An Analysis of Small-scale Entrepreneurs in the Irish Plastics Industry*

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I INTRODUCTION

An often advanced case for modern small-scale enterprises runs in terms of their contribution to the development of entrepreneurship. Given that the Irish plastics industry is basically a small-scale activity (Ahmed, 1976) and that entrepreneurial development forms the cornerstone of the IDA policy for small-industry promotion, this paper evaluates the contribution of the Irish plastics industry to the development of industrial entrepreneurship in Ireland. The paper introduces a set of hypotheses that influence the supply of industrial entrepreneurship in the developing countries, and these are empirically tested in the light of the available data.

The paper is organised as follows: Section II provides an operational definition of the entrepreneur and outlines the determinants of the supply of industrial entrepreneurship. An analysis of the social profile of the Irish entrepreneurs including their occupational origins, social mobility and age and level of education is presented in Section III. Section IV gives an assessment of the performance of the Irish entrepreneurs in terms of various intra-organisational factors, and the concluding section summarises the results and discusses implications of the major findings.

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The analysis is based on information gathered from questionnaires and interviews with 39 executives in the Irish plastics industry.\(^1\) The number of firms included in the sample is slightly below one-quarter of the total of 160 firms comprising the Irish plastics industry in 1973. The size distribution of the sample firms is given in Column 5, Table 1. The small firms (those employing less than 50 people) represent more than two-thirds of the total sample. Although the sample comprises foreign subsidiaries as well as associates, all but two of the firms are managed by Irish nationals. The paper therefore provides a profile of the Irish entrepreneurs in the plastics industry.

II DETERMINANTS OF THE SUPPLY OF ENTREPRENEURSHIP

1. AN OPERATIONAL DEFINITION OF THE ENTREPRENEUR

Entrepreneurship is increasingly emphasised as the key determinant of growth. Papanek (1962, p. 46) treats it as a “Key component”, Hirschman (1958, p. 7) regards it as the “missing components” and to Libenstein (1968, p. 75) the entrepreneur is the “input completer”. Despite all this recognition of its importance in the growth process, the term entrepreneur itself is a vaguely understood concept. Definitions and descriptions of the term abound.\(^2\)

Schumpeter (1934, pp. 63-66) regarded innovation or “The carrying out of new combinations comprising introduction of a new good, a new method, opening of a new market, a new source of supply and new organisation of industry” to be the sole function of the entrepreneur. Others assign him a much wider responsibility, that of perception and exploitation of economic opportunities. These tasks may be performed by a single individual in a small firm where the entrepreneur-manager performs all the following functions: (a) risk management and handling of economic uncertainty, (b) planning and innovation, (c) co-ordination, administration and control and (d) routine supervision. Often he is also the founder of the enterprise (see Section III). In the present study, an entrepreneur is thus broadly defined as a person (or a group of persons in case of joint-ownership and partnership) responsible for establishing and maintaining the market viability, including the organisation and routine management, of a manufacturing enterprise.

1. The respondents interviewed were the owner-managers in case of individual ownerships, and managing directors (chief executives); in other cases those who had financial stakes in the firm and had power to make decisions for, and on behalf of, the firm. For a discussion of the methodology of the survey see the Appendix in Ahmed (1976, pp. 19-20).

2. One of the most comprehensive sources dealing with various possible definitions of the concept is Bhambri (1962, pp. 401-423).
In the developing countries, persons who start an industrial enterprise on a small-scale, generally fill a known gap in the production chain. They are engaged primarily in imitation and adaptation (of the products and processes developed in the developed countries) rather than in radical innovative activity of the strict Schumpeterian type. Nevertheless, as Derossi (1971, p. 140) has noted, this does not diminish the scope and importance of the entrepreneurial role in the developing countries. Though innovation here may not be radical, it requires more than imaginative prediction to appreciate the virtues of alien innovations and considerable courage to venture upon the risk of importing them.

Table 1: Types of entrepreneurs in the sample firms by size

<table>
<thead>
<tr>
<th>Size groups</th>
<th>Owner-managers</th>
<th>Co-directors/founders with equity</th>
<th>Others</th>
<th>Total No. of firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 19</td>
<td>12</td>
<td>1</td>
<td></td>
<td>13</td>
</tr>
<tr>
<td>20 to 49</td>
<td>10</td>
<td>4</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>50 and more</td>
<td>1</td>
<td>6</td>
<td>4</td>
<td>11</td>
</tr>
<tr>
<td>Total Sample</td>
<td>23</td>
<td>11</td>
<td>5</td>
<td>39</td>
</tr>
</tbody>
</table>

Source: Based on Personal Interviews.

