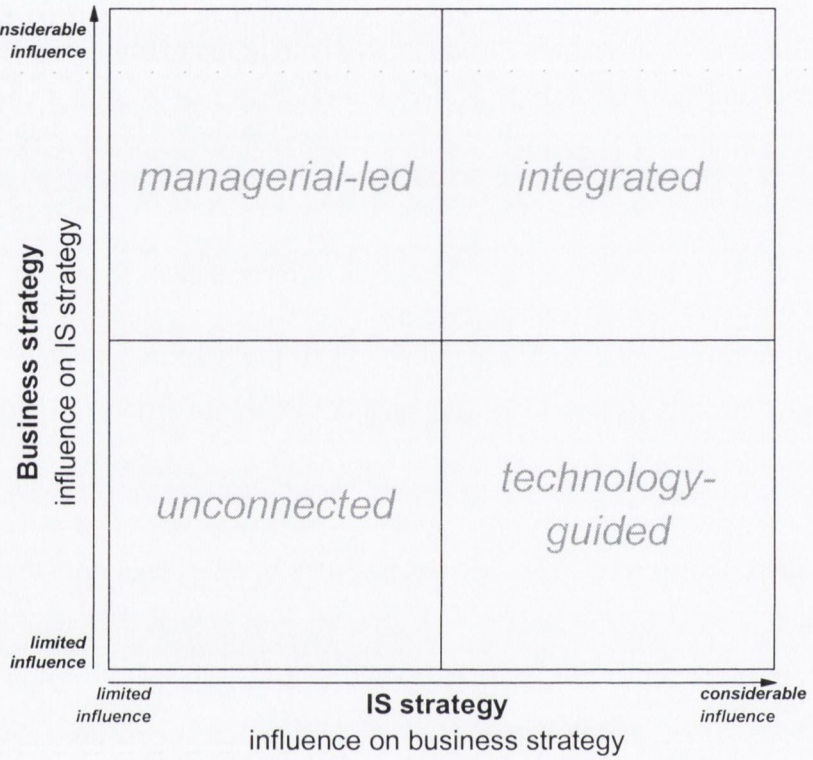


Figure 7.2: Approaches to synchronising business and IS strategies

Based on the nature of its two strategies, an organisation can only be situated in one of the four cells in Figure 7.2 in a given moment, *i.e.*, it can only take one of these four approaches at any point in time. Moreover, since the synchronisation of strategies is defined by the influence that exists between the business and IS strategies, centring on its dimensions each approach contains a distinct set of content and personnel (social) attributes of how organisations of that type carry out the synchronisation process.

7.2.2 Linking the framework with the case studies

In order to identify the main features of each approach, the synchronisation characteristics of the six case studies were used. Therefore, with the purpose of placing these organisations in a particular position on the framework, an analysis was performed by linking the case studies to the synchronisation actions. These actions were used because they correspond to the actual activities that jointly the six organisations carried out to synchronise their strategies. Using a four-point Likert type scale, each of these actions was unidimensionally measured according to

the degree to which they were realised in each organisation: '1' means that it is not realised in that organisation; '2' means that it is realised to a low degree; '3' means that it is realised to a medium-high degree; and '4' means that it is realised to a high degree. The quantification of each action was determined by the researcher based on the interviews, the review of secondary data, the case study reports, and the cases' synchronisation analysis (last table of each case study report in Chapter 6).

Tables 7.1 and 7.2 display the results of this examination. In the tables, for each case there are two columns, one measuring the influence of the business function on the IS function, and the other the other way around, indicators that are correlated to the synchronisation process. In addition, the last row contains the calculated mean for each column, which as seen below are used as coordinates to place each organisation in the framework. The reason for using a scale from 1 to 4 is, first, because an even range was required to avoid 'intermediate' or 'average' realisations of the synchronisation actions: either it was realised or it was not. Second, while a scale from 1 to 2 was too narrow to represent different levels of realisation, one from 1 to 6 or higher was too broad for the researcher to perform the analysis on his own. Therefore, a range from 1 to 4 was considered adequate for this investigation.

As the tables show, there are twelve synchronisation actions that are associated with the influence between the business and IS strategies. In line with this, the vertical axis in the matrix corresponds to the 'Business on IS' columns of Tables 7.1 and 7.2 and is directly associated with the influence of the business strategy on the IS strategy. Likewise, the horizontal axis relates to the 'IS on Business' columns in these tables and also to the influence of the IS strategy on the business strategy. Each axis measures a scale from 1 to 4 (from 'limited influence' to 'considerable influence'). Therefore, as seen in Figure 7.3, each organisation was positioned on the matrix according to the means (or coordinates) from each column. For example, since case 1 scored high in both directions, it is located in the upper-right corner of the matrix, representing high mutual influence between both strategies. Each synchronisation action might have a distinct weight in the overall synchronisation process. However, in order to facilitate the analysis and the interpretation of the results, in this thesis it was supposed that all actions have equivalent effects and that each group of six actions embodies how one strategy influences on the other. The researcher considered this as a reasonable assumption in order to delimitate the analysis since the individual weight of the synchronisation action was not measured and because they were identified in all cases after carrying out a cross-case analysis.

Table 7.1: Measurement of synchronisation actions (case studies 1 to 3)

Influence	Synchronisation actions	Case 1 (Business on IS)	Case 1 (IS on Business)	Case 2 (Business on IS)	Case 2 (IS on Business)	Case 3 (Business on IS)	Case 3 (IS on Business)
Business function influence on IS function	IS projects are proposed and managed by the business, since it understands technology and its effects.	3		3		3	
	IS strategy development is influenced by business strategy.	4		4		4	
	Business managers are deeply involved in IS area operations and planning.	3		2		3	
	IS area activities are directed by current organisational requirements.	3		4		3	
	During IS strategy formulation and implementation, the whole organisation is implicated.	4		3		2	
	IS requirements are discussed by IS manager with business managers of all divisional areas; a steering committee is used to link business and IS planning.	4		4		3	
IS function influence on business function	When planning operation changes, its viability is first checked with IS area and IS strategy.		4		2		1
	Technology, its advantages and projects are described in business strategy.		4		2		2
	Business managers have commitment and support in IS area and projects.		4		3		3
	IS people are knowledgeable about the business; there is continuous research on processes innovations.		3		3		3
	Development of business strategy is influenced by IS strategy; IS strategy has key role in running and planning of business.		3		1		2
	IS manager is part of top management team; this manager promotes new IS projects to organisation in general.		4		3		2
	Mean	**3.5**	**3.7**	**3.3**	**2.3**	**3.0**	**2.2**

Table 7.2: Measurement of synchronisation actions (case studies 4 to 6)

Influence	Synchronisation actions	Case 4 (Business on IS)	Case 4 (IS on Business)	Case 5 (Business on IS)	Case 5 (IS on Business)	Case 6 (Business on IS)	Case 6 (IS on Business)
Business function influence on IS function	IS projects are proposed and managed by the business, since it understands technology and its effects.	2		2		2	
	IS strategy development is influenced by business strategy.	3		3		2	
	Business managers are deeply involved in IS area operations and planning.	2		1		3	
	IS area activities are directed by current organisational requirements.	2		4		2	
	During IS strategy formulation and implementation, the whole organisation is implicated.	2		2		2	
	IS requirements are discussed by IS manager with business managers of all divisional areas; a steering committee is used to link business and IS planning.	3		2		3	
IS function influence on business function	When planning operation changes, its viability is first checked with IS area and IS strategy.		4		1		3
	Technology, its advantages and projects are described in business strategy.		3		1		3
	Business managers have commitment and support in IS area and projects.		4		2		4
	IS people are knowledgeable about the business; there is continuous research on processes innovations.		4		2		4
	Development of business strategy is influenced by IS strategy; IS strategy has key role in running and planning of business.		3		1		3
	IS manager is part of top management team; this manager promotes new IS projects to organisation in general.		4		2		4
	Mean	**2.3**	**3.7**	**2.3**	**1.5**	**2.3**	**3.5**

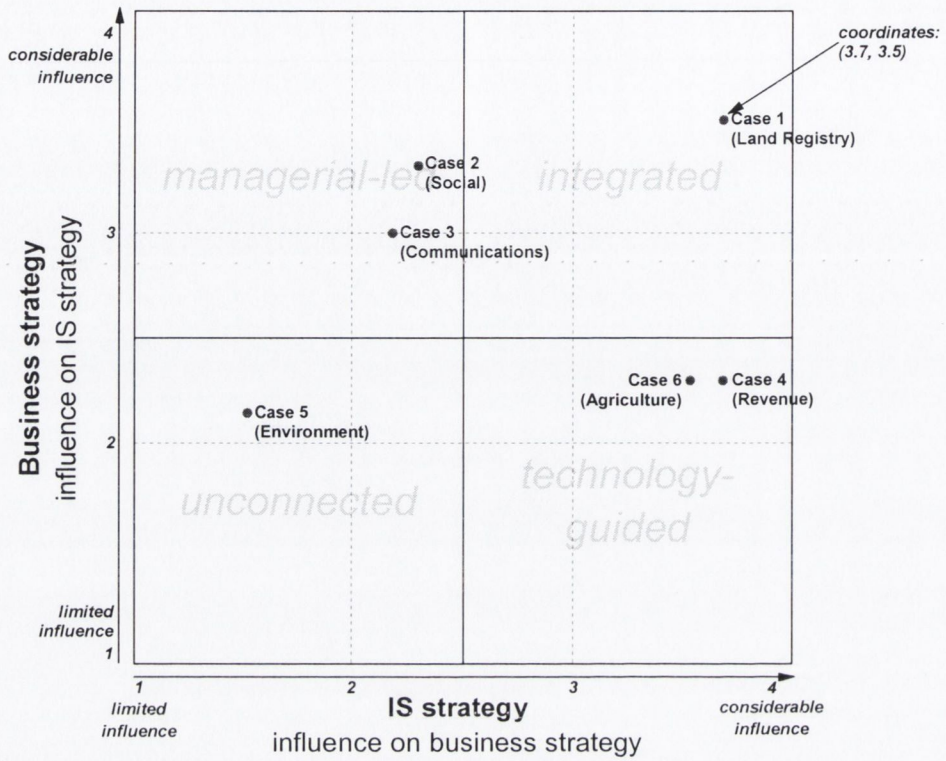


Figure 7.3: Position of case study organisations in theoretical framework

As seen in Figure 7.3 and according to their synchronisation type, Case 5 is considered an 'unconnected' organisation; Case 2 and Case 3 are 'managerial-led'; Case 6 and Case 4 are 'technology-guided'; and Case 1 is an 'integrated' organisation. According to their positions in this matrix, the next sub-sections expand on each approach taken by the organisations in question. Although the explanation is divided according to the influence that the business and IS functions have on the other, it also implicitly embraces both strategies and managers. Moreover, during the discussion the 12 synchronisation actions are used to reflect on how the organisation(s) that took a particular approach actually carried out the process, together with the role of the people involved, and the benefits and problems that resulted from the synchronisation endeavour.

Unconnected approach: general characteristics

The unconnected approach, exemplified by case 5, is associated with organisations that have limited influence between business and IS strategies (see Figure 7.3), no heavy reliance on IS, almost no planning experience and/or a non-strategic IS area. Consequently, problems that are generated by this situation are work processes unsupported by IS, deficient customer services and an unsophisticated technological infrastructure.

Due to its conditions and nature, an organisation starts the synchronisation endeavour the moment that it acquires both strategies. However, in the beginning these plans can have a very low influence between them. Case 5 started like this, but even though during the years some progress has been reached, the amount of influence between the two strategies is still inferior.

Business function influence on IS function:

In case 5, the influence of the business strategy on the IS strategy can be illustrated by the nature of the IS strategy and by the way it is assembled together. First, it has strong technical and tactical characteristics, mainly describing the principal IS projects and the organisation's technological infrastructure. Second, it starts to be formulated after the business strategy is published, recognising the resources necessary to support the organisation, and identifying the projects and activities required to maintain the current business needs. Third, for its preparation, mainly IS people are involved. These staff not only do not have good knowledge about the business operation, but spend most of their time fixing and maintaining existing applications in the organisation. Other stakeholders are also involved in the development of the IS strategy, but generally this is carried out during informal meetings.

The IS area's functions in case 5 are regarded as non-strategic. Consequently, business managers are not involved in the IS area's operation, and because they do not have good knowledge about technology, they are incapable of promoting or closely managing IS projects. Project boards, which have been established by mandate since the introduction of the Strategic Management Initiative, supervise the systems' development and implementation. They are controlled by business and IS people; however, business managers are only marginally drawn to these meetings. Furthermore, these business managers are not aware of the status of the IS strategy or its content – their main concern about the IS function is to have functional and effective IS that support the current operation of the organisation. Consequently, and due to its position, the IS area does not have the necessary resources or standing to discuss with users their requirements and needs.

Due to the inconsequentiality of the IS area in the organisation, many of the IS function's objectives, goals and budget decisions are decided in top management meetings without the presence of the IS manager. Nevertheless, he annually presents the area's business plan during MAC meetings and is called upon to discuss IS issues as required. Furthermore, the

IS manager has the responsibility for identifying the organisation's technology needs and guide the IS area towards the business' objectives.

IS function influence on business function:

Due to the low importance given to the IS strategy, there is almost no influence of the IS area and its strategy on the business strategy. In addition, not only the IS strategy has almost no sway to guide the organisation's objectives, but it is not considered during business planning meetings. The business strategy, which is a description of current organisational activities and functions is prepared mainly by business managers; moreover, almost no technological projects or their advantages are described. During its preparation, between the selected groups of people involved, the IS staff's ideas are not regarded as being of critical importance.

Business managers do not deem the IS area as strategic and have low commitment and involvement in the IS functions. Consequently, when the IS area tries to promote a hardware upgrade, for example, it has to go through a long bureaucratic process of approval, even though it is for the organisation's benefit. Furthermore, in case 5, since the IS area has other functions besides supporting the organisation's IS, its focus on the technological objectives is affected. This reduces the possibility of developing an IS strategy that is capable of strongly influencing the business strategy.

The IS area's main functions are to internally support the organisation. However, because the funding and standing for this area are inadequate, there are no human or monetary means for performing research and development with the objective of enhancing the organisation or its processes. In addition, the IS people have only limited knowledge about the business and mainly concentrate on supporting existing applications. Furthermore, the IS manager, who is not part of the top management team, lacks the authority to promote IS innovations or to suggest changes to the organisation's objectives. Moreover, the communication channels between business and IS managers are not sturdy.

Managerial-led approach: general characteristics

The managerial-led approach, as shown in Figure 7.3, is exemplified by two cases: case 2 and case 3. Even though the organisation represented in case 2 has been in operation for many more years than the one in case 3, in both organisations the business strategy influences the IS

strategy more so than the other way around. Also, while the case 2 organisation is completely dependent on technology, the case 3 organisation is still technologically underdeveloped compared to other public sector organisations in Ireland.

The synchronisation of business and IS strategies has evolved with a different rhythm in both cases. The case 2 organisation operated without technology for many years, until gradually computers and systems were incorporated into the Department and eventually an IS strategy was prepared. On the other hand, the case 3 organisation emerged already with the two strategies, particularly with a business strategy strongly influencing the IS strategy since its formulation.

Business function influence on IS function:

Since the business strategy is the main driver of the business operation, the business strategies in cases 2 and 3 strongly influence the IS strategy, but not the other way around. In both cases, business managers, who have considerable commitment to IS, are the ones who dictate the IS area's operations. Consequently, the IS manager and the IS people work in support of the business.

Because the business is shaping the IS strategy, business managers have good knowledge of existing technologies. Even though they do not know in detail how it has to be done, they have a general idea of what the IS areas have to do in order to fulfil the business' requests; nevertheless, there are some differences. In case 3 (since it is a newer organisation), business managers are more committed to knowing what applications can be implemented and how the Department can work more efficiently. On the contrary, in case 2 (since the majority of the current systems have been operating practically without changes for many years), business managers are not very involved in the running of the IS area.

In both organisations the IS strategy is completely shaped by and around the business strategy. Therefore, once the business strategy is published, the IS people are the ones who prepare a business plan with a mission and objectives in support of the business objectives and its existing systems. Case 2 relies more on technology than case 3; however, in both organisations their IS managers discuss with business managers and users their requirements, concerns, ideas and observations. It is not guaranteed that these issues will be dealt with, but at least they will be considered.

When comparing the importance of both strategies, the business strategy is more relevant for top managers. Nevertheless, in cases 2 and 3 this strategy is critical for the running of the IS area. In addition, in both organisations the business strategy is a document that focuses in the Departments' operation and goals, without extensively providing evidence of technological progress. Furthermore, a situation that can only be seen in case 2 is where several IS developments have been completed without the guidance of an IS strategy, since some systems were envisioned according to the tactical needs of the business.

IS function influence on business function:

In both organisations, as said above, not only does the IS strategy have an insignificant role in the organisation, but it is not critical to the running of the business and for organisational change. Due to its nature, it is formulated under the business strategy's direction and shaped around what is needed to support the implementation of the business strategy; therefore, its influence on the organisation's strategy statement is limited. Moreover, in case 2 business managers are completely unaware of the IS strategy's content, mainly because the real planning occurs during meetings, presentations and discussions.

In cases 2 and 3, the IS areas mainly have a support role in the organisation, in the maintenance of current systems, and in ensuring that the Department is technically managed, organised and resourced to successfully deliver solutions in accordance with its mandates (this is especially noticed in case 2, where the IS area is the backbone of the organisation). Besides, these areas do not have the human or monetary resources to be committed to finding ways of enhancing the organisation. However, in the last years, some technological innovations have been carried out in both organisations (*e.g.*, the Service Delivery Model in case 2 and wireless networks in case 3). In case 2 due to the organisation's dependency on technology, and in case 3 due to the age and small size of the IS area, IS people have good knowledge about the business.

In case 2, the IS manager has a senior position in the organisation. Together with business managers, he is involved in the running of the business, in organisational change, and in the identification of IS needs. In case 3, the IS manager is not part of the top management team, but good communication channels still exist between him and other executives.

Technology-guided approach: general characteristics

Exemplified by cases 4 and 6, the technology-guided approach is characterised by organisations that have an IS strategy that strongly influences the business strategy, but not the other way around (Figure 7.3). Normally associated with technologically oriented companies where innovations lead the business transformation, these organisations are at the forefront in the use of IS. Furthermore, these advancements have improved the effectiveness of the operations while exploiting technology-enabled service delivery opportunities.

Contrasting with managerial-led organisations where the IS strategy is not relevant for the business operation, in organisations taking the technology-guided approach the IS strategy strongly influences the business strategy and has even altered some business objectives by means of technology. Therefore, the strategy statement guides the organisation in a sophisticated technological environment. In cases 4 and 6, IS are vital components in enabling the efficient execution of the business, critical for the achievement of its objectives, and have completely changed the way both organisations operate.

Business function influence on IS function:

In the technology-guided approach, because the IS strategy has a strong influence on the business strategy, the IS function is able to direct and transform some of the organisation's objectives and goals. In both cases, the business strategy still has a critical role in the running and guidance of the organisation; nevertheless, when analysing its connection with the IS strategy, it was found that the latter strongly shapes several parts of the business strategy. In neither case was it perceived that the whole organisation was involved in the preparation of the IS strategy. Moreover, in case 6, an operational strategy developed by business managers was the one that provided the basis for the IS strategy formation.

More in case 4 than in case 6, business managers are familiar with technology; nevertheless, they owe this knowledge to the IS area. In both cases these managers have strong support, commitment and confidence in the IS areas and their projects. Therefore, they delegate the technological operation to the IS manager and his staff. This can especially be noticed in case 4, where the IS manager's expertise has guided several initiatives in the business during the last years (including its restructure). Furthermore, because of this situation, business managers in both cases have encouraged the IS areas to test the newest technologies and suggest process-enhancement ideas. However, afterwards these executives will test the new

developments and decide which proposals will be implemented, according to price, effect on the organisation and relevance.

In this type of synchronisation, the IS areas do not depend totally on the organisation's present needs. They clearly support the business' current systems and requirements; however, they also continuously work with business managers in new developments, process enhancements, novel functions and in addressing issues not considered before. In line with this, in both cases the IS managers have good and open communication channels with business managers, discussing their IS requirements and identifying what is needed in their areas to be addressed by IS.

IS function influence on business function:

Cases 4 and 6 demonstrate strong influence of the IS strategy on the business strategy. The IS strategy's main objectives are to set out the actions that are required to exploit existing and emerging technologies to best achieve the business goals and objectives. Also, these strategies link the IS area with the business and take into account the present status of the organisation, current work practices, planned and expected business challenges, and even modifications in the external environment. In line with this, a situation that is similar in both organisations due to its dependence on technology, but especially perceived in case 4, is that before the business changes a function or implements a policy direction by Central Government, first it has to check its feasibility with the IS area.