Given the above definition of the entrepreneur, we now turn to identifying him in reference to our sample. As Column 2 of Table 1 shows, 23 out of the 39 sample firms are owner-managed. In all of them the owner is also the founder of the firm. In eleven firms (Col. 3) the chief executive is either a co-founder or a co-director and has a major share in the equity capital of the firm. The chief executives who are co-directors with equity participation (mainly in the foreign subsidiaries or associates) also perform important entrepreneurial functions of financial risk-taking and management.

The chief executives in the remaining five cases (Col. 4) are only salaried managers. However, they may also be regarded as entrepreneurs in the sense that they participate in strategic decision-making. Mere launching of an enterprise is not enough. The challenge is also in keeping the venture alive through efficient planning and administration. The manager who is entrusted with this responsibility of investment planning and decision-making also performs an important entrepreneurial function especially in Ireland where managerial skills are a key bottleneck. Accordingly, research in the present exercise is focused not only on the owner-managers but also on the hired salaried executives.
2. Determinants of Entrepreneurial Supply

The study of entrepreneurship belongs not only to economics but also to the allied disciplines of sociology, history and psychology. Socio-psychological factors may influence entrepreneurial behaviour as much as economic factors. In fact, the literature on entrepreneurship is rich in socio-psychological theories and rife with arguments about the relative merits of economic and socio-psychological factors in explaining the growth of entrepreneurship. A discussion of all these theories is beyond the purview of this paper. A few of the major propositions discussed below will be empirically tested in the context of the Irish plastics industry.

(i) Economic Opportunity

Socio-psychological factors may be important determinants of entrepreneurial supply. But the prevalence of at least a minimum of economic opportunities can be regarded as the primum mobile of entrepreneurial development. It is growth in incomes that open up new vistas for industrial entrepreneurship, ease information bottlenecks and aid decision-making. In the developing countries, however, such economic opportunities may have to be exogenously created unlike in the developed countries where they are largely endogenous.

In the newly developing countries, state planning and participation has been instrumental in fostering industrialisation and providing an environment for risk-taking. The government’s emphasis on economic development creates favourable cultural and social values endorsing entrepreneurial activity. Further, it encourages the entrepreneur to believe that he is making an important contribution to the welfare of the society through participating in the development process.

The development of industrial entrepreneurship in Ireland has in no way been an exception to the pattern described above. Reliance on the domestic market for economic expansion was the major thread of Irish economic policy for about 25 years. Beginning from the early 1930s until 1958 an elaborate system of tariffs and quotas was applied to Irish industry and agriculture (Farley (1972/73), Ryan (1948/49) and McAleese (1971). From the mid-1950s to date, promotion of exports through encouraging foreign private investment became the thrust of new outward-looking policy. Accordingly

3. For a succinct discussion of these theories see, Alexander, (1966/67) and Kilby (1971).

a range of promotional incentives (for example, tax relief on manufactured exports, generous depreciation allowances and an elaborate system of capital grants) rated to be the best in Europe have been deployed to attract export oriented foreign enterprises into the country.

(ii) Economic-Occupational Structure

The supply of industrial entrepreneurship may be influenced by a country's economic-occupational structure. Some occupational groups generate more industrialists and others less, relative to their respective sizes in the total working population of the country. For instance, case studies from Turkey (A. P. Alexander, 1959/60), Greece (A. C. Alexander, 1965/66), Pakistan (Papanek, 1962) and El-Salvador (A. T. Robert, 1968) demonstrate the overwhelming importance of the former merchants as the largest single group supplying industrial entrepreneurs.

In each case, nearly 40 to 50 per cent of the industrialists happened to be former merchants before their entry into industry. Thus the large influx of entrepreneurs from the merchant class is explained by their easy access to sources of finance and business information. Being in business they are also sensitive to market incentives and are used to taking risks.

(iii) Social Approval

The importance of non-economic factors as determinants of entrepreneurial supply is generally explained in terms of various socio-psychological models. The main theme of the sociological model (or the theory of social action) is that social recognition of the entrepreneurial activity is a necessary and sufficient condition for its successful exercise. According to the theory, entry into the entrepreneurial group is an act of social mobility which depends not only on values and attitudes but also on facilitating mechanisms. One hypothesis for Ireland is that approval is given but social, as distinct from economic, facilitating mechanisms are in short supply (Cf. M. P. Fogarty, 1973, p. 30).