In both cases, the IS areas are experienced planning functions and innovative service providers, and are recognised as important drivers and enablers in the organisation. Therefore the IS people, who have good knowledge about the business, continuously work in process enhancements, in new products and services, in customer service improvements, and in training and education programmes to demonstrate the capabilities and possibilities of IS. In other words, they identify ways in which IS can further enhance the performance of each business unit. Consequently, the IS areas have a key role in understanding how the organisation operates so that IS are able to support the business' current needs. Moreover, business directions are anticipated and emerging technologies are constantly incorporated into the business.

The business strategy is a relevant document for the running of the business. Due to the importance of technology, IS projects and the IS area's main functions are exhaustively described in these overall plans. Therefore, during their development, the IS people have extensive input on technological issues that affect, directly and indirectly, the organisation's operation.

A situation that is distinguished in both organisations is that IS managers are part of the top management team. They are involved in the running and planning of the business and have good communication channels with the rest of the top executives. In addition, since the IS managers direct the IS area to assess new technologies, these administrators try to promote the newly developed systems and innovations to the rest of the organisation. Nevertheless, business managers must be convinced of their use and implications.

Integrated approach: general characteristics

As seen in Figure 7.3, the case 1 organisation is the only one in the group that takes an integrated approach, characterised by having both strategies strongly influencing each other. Some of the effects identified are efficient exploitation of IS, enhanced customer services, and business and IS objectives that are close to each other. Moreover, the use of effective IS has been acknowledged as a key strategy for the fulfilment of the case 1 organisation's business goals.

Due to the integrated synchronisation features, the organisation constantly anticipates the benefits of new technologies, explores new ways of working, and provides enhanced services that even exceed its clients' expectations. Furthermore, since technology is completely integrated into the organisation's processes, IS have evolved into the business' essence. Nevertheless, this has been achieved by visionary business managers who have designed enhanced ways of operating and of providing services to its customers.

Business function influence on IS function:

Case 1 represents an organisation with strong influences on the two strategies. One of the reasons for attaining this state is the supportive attitude of business managers to IS. For example, they are involved and committed in the IS area's operation, in the development of the IS strategy, and have good knowledge and understanding about existing and emerging

technologies. Furthermore, they have good working relationships with the IS manager, and together with the whole organisation they analyse how IS can help the business work more efficiently.

The business strategy is a document, strongly influenced by the IS strategy, that is relevant for the organisation's and the IS area's guidance. Furthermore, it has aided in the anticipation of external environmental factors. During its preparation, an analysis of what the organisation does and how technology can fit into the business' processes is performed. In addition, the whole organisation participates in its formulation (including the IS people and users), presenting ideas to help achieve the organisation's objectives, goals and IS developments.

Directing the IS area is the IS manager, who works in cooperation with business managers in the planning of the business. He has full support in the development of IS endeavours and is responsible for planning and controlling every IS activity in the organisation. Furthermore, he discusses with users and top executives their needs and IS requirements, and updates business managers with the latest technological developments in the market. In case 1, the IS area, which is formed by experienced and innovative planners, is guided by both strategies. To a certain degree the IS people support the current operation and maintain existing systems; however, they also look for ways to innovate processes. Moreover, the IS area has an adequate budget to fulfil its objectives.

IS function influence on business function:

Due to the organisation's location on the matrix in Figure 7.3, there are almost equal influences from the IS strategy exerted on the business strategy as the other way around. This means that the IS area has a relevant position in the organisation's operation and planning. Furthermore, it delivers IS solutions to the organisation in support of the attainment of business objectives.

Throughout the years, the IS strategy's influence on the organisation in case 1 has been growing. Nowadays, the IS strategy is essential for business planning, and it impacts on every area of the organisation by automating tasks, providing technology to support decision making, and in the enhancement of services. Furthermore, prepared by staff at all levels, it

includes an analysis of how things are done in the organisation and how technology can support and enhance work processes.

The IS manager has a key role in the case 1 organisation. Since he is part of the top management team, he is involved in the running and planning of the business. Moreover, he has good and open communication channels with all business managers. In this strategic position he not only ensures that technology is focused on the organisation's goals, but he continuously promotes new IS projects to users.

The IS area, which is a mature, efficient and experienced unit, is central for the achievement of the business objectives. The IS people have good knowledge about the business, and part of their activities are devoted to looking for ways of enhancing the organisation's processes, making them more modern and efficient. In the last years, the IS area has transformed the way the organisation has been operating by means of emerging technologies, which is why business managers discuss any planned changes with the IS manager. Furthermore, any intended improvements, new services or products are communicated to all areas before implementation with the purpose of testing and impact evaluation.

7.3 Explanation and generalisation of theoretical framework

As explained above, a theoretical framework with four approaches (unconnected, managerial-led, technology-guided and integrated) was formulated after analysing the influence between business and IS strategies in six case studies. This model can be generalised with the purpose of providing more information about how public sector organisations can synchronise their business and IS strategies based on how others have carried out the process in the past.

The last section identified where each of the case studies is located in the framework, thus determining the general characteristics of each approach. This section individualises each approach by describing its unique characteristics. Except for the extreme cases (that is, organisations that are located at the corners of the model), organisations might contain features (to a higher or lower degree) from the other three approaches. Therefore, by describing an extreme situation in each approach, the differences of each approach can be better grasped. Consequently, this will facilitate the generalisation of how other government departments and

offices located in that particular quarter of the model synchronise their business and IS strategies. In this section, the attributes that shape the framework and which together partly answer the *how* part of the research question are described (as discussed in Chapter 8, the synchronisation actions together with the framework answer this part of the research question).

Since the identified framework is a matrix, it is composed by a number of approaches (in this case four). Each of these has a distinct set of attributes which specify how the business and IS strategies influence each other in that particular approach. Any public sector organisation in Ireland can be positioned in one of these quadrants, revealing information about how that government department or office should be synchronising its business and IS strategies. As its nature indicates, the synchronisation is directly influenced by these two plans; nevertheless, as depicted in Table 5.4, the process is also affected and shaped by four further 'agents' who directly and indirectly influence the synchronisation process: the business function, the IS function, the business managers and the IS managers. Consequently, the synchronisation process is shaped by six distinct agents.

Since the framework comprises four approaches, it is necessary to have specific characteristics or attributes that can individualise each approach by distinguishing what is unique about it and makes it different from the others. Given that each of the six agents can provide particular characteristics to personalise each approach, the way each agent reacted in the synchronisation process were the ones that derived each attribute (*e.g.*, the action of 'business function' derived the attribute 'IS impact on the business'; the action of 'business strategy' derived the attribute 'role of business strategy in synchronisation'). The actions of each agent were used as attributes since they provide further information of how the business and IS strategies, the business and IS functions, and the business and IS managers performed in a particular approach, thus revealing specific features that are unique to each approach. The attributes were identified by the researcher by analysing the synchronisation actions that are part of each agent and deciding how best to represent them in a general form. Table 7.3 includes a description of each of the attributes and the agent they are related to.

Table 7.3: Descriptions of attributes of approaches to synchronising business and IS strategies

Attribute	Description of attribute
IS impact on the business (from 'Business function' agent)	Refers to how IS and technology influence the organisation, its processes and customers.
Role of business strategy in synchronisation (from 'Business strategy' agent)	Refers to how the business strategy is affecting / being affected by the IS strategy.
Business managers' attitude to IS issues (from 'Business managers' agent)	Describes the role, position and importance that business managers ascribe to IS and IS strategy.
IS area importance in the business (from 'IS function' agent)	Defines the role of the IS area in the business and the importance that the IS function has in synchronisation.
Role of IS strategy in synchronisation (from 'IS strategy' agent)	Identifies the role of the IS strategy and its relationship with the organisation and the business strategy.
IS manager's function in synchronisation (from 'IS manager' agent)	Refers to the functions and role of the IS manager in the synchronisation process, business planning and the running of the IS area.

In order to illustrate each of the approaches in the framework and to partly recognise *how* public sector organisations of that type synchronise their business and IS strategies (the second part of the research question), it is necessary to portray and discuss every attribute in each of the four approaches identified earlier (*i.e.*, unconnected, managerial-led, technology-guided and integrated). However, as the investigation is exploratory, the classification of the approaches is descriptive and was derived by inductive interpretation of organisational experiences. The detail of each attribute was gathered by reviewing the within-case analysis of each case study and the narration of the organisation's position in the framework as detailed in Section 7.2.2. This ensures that the attributes identified in each approach correspond only to that particular type. Table 7.4 summarises the characteristics of all attributes and approaches.

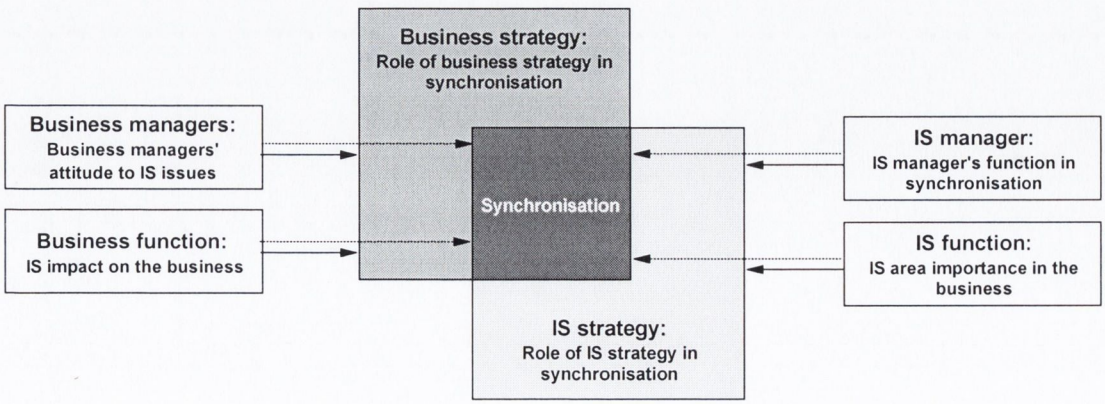


Figure 7.4: Influence of attributes in synchronisation process

Table 7.4: A taxonomy of approaches to synchronising business and IS strategies (detail)

Attribute	Unconnected	Managerial-led	Technology-guided	Integrated
IS impact on the business	Insignificant influence of IS in business. Users do not have widespread knowledge about IS. Inefficient systems, slow processes and recurrence of tasks.	Technology has a support role in organisation. Information systems aid the organisation in attainment of its business objectives and operation.	The business is enhanced and influenced by IS. It regularly considers and tests new projects and technologies, deciding which innovations are worth implementing.	Business and IS drive each other. IS are an integral and crucial part of the organisation's processes, essential during operation and when providing quality external services to customers.
Role of business strategy in synchronisation	Business strategy with a marginal role to IS initiatives. IS people not involved in its preparation. Business guided by tactical decisions with limited technological effect.	Business strategy sets out and drives in a top-down style how IS area must operate. Only requirements listed in business strategy will be supported by IS. No possibility for innovation.	Strong influence from IS strategy. Parts of business strategy are shaped and induced around IS. IS can dictate or modify some business objectives and even alter organisation's direction.	IS are an integral and decisive element of the business strategy. The business strategy reflects the use and importance of IS in the organisation. All staff are involved in its preparation.
Business managers' attitude to IS issues	Business managers lack knowledge, commitment, confidence and endorsement of IS issues. They are unaware of the IS strategy and are not involved in the IS area's operation.	Business managers are the ones guiding the IS area's projects and activities. They understand what technology can accomplish and are involved in IS issues.	Business managers are aware of IS possibilities and advantages. They encourage, have confidence and endorse IS area's implementations and innovations.	Business managers understand technology, its advantages, capabilities and problems. Considerable commitment and involvement to IS issues.
IS area importance in the business	IS area depends on other functions. Limited budget for area. IS people do not have good knowledge about business and business people about IS function. It is regarded as peripheral.	IS area is guided and monitored by the business. IS area contributes to business objectives and goals. Its functions are to find ways for implementing business requirements.	IS area is continuously looking for ways of enhancing the business and developing novel applications. It might dictate where the business should be heading according to its environment.	Together with the business, the IS area designs process enhancements and work efficiencies. The IS area is a fundamental element in organisation. IS staff have good knowledge of business.
Role of IS strategy in synchronisation	IS strategy is a descriptive, tactical, technologically-oriented list of projects and requirements with limited impact on the organisation and business strategy.	IS strategy is shaped by business strategy. It encapsulates the objectives, requirements and performance indicators of the business strategy to IS deliverables.	IS strategy must be constantly updated and reviewed in relation to where the business is heading. It considers emerging technologies to enhance processes and support work methods.	IS strategy impacts every area of the business. It is concurrently influenced by the business strategy. For its development there is involvement of staff at all levels.
IS manager's function in synchronisation	IS manager has a non-strategic and inconsequential role in organisation. Limited interaction with business managers during planning and running of business. Not part of executive group.	IS manager translates business strategy into specific deliverables that IS area must follow. IS manager receives guidelines about what the IS area must operate and accomplish.	IS manager is responsible for 'selling' technology to the business. This manager leads the IS area in an innovative way to deliver solutions not contemplated before.	IS managers are strategic elements in the running and planning of the business. Strong communication links between business and IS managers. Ensures that IS are focused in business.

Figure 7.4 depicts the attributes and the manner in which they affect the synchronisation process. The two strategies are portrayed in its central part. Their intersection corresponds to the synchronisation of the strategies, or the influence that each strategy has upon the other. In addition, the other four agents are situated on the sides since directly and indirectly they also shape the synchronisation process.

To facilitate its comprehension and assimilate the overall picture of how public sector organisations synchronise their business and IS strategies, the 24 attributes were reduced to keywords (Table 7.5). By means of these keywords, the next four sub-sections individually describe each of the approaches. First, by means of a diagram, an overview is given of how organisations that fall into that type synchronise their business and IS strategies. By incorporating the keywords into these figures, a better representation is provided about the role of the six agents that affect the synchronisation process and thus the unique characteristics of each approach. Then, a brief explanation is given of the six attributes.

Table 7.5: A taxonomy of approaches to synchronising business and IS strategies (keywords)

	Approach			
Attribute	**Unconnected**	**Managerial-led**	**Technology-guided**	**Integrated**
IS impact on the business	Minor	Support	Enhance	Crucial
Role of business strategy in synchronisation	Marginal	Driver	Induced	Decisive
Business managers' attitude to IS issues	Uncommitted	Dictate	Endorse	Dedicated
IS area importance in the business	Peripheral	Monitored	Innovative	Fundamental
Role of IS strategy in synchronisation	Secluded	Imposed	Anticipate	Concurrent
IS manager's function in synchronisation	Inconsequential	Translator	Visionary salesperson	Strategic

Unconnected approach: attributes

Due to its nature, the unconnected approach is categorised as the least sophisticated state in the framework. It is associated with organisations that do not regard technology as strategic, or with recently established organisations that are still inexperienced planners. In any of these two circumstances, the IS area constitutes an insignificant and under-resourced function that mainly maintains the already established organisational processes and only regards the internal business environment. The approach was designated 'unconnected' because of the independent nature of the two strategies that partly influence each other, to the detached features of the IS area, and to the deficient communication between business and IS managers.

As seen in Figure 7.5, organisations that take this approach have a business strategy that is in practice detached from the IS strategy (due to the framework's measurements, there is always some degree of connection between both strategies). Because of their restricted influence upon each other, while the business strategy has a marginal role in the planning of the IS function and thus in the synchronisation process, the IS strategy is a secluded descriptive list of projects to be developed in the short term. This can be explained by the role of stakeholders: while business managers are uncommitted to IS issues, the IS manager holds an inconsequential and non-strategic role in the organisation. Accordingly, IS have a minor impact on the business and its operation, and the IS area has a peripheral importance in the organisation's structure.

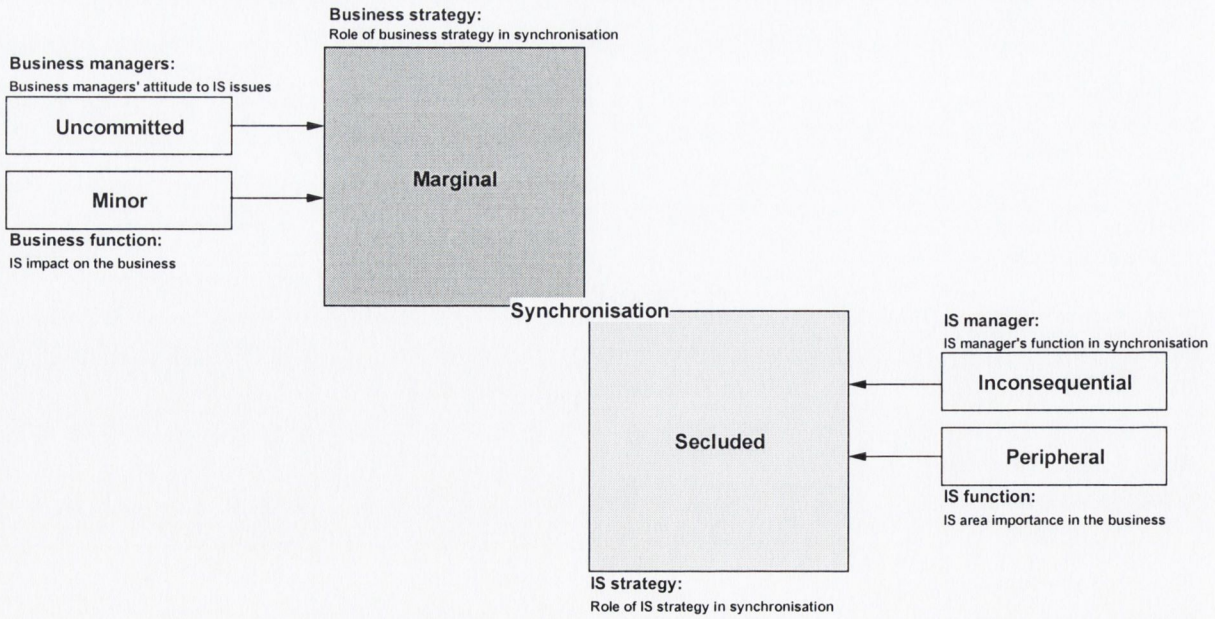


Figure 7.5: Unconnected approach: attributes with keywords

IS impact on the business. Due to the lack of weight of technology in the organisations' operating processes, there is no significant influence of IS in the business. Because of this, employees do not have broad knowledge and understanding of IS or its effects. An analysis of its systems reveals a dominance of stand-alone and clerical applications, recurrence of tasks, duplication of information, and systems that do not or only inefficiently interact with each other. Keyword: minor

Role of business strategy in synchronisation. Due to its position, in these organisations the business strategy is detached from IS issues, initiatives and recommendations. Its content, since the IS people are not involved in its formulation and the IS function is not taken into account, is based on a narrative of current or future organisational activities with no technological weight. Consequently, because its influence on the IS strategy is limited, mainly tactical decisions with inadequate technological weight guide the business. Keyword: marginal

Business managers' attitude to IS issues. Given that IS do not have a strategic position in the organisation, business managers lack the knowledge, confidence and endorsement of technological issues. Also, they disregard the IS strategy, avoid new IS advances, and do not consider seriously or essentially the use of technology to enhance processes and services. Furthermore, they are not involved and have no commitment in the IS area's operation. In these organisations business managers do not understand or appreciate the potential value of IS, and are incapable of discussing the integration of technology into the business' needs with the IS manager. Keyword: uncommitted

IS area importance in the business. The IS area corresponds to a low-standing and non-strategic function that normally is situated under other areas (*e.g.*, finance) and that might have responsibility for other organisational duties (*e.g.*, telephony and office supplies). Also, while IS people do not have good knowledge of the business, the business people are unaware and not concerned of the IS area's activities and tasks. The budget for this area is limited; as a result, mainly internal, non-strategic functions are carried out. Due to the fact that the planning of the IS function occurs with limited consideration of the business strategy, problems might be caused and resources might be wasted. Keyword: peripheral

Role of IS strategy in synchronisation. Generally the IS strategy is a descriptive, tactical, technologically-oriented list of projects and requirements with limited impact on the business and its strategy. In line with this, the planning of the IS function can be regarded as taking place in isolation from the organisation's operation. For its preparation, mainly IS people are engaged in. Keyword: secluded

IS manager's function in synchronisation. The IS manager has a non-strategic role in the organisation and is not part of the top-management team. Consequently, this person has limited interaction with business managers during business planning and the running of the business. Furthermore, the IS manager struggles to implement the IS strategy organisation-wide and to obtain top-level support for technological initiatives. Keyword: inconsequential

Managerial-led approach: attributes

As seen in Figure 7.2, the managerial-led approach is characterised by a business strategy that strongly influences the IS strategy, even though the IS strategy lacks a reciprocal effect on the business strategy. Due to this situation, technology mainly has a support role rather than an enhancement role towards the business goals and objectives. It was labelled 'managerial-led' because of its nature of having IS implementations regulated by the business.