In sum, to the economist, the principal determinants of entrepreneurial endeavour are the market incentives. But to the sociologist, the economic incentives are only a part of the large system of sanctions based on the society's value orientation and status hierarchy. Depending on the avail-

5. The growth of entrepreneurship in the late 19th Century Russia despite a hostile social environment (i.e., the hatred of the nobility and the gentry towards industrial entrepreneurship) is cited by Alexander Greshenkron as a significant exception to the theory. See, for details, Alexander Greshenkron, "Social Attitudes, Entrepreneurship and Economic Development", Explorations in Entrepreneurial History, 2nd Series, Oct. 1953, pp. 1-15.
ability of data, the degree of responsiveness of the sample entrepreneurs to such factors is explored in relevant sections of the paper.

III A SOCIAL PROFILE OF THE IRISH ENTREPRENEURS

1. OCCUPATIONAL ORIGINS AND SOCIAL MOBILITY

Occupational mobility in response to opportunities is an important determinant of entrepreneurial development. To what extent is this true for the entrepreneurs in the Irish plastics industry? From what occupational background do they come? How much intergenerational occupational mobility is there among the entrepreneurs? Is social class origin an important determinant of entrepreneurial supply? These questions are examined below.

Table 2 shows the different occupations in which the entrepreneurs were engaged preceding their entry into the plastics industry. Unless specified, the terms “Irish entrepreneurs” and “entrepreneurs in the Irish plastics industry” are used synonymously. The table shows that second generation industrialists such as ex-proprietors and ex-employees in industry account for nearly 80 per cent of the total sample. Small traders (mainly shop-keepers), professional men and civil servants make up the rest with none from the farming community. The prominence of the groups with experience in industry and trade either as ex-proprietors or ex-employees as suppliers of industrialists is not surprising. This can be explained by the difference in the entrepreneurs’ financial capacities, marketing abilities and entrepreneurial competence in terms of the possession of technical knowledge and skills. Those who have experience as business proprietors particularly in manufacturing and commerce will be more sensitive to market incentives and used to risk-taking. Through their business experience they have at least some capital and are relatively more familiar with sources of credit.

Given the general occupational structure of Ireland, however, (slightly below one-quarter of the total labour force being dependent on agriculture in 1973) the failure of agriculture to supply even a single industrialist in the sample needs explanation. The most plausible explanation might be that people with a farming background are more likely to enter traditional industries where technology is fairly elementary, capital costs relatively low and risks moderate. On the contrary, plastics, as a technically oriented industry, attracted individuals with previous experience in industry and trade who are receptive to new ideas and better equipped to handle complex technology.

6. This is also supported by J. Boswell’s study in Britain where he found men of humble origin to enter businesses involving lower technological and capital requirements. Cf. J. Boswell, The Rise and Decline of Small Firms, London, George Allen and Unwin, 1972, chapter 3.
The foregoing analysis demonstrates a moderate degree of individual occupational mobility of the Irish entrepreneurs. However, entry into industrial entrepreneurship is also a function of intergenerational occupational mobility. Father’s occupation affects entrepreneur’s activities in several ways, in providing business contacts and accumulating funds for investment. The intergenerational occupational mobility of the Irish entrepreneurs is also illustrated in Table 2 which compares the occupational backgrounds of the fathers with the occupational backgrounds of the sons preceding the latters’ entry into the plastics industry. Two important observations can be made from the table. First, the occupational background of the fathers are more varied than those of their sons. Nearly one-fourth of the fathers were themselves industrialists. However, including the ex-employees (who worked mostly as executives in industry) the proportion of fathers with industrial background comes to be nearly one-third of the total number of fathers. Thus the proportion of fathers with industrial background exceeds the proportion having a professional background. Next in importance were traders, whilst fathers with civil service and farming backgrounds were of equal importance.

Table 2: Comparison of the occupational backgrounds of the Irish entrepreneurs and their fathers

<table>
<thead>
<tr>
<th>Occupations</th>
<th>(2) Distribution of the fathers in each occupation</th>
<th>(3) Distribution of the sons in each occupation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>Industrialist</td>
<td>9</td>
<td>23.08%</td>
</tr>
<tr>
<td>Ex-employees (in industry)</td>
<td>2</td>
<td>5.13%</td>
</tr>
<tr>
<td>Professional men</td>
<td>10</td>
<td>25.64%</td>
</tr>
<tr>
<td>Trader/shopkeeper</td>
<td>6</td>
<td>15.38%</td>
</tr>
<tr>
<td>Civil servant</td>
<td>5</td>
<td>12.82%</td>
</tr>
<tr>
<td>Farmers</td>
<td>5</td>
<td>12.82%</td>
</tr>
<tr>
<td>Not ascertained</td>
<td>2</td>
<td>5.13%</td>
</tr>
</tbody>
</table>

Total 39 100 39 100

Source: Author’s survey.