As seen in Figure 7.6, since organisations of this type are managed by executives that define and dictate what position technology will adopt in the organisation, they have IS strategies shaped by the business and with its objectives imposed by the business strategy. Consequently, technology has a support role in the organisation and the IS area's main functions are monitored and controlled by business managers. Furthermore, by establishing what the IS area must accomplish, the business strategy is the driver in a top-down style of how the IS strategy will be formulated and how the business' processes will be attained; therefore, the IS manager performs as a translator, interpreting the business requirements into activities that the IS area has to follow.

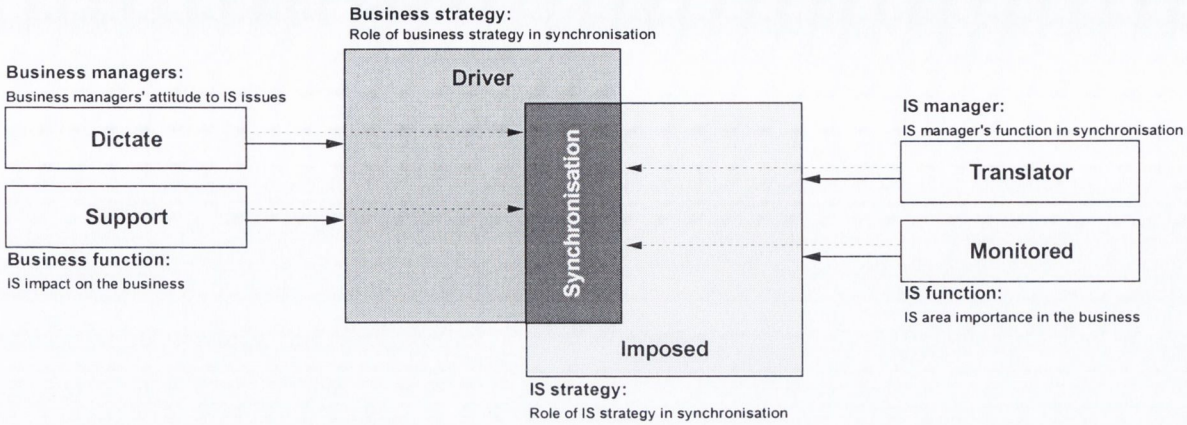


Figure 7.6: Managerial-led approach: attributes with keywords

IS impact on the business. Due to its non-strategic nature, technology mainly has a support role in the business. Therefore, the business expects that IS applications enable its operations and facilitate the attainment of the organisation's objectives. However, a problem that can emerge when the business is the one driving the IS function is that it might want more from the IS area than is possible. Keyword: support

Role of business strategy in synchronisation. The business strategy, as the overall plan of the organisation, describes the business goals and objectives. It drives or sets out in a one-way relationship, top-down approach how, where and when every information system application or development must be implemented according to the business requirements. Keyword: driver

Business managers' attitude to IS issues. Business managers, due to their top-down managerial style, control the IS area's operations according to the organisation's requirements. They do not know in detail how it has to be done, they have a general idea of what the IS area has to do and what existing technology can accomplish in order to fulfil the business' objectives. Therefore, they prioritise and decide which of the organisation's necessities have to be realised by IS. For business managers, the IS strategy is a low-standing document only relevant for the running of the IS area. Keyword: dictate

IS area importance in the business. The IS area's main objectives are to identify procedures for enabling and supporting the business requirements so the overall goals can be attained. Therefore, the IS area is constantly subjected to the control of business managers,

guiding its activities according to the business' strategic directions and delivering towards the business' objectives. Furthermore, since the business determines the IS area's activities, an inflexible budget is allocated to fulfil its duties. Keyword: monitored

Role of IS strategy in synchronisation. The IS strategy is derived from the business objectives. This IS strategy brings together the objectives, requirements and performance indicators of the overall business plan to an operational level for the IS area. Given that its influence on the business strategy is limited, its content depends on what the business managers identified as technologically significant to the organisation's operation. In addition, since this IS strategy is not seen as critical to the running of the business and to organisational change, the IS mission and objectives are inflexibly determined by a top-down approach from the business strategy. Keyword: imposed

IS manager's function in synchronisation. The IS manager is responsible for translating the overall business strategy into specific deliverables that the IS area must comply with. Since the IS strategy is strongly influenced by the business strategy, the IS manager receives guidelines about the IS area's activities, goals and performance measurements. Therefore, the IS manager must follow the business' indications and support its requirements. Keyword: translator

Technology-guided approach: attributes

The technology-guided approach represents the opposite situation of the managerial-led approach (Figure 7.2). In this case, while the IS strategy has a strong influence on the business strategy, the business strategy exerts limited change on the IS strategy. It is common to find that the strategies of information intensive organisations such as banks and e-businesses are in a similar situation vis-à-vis each other. But due to difficulties associated with allocating public funds for IS research and innovation, it is uncommon to find this approach in government organisations. The approach was called 'technology-guided' because of the innovative nature of the IS area and its strategy, which influences and transforms the business strategy with novel systems, enhancement ideas and new technologies.

Figure 7.7 summarises how organisations following the technology-guided approach synchronise their business and IS strategies. Unlike in the managerial-led approach, here the IS

strategy has a critical role in business planning, influencing and shaping an induced overall business plan towards an enhanced operation. Therefore, the IS strategy constantly anticipates where the business should be going and how it has to perform according to current needs and changes in the external environment. So in order to succeed, the IS manager works as a visionary salesperson, identifying where the organisation should be heading and trying to promote novelties and improvements to the business' processes developed by an innovative IS area. Furthermore, due to the importance given to technology, business managers act as endorsers, encouraging IS people to elaborate and recommend business enhancements.

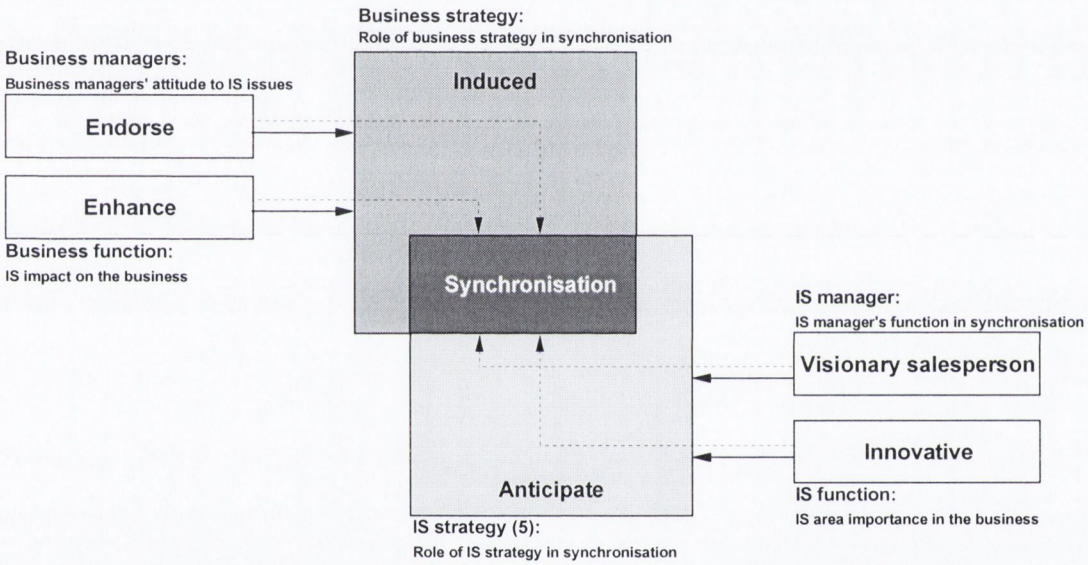


Figure 7.7: Technology-guided approach: attributes with keywords

IS impact on the business. Associated with organisations that are at the forefront in the use of IS, technology has a key role and the business is greatly e-enabled and influenced by IS. Also, due to the fact that the IS area and its staff are continuously seeking technological enhancements, the business constantly tests and considers new projects and innovations, deciding which are worth being implemented. Consequently, occasionally the business has to modify its objectives, directions and working methods. Moreover, when a wide-ranging function has to change due to external influences, the business first checks its viability with the IS area. Keyword: enhance

Role of business strategy in synchronisation. Since the IS strategy strongly influence the business strategy, instead of exclusively supporting previously recognised organisational objectives, technology guides the improvement or development of

processes. Consequently, even though the business strategy is still critical during the planning of the business, parts of this plan are induced around technological enhancements and lead towards the IS area's vision. Furthermore, IS can dictate or modify the business operation and even guide the organisation into more efficient, cost-effective and customer-driven directions. During the preparation of the business strategy, the IS people are involved since they have an extensive influence on technological issues that affect, directly and indirectly, the organisation's operation. Keyword: induced

Business managers' attitude to IS issues. In these organisations, the IS strategy has considerable importance due to the business managers' attitude towards technology and its effects. These managers encourage, have confidence in and support the IS area to recommend innovations as to how the organisation might be enhanced. Even though business managers lack adequate technological knowledge to design some of these improvements, they are aware of what technology can do for the business and its processes. Keyword: endorse

IS area importance in the business. The IS area is an experienced planning function, innovative service provider, and recognised as a critical driver and enabler in the organisation. Consequently, besides supporting everyday operations, the IS staff continuously look for technological innovations in which IS can enhance the performance of the business. Since the IS strategy strongly influences the business strategy, the IS area is able to anticipate and dictate some of the business' objectives and goals. Furthermore, the IS people have good knowledge about the business. Keyword: innovative

Role of IS strategy in synchronisation. Since the IS strategy has a significant effect on the business strategy, the IS strategy must be continuously updated and reviewed in relation to where the organisation is heading according to its internal and external environments. Therefore, in many cases the IS goals and objectives are designed before the formulation of the organisational objectives. Also, the IS strategy takes into account emerging technologies in order to enhance processes and support work methods. For its preparation, mainly IS people and some business managers are involved. Keyword: anticipate

IS manager's function in synchronisation. The IS manager is responsible for 'selling' technology to the organisation while guiding its technological operation. This manager leads the IS area in a visionary way to deliver results or solutions not contemplated before, while convincing business managers that novel applications will enhance the operation of the organisation and/or provide better services. Keyword: visionary salesperson

Integrated approach: attributes

The integrated approach is associated with a situation that every public sector organisation should aim for, given that the formulation and implementation of the business and IS strategies are practically carried out together (Figure 7.2). In this way, the organisation takes maximum advantage of existing and future technological innovations, enhances its processes, and delivers efficient and high-quality customer services. Likewise, the IS area gains from this relationship by having an overall business plan that partly guides its activities, together with the attainment of top managers' commitment, trust and support, and cooperation from the whole organisation. The approach was called 'integrated' because the synchronisation situation of the business and IS strategies leads the main activities of the business and IS functions of these organisations to be integrated with each other.

Figure 7.8 illustrates how organisations of this type synchronise their business and IS strategies, with the role of top managers being key to a successful arrangement. Business managers are fully dedicated in IS issues, demonstrating that technological concerns are important to the organisation in general. IS managers have a strategic position in the organisation and together with the middle managers and users are involved in business planning. Also, full support is given to the IS area, which is a fundamental function in the business and its operation. Moreover, the business strategy is decisive for the organisation's running and incorporation of technology, thus causing the IS strategy to coexist with the organisation and its mission, goals and objectives. Consequently, since both strategies are concurrently developed, IS are a crucial element in the organisation.

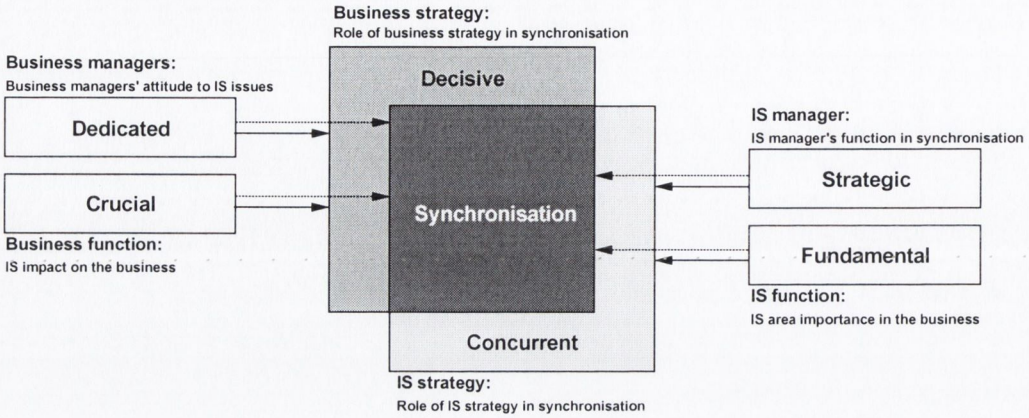


Figure 7.8: Integrated approach: attributes with keywords

IS impact on the business. Because of the integrative relationship between the organisation and technology, there are strong concurrent influences between the business and IS functions. IS are a fundamental part of the organisation's processes, causing technology to be completely embedded in the business' operation. Furthermore, IS are essential to provide quality external services to customers and for the running of the organisation. Keyword: crucial

Role of business strategy in synchronisation. Due to the fact that there are strong mutual influences and impacts between business and IS strategies, the business strategy reflects the use and importance of technology in the organisation. Since this overall plan is decisive for the organisation's and IS area's guidance, all staff are involved in its preparation, analysing what the business does and how technology can enhance the organisation's processes. Therefore, in this type of organisation, IS are a vital element of the business strategy. Keyword: decisive

Business managers' attitude to IS issues. In these organisations, business managers have a good understanding of technology, of its advantages, capabilities and possible problems. In addition, they have considerable commitment and involvement to IS issues, support technological innovations, and have good working relationships with the IS manager. Furthermore, these business managers are continuously engaged and dedicated in the development of the IS strategy. Keyword: dedicated

IS area importance in the business. The IS area, which is central to the achievement of business objectives, is guided by the business and IS strategies. It supports the organisation's current operation, maintains existing systems, and constantly looks for ways of innovating processes. Also, close working relationships between the business and the IS area facilitate the anticipation of changes in the environment. The IS people, who have good business knowledge, design process enhancements and work efficiencies in cooperation with the users and business managers. Moreover, they distribute new developments and changes throughout the organisation for testing and impact evaluation purposes. The IS area has a flexible and adequate budget to accomplish its objectives. Keyword: fundamental

Role of IS strategy in synchronisation. The IS strategy, which is an essential document during business planning, impacts every area of the organisation. Since there are strong concurrent influences between the business and IS strategies, the IS goals and objectives are connected and coexist with the business goals and objectives. For its development there is involvement of business managers, the IS manager, clients and staff at all levels. Keyword: concurrent

IS manager's function in synchronisation. The IS manager has a senior and strategic position in the organisation. Moreover, this person is an important element in the running and planning of the business, in the development of business strategies, and during organisational change. The IS manager has strong communication links with business managers, ensuring that technology is focused towards the business while promoting new IS projects and adjustments to existing applications. Moreover, he/she discusses with users and top executives their needs and IS requirements. Keyword: strategic

7.4 Reasons for synchronisation (*why* part of the research question)

After carrying out the pilot study, it became apparent that in order to investigate *why* public sector organisations synchronise their business and IS strategies, it was necessary to follow two main lines of inquiry:

- What are the top managers' reasons for having a strong mutual influence between the business and IS strategies?

- What would occur in an organisation with weak or poor synchronisation between the business and IS strategies?

The reason for these queries is because it was acknowledged that organisations try to maintain a strong synchronisation between their business and IS strategies based on past evidence. Therefore, on the one hand they want to achieve benefits that other organisations have already attained. On the other hand, they want to prevent situations they have heard about.

With a method analogous to the *how* part of the research question where concepts were extracted from raw data (see Section 5.4.2), the reasons for synchronising the business and IS strategies were identified. Since all organisations, notwithstanding their position in the framework, have the same motives for synchronising both strategies, a separation by approach was not necessary. However, due to the synchronisation characteristics of each approach and the particular reasons found in each organisation, these impetuses were attained in various levels.

Two codes in Table 5.3 contained the raw data from interviews and secondary data: 'Synchronisation reasons – Advantages, and 'Synchronisation reasons – Disadvantages'. While the first code, as stated above, refers to the reasons or advantages for having strong synchronisation, the second code is associated with the disadvantages that could emerge when the process is not satisfactorily accomplished, in other words, effects of a poor or a weak synchronisation (Papp 1999; Papp and Fox 2002; Papp and Luftman 1995). After the codes were extracted (at least two statements from different sources were necessary for a concept (*i.e.*, a reason) to be suitable), 30 reasons were distinguished – 19 advantages of a strong synchronisation (Table 7.6) and 11 disadvantages of a weak synchronisation (Table 7.7). Furthermore and similar to the framework's attributes, these reasons were divided according to the agent that is directly related to: the business or IS functions, the business or IS managers, and the business or IS strategies.

Table 7.6: Reasons for synchronising business and IS strategies (advantages)

	Agent					
Advantages of strong synchronisation (a strong synchronisation is necessary to achieve...)	**Business function**	**Business managers**	**Business strategy**	**IS function**	**IS managers**	**IS strategy**
Novel and improved products and services (including e-services)	♦					
A more effective business operation	♦					
Constantly innovated processes	♦					
Improved management of information and access to data	♦					
Higher quality of customer interaction	♦					
Increased internal and external productivity	♦					
Increased business reputation	♦					
A promptly reflection of changes in the environment	♦					
Cost reduction in operations and to customers	♦					
An elimination of expensive and unnecessary IS developments	♦			♦		
Continuously implemented up-to-date technologies	♦			♦		
Robust and flexible technical infrastructure				♦		
Adequate funding for IS area				♦		
Improved relationship and communication of IS area with other functions				♦		
Recognition of IS area as a modern, service-oriented business area				♦		
Better prioritisation of IS projects				♦		♦
Efficiently realised objectives of both the business and IS functions			♦			♦
IS perceived as integral elements of business strategy			♦			
Close working relationships between business and IS managers		♦			♦	
Number of occurrences	**11**	**1**	**2**	**7**	**1**	**2**

As seen in Table 7.6, there are several positive issues identified by top managers which are related to the reasons for synchronisation; for example, adequate funding for IS area, a promptly reflection of changes in the environment and higher quality of customer interaction. Together they constitute a wide-ranging list of effects that public sector organisations in Ireland identified as gains of the synchronisation process. Judging by the number of occurrences (see bottom row in table), most of the reasons are related to the 'business function' agent. This suggests that not only the IS function has a significant impact in the organisation in general, but also that the business and IS strategies are mainly synchronised to enhance the business, its operation, products and services. After the business function, the IS function is the agent most

impacted by the synchronisation process. Even though the personnel dimension has a noteworthy effect in how the synchronisation process is carried out, both the business and IS managers are the agents with least identified advantages.

Table 7.7: Reasons for synchronising business and IS strategies (disadvantages)

	Agent					
Disadvantages of weak synchronisation (a strong synchronisation is necessary to prevent...)	**Business function**	**Business managers**	**Business strategy**	**IS function**	**IS managers**	**IS strategy**
Business unable to gain from IS benefits	♦					
Considerable duplication of information	♦					
Deficient customer services	♦					
Disruptions to operation of business	♦					
Business unable to cope with future or unexpected situations	♦					
Inefficient processes	♦					
Likelihood that IS projects drive the business into a resource-wasting state	♦			♦		
Failure to perform technological innovations				♦		
An IS area that entails a considerable amount of resources				♦		
Tight controls over IS area				♦		
Low confidence and trust in IS manager and IS staff				♦	♦	
Number of occurrences	**7**	**0**	**0**	**5**	**1**	**0**

Taken as a whole, Table 7.6 portrays the actual circumstances that top managers identified with a weak synchronisation process; for example, deficient customer services, inefficient processes and tight controls over the IS area. Similar to the advantages of a strong synchronisation, the business and IS functions are the agents most affected by weak influences between the business and IS strategies. Moreover, no disadvantages to business managers or either strategy were identified. Section 7.5 further expands on these reasons by comparing the results with the literature.

7.5 Discussion of results

This chapter has described the findings that emerged from a process that extracted categories from concepts, and concepts from codified raw data. The purpose of this section is to ground

these results in previous empirical investigations and publications. Consequently, the discussion aims to establish that the outcomes' bases are in line with the existing body of knowledge and to point out how the work contributes to the IS domain. The first part, Section 7.5.1, discusses the framework which, together with the synchronisation actions, is related to the 'how' part of the research question. Then, Section 7.5.2 expands the results concerning the reasons for wanting to achieve strong synchronisation, which are associated with the 'why' part of the research question.

7.5.1 Discussion of 'how' part of the research question

As described above, a theoretical framework was constructed with the objective of analysing different approaches to synchronising business and IS strategies, which together with the synchronisation actions explain *how* public sector organisations carry out the process.