Second, when the fathers’ occupations are compared with those of their sons prior to their entry into the plastics industry, a marked intergenerational occupational mobility is seen. For example, in the course of transition from the fathers’ generation to that of their sons, the proportion of industrialists and industrial employees among the sons increases and that of other occupa-
tions decreases. While the decrease in the case of the professions and civil service is significant, there is a complete break with the farming background. This shift in the occupational movement of the sons from agriculture to industry manifests a remarkable intergenerational occupational mobility of the Irish entrepreneurs.

How much of this occupational mobility can be attributed to social factors (social approval or disapproval) or economic incentives? Though a definite answer is not possible there is some evidence in support of the conclusion that economic incentives rather than social factors have exercised a greater influence.

The first concerns the historical development of the Irish plastics conversion industry. Out of the 160 firms comprising the industry in 1973 only 20 were involved in plastics processing prior to 1950 (see, for example, McNamara and Sainsbury (1969)). The rest came into existence largely in the 1950s and 1960s when protection was withdrawn and new markets became available to the Irish industry. This is also true for the sample firms. While the foundation of only four (10.3 per cent) of the sample firms dates back prior to 1950, nearly three-quarters (74.3 per cent) came into existence in the 1950s and 1960s when the development of modern technically oriented industries like plastics became an avowed objective of the new industrial policy. Besides the availability of generous fiscal and financial incentives, the Irish plastics processors also benefited from the duty free imports of plastics materials at internationally competitive prices (PIA 1974, p. 14). The wide acceptance of plastics by Irish people for a variety of uses is noted by Gallen (1974, p. 8) as another contributory factor to the high growth of the Irish plastics industry.

Thus while the economic incentives and market opportunities appear as the relatively more important determinants of entrepreneurial supply in the Irish plastics industry, the influence of social factors cannot, however, be completely ruled out. For example, the spirit of nationalism and the urge to create a national industrial elite (especially in the early 1930s) must also have had some influence on the development of industrial entrepreneurship through creating a favourable social environment.

Intimately related, but not identical, to occupational mobility is the status mobility of the entrepreneurs. The intergenerational occupational mobility of the entrepreneurs illustrated in Table 2 can also be interpreted as a vertical mobility in terms of movement from "lower" to "higher" status activities. A rough index of social status can be constructed using father's occupation as an indicator of the entrepreneur's class origin. For example, assuming the industrialists and industrial employees with executive ranks as "upper class" in status, professional men, traders and civil servants as the "middle" and
farmers as the "lower" social group, some light can be thrown on the pattern of social mobility of the sample entrepreneurs. This is done through a comparison of the entrepreneur's social status (based on occupation) with that of his father's (Table 3).

Table 3: Comparison of the entrepreneurs' social status with that of their fathers

<table>
<thead>
<tr>
<th>Social status</th>
<th>Entrepreneurs</th>
<th>Fathers</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>Upper Class</td>
<td>31</td>
<td>79.5</td>
<td>11</td>
</tr>
<tr>
<td>Middle Class</td>
<td>8</td>
<td>20.5</td>
<td>21</td>
</tr>
<tr>
<td>Lower Class</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>Total</td>
<td>39</td>
<td>100</td>
<td>37*</td>
</tr>
</tbody>
</table>

*Total of less than 39 results from two non responses in fathers' occupations.

Source: Author's survey.

Two important points can be made from the figures in Table 3. First, judged by their fathers' social status the Irish entrepreneurs may be adjudged privileged. Placed on any commonly used socio-economic scales, they can be considered upper class in occupational background. Second, when compared with their fathers' social status, the Irish entrepreneurs demonstrate considerable mobility in terms of social status. While nearly 80 per cent of the sons belong to the upper class compared with only 29 per cent of the fathers none of the entrepreneurs belong to the lower class. This suggests that entrepreneurial activity is an important means of moving up the social ladder. This also implies that social status is not dependent upon family position or traditional occupation but on achievement through entrepreneurial endeavour rather than through ascription where individuals acquire social status by birth and not by performance.

The occupational origin and the individual and intergenerational occupational mobility exhibited by the entrepreneurs in the Irish plastics industry have much in common with those of their counterparts both in Ireland and elsewhere. Barron and Egan (1968, pp. 41-42), for example, found that the

majority of the 37 entrepreneurs (representing a wide spectrum of Irish industry) they investigated came from an upper-middle to upper class background. The three main occupational groups from which the industrial entrepreneurs were recruited in Lebanon (Saigh 1962, chapter 4), Pakistan (Papanek 1971), Latin America (Cardoso 1967), Nigeria (J. Harris, 1971, pp. 331-355) and Kenya (Marris and Somerset, 1971) were the former traders, industrialists and industrial executives and the craftsmen. However, compared with the traders in these countries the former industrialists formed the overwhelming majority in our sample. In terms of social mobility also, the Irish case fits broadly with that found in Greece (Alexander, 1965-66, pp. 106-109) and the Philippines (Carroll, 1965, pp. 97-98). For example, Carroll (1965) found that compared with only 20 per cent of the grandfathers and 36 per cent of the fathers, 98 per cent of the Filipino entrepreneurs belonged to the upper social class and 20 per cent to the middle class, with none from the lower class. 

2. Age, Qualification and Experience

Many studies suggest that there is a significant association between personal traits such as age, education and work experience and the capacity to become an entrepreneur. While S. Watanabee (1970, p. 539) suggests the individual’s entrepreneurial debut to be concentrated in their twenties and thirties, John Deeks (1972, pp. 127-149) and Gorman et al. (1973, pp. 43-60) postulate a relationship between entrepreneur’s age, size of firm, level of education and his job mobility. We turn to examine some of these propositions in the context of our sample.

(i) Age distribution

Table 4 shows the percentage of entrepreneurs falling in different age groups for each size of the sample firms. It can be observed from the last row of the table that more than 40 per cent of the sample entrepreneurs are in the 41-49 years age group. The proportion in the 31-40 years age group is higher than that in the group under 30 as well as in the group 50 and above. When the two middle-age groups (31-40 and 40-49) are combined, more than two-thirds of the entrepreneurs are found to be concentrated in their thirties and forties. This is broadly representative of the overall age distribution pattern found by Gorman and his colleagues (1973, p. 44) in Irish industry in 1973.

8. This higher social status of the industrial entrepreneurs found in Ireland and elsewhere tends to corroborate Lipman’s comment that the proportion of industrial leaders emerging from the lower social class always tends to be low. Cf. Lipman, “Social Background of the Bogota Entrepreneurs,” Journal of Inter-American Studies, Vol. 7, 1965, pp. 233-234.
Are the ages of the entrepreneurs influenced by the size of firms to which they belong? The figures in Table 4 suggest that they are not. The proportion of the entrepreneurs in different age groups does not exhibit any systematic variation with increase or decrease in the size of firms. This was further confirmed by the results obtained from a chi-square test (the chi-square value of 1.685 not being significant at the 0.05 per cent level) of the difference between the number of entrepreneurs in the large and small firms belonging to age groups below and above 50 years.

Another interesting feature of Table 4 is the concentration of the relatively older entrepreneurs (50 and over) in the smallest size group. This (despite the highest concentration of family firms, i.e., 9 out of 16 in the total sample in this group) casts doubt on the general belief that succession of family members to managerial responsibility results in a higher proportion of younger executives in the small family firms.

(ii) Education

The level of education of the entrepreneur is considered as another crucial determinant of entrepreneurial performance. Most studies on entrepreneurship in developing countries have found that the entrepreneur is one of the highly educated members of his community. ⁹

Whether education is a random variable or has bearing on the supply and performance of the Irish entrepreneurs is now examined in terms of our

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9. To the author's knowledge, the only exception is reported by G. Papanek (1971, p. 238) for Pakistan where the entrepreneurs were largely drawn from the merchant capitalists with little education. While more than 70 per cent had never been to university, only one-third had primary education.
sample. The last row of Table 5 shows the percentage distribution of the sample entrepreneurs according to their level of education. While nearly half of the entrepreneurs had a university degree, more than one-third had certain professional or technical qualifications (including three cases completing secondary school) in the form of a training received or course taken. Of those who had a university degree (graduation in all cases) 47 per cent had graduated in physics, chemistry and engineering subjects, 23 per cent in business and accounting and the rest in various other subjects including economics and law. Among the professionally qualified entrepreneurs, tool-makers, mechanics and designers formed the dominant groups. As explained below the relatively large weight of the science graduates among the degree holders in the sample may be an outcome of the higher technical orientation of plastics compared to other industries.

When the two groups of entrepreneurs (i.e., entrepreneurs with formal qualification and those with professional qualifications) are combined, the proportion with some form of qualification comprises more than 80 per cent of the total sample. The remaining 17 per cent who had no formal or professional qualification is broadly classified as “unqualified”. These results suggest two things. First, the majority of entrepreneurs in the Irish plastics industry have a formal rather than a trade or craft qualification. Second, they have, in general, a higher educational background compared to their counterparts in Irish industry as a whole. The proportion of qualified chief executives in the transportable goods industry in Ireland in 1973 was 56 per cent (Gorman et al., 1973) compared to 82 per cent in our sample. As noted by D. C. Clark and T. M. Masson (1968), this difference in the educational background of the sample entrepreneurs and their counterparts in Irish industry may, in part, be the outcome of higher technical sophistication of plastics compared to other industries. In fact, comparing the educational background of the executives of different industries in the UK, Clark and Masson also found that the managers of modern science based industries (i.e., chemicals) usually have higher educational backgrounds than their counterparts in the traditional industries such as textiles.