The first four sub-sections discuss each approach on a case by case basis. Taken individually and corroborated by previous publications, the situation represented by each approach has strong theoretical bases. Throughout the years academics, practitioners and consultants have extensively published about the four different scenarios portrayed in the theoretical framework; nevertheless, jointly (as expanded in the final sub-section) the four approaches and their attributes constitute a novel theoretical model that contributes to our knowledge of the IS field, provides new insights about the IS strategic planning topic, and expands the information that public sector organisations have about the synchronisation topic.

Unconnected approach: discussion

The unconnected approach represents the typical scenario noticed during the earliest stages of IS strategic planning. It is associated with organisations, due to having only limited mutual influences between their business and IS strategies, whose plans can almost be regarded as isolated from each other. This causes an inability to realise the benefits associated with both an efficient ISSP function, and with business and IS strategies strongly synchronised with each other (Willcocks 2003). Also, its unconnected nature can be recognised by taking into account the lack of knowledge of and disregard by staff for the IS strategies (Baets 1992). Some characteristics of this approach identified in the literature include an IS function that is technically-oriented and non-strategic, an IS manager as a functional administrator responsible for back-room support, and an IS area whose main activities involve operational efficiency and cost minimisation (King and Teo 1997).

Similar to King and Teo's (1997) *administrative* stage, the unconnected approach was common in the early 1970s when technology was solely an efficiency enhancer, when computers were considered an expensive resource, and when the planning of the IS function was not widely practised. Nowadays, this approach is typically seen in organisations that do not regard technology as important, that do not want to automatise their processes (sometimes due to the cost entailed), or that are not determined to transform into modern knowledge-oriented businesses. Therefore, IS strategic planning takes place in a vacuum (Synnott 1987). Furthermore, a private company found following this approach would find it very difficult to survive due to competition forces. Kottemann and Konsynski (1984) say that in this type of isolated (Galliers 1993) operating mode with no identified direction of attack (Ein-Dor and Segev 1978), the Critical Success Factors methodology (Rockart 1979) could be useful during the planning of the IS function to ease the process.

The impact of IS on the business is such that, similar to Luftman's (2004) *Initial/Ad Hoc* process, users and business managers are practically unaware of the IS area's undertakings and current projects. This happens due to informal communication channels (Pyburn 1983) and deficient interactions between stakeholders. Consequently, these managers have limited involvement in IS issues and are incapable of contributing new ideas about how technology might be integrated into the organisation's processes (Synnott 1987). Correspondingly, the IS people have limited knowledge about the business (Luftman 2004) and the IS function is practically non-strategic (King and Teo 1997).

Problems emerge because IS strategic planning is performed by an IS group working in isolation from the rest of the organisation (Raghunathan and Raghunathan 1991; Rosser 1996), including an IS manager detached from the planning of the business (Lederer and Mendelow 1989). Some of these inconveniences are due to a secluded and under-resourced IS area, poor understanding of IS among business managers, and middle managers' reluctance to propose changes (Brown 1994). Therefore, the planning of the IS function would be more successful if it was championed by business managers (McFarlan 1971).

The synchronisation situation in the unconnected approach is such that due to the inadequate importance given to the integration of the business with IS, the business and IS strategies are incapable of being successfully formulated, implemented, and thus strongly synchronised. Both strategies have limited impact upon each other, with the result that both documents are

developed without referring to each other's objectives and goals. The main reason for this situation is due to the low weight given by business managers to technology and its outcomes. Therefore, this triggers a set of effects such as the non-strategic role of IS managers, the irrelevant function of the IS area, and the insignificant role of IS in the business operation.

Managerial-led approach: discussion

In this type of organisations the business strategy is a document that, by describing the overall objectives and goals, imposes in a one-way, top-down approach the needs and requirements that must be supported by technology (Teo and Ang 1999). Due to this administrative style, business managers direct the IS area according to the organisation's needs and changes in the environment (Friedlander 1985; Saunders and Jones 1992). In addition, they provide the required technological vision to articulate the IS logic and choices that would best support the business operation and its strategy (Henderson *et al.* 1996; McLean and Soden 1977). Therefore, based on the first version of King's (1978) strategy set transformation model where a one-way influence from the business strategy to the IS function predominated, it is possible to achieve an IS strategy with ample influence from the business strategy (Bowman *et al.* 1983; Davis and Olson 1985). In the strategic management literature, deriving objectives in this way for a functional-level area like the IS function within an organisation has been expressed as a 'cascade approach' (Granger 1963; Raia 1974).

The first survey of public sector IS managers uncovered that in organisations similar to the ones which are part of the managerial-led approach, technology mainly acts as a support feature for business processes (Caudle *et al.* 1991). For that reason, the IS manager and his/her staff must demonstrate how IS can effectively support the organisation and assist it in the achievement of the business' objectives (Laware 1991), reacting to the business strategy in terms of how technology will best support its goals (Synnott 1987). In addition, while the IS manager is a technological architect responsible for 'translating' the business strategy to deliverables for the IS function, there is almost no involvement from users in the IS strategic planning process (Earl 1993; Henderson *et al.* 1996; McLean and Soden 1977). So, similar to Galliers and Sutherland's (1991) *centralised dictatorship* stage, technology is centrally controlled, planning is performed in a top-down direction from which future IS developments emanate, and the IS area is regarded as a support function in the organisation. Consequently and related to King and Teo's (1997) *sequential* stage, while the IS function is a resource to support the business strategy, the IS manager is an IS expert who formulates IS strategies to implement business

strategies. Moreover, it is common to find in this type of organisations ISSP practices guided by commercial methodologies.

Due to their importance, business strategies drive the IS strategy because the business direction or strategy are the only bases upon which IS plans can be built (Kottemann and Konsynski 1984; Reich and Benbasat 2000). In other words, the IS strategy's timing is characterised by being post-business strategy (Lederer and Mendelow 1989), thus shaping the IS area's mission and objectives directly on the basis of the overall plan (Davis and Olson 1985; McLean and Soden 1977). So, analogous to Earl's (1993) *business-led* approach, even though the business strategy is analysed to identify where IS are most needed, the notion that technology may offer new strategic options is not widespread; nevertheless, IS are considered a strategic resource. In addition, similar to the *technology potential* perspective of Henderson and Venkatraman's (Henderson *et al.* 1996) strategic alignment model, the IS strategy is developed in response to a business strategy and uses corresponding choices to define the required IS infrastructure and processes. However, it is deemed that even though most organisations have a business strategy, its universal availability and high quality cannot be taken for granted (Lederer and Mendelow 1986; Lederer and Sethi 1988).

The synchronisation situation in the managerial-led approach is such that the business strategy is primarily formulated by business managers, which in turn also shape the IS strategy. Consequently, both strategies are synchronised in such a way that technology only supports the business requirements. Therefore, business managers specify in a reactive, top-down direction of attack what the IS area must accomplish, which and when IS projects must be developed, and how the technological needs must be exploited (Henderson and Sifonis 1988; Hufnagel 1987; Saunders and Jones 1992). Furthermore, the IS manager works as a translator of business requirements into activities that the IS area must engage.

Technology-guided approach: discussion

The technology-guided approach is the least widespread scenario both in practice and in the literature due to the difficulty of noticing concrete and short-term benefits from technological investments (Weil and Broadbent 1998). Traditionally IS strategies were heavily dependent on business strategies (Henderson and Venkatraman 1992). However, since it was recognised in the 1980s that business strategies could be led by IS resources (Cash *et al.* 1988; King 1985; King and Zmud 1981; Porter and Millar 1985), IS strategies have progressively increased their

significance in organisations until eventually becoming a tool to strategically transform business objectives (Galliers and Sutherland 1991). Since it is part of the process of designing business goals and not merely a means of supporting previously identified objectives (Holley *et al.* 2002), technology gets pushed into the business (Luftman 2004). Therefore, the IS staff continuously seek ways in a proactive operating mode and bottom-up approach in which IS can enhance the performance of each business unit (Jordan 1993; Soden 1975; Soden and Tucker 1976). Analogous to the *proactive* level in Reich and Benbasat's (2000) scale of planning styles, IS objectives precede the formulation of some business objectives.

Due to greater opportunities for exploiting IS (Porter and Millar 1985), this approach is similar to the *competitive potential perspective* of Henderson and Venkatraman's strategic alignment model (Henderson *et al.* 1996). These phases are characterised by an exploitation of emerging IS capabilities that impact on new products and services, together with modifications of and strong influences on the business strategy via novel technologies, innovations and competitive advantages. Due to this arrangement, when developing business strategies there are a number of bottom-up recommendations from the IS area in line with identified technological opportunities (Ein-Dor and Segev 1978). Therefore, the IS area can be a powerful agent of change since it can "effect changes in the organization by suggesting new business strategies and new information-based products and coordinating both development of technology and the planned changes in the organization" (Gottschalk and Taylor 2000 p.342). Also, the operating mode is proactive given that the IS area influences the formulation of business strategies (Soden 1975).

The synchronisation situation in the technological approach is such that organisations of this type rely heavily on technology to accomplish their objectives. Therefore, there is an experienced and ground-breaking IS area that understands the business, its needs and requirements, its internal and external environments, and the direction the organisation should be heading. Business managers acknowledge the importance of IS in the organisation's operation; therefore, they encourage and support technological improvements and transformation, but only allow their implementation after extensive testing.

Integrated approach: discussion

Considered as the most relevant state in the framework, in organisations of this type the business and IS strategies influence each other concurrently (King and Zmud 1981; Teo and Ang 1999) to a degree that they might even be thought of or conceived at the same time (Reich

and Benbasat 2000; Synnott 1987). In other words, the business and IS functions drive each other (Luftman 2004) similar to the last phase – *maturity* – of Nolan's Stages of Growth Model (Gibson and Nolan 1974; Nolan 1979), where technology is fully integrated with the business function. Through this arrangement, the two strategies are converged and yield business opportunities enabled by IS that otherwise would not have even been contemplated (Smaczny 2001).

Similar to Earl's (1993) *organizational approach*, where quantitative and qualitative evidence suggests that it is the most relevant IS strategic planning scenario, the IS strategy is developed through the continuous integration of the IS area with the business. Also, there is collective learning across the organisation and the IS staff work in close partnership with the rest of the stakeholders. Analogous to King and Teo's (1997) *reciprocal* and *full* stages, the IS manager provides valuable input during business strategy formulation and continuously seeks 'targets of opportunity', suggesting technology support alternatives and weighting the impact of technical trends on business strategies (Synnott 1987). Therefore, not only does the IS manager have a critical function in the business, but he/she is in fact part of the top management team responsible for business planning (Claudle 1996). In this way, when appropriate, strategic decisions have the required technological element embedded in them. Furthermore, due to the close relationship and good communication channels between executives, when the IS strategy is prepared, business managers suggest priorities, seek out-IS based opportunities, evaluate alternative investments and decide resource allocations (Kearns and Lederer 1999; Synnott 1987).

Due to the way these organisations plan the IS function, there is a combination of top management (top-down) and user (bottom-up) partaking during IS strategic planning. Moreover, IS steering committees with business and IS people discussing where, why and how IS will be implemented, also play a relevant role (Teo and Ang 1999). In consequence, the operating mode is inside-out (Conrath *et al.* 1992), assessing existing and future business issues by conducting internal and external environmental analyses (Wassenaar 1990). Some of the identified benefits of having both strategies strongly influencing each other are that this arrangement positively induces the organisation to reach its goals, together with providing performance improvements (King 1988; Premkumar 1992; Premkumar and King 1994), and the identification of superior competitive advantages. Nevertheless, disadvantages include the anxiety that might emerge among IS managers about the reliance of the IS area in the

organisation's operation, and also the apprehension of IS people about what they will have to produce or innovate in the future (Earl 1993).

The synchronisation situation in the integrated approach is characterised by concurrent influences between the two strategies. However, it is necessary to have close relationships between business and IS managers, both strategies must have a similar weight to stakeholders, and the IS area must retain a key role in the organisation. Therefore, on the one hand the IS manager has to be part of the top management team and participate in business planning meetings, suggesting ways of how technology can enhance the organisation. And on the other hand, business managers must be involved in IS strategic planning, in the prioritisation of technological projects, and in the development of IS strategies.

The framework and synchronisation actions

As seen in the last sections, by means of an exploratory investigation four approaches to synchronising business and IS strategies in public sector organisations were identified from raw data. These approaches, which are firmly grounded in the literature, reinforce extant research and denote the characteristics of several semi-sequential phases of the synchronisation process. As a result, jointly the four approaches and their attributes constitute an original theoretical framework of deliberate strategies which expands our knowledge of the synchronisation process, of the IS strategic planning domain, and also of the IS field in a context (*i.e.*, public sector organisations) not widely researched. It has been said that even now further empirical research is needed in the ISSP topic to explore how organisations carry out the planning process of the IS resources (Grover and Segars 2005). Therefore, as mentioned in the next chapter and guided by the research question, a framework emerged that contributes to the IS field in a way that it enhances the knowledge that theorists and practitioners have about the IS management perspective. Moreover, the framework and the synchronisation actions produce novel insights about the ISSP domain, yielding more information about how the process is carried out, together with its implications and requirements.

As described in Section 3.4.1, four other frameworks were previously identified that measure the degree of synchronisation between the business and IS strategies. These are Synnott's (1987) five levels of IS strategic planning, Chan and Huff's (1993b) three levels of linkage between business and IS plans, King and Teo's (1997) four stages of business-IS planning, and Reich and Benbasat's (2000) five types of IS strategic planning. As explained earlier, there are

also three frameworks that, although related to the synchronisation process, do not measure the mutual influence between the business and IS strategies. These are Earl's (1986; 1993) three and then five modes for IS planning, Luftman's (2004) model of alignment maturity, and the most popular, Henderson and Venkatraman's (1991) strategic alignment model (not included in Table 3.2 because instead of describing phases, it discusses the alignment circumstances in general). However, an issue worth considering in this discussion is the uniqueness of the framework proposed in the present thesis, given that there are four related models with similar objectives. Overall there are four main differentiators:

- First, the framework in this thesis is the only one shaped around public sector organisations. Therefore it considers particular conditions that these type of organisations have when synchronising their business and IS strategies, such as an imposed strategic management programme, multiple intangible benefits (Self 1977), bureaucratic systems (Lederer and Sethi 1988), and a lack of stability which is common among private corporations (Lasden 1981). Even though some of the other models could be used to measure to a certain extent the status of synchronisation in a public organisation, evidence suggests that not all ISSP practices are exchangeable between the private and public sectors (Caudle *et al.* 1991).

- Second, Synnott's (1987), King and Teo's (1997), and Reich and Benbasat's (2000) models start with a stage where the business and IS strategies are completely separated from each other. In the present framework, the measures range from limited to considerable influence because a condition of the synchronisation process states that both strategies must be present in the organisation (Lederer and Mendelow 1989). Moreover, due to the public resources involved in the incorporation of technology into government organisations, nowadays these type of bodies will always have an IS strategy with at least a minimal connection with the business strategy.

- Third, the four previous models are linear, from a limited synchronisation to a full integration. However, due to the highly controlled environment in which public sector organisations operate (Caudle *et al.* 1991), strong operating and funding constraints (Bajjaly 1998), multiple internal and external stakeholders (Holley *et al.* 2002; Savas 1982), and managers with low decision-making autonomy for considerable changes (Rainey *et al.* 1976), it is almost unattainable for a government organisation to simultaneously swap the existing influence between its business and IS strategies in order to directly move from a managerial-

led approach to a technology-guided (or vice versa), without first passing through the unconnected or integrative approaches. As shown in Figures 7.9 and 7.10, the managerial-led and technology-guided approaches are transitional stages. Consequently, the present model is semi-sequential and has the characteristic that organisations not necessarily have to start in the unconnected approach; initially they can be situated in any other stage.

- Fourth, the framework emerged from the same data as the synchronisation actions. Table 3.1 listed nine publications that investigated critical success factors when synchronising the business and IS strategies. Nevertheless, only one investigation (Hartung *et al.* 2000) was exclusively carried out in the public sector (*i.e.*, the Canadian Forces). Therefore, the novelty of the actions recognised in the present thesis lies in its context; that it recognises whether the action is the result of an impact from the business function to the IS function or vice versa; and that the actions are divided according to their agent, that is, to the managers, functions or strategies that directly impact the process. Taking together the framework and the synchronisation actions, not only can an organisation identify in which approach it is situated, but based on what other public sector organisations have carried out in the past, they can recognise what needs to be done to reposition itself at an alternate location in the framework or maintain its present one. Consequently, the framework and the actions must be used together, yielding an enhanced model that portrays how public sector organisations synchronise their business and IS strategies.

Based on the influence between the business and IS strategies, no further combinations are possible except the concurrent development of both documents to such degree that instead of two strategies only one main strategy guides both the business and IS functions (Smaczny 2001; Teo and Ang 1999). However, based on the synchronisation histories of the six organisations in the study and top managers' opinions, it is unlikely that this combination will be prevalent in Irish public sector organisations in the near future.

7.5.2 Discussion of 'why' part of the research question

Since the 1970s, academics, practitioners and consultants have stated that strongly synchronising business and IS strategies is necessary in every organisation due to the advantages that can be accomplished (Ball 1982; Feld and Stoddard 2004; McFarlan 1971; Pyburn 1983; Teo and Ang 1999). As explained in Section 3.5.1, empirical investigations have identified several benefits to be attained when the process is strongly realised (Wallace 1987),

including performance enhancements (Chan and Huff 1993a), full exploitation of IS (Karimi 1988) and improved outcomes (Ball 1982; Teo and Ang 1999). However, most of the studies were carried out in private companies, and on a number of occasions a predefined list of advantages was tested.

After extracting raw data and turning it into concepts and categories, several reasons for synchronisation were uncovered which are considered the product of the process. These correspond to 19 advantages of a strong synchronisation (listed in Table 7.6) and 11 disadvantages of a weak synchronisation (listed in Table 7.7), all of which guided government departments and offices in Ireland in their endeavours to synchronise their business and IS strategies. The novelty of these results (the *why* part of the research question) lies in the fact that even though they are not exclusively characteristics of public sector organisations, they were uncovered solely in a sample of these type of organisations. This means that, as stated by Stamoulis, *et al.* (2001), despite documented differences, public and private sector organisations share similar features when it comes to the planning of the IS function. Also, despite the difficulties identified by authors such as Lederer and Sethi (1988) and Savas (1982), public sector organisations have successfully incorporated IS strategic planning concepts into their processes. Moreover, as recommended by Byrd, at al. (1995), in some public sector organisations the IS function and IS staff have acquired such a significant position that the majority of the reasons identified for carrying out the synchronisation process may benefit the whole organisation, rather than solely the IS area.

Despite the large number of recommendations published over the years (Chan 2002; Johnston and Carrico 1988; Luftman and Brier 1999; Sabherwal and Kirs 1994), surveys demonstrate that a strong synchronisation of business and IS strategies is not equally pursued in all organisations (Burn and Szeto 2000; Luftman and Brier 1999). One of the reasons for this is a lack of information about its effects. Therefore, Table 7.6 provides more detail about what has motivated public sector organisations to embark on the synchronisation process, together with further evidence that retaining a strong influence on both strategies is advantageous for both the business and the IS functions (Johnston and Carrico 1988). However, as Tan (1995) says, every company is different, so its responsiveness to the synchronisation process and any generated effects, positive or negative, might differ.

Standing out against the advantages of a strong synchronisation, disadvantages were uncovered which top managers consider can surface in case of poor or weak synchronisation (Table 7.7). However, as shown in Section 3.4.2, even though organisations might follow procedures recommended by academics and practitioners to achieve a strong mutual influence between business and IS strategies, some barriers may possibly obstruct the process and cause problems such as those identified by Lederer and Gardiner (1992), *i.e.*, inefficient processes, duplicated information and tasks, incompatible hardware, and forfeited enhancement opportunities. Similar to the synchronisation advantages, these issues are not exclusive to the public sector and were not necessarily detected in the organisations in the sample; nevertheless, they constitute a list of problems that interviewed top managers consider might happen in the case of poor synchronisation between business and IS strategies.

An issue worth discussing is if top managers are aware of the issues listed in Tables 7.6 and 7.7, why then do not all organisations carry out the necessary activities to strongly synchronise their business and IS strategies? First, the endeavour is not easy to accomplish (Broadbent and Kitzis 2005), which is why IS strategic planning methodologies (described in Section 2.5.2) became so popular and reason of why consultants are frequently hired to ease the process (Tillquist 2000) (however, about this last point, Lederer and Sethi (1996) found that the more ISSP planners used external consultants, the less they achieved a successful IS strategic planning process). Second, several ISSP recommendations made by academics, practitioners and consultants come with conditions to be met (Ang *et al.* 1995; Chan 2002; Deloitte 2004), and at times these are difficult to go through due to the resources needed, the unavailability or low-quality of a business or an IS strategy, and a lack of time. Finally, due to the fact that the synchronisation is a socio-technical process, it is common to find social obstacles, such as the lack of support from top managers, poor relationships between business and IS people, and even IS staff without knowledge and vision about the business. This means that a synchronisation process is not easy to implement, and as Broadbent and Kitzis (2005) recently mentioned, it is expected that it will remain a challenge for the foreseeable future.