Is education of more importance for the large and more complex firms? Do more highly educated entrepreneurs perform better than the less educated entrepreneurs?

Table 5 presents a cross classification between the entrepreneurs’ level of education and size of firms. The results obtained from the table suggest an

10. The use of the term “unqualified” is not intended to suggest that only those with some qualification are able to perform entrepreneurial functions. The value of on-the-job experience is also regarded as an important factor in the development of entrepreneurial talents.
Table 5: Distribution of the entrepreneurs with different level of education by size of firms

<table>
<thead>
<tr>
<th>Size groups</th>
<th>Level of Education</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Degree</td>
<td>Training or course</td>
<td>None</td>
<td>Total</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
<td>No.</td>
<td>%</td>
</tr>
<tr>
<td>1 to 19 Empls.</td>
<td>1</td>
<td>7-7</td>
<td>8</td>
<td>61-5</td>
<td>4</td>
<td>30-8</td>
</tr>
<tr>
<td>20 to 49 Empls.</td>
<td>9</td>
<td>60-0</td>
<td>4</td>
<td>26-7</td>
<td>2</td>
<td>13-3</td>
</tr>
<tr>
<td>50 and over Empls.</td>
<td>7</td>
<td>63-6</td>
<td>3</td>
<td>27-3</td>
<td>1</td>
<td>9-1</td>
</tr>
<tr>
<td><strong>Column total as % of Sample total</strong></td>
<td><strong>17</strong></td>
<td><strong>43-6</strong></td>
<td><strong>15</strong></td>
<td><strong>38-5</strong></td>
<td><strong>7</strong></td>
<td><strong>17-9</strong></td>
</tr>
</tbody>
</table>

Source: As Table 4.

overall positive association between level of education and size of the sample firms. While the proportion of entrepreneurs with a degree increases, with increase in firm size, those with no qualifications decrease. Regrouping the data in Table 5 in the form of a three-by-three contingency table, the chi-square value ($X^2 = 10 \cdot 371$) of the degree of association between size of firms and the entrepreneur’s level of education was found to be statistically significant at the 0-05 per cent level. This confirms that the more qualified entrepreneurs tend to be in relatively large firms. In contrast, the age of the entrepreneurs was found to be a random variable with no positive association between age and firm size. Thus if size of firms is used as a measure of success this indicates entrepreneurial performance to be independent of the age of the entrepreneurs.

However, the analytical value of this result as a measure of entrepreneurial success is limited. An ideal measure for the purpose would be the growth of output and/or profitability of the firms. Due to lack of data on profits the rate of growth of gross output has been used as an index of entrepreneurial performance for 24 of the 39 sample firms which gave output data for a series of years.

The method adopted is that annual rate of growth of output has been calculated first for each firm for the period 1965-73. Then the estimated average (20 per cent) of these growth rates was used as an index of success. Firms achieving annual average growth rates of 20 per cent and above were

11. Though James Berna used growth in equity capital and labour inputs as measures of firm (or entrepreneurial) success, this has little or no meaning unless a fixed input-output coefficient is assumed. Nevertheless, such assumption will create further difficulties in that this will rule out the effect of entrepreneurial functions on the growth of output. Cf. J. J. Berna, *Industrial Entrepreneurship in Madras State, 1960*. Bombay. Asia Publishing House.
classified as more successful and those with below 20 per cent were classified as less successful. The entrepreneurs of all 24 firms who had either a degree or professional qualifications were categorised into two broad groups. Those with university degrees were categorised as more qualified (more educated) and those with professional qualifications as less qualified (less educated). Table 6 illustrates the degree of association between level of education and the entrepreneurs’ success. As the results indicate, the relationship between higher educational background and growth is not confirmed. The chi-square value of the difference between the number of more and less successful entrepreneurs with higher and lower qualifications is not statistically significant at the 0·05 per cent level.