7.6 Conclusion

The main objective of this chapter has been to present the research findings that emerged from the case studies. On the one hand, a theoretical framework was developed as a result of the mutual influence that exists between the business and IS strategies. Four approaches were

identified, formed by several attributes that specify individual characteristics of how organisations of a particular type synchronise their strategies. Due to its preparation and nature, and in partnership with the synchronisation actions, the framework can be generalised to other Irish public sector organisations with the objective of identifying the present state of their synchronisation and to determine the necessary steps or actions required to achieve stronger influences.

On the other hand, as the first part of the research question states, a list of reasons (advantages and disadvantages) of why organisations engaged in this endeavour were also uncovered. These reasons not only provide evidence of why it is necessary to engage in a strong synchronisation process, but also offer a list of benefits that may be obtained when both strategies strongly influence each other and a record of problems that may emerge when the strategies weakly influence each other.

Based on what was presented throughout this chapter, the next and final chapter presents an overview of the research process and describes the significance of the research findings, including their implications and limitations.

CHAPTER 8

CONCLUSIONS AND IMPLICATIONS

> *"Each problem that I solved became a rule which served afterwards to solve other problems."*
>
> Rene Descartes
> French philosopher, mathematician and scientist (1596-1650)

8.1 Introduction

Throughout this thesis, an exploration was detailed which can be divided in the following main phases: the identification of a research problem and its foundation in previous literature, the proposal of a methodology to answer the research question, the emergence of a framework to explain the phenomenon under study, and the description of the study's outcomes and implications. This chapter corresponds to the last step of this investigative process, and has the purpose of presenting the research conclusions, implications, limitations and ideas for further research. In line with this, first the main elements of the thesis are reconsidered in Section 8.2. Then, the main findings and their importance are described in Section 8.3. Sections 8.4 to 8.6 expand the implications for theory and practice, together with the limitations identified throughout the investigation. After this, Section 8.7 outlines some proposals for further research. Finally, Section 8.8 describes what was followed to maintain the quality of the study.

8.2 Thesis' major building blocks

The synchronisation of business and IS strategies, an IS strategic planning sub-topic derived from the combination of strategic planning and IS concepts, has been recognised as a relevant and contemporary subject matter of research (Hartono *et al.* 2003; Mirchandani and Lederer 2004; Reich and Benbasat 2000). Defined as the influence that exists between deliberate business-level and functional-level IS strategies, it is considered as the number one objective for ISSP, a key concern for business and IS managers, and a need to ensure optimal use of IS

resources (Galliers 1986; Kearns 2006; Luftman and McLean 2004; Papp 1999; Peak *et al.* 2005). Moreover, firms cannot be competitive or successful if their business and IS strategies are not strongly synchronised (Avison *et al.* 2004).

Notwithstanding if the synchronisation is brought into effect in a public or in a private sector organisation, it assists in the incorporation of technology into businesses and produces advantages such as process enhancements, improvement of products and services, and the identification of better and more efficient ways of operating (Henderson and Venkatraman 1992; Hirschheim and Sabherwal 2001). However, despite its benefits and importance, not only is the synchronisation process considered as a convoluted set of activities of continuous adaptation and change (Lederer and Sethi 1988), but mainly due to the resources entailed and to interaction problems between the stakeholders involved, still many organisations – especially in the public sector – are not maintaining strong influences between their business and IS strategies (Burn and Szeto 2000; Deloitte 2004). In line with this, a research problem was acknowledged both as a gap in the literature and as an identified need for further research (Grover and Segars 2005). Consequently a research question was proposed which explored why and how public sector organisations in Ireland synchronise their business and IS strategies.

In the course of this thesis a process was followed that progressed from identifying a research problem to its conclusion. As seen in Figure 8.1, research is a cumulative cycle that is divided in phases, starting with the emergence of a research question and concluding when its answer addresses and increases the knowledge of the topic area and its parent discipline(s). In this case, after carrying out a literature review concerning IS strategic planning, the synchronisation of business and IS strategies, the IS field, and strategic planning (number 1 in Figure 8.1), a research question was formulated with the objective of exploring why and how public sector organisations synchronise their business and IS strategies (#2). Subsequent to deciding on the interpretative epistemological paradigm and the case study method as the preferred investigative approach, and selecting inductive semi-structured interviews and document gathering as qualitative data collection methods (#3), six exploratory case studies were carried out in Irish government departments and offices (#4). Case studies were chosen due to their comprehensive nature to carry out interpretative investigations in a real-life context (Yin 1989; Yin 1994). In addition, they were selected because they are particularly well-suited to the nature of IS investigations (Dubé and Paré 2003), allowing the researcher to access and report factual IS experiences with the intention of capturing knowledge and developing novel theories

(Benbasat *et al.* 1987). Data analysis had the purpose of uncovering new theory (rather than extending existing theory) and consisted in within-case and cross-case analysis. So after a process of data extraction from codes to categories, a framework comprising four distinct synchronisation approaches was put together, jointly with a list of actions that organisations performed to achieve and maintain strong synchronisation (#5). Moreover, several reasons used by top managers to justify the need for having strong influence between their strategies were uncovered. Ultimately, these outcomes provide an original contribution to academic knowledge in the IS field (#6). Additionally, while they present more information for practitioners to help them accomplish a strong synchronisation process in their organisations, they also enhance the knowledge that theorists have about IS strategies and IS strategic planning (#7).

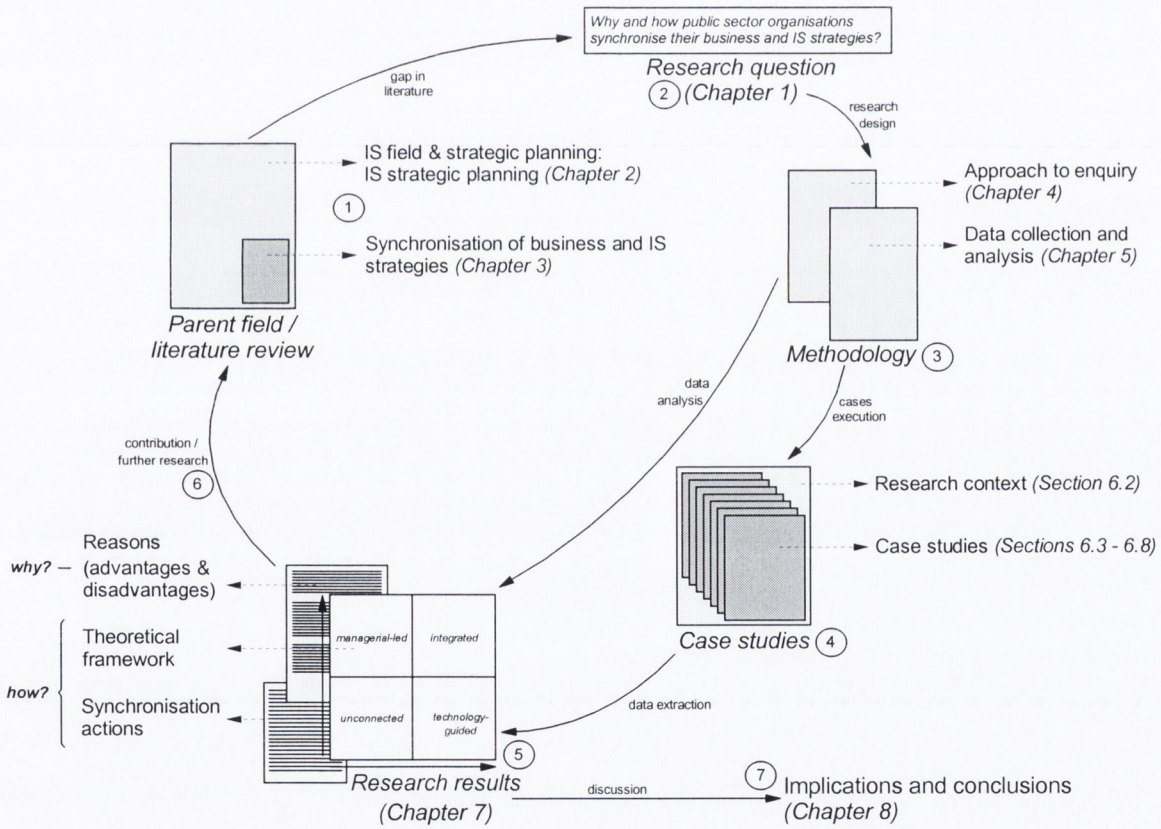


Figure 8.1: Organisation of research and thesis

In summary, after identifying the research question, an interpretative epistemological investigation was carried out in the Irish public sector. According to the nature of collecting qualitative information with these methodologies, the case study method was pursued by means of semi-structured interviews and secondary-data as data gathering techniques. Subsequent to analysing raw data by within- and cross-case analysis, a list of three contributions claimed for

the Ph.D. emerged (description and implications detailed in next three sections). The relevance of these findings, as detailed throughout this chapter, is that it enhances the knowledge about the nature of the synchronisation process and IS strategic planning, particularly about how public sector organisations have pursued this process, and understanding the reasons for engaging in this endeavour. The three outcomes are:

1. **Theoretical framework:** alternating the influence between the business and IS strategies, a 2x2 theoretical framework surfaced encompassing four distinct approaches of how public sector organisations in Ireland synchronise their business and IS strategies. Each type is characterised by unique attributes that confine an organisation to be situated in only one approach at any given moment. Since no previous investigations about this topic have been carried out in the Irish context to date, this outcome addresses the need for more rigorous research, contributes to the body of knowledge within the IS field, provides more information about the synchronisation process and allows an organisation to evaluate its current status and alterative situations.

2. **Synchronisation actions:** a list of twelve actions of how public sector organisations in Ireland actually synchronise their business and IS strategies were recognised. Divided in the six synchronisation agents, these actions provide specific procedures of what a public body in Ireland has to follow in order to achieve a stronger synchronisation arrangement. It is possible to use the framework and the actions together to distinguish how to move between approaches. This finding presents more empirical evidence of how the synchronisation of business and IS strategies is carried out.

3. **Reasons for synchronisation:** nineteen advantages of strong synchronisation and 11 disadvantages of weak synchronisation were identified. These points represent the reasons of why top managers were concerned in realising strong influences between the business and IS strategies based in what can be gained or avoided by a strong arrangement. With this finding, more information is provided about the importance of the synchronisation topic in the public sector and the need to have stronger mutual influences between both strategies.

8.3 Conclusions about research question

As discussed in Chapters 5 and 7, the research produced three main findings from data collected as guided by the research question. While jointly the first two answer the *how* part of the research question, the third one is associated with the *why* part. The following points detail each key result:

1. According to the influence that exist between business and IS strategies, together with the synchronisation dimensions (*i.e.*, timing, content and personnel), a theoretical framework with several approaches was produced which collectively identify four distinct types of synchronisation. As shown in Figure 8.2, by measuring the degree of influence of one strategy on the other (from limited to considerable), a total of four combinations are possible (classified as unconnected, managerial-led, technology-guided and integrated). Each of these corresponds to distinct mechanisms of how public sector organisations synchronise their strategies, characterised by attributes that fluctuate according to the content of the business and IS strategies, the role of the business and IS managers, and to the operation of both the business and IS functions (see bullet-points in Figure 8.2). Specifically, the unique attributes of each approach were identified according to the position of the six case studies in the framework itself arrived at through the information gathered by means of semi-structured interviews and secondary data.

   The relevance of this finding is that it provides further information about the synchronisation process, a relevant topic for academics and practitioners during the last 40 years (Kriebel 1968/1969; Luftman and McLean 2004). Moreover, since no previous investigations have addressed this topic in the public sector, the framework augments the knowledge that these organisations have about IS strategic planning, the integration of technology, and the influence between the business and IS strategies. Therefore, by identifying where a public sector organisation is positioned in the framework (they can only be located in one quadrant at any point in time), that organisation will acquire essential information to evaluate its current synchronisation situation. In addition, based on *how* other organisations have accomplished the process in the past (see next finding), it is possible to know how to sustain or achieve stronger mutual influence between both strategies.

One feature of the framework is that its typology represents extreme cases. Therefore, an organisation positioned in a particular approach can have characteristics (in a lower or higher degree) of the other three approaches. By describing the extreme situations, the differences between approaches can be better acknowledged.

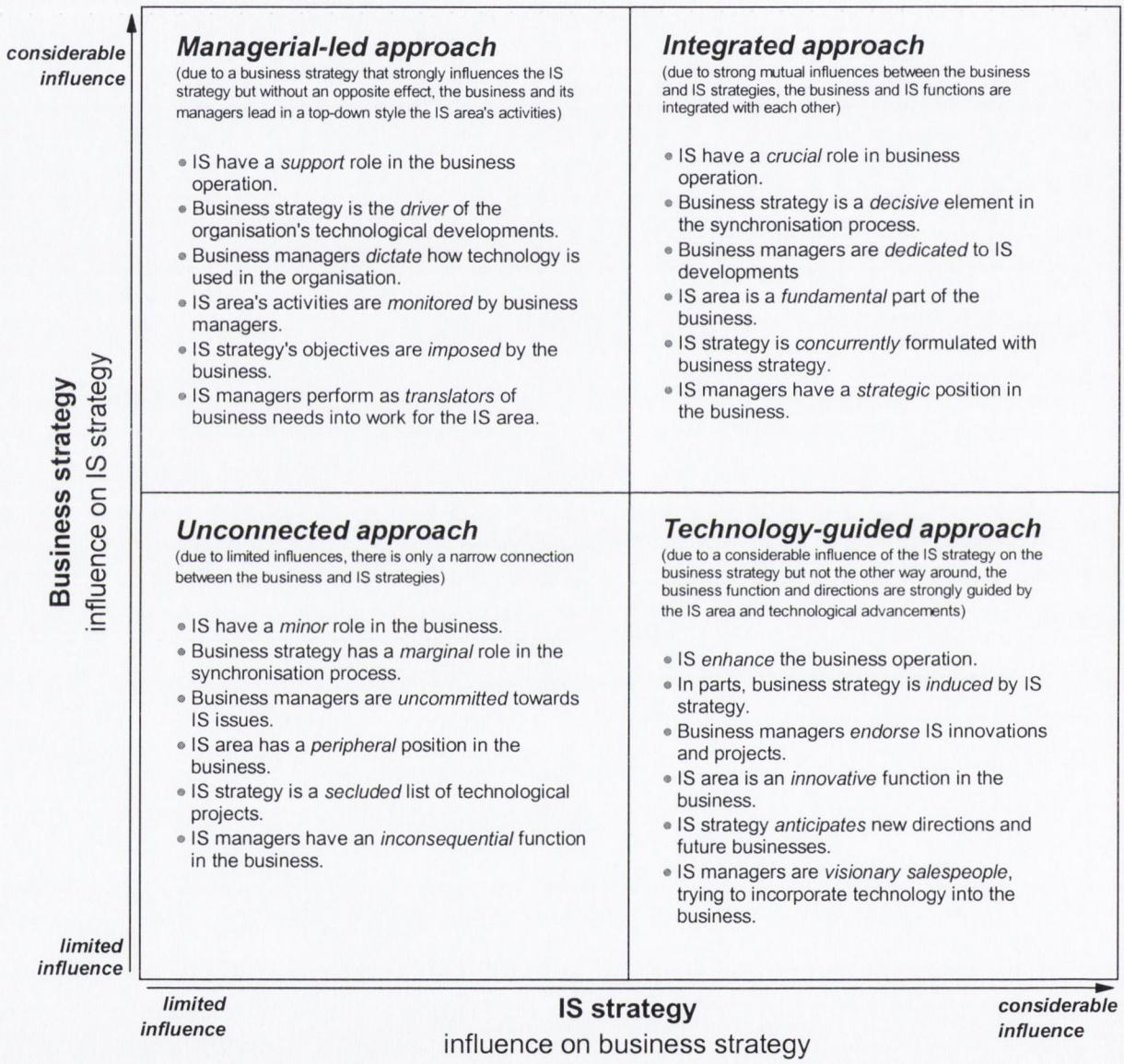


Figure 8.2: Approaches to synchronising business and IS strategies (with attributes)

2. As described in Section 5.4.2, after a process of data extraction several key actions that public sector organisations have carried out to synchronise their business and IS strategies were identified (Figure 8.3). Due to its nature, the synchronisation process is composed by six 'agents', which directly and indirectly affect in distinct degree the synchronisation procedures: the business and IS strategies, the business and IS managers,

and the business and IS functions. Consequently, by combining and organising the synchronisation actions by these agents, specific guidelines are provided for each of the synchronisation's major building blocks.

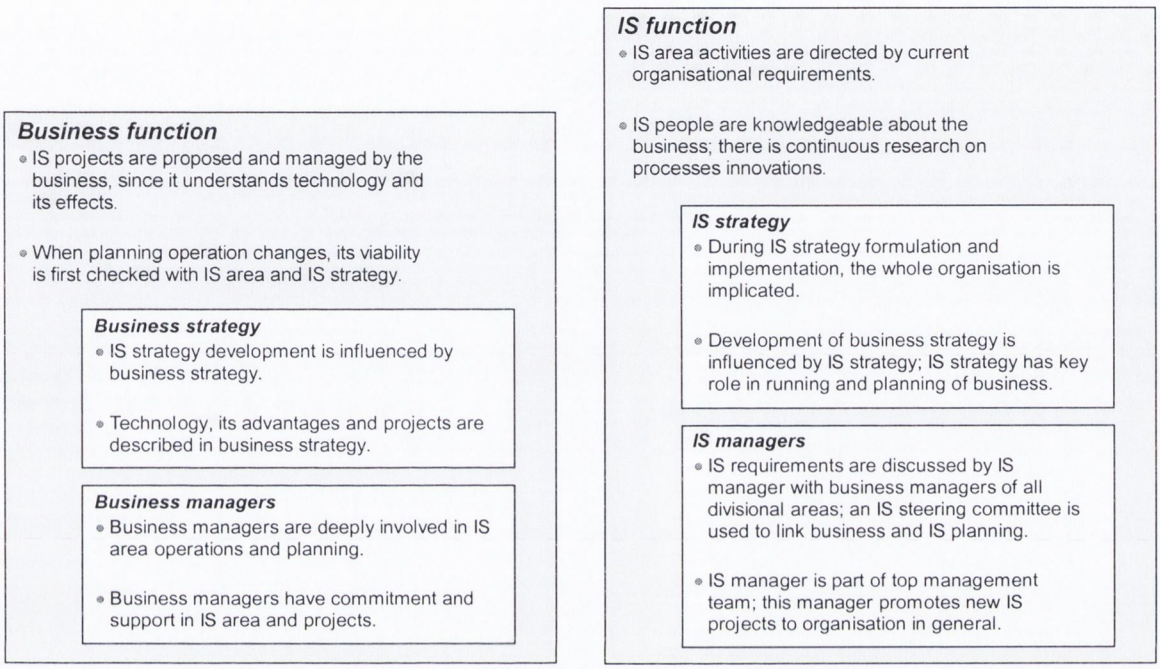


Figure 8.3: Synchronisation actions categorised by agent

Even though the individual relevance of each action was not determined, collectively they improve our understanding of the means by which public sector organisations achieve and maintain a stronger synchronisation arrangement between their business and IS strategies. For example, as seen in Figure 8.3, it is proposed that business managers must be deeply involved, and have commitment and support to the IS area's operation and projects. Also, it was found that the IS manager must be part of the top management team while discussing technological requirements with business managers. Moreover, as explained earlier, by liaising these activities and the theoretical framework, it can be discerned how public sector organisations can reposition themselves in a different approach or even how to maintain the current state. Therefore, these two outcomes jointly answer the *how* part of the research question.

3. After analysing the reasons why public sector organisations synchronise their business and IS strategies, a list of 19 advantages of strong synchronisation (*i.e.*, what the organisation wants to accomplish by having strong mutual influence between its business

and IS strategies) and 11 disadvantages of weak synchronisation (*i.e.*, what the organisation wants to prevent from happening by strongly synchronising both strategies) emerged from raw data (see Figure 8.4). Taken as a whole, these 30 points are the reasons why top managers of public sector organisations decided to have a business strategy that influences their IS strategy and is in turn influenced by it. In other words, these reasons are considered the product or the result of the activities of the synchronisation process. As seen in the figure, even though all issues impact the organisation in general, a classification by agent provides more information about their nature and consequences.

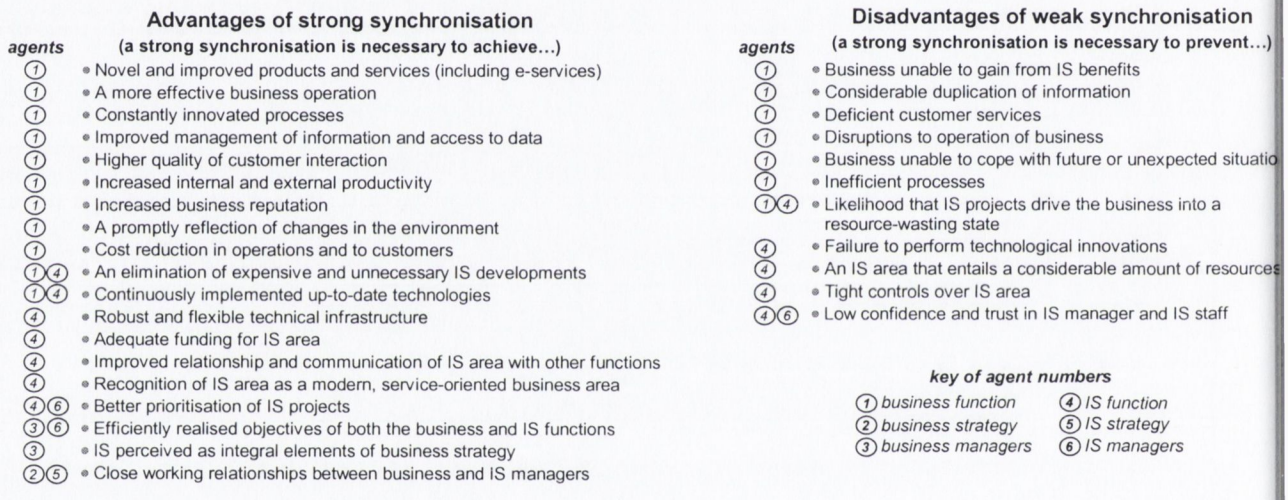


Figure 8.4: Reasons for synchronisation

Considering all the advantages as a whole, this finding demonstrates the importance of the synchronisation process and identifies the reasons for carrying out the necessary activities to reinforce or maintain a strong mutual influence between the business and IS strategies. The disadvantages, which impact will diminish as the organisation improves its synchronisation situation, can be considered as problems resulting from not synchronising or as effects of poor synchronisation. Although having strong mutual influence between business and IS strategies is not sufficient in preventing some of the issues identified as causing problems (*i.e.*, the disadvantages of weak synchronisation), a strong synchronisation is an indispensable element for its reduction.

The relevance of this finding is threefold. First, the reasons were identified exclusively in public sector organisations, a sector not widely investigated with regard to this subject.

Second, even though some elements in Figure 8.4 had already been identified in previous publications as effects from the synchronisation process (*e.g.*, a more effective business operation), no evidence of other issues was found (*e.g.*, IS perceived as integral elements of business strategy). Third, since these outcomes were detected to distinct degrees in government organisations, the finding provides motivations for having strong mutual influence between business and IS strategies. Nevertheless, since on the one hand all organisations have different characteristics, and on the other hand the synchronisation process depends on a variety of internal and external factors (*e.g.*, budget for IS area, commitment of top managers in IS issues, and policies from Central Government), not necessarily all outcomes may have been noticed in all organisations.

8.4 Implications for theory

Overall, the investigation's objectives were achieved so that the researcher has been able to identify several approaches and actions taken by public sector organisations to synchronise their business and IS strategies, together with a number of reasons why these organisations are concerned with having strong mutual influence between both strategies. Moreover, the term 'synchronisation' was created to differentiate the influence between these two strategies from other over-used descriptions that take in alternate meanings or that are associated with other business functions. In this thesis, the research outcomes generate several implications for theory:

- First, the outcomes of the thesis contribute to the body of knowledge within the IS field (the parent discipline of the research topic) and its theorists, increasing our understanding of IS strategic planning, identifying more reasons for planning the IS function, enhancing the importance of completing an IS strategy, augmenting the knowledge of the association between the IS field and strategic planning, and providing more information about the significance of having an IS strategy strongly synchronised with the business strategy. The synchronisation of strategies, formed by a combination of technology and social procedures, has been ranked as an important issue in IS research agendas in the last years (Burn 1996; Luftman and McLean 2004). Moreover, it has been stated that rigorous research is needed, especially about how to carry out the process (Avison *et al.* 2004; Grover and Segars 2005;

Jarvenpaa and Ives 1990). Therefore, the findings complement to the investigations already carried out and address the need for more research that contributes to the IS field.

- Second, the results comprise a theoretical framework about approaches to synchronisation in a context (*i.e.*, the public sector) that has not been widely researched before. Therefore, while contributing to the IS field, the framework complements previously developed models and investigations into the topic, providing supplementary information about how public sector organisations plan the IS function and synchronise their business and IS strategies. In addition, it expands the main characteristics of the agents that shape the process: the business and IS strategies, the business and IS managers, and the business and IS functions. In agreeing with Bacon and Fitzgerald (2001 p.52), this theoretical framework "is presented as a step, within the historical development of the IS field, towards some form of common ground for the field of information systems."

- Third, originated from raw data, several actions that public sector organisations have carried out to synchronise their business and IS strategies were identified. For theorists, this outcome is relevant since it contributes to a theme in a sector not widely researched. As listed in Table 3.6, most previous studies provide information about how these organisations *should* conduct the synchronisation process via critical success factors, rather than *how* they are actually carrying it out. Therefore, the synchronisation actions contribute to the theorists' knowledge by enhancing the information of the ISSP topic and adding more empirical evidence of how the synchronisation process is executed. Moreover, jointly with the theoretical framework the actions allow us to understand how practitioners enhance the influence between their strategies.

- Fourth, in line with the *why* part of the research question, several reasons to synchronise – divided into advantages and disadvantages – emerged from raw data. Throughout the years, recommendations for attaining a strong synchronisation between business and IS strategies have been continuously published by academics; however, many of these were shaped around private companies. Therefore, the reasons in the present investigation provide evidence of why public sector organisations have carried out the necessary actions to enhance or maintain a strong influence between both strategies.

- Finally, since most previous investigations in the synchronisation topic have been carried out using samples of private companies or by combining public and private sector organisations, the thesis' outcomes enhance our knowledge of the topic by providing more detail about how government organisations can achieve a strong synchronisation of business and IS strategies and the reasons for doing this. Therefore, the findings provide more information about public sector organisations' strategic planning of the IS function, the role of their stakeholders, the advantages that could accrue to these organisations, and issues that impact the incorporation of technology into the business function.

8.5 Implications for practice

Since basically no research work on the synchronisation of business and IS strategies theme has been completed in the Irish context to date, the research outcomes have several implications exclusively for the Irish public service, its organisations and civil servants. This section illustrates the relevance of the thesis' outcomes in the Irish public sector.

- First, the outcomes of this investigation expand current knowledge of the synchronisation process; that is, they provide more information and rich insights of how business and IS strategies influence each other. Consequently, the three main findings assist organisations in improving the effectiveness of their IS strategic planning by providing evidence about how to carry out the synchronisation process, the role of IS strategies, the importance of having a close synchronisation between the business and IS strategies, the significance of incorporating the IS manager in the planning of the business, and the commitment that business managers must have about the planning of the IS resources. Therefore, public sector organisations are presented with more foundations about a topic widely researched in the private sector – but which is considered essential in all organisations – and which could deliver multiple benefits if accomplished to a significant degree.

- Second, using the theoretical framework as a guide, the synchronisation situation in a particular public sector organisation can be evaluated, thus acknowledging how adequate or unsatisfactory the current synchronisation condition is. Since there are several synchronisation approaches, the framework provides an understanding of what is characteristic of each type and how the approaches differ from each other. Therefore, armed

with this information a public sector organisation in Ireland can not only identify its current synchronisation status, but it is provided with the means of enhancing the mutual influence of the two strategies and/or maintain a strong arrangement.

- Third, by using the framework and synchronisation actions together, it is possible for a public sector organisation to know how to progress towards a stronger arrangement. However, in case that the organisation already experiences strong mutual influence between its business and IS strategies, the actions outlined here could help as guidelines to determine which activities are necessary to maintain the present status. Since these actions correspond to actual procedures carried out by similar public sector organisations, it is expected that they will alter the way the business function interacts with the IS function and thus change how the organisation operates and improve the effectiveness of their IS strategic planning.

- Fourth, the results reveal to business and IS managers of public sector organisations an actual outlook of what other analogous organisations have achieved or that were expecting to realise from the synchronisation process. This includes what can be gained and what can be avoided by attaining a strong arrangement of influences. Furthermore, by comparing these motivations to a given organisation's actual reasons, new capacities could be developed or learned, and the necessary changes in the way the organisation manages its IS resources could be identified. Moreover, the finding provides the basis for attaining more funding and top management support for the synchronisation process.

- Finally, the investigation expands our knowledge of the significance of strategically planning the IS function and of what it means to develop an IS strategy that strongly influences an organisation's business strategy and is in turn influenced by it. Nowadays there are still a large number of public sector organisations with inadequately-synchronised strategies; therefore, by providing more information about the process, it is expected that over time more organisations will have stronger mutual influence between their business and IS strategies, and thus attain benefits such as an increase in productivity and the provision of better services.

8.6 Limitations

Several limitations were identified in this research project which affected the ability to study the issues of interest:

- First, there was only one researcher to interpret the results. With more investigators it would have been possible to analyse more cases and collect further data, thus obtaining more information about the attributes in each approach in the framework and possibly identifying additional synchronisation actions. Furthermore, with more people involved in the data collection and analysis, a comprehensive survey of other government departments and offices would have been possible to carry out in order to confirm the validity of the framework in organisations outside the sample.

- The nature of the organisations in the study was a limitation – as one of the IS managers interviewed said, "in the public service things take time; if you do not have the power, you have to wait." Not only did gaining access take a considerable amount of time, but every appeal was dealt with in an unhurried fashion; for example, to schedule a meeting with one of the Secretary Generals, several people had to first approve the request. This did not affect the ability to study the issues of interest – but it caused the work to take more time than initially planned. Nevertheless, some advantages of carrying out research in the public sector included the availability of documents (even of reports that were printed several decades ago), the existence of IS and business strategies as mandated by Central Government, and the access to certain data by means of the Freedom of Information Act.

- Another limitation corresponds to the researcher's lack of experience preparing case studies and collecting data via interviews. About the former, several publications were read about the case study method and a large number of actual cases were studied with the purpose of understanding their development and objectives. Since it is about skills, the second issue was more challenging to deal with. Several books were read about how to carry out interviews. But it was not until the case study protocol was discussed with IS executives at AIB and ESB that 'real' interviews were completed for the first time. These individuals and also colleagues in the School of Business provided comments and suggestions about how to avoid bias, start and close the meetings, and even on how to take notes. Therefore, even though the first two

interviews (during the pilot case) were the most challenging, the technique was refined as more meetings were performed.

- Despite the case study method being selected due to its research approach, advantages, support for IS investigations, and preference when investigating a *how* or a *why* question about a contemporary set of events, the method has some weaknesses (see Section 4.3.2). However, the ones that instigated limitations during the study are the possibility of generalising the results, the number of cases, and the fact that the reports usually portray positive aspects.
  - It has been published, especially by advocators of positivist investigations, that the conclusions of the case study method cannot be easily generalised. However, since special attention was placed during the selection of the organisations, only cases were chosen that would provide sufficient information to allow the study to fulfil its objectives. These cases constituted a group of organisations with distinct experience in planning the IS function and thus synchronising their business and IS strategies. Therefore, even though in line with the nature of the case study method only a small number of organisations were used for the field study, the results can be generalised to all government departments and offices of Ireland (see also transferability in Section 8.8). As mentioned in the next section, further research is needed to expand the outcomes to other countries and organisations such as local authorities.

  - Multiple case studies, contrasted with a single longitudinal case, have the limitation that considerable resources are needed for its development. During the development of several cases, breath opposed to depth trade offs have to be made; nevertheless, as described in Section 4.4.4, a multiple case design is desirable during theory building, especially when the same phenomenon is thought to exist in a variety of situations.

  - Finally, when the selected organisations agreed to participate in the investigation, it was established that all key contacts (*i.e.*, the IS managers in all organisations except in the Department of Social and Family Affairs) were to be provided with the final version of the case study report before publication. Consequently, these individuals were able to eliminate or edit parts of the text that they did not want to become public and even modify the way the story was told to highlight the organisation's positive aspects. However, these amendments were made by agreement with the researcher and the

modifications did not alter the facts or materially change the totality of the account as initially reported. So the limitation is not that the case study reports are not reflecting the actual synchronisation situation in each organisation, but that it is recounted as these managers considered as most appropriate.

- A further limitation corresponds to the number of interviews. It has been suggested (Perry 1998) that PhD theses ideally require between 35 and 50 interviews. The field study of the present research involved 24 meetings with 19 different business and IS managers. This number might be considered short or inadequate in exploratory investigations of this type; moreover, by interviewing just a small number of people the research is exposed to them colluding and telling an agreed story, thus weakening the triangulation. Nevertheless, due to the quality and quantity of the data collected not only the researcher considered that no supplementary interviews were needed to structure the theoretical framework and other findings, but also documents and archives were gathered to complement and corroborate the views and opinions of the participants.

- Comparisons between a small organisation with a narrow focus like the Registries with a large and complex department like Agriculture can be open to discussion. However, not only had the funders of the research a key role in selecting the six organisations in the study, but independently of the size or intricacy of the government departments or offices, only the unit of analysis was scrutinised.

- A final limitation lay in the fact that due to the rank of some of the interviewees, it was not possible to schedule additional meetings. Some of them agreed to answer emails with further questions, but practically all business managers made it clear that only one interview would be granted.

8.7 Further research

There are several ways in which the research could be extended to cover aspects not contemplated during this investigation, or in which alternative situations could be devised to complement the research results.

- Because the unit of analysis (the synchronisation of strategies) was not treated as a process, some authors might say that the investigation could have missed some rich historical and processual connectedness (Pettigrew *et al.* 2002). Therefore, two types of complementing studies can be performed. On the one hand, a longitudinal case study might investigate in a period of time how the business and IS strategies are synchronised in one organisation. By doing this, more information could be gathered about how the process of synchronisation is accomplished as it happens; the specific role of each stakeholder at different periods of the process; and an organisation's main synchronisation actions according to changes in the internal and external environments. On the other hand, an historical study might investigate in retrospect how the synchronisation process has continuously evolved prior to the development of the first strategies, analysing past documents and archives, if necessary interviewing former employees, and interpreting what actually happened and what was realised during the review of each strategy to understand the progression of the process. Due to the nature of this potential processual study, individual case studies could analyse past documents and focus the interviews to investigate the actual situation at different points in time.

- Since the present study was limited to Ireland, further research could extend the findings and verify whether the synchronisation approaches captured in the theoretical framework can be generalised to public sector organisations in other countries. In Ireland, some of the synchronisation actions are influenced by the government's centrally controlled strategic management programme. Therefore, further research could test the theoretical framework and document similarities and differences in nations that have introduced alternative or analogous programmes. Since the subjects of this study are local executives, cultural differences may exist between Ireland and other countries.

- The six organisations selected for the study correspond to wide-range organisations with direct influence from Central Government. Further research could expand the framework to analyse how local authorities and agencies with limited authority and restricted use of resources also synchronise their business and IS strategies.

8.8 Standards for the quality of conclusions

As explained in Chapter 4, there are some tests to establish the quality of interpretive investigations and to determine if the emerging findings maintain empirical rigour and validity. Despite some interpretivist researchers say that it is not really possible to specify criteria for good qualitative work (Schwandt 1990), the next points expand what was carried out in this thesis to address each argument:

- *Confirmability:* In order to maintain confirmability during the investigation, the study's methodology, including data collection and analysis procedures, are explicitly detailed in Chapters 4 and 5. As a result, the sequence of how data were collected, processed and transformed from their raw form to the conclusions can be accurately followed. Moreover, it is possible to backtrack where the findings came from (categories, concepts and codes for the synchronisation actions and reasons to synchronise, and the case studies for the framework) by linking Tables 5.4 and 5.5, the six case studies, Section 7.2.2, and Appendix 6. Throughout the investigation, the researcher has been aware of possible biases that can affect data interpretation. Therefore, not only a case study protocol was employed, but also a step-by-step data analysis was carried out, and all key informants were asked to review the written reports to confirm that the information was fair, accurate and that it reflected the actual synchronisation situation in the organisation in a particular period of time. Finally, when completing and discussing the theoretical framework, alternative models were considered (Chan and Huff 1993; King and Teo 1997; Reich and Benbasat 2000; Synnott 1987).

- *Dependability:* To achieve dependability, the investigation was carried out in successive steps to allow consistency and stability over time. Starting with a research question, data were collected and subsequently analysed across appropriate settings. Moreover, relevant information surfaced by meeting people knowledgeable about the unit of analysis and by gathering documents that contained related information. As stated in Section 8.6, a limitation of this investigation is that only one field-worker was involved; therefore, the interpretation of the data, including its coding, could not be converged with alternative observations or cross-checked for agreement. However, throughout the investigation and thesis, every phase was methodically documented, including the use of a case study protocol and the storage of hard copies of all documents.

- *Credibility:* To attain credibility of the results, not only the case reports were prepared with context-rich and meaningful descriptions, but the findings were grounded in previous literature (see Section 7.5) to express what is novel and how these outcomes have been previously discussed. Moreover, data source triangulation was maintained (*i.e.*, key people in each organisation were interviewed and secondary data was collected) to gather information from multiple sources and complement the conclusions. As seen in Section 8.3, the three key findings from the investigation are internally coherent and systematically related, counterparting one another. Due to the explorative nature of the research, no propositions or hypothesis were formulated; therefore, as discussed in Section 8.7, a survey could be used to verify the findings and to establish if the information uncovered is coherent in similar and contrasting organisations. Section 8.6 identified several limitations or areas of uncertainty, mainly related to the research method, the number of investigators, and the nature of public sector organisations. No negative evidence was sought for or found; nevertheless, the emerging framework was compared and contrasted with four alternative models, indicating their similarities and differences and thus demonstrating its novelty. Finally, in order to authenticate the case reports and accordingly the findings, each case study was sent to the key informant in each organisation for verification and further discussion.

- *Transferability:* As a way of generalising the findings beyond the immediate sample or setting in which the research took place, replication logic was used. This consisted in finding similar results in each of the cases. Once direct replications were made, the results were significant in the context of theory generation, even though the investigation included a limited number of organisations. Moreover, the detail of all interviews is listed in Appendix 3 and documents in Appendix 4, allowing their comparison with the actual circumstances of other samples. The organisations chosen correspond to six government departments and offices with distinct characteristics such as functions, size, budget and IS strategic planning experience; therefore, this group is theoretically diverse to encourage broader applicability. To achieve generalisation, the boundaries and scope of the research were described in Chapter 1, setting the limits of where the field study was carried out and where the findings can be practical. Furthermore, in each case study, the background of the organisation was described, including its origins, structure, main functions and stakeholders, allowing readers to compare other organisations to the investigation's own settings. As described in Section 7.5, the results were discussed and grounded with previous

publications, demonstrating that they are congruent with prior theory. Therefore, this indicates that the conclusions are generic enough to be applicable in other settings. The findings were not replicated in other studies to assess their robustness; however, as described in Section 8.7, some possibilities of further research exist to extend the conclusions. Finally, to sustain transferability, not only the narrative sequences (*i.e.*, the case reports) were not obscured, but the findings and theory emerged from cross-case comparisons.

8.9 Thesis' conclusions

In conclusion, based on a gap in the literature and a current research need, the synchronisation of business and IS strategies was explored, particularly why and how it is carried out in the public sector. This theory-building research postulated a theoretical framework comprising four approaches to how business and IS strategies are synchronised in Irish government organisations, identified specific actions of how public sector organisations carry out the process, and presented some reasons why top managers invested resources in enhancing the mutual influence between their business and IS strategies. Due to the explorative method taken in developing the framework and uncovering these actions and reasons, it provides a foundation for further research into the topic while generating valuable implications not only for theorists, but also for practitioners and their organisations.

APPENDIXES

The following six appendixes, which have the purpose of supporting the research methodology (contained in Chapter 5) of the present thesis, consist of the following:

- Appendix 1. Includes the initial group email sent to all Secretary Generals and IS managers of the six organisations selected to participate in the investigation. The purpose of this letter was to present the objectives of the research and request access to the department's or office's informants and documents.
- Appendix 2. Contains the first (in the form of a question-diagram) and final versions (wording and figure) of the case study protocol. This protocol was the instrument to guide the researcher during the semi-structured interviews.
- Appendix 3. Lists the detail of all interviews conducted, including the individuals' names and roles, the dates of the meetings and their length.
- Appendix 4. Includes the title and publication date of all secondary-data gathered and analysed. The documents are grouped by case number.
- Appendix 5. Contains a copy of the six letters endorsed by the key contact of each organisation with the purpose of signing-off the case reports.
- Appendix 6. List the concepts extracted from the codified raw data. In four of the six tables, the concepts display an identifier to link each item to the categories in Table 5.4.