Table 6: Association between level of education and entrepreneurs’ success

<table>
<thead>
<tr>
<th>Level of education</th>
<th>More successful entrepreneurs</th>
<th>No. of less successful entrepreneurs</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>More Qualified</td>
<td>9</td>
<td>2</td>
<td>11</td>
</tr>
<tr>
<td>Less Qualified</td>
<td>6</td>
<td>7</td>
<td>13</td>
</tr>
<tr>
<td>Total</td>
<td>15</td>
<td>9</td>
<td>24</td>
</tr>
</tbody>
</table>

\[ \chi^2 = 1.881; \text{ df.} = 1. \]

IV ASSESSMENT OF ENTREPRENEURAL PERFORMANCE

The backgrounds and careers of the Irish entrepreneurs have been discussed up to the point of founding their enterprises. But the formation of adequate numbers of enterprises is not enough for the development of a country. The entrepreneurial sub-functions such as management, capital provision and technical innovation are as important as the formation of an enterprise. The ability of the Irish entrepreneurs to perform these functions must, therefore, be assessed.

To identify the important areas of responsibility of an entrepreneur apart from the enterprise formation, the respondents were asked what functions/qualities would they regard essential for efficiently running an enterprise. The replies received from the questionnaires and interviews are presented (in order of priority) in Table 7. As the figures suggest, nearly 60 per cent of the respondents assigned first priority to management followed by technical skills and financial support to be the main responsibilities of a businessman.
Table 7: Distribution of the entrepreneurs by what they regard to be their main functional responsibilities/qualities after the formation of their enterprise

<table>
<thead>
<tr>
<th>Main functional areas</th>
<th>No. of Replies in order of priority</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1st Priority</td>
</tr>
<tr>
<td>Management</td>
<td>No.</td>
</tr>
<tr>
<td>Technical improvement</td>
<td>22</td>
</tr>
<tr>
<td>Financial support</td>
<td>10</td>
</tr>
<tr>
<td>Higher education</td>
<td>3</td>
</tr>
<tr>
<td>Family background</td>
<td>2</td>
</tr>
<tr>
<td>Political connections</td>
<td>1</td>
</tr>
<tr>
<td>Totals</td>
<td>-</td>
</tr>
</tbody>
</table>

Totals (do not add up to 100 because some entrepreneurs thought family background and political connection to be irrelevant for business success while others put equal priority to management and technical skills).

Source: Author’s survey.

The least mentioned qualities were education and family background with none emphasising the need for political support as a necessary prerequisite. In the second and third priority lists, the majority emphasised financial support followed by technical expertise and management skills. Efficient management, technical innovation and provision for finance are thus invariably identified by the entrepreneurs to be their key functional areas. We now turn to assessing the ability of the Irish entrepreneurs in performing these functions.

1. MANAGEMENT

Judged by the number of managers, the size of management team in most of the survey firms was found to be relatively small. For example, in more than two-thirds (66-7 per cent) of the survey firms (employing less than 50 persons) the number of managers was two or three and over 40 per cent of them had only one manager—the chief executive or the owner-manager himself. The size of management team of a firm must reflect the division of management function practiced by it. With increase in the firm size, greater specialisation of this function and a deepening of hierarchical levels are expected to occur. As Table 8 shows, this was found to be true for the same firms. While some of the management functions (finance, purchasing, personnel and research) are totally non-existent in the small firms, there are specialists in every branch in the large size group. This clearly indicates that

12. A manager is defined here as one who bears the responsibility to plan, organise and control the activities of the firm.
Table 8: Functional division of management in the sample firms

<table>
<thead>
<tr>
<th>Management functions</th>
<th>1 to 19</th>
<th>20 to 49</th>
<th>50 and more</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>%</td>
<td>No.</td>
</tr>
<tr>
<td>General management</td>
<td>12</td>
<td>92.3</td>
<td>9</td>
</tr>
<tr>
<td>Production and works</td>
<td>1</td>
<td>7.7</td>
<td>5</td>
</tr>
<tr>
<td>Sales and marketing</td>
<td>1</td>
<td>7.7</td>
<td>7</td>
</tr>
<tr>
<td>Finance and accounting</td>
<td>—</td>
<td>—</td>
<td>1</td>
</tr>
<tr>
<td>Personnel and training</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Purchasing and distribution</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Others (R &amp; D)</td>
<td>—</td>
<td>—</td>
<td>—</td>
</tr>
</tbody>
</table>

Totals (do not add up to 100 because at least one firm in each size group had more than one manager).

Source: Author's survey.

the small firms do not hire professional managers and only one general manager performs all the management functions. The respondents of such firms were asked whether they encountered any management problems for this reason.

Of the 22 firms with only one or less than three managers only nine stated they had no problems. The rest mentioned problems of excessive work loads, lack of opportunities for specialisation, supervision and delegation. Thus the dilemma of these owner-managed firms appears to be that the owner has got to be his own expert in most things but has rarely any time to do each job as thoroughly as he would wish.