APPENDIX 1

INTRODUCTORY LETTER

Dear Secretaries General and Heads of Information Technology:

The STRATEGIC INTEGRATION research programme:

MEMORANDUM by Dr. Joe McDonagh, Senior Lecturer in Strategic Change and Information Technology, Trinity College Dublin

Date: Wednesday, 26 May 2004

INTRODUCTION

The School of Business Studies at Trinity College Dublin has a vibrant graduate research programme organized around a series of overarching strategic tracks of concern to industry and governments. Within the strategic change and information technology (IT) track, there are currently seven research initiatives underway, one of which is focused on the process of integrating business and IT strategies both within and across Government Departments and Offices. I now solicit your support in advancing this particular research endeavour which is supported by both the Centre for Management and Organisation Development and the Information Society Policy Unit through the Information Society Fund.

THE CHALLENGE OF CHANGE

Central to the challenge of effectively introducing IT in work organizations is the need to foster a highly systemic approach to change. Such an approach of necessity takes due cognisance of the need to seamlessly integrate strategic, technical, social and political aspects of change. Best practice clearly supports the view that no more than 20/25% of an IT project spend will be absorbed by technical change considerations while the remaining 75/80% will be absorbed by strategic, social, and political aspects of change. It is common for the 20/25% to be classified as the 'HARD' or technical side of change while the remaining 75/80% is classified as 'SOFT'. The difference between success and failure is directly related to how both the 'HARD' (20/25%) and 'SOFT' (75/80%) aspects of change are woven together into a seamlessly integrated change initiative.

The bias towards 'HARD' (20/25%) aspects of change to the detriment of 'SOFT' (75/80%) aspects of change is a problem that blights both public and private sector IT initiatives alike. It is generally easier to secure funding for the 'HARD' technical side of change. It is generally easier to appoint project managers that have deep knowledge and expertise in a chosen

technical arena. It is difficult to secure the necessary funding for both the 'HARD' and 'SOFT' aspects of change. It is equally difficult to access individuals whose repertoire of knowledge, skills and expertise spans both the 'HARD' and 'SOFT' aspects of change.

International best practice, supported by compelling research evidence, clearly indicates that one prerequisite for both capturing the full impact of IT investments and the effective management of IT-enabled change is the distinct ability to effectively integrate business and IT strategies.

PROPOSED RESEARCH INITIATIVE

With this in mind, the proposed programme of inquiry seeks to make explicit the major challenges and choices confronting Government executives intent on integrating business and IT strategies both within and across Departments and Offices. Of particular interest to this inquiry is the practice of developing strategy statements within Departments and Offices along with the need to address IT as an integral part of supporting strategy development processes.

The field research involves building a comprehensive picture of the process of integrating business and IT strategies within and across Departments and Offices in Ireland in recent years. Of necessity this involves access to background documentation along with the need to interview key stakeholders. At this juncture it is envisaged that such interviewing will be confined to individuals deemed central to strategy development initiatives. The proposed study will initially focus on six Departments and Offices including (i) Agriculture, Food and Rural Development, (ii) Communications, Marine and Natural Resources, (iii) Environment and Local Government, (iv) Social and Family Affairs, (v) Revenue Commissioners, and (vi) Land Registry.

The proposed work will be of immense benefit to civil and public service organizations as practically no research work on this theme has been completed in an Irish context to date. It will provide rich insights into what has worked well in the integration of business and IT strategies along with the development of best practice guidelines for the effective integration of such strategies in the future.

The field research will be carried out by Mr. Jorge Diaz-Padilla Boyer and will form an integral part of his PhD research degree programme which is due for completion in September 2005.

Kind regards

Dr. Joe McDonagh
Senior Lecturer in Strategic Change and IT
University of Dublin
Trinity College
Dublin 2
Ireland

APPENDIX 2

CASE STUDY PROTOCOL

The case study protocol is the guide used by the researcher during interviews. In line with exploratory investigations, this is not a rigid document. It is modified according to how and what direction the research is taking, removing issues not relevant to the investigation's objectives or adding topics not considered before. In other words, it is an evolving tool.

The case study protocol presented in this appendix is the guide used during the last interview. Starting with the pilot case study, it was continuously modified during data collection. Given that after each interview the research became more focused, it was adjusted with the objective of gathering 'better' data during the next discussion. Furthermore, the structure of the enquiry changed, yielding an arrangement in line with issues identified during data collection. This way, since initially there were more open-ended questions, these became more focused as the investigation proceeded.

Since the interviews were semi-structured, key topics were used as guidance (these might or might not be used according to where the discussion was heading). In addition, for each theme, probes were listed in order to remind the researcher of issues that should be embraced, if possible. However, instead of having a list of probes and topics to follow that may complicate the gathering of data, a question-diagram was used. This figure portrays all necessary information to allow the researcher to know with a glance what was already covered and what is still pending.

First, the actual protocol is presented, including the definitive question-diagram that emerged after all iterations (as seen, it is organised around the synchronisation 'agents' and reasons). Then, with the purpose of demonstrating how the protocol evolved throughout the data collection process, Figure A2-1 displays the initial question-diagram used during the first interview (after the pilot case study).

Case study protocol:

1. Overview

1.1. Project objectives

The investigation's main objectives are to explain *why* public sector organisations synchronise their business and IS strategies and understand *how* organisations perform this process. The study involves independent case studies which internally shape the unit of analysis under investigation. The process has to be indirectly analysed by interviewing the people involved and by examining supporting secondary data. The outcomes of the investigation will not only evaluate the importance of having both strategies synchronised (by means of reasons), but will also explain new insights and practices of how public sector organisations are developing this process.

1.2. Key issues of the research

- To explore and identify the reasons and motivations of *why* public sector organisations addressed the synchronisation of business and IS strategies by analysing the main tasks performed and the nature of the mutual influence between both strategies;
- To explore *how* these public sector organisations have synchronised their business and IS strategies by means of a theoretical framework that explores the nature of the synchronisation process.

1.3. People involved

The researcher is a student working in the School of Business at Trinity College, Dublin. His supervisor, Dr. Joe McDonagh, is Director of Executive Education within the School. This research is supported by the Centre for Management and Organisation Development (CMOD) and by the Information Society Policy Unit (ISPU) through the Information Society Fund.

2. Field procedures

- Make initial contact with the person at the highest level possible.
- Request authorisation, through this individual, to access the organisation, interview other members and collect required information.
- Initially interview IS manager.

- After the initial meeting, schedule interviews with high-level business managers involved in business planning (if possible meet Secretary General).
- Before starting the interview, communicate research objectives and confidentiality agreement (*i.e.,* no information given or documents provided will be disclosed).
- If allowed, record interviews (otherwise, take notes).
- When possible, support verbal information with documentary evidence.
- Attempt to interview informants in their offices rather than interview rooms or public places.
- During the interview, use question-diagram as a guide of what must be queried.
- Try not to bias the interview by giving personal opinions or influencing the responder's answers.
- Maintain the length of the interview to the time initially agreed.
- Ask permission for an additional meeting or for sending pending questions via email (especially for follow-ups and if inconsistencies exist between documents and interviews).
- Immediately after the interview, write a brief summary of the meeting and take notes on further information.
- Send an email to interviewee or his/her personal assistant to express gratitude for time granted.
- After writing the case report, forward a copy to IS manager for validity checking and further comments.

3. Case study questions

The following diagram must be used as a guide during the interview. Since the questions asked are semi-structured, the points below each question work as probes to be followed when pertinent and when possible.

Why and how do public sector organisations synchronise their business and IS strategies?

- Job function
- Background (degree)
- Years in organisation
- In what other areas has the person worked before?

At the beginning

- Role and importance of IS to business.
- Business dependance on information systems.
- Importance given to IS.
- Knowledge of users about IS.
- Benefits and enhancements achieved with IS.
- Identified problems after integrating IS.
- IS integration history in organisation (main IS projects).

The business

- Business strategy development.
- Preparation and people involved.
- Content of business strategy.
- Importance of business strategy to organisation.

- Influence of IS and IS strategy during business strategy development.
- Influence of IS strategy during business strategy development.
- Consideration of IS during business strategy development.

Business strategies (strategy statements)

- Involvement of business managers during planning of IS function.
- Involvement of business managers in development of IS strategy.
- Commitment and support to IS issues.
- Knowledge of technology.

Role of business managers

Business function

- Anything else you want to add?
- Who else can provide me more information about this process?
- Request missing documents.

At the end

- Role of the IS area during business-IS integration.
- Importance of IS area in organisation.
- Knowledge of IS people about business needs and objectives.
- Innovation of business processes.
- Budget of IS area.

IS area

- IS strategy development.
- Preparation and people involved.
- Content and updating frequency of IS strategy.
- Importance of IS strategy to organisation.

- Influence of business strategy during IS strategy development.
- Influence of business strategy during IS strategy development.
- Consideration of business during IS strategy development (organisation's mission, goals and objectives).

IS strategies (IS business plans)

- Role of the IS manager during business planning (and development of business strategy).
- Importance and role of IS manager in organisation.
- Participation of IS manager during business planning.
- Relationship of IS manager with business managers.

- Role of the IS manager during IS strategy development.
- Functions of IS manager during preparation of IS strategy.

Role of IS manager

IS function

- Reasons for accomplishing integration.
- Benefits and advantages (was it worth doing the process and what was achieved)?
- Importance of influence between business and IS strategies.
- Changes in the way the organisation has been working?

- Occurrences in case of limited integration.
- Possible problems in organisation.

Reasons

4. Guidelines for the case study report

- *Target audience*: Thesis committee. It is necessary to emphasise a mastery of the methodology, theoretical issues and the care with which the research was conducted. Write cases in a comprehensive way so when the target audience reviews the research results, it is clear where the findings came from.
- *Format for the report*: Since the research design consists of multiple cases, there will be one narrative for each case. Additionally, it is necessary to present the context of the research as background information.
- *Case study composition*: Linear-analytic structure (applicable to exploratory case studies). The sequence of sections in each case will be the following (it is important to have the same structure in all reports):
    1. Origins
    2. Function and objectives of the department
    3. Organisation and stakeholders
    4. Business strategy development
    5. The department's IS area
    6. IS strategy
    7. Integrating IS with the business
    8. Synchronising business and IS strategies
    9. Main IS projects and e-government initiatives

Note: during the meetings, instead of the term 'synchronisation', use 'integration' because the interviewees might be unfamiliar with this new designation. However, 'synchronisation' will be employed during the case reports.

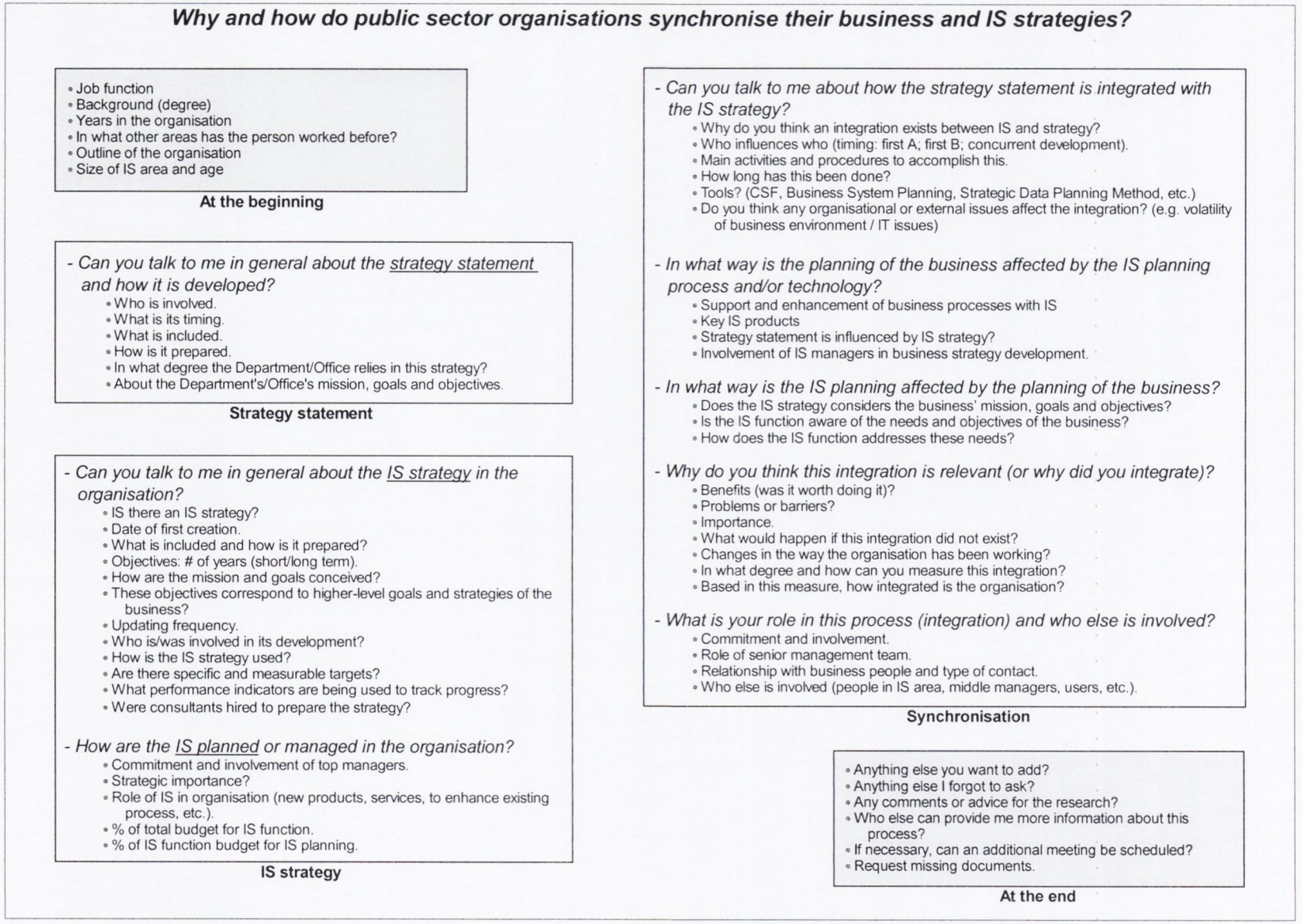


Figure A2-1: Initial question-diagram of case study protocol

APPENDIX 3

INTERVIEW DETAILS

The following table lists all the people interviewed as part of the field study and case study report discussion. The role of the interviewee, the date of the meeting and its length are also included.

Case number	Interviewee name	Role in department or office	Date	Interview length
Case 1: Land Registry and the Registry of Deeds	John O'Sullivan	Information Systems Manager	09/06/2004	45 minutes
	Catherine Tracy	Chief Executive and Registrar of Deeds and Titles	30/06/2004	50 minutes
	Michael Treacy	Corporate Services Manager	01/12/2004	30 minutes
	John O'Sullivan	Information Systems Manager	10/03/2005	45 minutes
	Michael Treacy	Corporate Services Manager	10/03/2005	45 minutes
Case 2: Department of Social and Family Affairs	Niall Barry	ICT Director	13/08/2004	70 minutes
	Bernadette Lacey	Director General – Social Welfare Services	31/03/2005	40 minutes
	Gerry D. Daly	Assistant Director General	22/04/2005	35 minutes
Case 3: Department of Communications, Marine and Natural Resources	Liam Kidd	ISD Manager	24/07/2004	35 minutes
	Sarah White	Deputy Secretary General	23/09/2004	40 minutes
	Brendan Tuohy	Secretary General	21/10/2004	35 minutes
	Liam Kidd	ISD Manager	07/04/2005	45 minutes
Case 4: Office of the Revenue Commissioners	Sean Connolly	ICT and e-Business Director	15/08/2004	65 minutes
	Michael O'Grady	Commissioner (and Chairman of IT Executive)	18/08/2004	35 minutes
	Liam Irwin	Collector General	08/10/2004	45 minutes
	Sean Connolly	ICT and e-Business Director	10/03/2005	75 minutes
Case 5: Department of the Environment and Local Government	Fred Bradley	Principal Officer – Organisation/ICT/FOI	19/08/2004	55 minutes
	Niall Callan	Secretary General	27/05/2005	30 minutes
	Fred Bradley	Principal Officer – Organisation/ICT/FOI	14/10/2005	50 minutes

Case number	Interviewee name	Role in department or office	Date	Interview length
Case 6: Department of Agriculture and Food	Philip O'Reilly	IT Director	24/09/2004	50 minutes
	Seamus Healy	Assistant Secretary – Animal Health	11/03/2005	30 minutes
	Denis Byrne	Assistant Secretary – Mkt. Supports, Forestry and On-Farm Investments	07/04/2005	45 minutes
	John McCarthy	Principal Officer – Direct Payments	14/04/2005	30 minutes
	Robert Butler	Principal Officer – IT Infrastructure	14/04/2005	30 minutes
	Philip O'Reilly	IT Director	25/06/2005	45 minutes

APPENDIX 4

SECONDARY DATA DETAILS

The following tables list all documents collected from each case (secondary data). These documents, which mainly are strategy statements, annual reports, IS strategies and customer action plans, were published between 1948 and 2005.

Table A4-1: Secondary data from Land Registry and Registry of Deeds

Document title	Year of publication
Land Registration in Ireland: an overview (presentation in EULIS, Belfast)	2005
Annual Report 2003	2004
Annual Report 2002	2003
Strategy Statement 2002 – 2005	2002
Annual Report 2001	2002
The Registry of Deeds e-Service Delivery Strategy	2002
Annual Report 2000	2001
Electronic Service Delivery Strategy 2001 – 2004	2001
Quality Customer Service	2001
Annual Report 1999	2000
Strategy Statement 1999 – 2000	1999
Annual Report 1998	1999
Strategy Statement 1996	1996
Land Registry Centenary 1892 – 1992	1992
Strategic Plan: IS and Organisational Development	1990

Table A4-2: Secondary data from Department of Social and Family Affairs

Document title	Year of publication
Strategy Statement 2005 – 2007	2005
Annual Report 2004	2005
Annual Report 2003	2004
Customer Action Plan 2004 – 2007	2004
Strategy Statement 2003 – 2005	2003
Annual Report 2002	2003
Information Services Strategy 2003 – 2006	2003
Annual Report 2001	2002

Strategy Statement 2001 – 2004	2001
Annual Report 2000	2001
Customer Action Plan 2001 – 2004	2001
Annual Report 1999	2000
Annual Report 1998	1999
Strategy Statement 1998 – 2001	1998
Report of the Department of Social, Community and Family Affairs (96 – 97)	1998
Guide to the Functions & Records of the Department	1998
Customer Action Plan 1998 – 1999	1997
The Strategic Management Initiative of the Department of Social Welfare	1996
Report of the Department of Social Welfare (1994 – 1995)	1996
Report of the Department of Social Welfare (1992 – 1993)	1994
Report of the Department of Social Welfare (1989 – 1991)	1992
Report of the Department of Social Welfare (1987 – 1988)	1989
Report of the Department of Social Welfare (1985 – 1986)	1987
Report of the Department of Social Welfare (1983 – 1984)	1985
Report of the Department of Social Welfare (1981 – 1982)	1983
Report of the Department of Social Welfare (1979 – 1980)	1981
Report of the Department of Social Welfare (1976 – 1978)	1979
Report of the Department of Social Welfare (1972 – 1975)	1976
First Report of the Department of Social Welfare (1947 – 1949)	1948

Table A4-3: Secondary data from Department of Communications, Marine and Natural Resources

Document title	Year of publication
Strategy Statement 2005 – 2007	2005
Annual Report 2004	2005
Annual Report 2003	2004
Customer Service Action Plan 2004 – 2006	2004
Information Systems Division – Business Plan 2004	2004
Strategy Statement 2003 – 2005	2003
Annual Report 2002	2003
ICT Strategy 2003	2003
Information Systems Division – Business Plan 2003	2003
Annual Report 2001	2002
Customer Service Action Plan 2002 – 2004	2002
Information Systems Division – Business Plan 2002	2002
Strategy Statement 2001 – 2003	2001
Annual Report 2000	2001
Annual Report 1999	2000
Annual Report 1998	1999
Strategy Statement 1998 – 2000	1998
Guide to the Functions of and Records Held by the Department	1998
Delivering a Quality Customer Service 1998 – 1999 (Dept. of the Marine)	1998
Strategy Statement 1997 – 1999	1997
Strategy Statement 1997 (Dept. of Transport, Energy & Communications)	1997

Table A4-4: Secondary data from Office of the Revenue Commissioners

Document title	Year of publication
Strategy Statement 2005 – 2007	2005
Annual Report 2004	2005
Annual Report 2003	2004
The Irish Revenue – A case study in transformational change	2004
Guide to the Structure, Functions and Records of Revenue	2004
ICT and eBusiness Strategy 2004 – 2005	2004
Strategy Statement 2003 – 2005	2003
Annual Report 2002	2003
Integrated Applications and Service Delivery (presentation)	2003
A New Organisational Structure for Revenue	2003
Annual Report 2001	2002
Request for Tender (RFT) for Revenue Risk Analysis System	2002
Strategy Statement 2001 – 2003	2001
Annual Report 2000	2001
Customer Service Action Plan 2001 – 2004	2001
Quality Customer Service in the Office of the Revenue Commissioners	2001
Annual Report 1999	2000
Report on the Review of the Office of the Revenue Commissioners	2000
Annual Report 1998	1999
Annual Report 1997	1998
Revenue Commissioners 75th Anniversary Commemorative Book	1998
Annual Report 1996	1997
Strategy Statement 1997 – 1999	1996
Annual Report 1995	1996
Annual Report 1994	1995
Corporate Plan 1994 – 1996	1994
Annual Report 1993	1994
Annual Report 1992	1993
Annual Report 1991	1992
Annual Report 1990	1991
Annual Report 1989	1990

Table A4-5: Secondary data from Department of the Environment and Local Government

Document title	Year of publication
Strategy Statement 2005 – 2007	2005
Annual Report 2004	2005
Annual Report 2003	2004
Customer Service Action Plan 2004 – 2006	2004
Strategy Statement 2003 – 2005	2003
Annual Report 2002	2003
ICT Unit Business Plan 2003	2003
Annual Report 2001	2002

Strategy Statement 2001 – 2004	2001
Annual Report 2000	2001
Customer Service Action Plan 2001 – 2004	2001
e-Public Services Strategy	2001
Annual Report 1999	2000
ICT Vision for Local Government	2000
Modernising Local Government	2000
Annual Report 1998	1999
Information Systems Strategy 1999	1999
Strategy Statement 1998 – 2001	1998
Guide to the Functions & Records of the Department	1998
Operational Strategy 1996	1996
Operational Strategy 1996 (key points)	1996

Table A4-6: Secondary data from Department of Agriculture and Food

Document title	Year of publication
Strategy Statement 2005 – 2007	2005
Annual Report 2004	2005
Customer Service Action Plan 2005 – 2007	2005
Annual Report 2003	2004
ICT Strategy 2004	2004
Strategy Statement 2003 – 2005	2003
Annual Report 2002	2003
Schemes and Services 2003	2003
Annual Report 2001	2002
Schemes and Services 2002	2002
Strategy Statement 2001 – 2004	2001
Annual Report 2000	2001
Schemes and Services 2001	2001
Annual Report 1999	2000
Customer Service Action Plan 2001 – 2004	2000
e-Government Strategy 2000	2000
First Annual Report on the Implementation of the Statement of Strategy (98-00)	1999
Annual Report 1998	1999
ICT Strategy 2000	1999
Future Information Architecture	1999
Strategy Statement 1998 – 2000	1998
Guide to the Functions of and Records Held by the Department	1998
Customer Service Action Plan 1998 – 2000	1997
Strategy Statement 1995 – 2000	1995
Operational Programme 1994 – 1999	1995
IT as a strategic resource in the Department of Agriculture and Food	1993

APPENDIX 5

LETTERS TO AUTHENTICATE CASE STUDIES

This appendix includes a copy of the letter sent by the key contact of each organisation in the sample with the purpose of signing-off the case and corroborating that the information included accurately describes the facts recounted in each report. In order to complete the letters, a template was sent to each key contact together with the last version of the case report; nevertheless, each individual was free to modify the template as they wish.

As noticed, the letter from case 4 – Office of the Revenue Commissioners – was signed by Mr. Liam Ryan, the new ICT and e-Business Director. In case 2, due to the unavailability of the IS manager in the last months, the letter was signed by the Assistant Director General. Finally, the letter from case 5 was not printed in official letterhead because Mr. Fred Bradley was transferred to another department; however, he signed the document because as key contact he was familiar with the case and its content.



Land Registry
Clárlann na Talún

24th February 2006

To Whom It May Concern:

I have read the case study, prepared by Mr. Jorge Diaz-Padilla as part of his Ph.D. programme, on Land Registry and the Registry of Deeds. I am in agreement with the details of the case, which accurately describe the facts and circumstances that occurred in the Office during the investigative period (June – December 2004). I recently received the final version of the case study, and have revised accordingly to permit case publication. If you have any further queries regarding same, please do not hesitate to contact me.

Sincerely,

John O'Sullivan

John O'Sullivan
Information Systems Manager
Land Registry and the Registry of Deeds

Social Welfare Services Office,
Department of Social,
and Family Affairs,
Goldsmith House
Pearse Street
Dublin 2.

Oifig na Seirbhísí Leasa Shóislaigh,
An Roinn Gnóthaí Sóisialacha,
agus Teaghlaigh,
Teach Goldsmith
Sráid An Phiarsaigh
Baile Átha Cliath 2.

☎ (01) 874 84 44 Fax (01) 673 23 89

24th March 2006

To Whom It May Concern:

I have read the case study, prepared by Mr. Jorge Diaz-Padilla as part of his Ph.D. programme, on the Department of Social and Family Affairs. I am in agreement with the overall content of the case, which accurately outlines circumstances that pertained during the investigative period (August 2004 - April 2005). I recently received the final draft of the case study, and have reviewed and suggested some further changes to permit case publication. If you have any further queries regarding same, please do not hesitate to contact me.

Sincerely,

Gerard D Daly
Assistant Director-General
Department of Social and Family Affairs

An Roinn Cumarsáide,
Mara agus Acmhainní Nádúrtha
Baile Átha Cliath 2.



Department of Communicatio
Marine and Natural Resource
Dublin 2.

20 February 2006

To Whom It May Concern:

I have read the case study, prepared by Mr. Jorge Diaz-Padilla as part of his Ph.D. programme, on the Department of Communications, Marine and Natural Resources. I am in agreement with the details of the case, which accurately describe the facts and circumstances that occurred in the Office during the investigative period (July – October 2004). I recently received the final version of the case study, and have revised accordingly to permit case publication. If you have any further queries regarding same, please do not hesitate to contact me.

Sincerely,

Liam Kidd

Liam Kidd
Principal Officer
IS Division
Department of Communications, Marine and Natural Resources

Revenue

www.revenue.ie

Office of the Revenue Commissioners
Information Communications Technology
and Electronic Business Division
Castle House
South Great George's Street
Dublin 2, Ireland

Oifig na gCoimisinéirí Ioncaim
Rannán Theicneolaíocht Chumarsáid an
Eolais agus Gnólachta Leictreonaigh
Teach an Chaisleáin
Mórshráid Sheoirse Theas
Baile Átha Cliath 2, Éire

21st February 2006

To Whom It May Concern:

I have read the case study, prepared by Mr. Jorge Diaz-Padilla as part of his Ph.D. programme, on the Office of the Revenue Commissioners. I am in agreement with the details of the case, which accurately describe the facts and circumstances that occurred in the Office during the investigative period (August – October 2004). I recently received the final version of the case study, and have revised accordingly to permit case publication. If you have any further queries regarding same, please do not hesitate to contact me.

Sincerely,

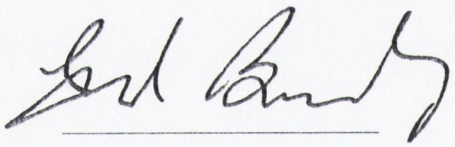
Liam Ryan
ICT and e-Business Director
Office of the Revenue Commissioners

2 May 2006

To Whom It May Concern:

I have read the case study, prepared by Mr. Jorge Diaz-Padilla as part of his Ph.D. programme, on the Department of the Environment and Local Government. I am in agreement with the details of the case, which accurately describe the facts and circumstances that occurred in the Office during the investigative period (August 2004 – May 2005). I recently received the final version of the case study, and have revised accordingly to permit case publication. If you have any further queries regarding same, please do not hesitate to contact me.

Sincerely,



Fred Bradley
Former Principal Officer (Organisation / ICT / FOI)
Department of the Environment and Local Government
Mobile 0878543626

THE DEPARTMENT OF
AGRICULTURE & FOOD
AN ROINN TALMHAÍOCHTA AGUS BIA

18 May 2006

To Whom It May Concern:

I have read the case study, prepared by Mr. Jorge Diaz-Padilla as part of his Ph.D. programme, on the Department of Agriculture and Food. I am in agreement with the details of the case, which accurately describe the facts and circumstances that occurred in the Department during the investigative period (September 2004 – April 2005). I recently received the final version of the case study, and have reviewed it to permit case publication. If you have any further queries regarding same, please do not hesitate to contact me.

Sincerely,

Philip O'Reilly
Assistant Secretary General,
Director of IT Group

APPENDIX 6

CONCEPTS EXTRACTED FROM CODIFIED DATA

Appendix 6 lists all the concepts identified after codifying raw data (at least associated with two or more statements from different sources). In total 190 different concepts separated in six groups of codes were acknowledged. These groups are: business function, business strategy, IS area, IS strategy, synchronisation of business and IS strategies, and external influences. The 3rd column of the first four tables displays an identifier to associate the concepts with the categories in Table 5.4. The last two tables do not have this code because they were not used during the formation of the theoretical framework.

Table A6-1: Concepts (business function)

Codes	Concepts	#
Business managers (role in synchronisation)	Commitment and involvement from business managers in IS issues.	A1
	Business managers show leadership and support in IS issues.	A2
	Business managers support and take ownership of IS initiatives.	A3
	Business managers understand technology and its advantages.	A4
	Involve top managers in development of IS strategies.	A5
	Business managers direct, prioritise and authorise IS projects.	A6
	Managers deal with performance issues and coordinate IS agendas.	A7
Users (role in synchronisation)	Consider users' opinions when planning IS objectives.	A8
	Query users to identify IS requirements and directions.	A9
	Users must know and understand what they need from IS.	A10
	Users contribute and take part in the development of IS strategies.	A11
	Users understand the business.	A12
	Users understand technology.	A13
	Users identify areas of IS improvement.	A14
	Involve users so policies and services will reflect their needs.	A15
	Involve users to ensure ownership of the planning process.	A16
MAC issues	MAC is responsible for developing and monitoring IS strategies.	A17
	MAC considers organisational functions and its inter-relationships.	A18
	IS Manager is a MAC member.	A19
	MAC is formed with senior managers of every area.	A20
	IS is a key issue in the MAC.	A21
	MAC uses the IS strategy to plan business functions.	A22
	MAC considers IS area when planning organisational changes.	A23
	MAC is knowledgeable about technology.	A24

Table A6-2: Concepts (business strategy)

Codes	Concepts	#
Business Strategy – Development	Involvement of staff at all levels during development of strategy statements.	B1
	Develop focus groups or a partnership process to involve staff and managers.	B2
	Each division presents their own goals, objectives and performance indicators to develop the business strategies.	B3
	Input is received from a wide range of external stakeholders when developing strategy statements (business strategies).	B4
	Top management involvement and commitment when developing strategy statements (business strategies).	B5
	Top-down and bottom-up planning when developing strategy statements (business strategies).	B6
	Analysis of how IS can enhance the organisation's processes when developing strategy statements (business strategies).	B7
	Business strategy is circulated to all staff before publication for comments.	B8
	Analysis of how IS impacts or can impact the organisation when developing strategy statements (business strategies).	B9
Business Strategy – Characteristics	Business plan dictates how the organisation will perform and what it will do.	B10
	IS business plans are written at a lower level, but are linked back to the business strategy.	B11
	Business strategy is formed with plans from all business units.	B12
	Business strategy must reflect the external environment.	B13
Business Strategy – Content	Business strategy contains a description of the IS area's projects.	B14
	Business strategy considers the influence and capabilities of IS in the organisation.	B15
	Business strategy contains the organisation's mission.	B16
	Business strategy contains an agenda for the organisation.	B17
Business Strategy – Evaluation	Yearly reviews of business plans.	B18
	Flexible strategy because business is continuously changing.	B19
	MAC constantly reviews strategy statements.	B20
Business Strategy – Reasons	Develop business strategy to lift barriers or complications.	B21
	Develop business strategy to prepare for the future.	B22
	Business strategy prioritises IS resources.	B23
Business Strategy – Requirements	Business strategy requires commitment and involvement of all staff.	B24
Organisation – Mission & objectives	Business objectives generate the IS strategy.	B25
	Business goals are fulfilled through the effective use of information systems.	B26
	Identify how IS can help achieve the business's goals.	B27
	The organisation needs a business strategy with clear goals and objectives.	B28
	All major IS expenditures and projects are linked to the business objectives.	B29
	IS objectives are synchronised with business objectives.	B30

Table A6-3: Concepts (IS area)

Codes	Concepts	#
IS manager (role in synchronisation)	IS manager has adequate and open communication channels with business managers.	C1
	IS manager promotes process innovations and enhancements to business.	C2
	IS manager works with business managers in the development of business and IS strategies.	C3
	IS manager is part of the top management team.	C4
	IS manager is involved in the running of the business and organisational change.	C5
	IS manager translates the business strategy into work for the IS area.	C6
IS Steering Committee (role in synchronisation)	Through the IS Steering Committee, new developments are promoted to the users.	C7
	IS Steering Committee is formed by top managers and operational people of each of the business areas.	C8
	IS Steering Committee is the link between the business and the IS area.	C9
	IS Steering Committee reviews IS progress and its business plans against strategy statements.	C10
	IS Steering Committee ensures that the organisation's IS strategy is implemented.	C11
	IS Steering Committee establishes budgets and funds for IS projects.	C12
	IS Steering Committee is chaired by the Secretary General.	C13
	IS Steering Committee appoints project boards.	C14
	IS Steering Committee's objective is to push technology into the business.	C15
IS Area – Mission and objectives	IS mission aims at the enhancement of business processes.	C16
	IS strategy is derived from the delivery of the IS area's vision.	C17
	IS area considers emerging technology to innovate processes.	C18
	IS people have good knowledge about the business	C19
	IS people understand business requirements.	C20
	IS people know the business strategy and its objectives.	C21
	IS area enhances projects that will support the organisation's objectives.	C22

Table A6-4: Concepts (IS strategy)

Codes	Concepts	#
IS Strategy – Reasons & Objectives	IS strategy: identifies where technology can enhance the organisation's work methods.	D1
	IS strategy: achieves the organisation's goals and objectives by aligning both strategies.	D2
	IS strategy: to know the role of IS area in organisation's operation.	D3
	IS strategy: improves the quality of customer services.	D4
	IS strategy: monitors and reviews progress in the IS area.	D5
	IS strategy: identifies emerging technologies and how it can support the business.	D6

	IS strategy: portrays a panorama of the IS area about what are their current project and objectives.	D7
	IS strategy: achieves a capable, adaptable and effective organisation.	D8
	IS strategy: implements e-government initiatives.	D9
	IS strategy: maintains and enhances the internal and external capability needed to deliver IS services.	D10
	IS strategy: to achieve a better implementation, top managers need to have understanding about its content and technology.	D11
	IS strategy: identifies resources (human and financial) required in the IS area.	D12
IS Strategy – Content	IS strategy: includes detail of the projects to be developed during the year.	D13
	IS strategy: considers emerging technologies that can be incorporated into the business.	D14
	IS strategy: considers how IS can enhance and support the organisation and its performance.	D15
	IS strategy: is based in preceding years, the present state and future objectives.	D16
	IS strategy: includes how the IS area can contribute to the business.	D17
	IS strategy: is based in the organisation's overall business plan.	D18
	IS strategy: includes a review of the current technological environment.	D19
	IS strategy: describes how innovations will be implemented in business.	D20
	IS strategy: has a particular regard to the needs of the users.	D21
	IS strategy: addresses issues regarding service quality provided to external stakeholders.	D22
	IS strategy: covers the short and long-term needs of the organisation.	D23
	IS strategy: includes a revision of the information architecture.	D24
IS Strategy – Development (how?)	To develop IS strategy: use external consultants.	D25
	To develop IS strategy: user involvement (bottom-up / requirements).	D26
	To develop IS strategy: address business plan objectives.	D27
	To develop IS strategy: linkage with business strategy.	D28
	To develop IS strategy: analysis of current systems (status).	D29
	To develop IS strategy: top management involvement.	D30
	To develop IS strategy: involvement of heads of division.	D31
	To develop IS strategy: client involvement (requirements and needs).	D32
	To develop IS strategy: analysis of information requirements in organisation.	D33
	To develop IS strategy: analyse impact of IS in the organisation.	D34
	To develop IS strategy: consider needs and involvement of IS Unit.	D35
	To develop IS strategy: engage the whole organisation.	D36
	To develop IS strategy: understanding the business.	D37
	To develop IS strategy: influence of Central Government.	D38
	To develop IS strategy: influence of the external environment.	D39
	To develop IS strategy: address organisation's vision.	D40
	To develop IS strategy: flow of operational strategy and targets.	D41

	To develop IS strategy: IS Manager incorporates requirements from business units.	D42
	To develop IS strategy: consider business plan's CSF.	D43
IS Strategy – Evaluation	IS strategy is updated and reviewed every year.	D44
	IS strategy is continuously evolving.	D45
	IS strategy progress is monitored in relation to business unit activities.	D46
IS Strategy – Characteristics	IS plan brings the goals, strategies and performance indicators of the strategy statement together down to an operational level.	D47
IS Strategy – Requirements and CSF	IS strategy has adequate board and senior management drive and support.	D48
	IS strategy needs to involve the whole organisation.	D49
	IS strategy has adequate funding.	D50
	IS strategy is properly managed and resourced.	D51

Table A6-5: Concepts (synchronisation of business and IS strategies)

Codes	Concepts
Synchronisation reasons - Advantages	A promptly reflection of changes in the environment
	Adequate funding for IS area
	An elimination of expensive and unnecessary IS developments
	An enhanced business operation
	Better prioritisation of IS projects
	Business and IS objectives closely linked to one another
	Close working relationships between business and IS managers
	Constantly innovated processes
	Continuously implemented up-to-date technologies
	Cost reduction in operations and to customers
	Efficiently realised business goals and objectives
	Higher quality of customer interaction
	Improved management of information and access to data
	Improved relationship and communication of IS area with other functions
	Increased business reputation
	Increased internal and external productivity
	IS perceived as integral elements of business strategy
	More effective work processes
	Novel and improved products and services (including e-services)
	Recognition of IS area as a modern, service-oriented business area
	Robust and flexible technical infrastructure
Synchronisation reasons - Disadvantages	An IS area that entails a considerable amount of resources
	Business unable to cope with future or unexpected situations
	Business unable to gain from IS benefits
	Considerable duplication of information
	Deficient customer services
	Disruptions to operation of business
	Failure to perform technological innovations
	Inefficient processes
	Likelihood that IS projects drive the business into a resource-wasting state

	Low confidence and trust in IS manager and IS staff
	Tight controls over IS area
Synchronisation – How	Analyse how technology can help, support and enhance the organisation's goals and outcomes.
	Analyse how things are actually done in the organisation (including outcomes).
	Analyse the organisation's goals and objectives.
	Constantly evaluate emerging technologies and how it can benefit the business operations.
	Do bottom-up consultations with users and non-technical areas.
	Educate the organisation about capabilities and possibilities of IS and business.
	Establish an IS Steering Group to ensure that the IS function and strategy support the business objectives.
	Have a detailed and itemised plan when incorporating technology.
	Incorporate the IS manager to the top management team.
	Inform users of advances in IS and work changes.
	Translate the business strategy into itemised steps or projects that the IS area can follow.
Synchronisation – CSF	A continuing commitment of top managers to strategic planning is essential.
	It is essential that the necessary funding is available.

Table A6-6: Concepts (external influences)

Codes	Concepts
Consultants (influence to synchronisation)	Advantage: consultants can achieve the work quicker.
	Advantage: consultants can give an external opinion of the company situation.
	Consultants are hired because companies do not have the necessary IS expertise.
	Consultants are hired due to staff shortages.
	Consultants are hired to facilitate process of IS strategy formulation
	Consultants must closely work with the internal staff.
	Disadvantage: companies can become too dependant on consultants.
	Disadvantage: consultants can be expensive.
	Disadvantage: consultants generally do not understand the business.
e-Government issues (influence in synchronisation)	Central Government might stipulate how the services will be provided on-line.
	e-Government enhances the way services are provided to public.
	e-Government involves the use of IS in the business and its transformation.
	e-Government causes changes in the Government processes.
Public Sector (influence to synchronisation)	A different approach to incorporate IS issues is needed in the public sector.
	Generally the public sector lacks IS knowledge and is not visionary.
	In the public sector, IT tasks are more difficult to carry out and take longer.
	Strategic planning concepts are needed in the public sector.
	The public sector lacks business competitive forces when driving IT.

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