The problem is further aggravated by the fact that very few of the owner-managers have any training in management. The proportion of respondents attending some management training courses (mostly day courses) was 39.3 per cent in the small firms compared to 90 per cent in the large firms. What was more interesting, most of the respondents (except three owner-managers) seriously felt the need to improve their management skills through training. But the numbers actually going for training (11) and those strongly emphasising the need for it (25) did not match. This suggests that the need for training is only perceived rather than implemented by the small firms.

There are at least two reasons why the owner-managers may not hire professional managers. The first is their limited financial resources combined with an inelastic supply of such managers in Ireland; the second is related to his personality. As is well known, he has often an authoritarian personality and is adverse to sharing responsibilities. An important reason for going into business often cited by the small entrepreneurs is to become independent
(see latter section for evidence). This is reflected in his characteristic reluctance to use outside professional advice even when he needs it most.

To find out what the entrepreneur does about delegating authority the respondents were asked, who takes charge of the business in their absence on business trips. The answers were so varied that they could hardly be categorised. However, the general impression was that delegation is an *ad hoc* decision when such a problem arises. While in most cases the supervisor or the foreman is deputised to take charge of production on the factory floor, in some cases the owner delegates entire authority to his wife (mostly a co-director of the company) to maintain the accounts and keep “a general watch on things.” One of the owner-managers stated, “In my absence, there is no one to fix up things and every decision is delayed till I come back.”

What are the implications of such attitudes towards power sharing? Besides their reluctance to professional managers, the characteristic independence and mistrust of the owner-managers also inhibits them from using the services of the professional consultants or any trade association for advice. While only 25 per cent of the small firms in the sample ever used an outside management consultant, less than half were found to be the members of various trade associations like PIA and CII. The proportion of the large firms using such services were respectively 81.8 and 90 per cent.\(^\text{13}\) High costs, low standards and suspicion about the professional consultants were cited by the small firms as the main reasons for not using them.

The foregoing suggests that though the use of an outside professional manager may often be desirable, many of the small owner-managers are not likely to do so even when they can afford it. This can become a problem and may limit further growth of the small firms when internal re-organisation, especially decentralisation of authority becomes necessary. Berna (1960, pp. 148-149) identified such firms in his sample as having discontinuous growth because of the lack of division of managerial labour at a time when it was necessary for sustained growth.

2. TECHNOLOGICAL CHANGE AND RESEARCH

Product and process obsolescence being relatively high in plastics com-
pared to other industries, the competitive survival of the firms depends on the maintenance of a high technical standard.

The most frequently used index of technological progressiveness is the size of Research and Development (R & D) activity. A rough idea of the technological efforts (based on subjective information rather than R & D expenditure) made by the sample firms is provided by the figures in Table 9. Subject to the limitations of the data, several observations can be made from the table. On the whole, nearly one-third (30.8 per cent) of the sample firms carry out research by themselves and one-third (33.3 per cent) use research facilities either from their parent or associate firms14 or from the IIRS. As the figures suggest, in all but one case, research is an informal or non-routine activity carried mostly by a chemist, the product development officer or by the owner-manager himself on the factory floor. The proportion of firms carrying out informal technical activities is nearly 60 per cent in the small size group compared to 28 per cent in the large firms. This probably leads to a bias against the former when inter-firm comparisons of relative R & D intensity is made by using official data on R & D spending. Such data excludes the self-financed R & D by the very small firms as covered by our sample.

Another feature of the table is that the proportion of firms carrying out some form of research (formal or informal) increases with increase in the firm size. This suggests that research intensity is a function of size in the sample firms. However, due to the nature of data analysed, any conclusive

14. The degree of association between Irish plastics interests and companies abroad in the sample firms is considered in Ahmed (1976).
judgement on the relationship between firm size and research intensity is to be reserved. Further, such judgement must also be reserved given the fact that existing evidence on the positive association between size and research intensity of firms is largely inconclusive (see for a survey of evidence on the subject, Kennedy and Thirwell, 1972, pp. 50-55).

It is shown later in this section that basic research in the R & D laboratory was non-existent in all but one of the sample firms. However, most firms improved the existing products and processes and introduced new ones. Given the small size of the survey firms (over 70 per cent employing less than 50 people) the absence of formalised research is not surprising. Besides smallness in size and lack of funds, most respondents also pointed out that undertaking basic research on their own would mean duplication of R & D efforts which are made primarily by the machinery manufacturers and raw material suppliers for the processors. Indeed, as existing evidence suggests, R & D by the plastics conversion industry itself has not been a significant determinant of the industry’s growth so far either in Ireland or elsewhere. For example, despite recording the highest growth in annual turnover (see, PIA 1974, p. 17) between 1969 and 1973, the Irish plastics industry’s share (including that of Rubber) in the total industrial R & D expenditure was one of the lowest and also remained static (3.9 per cent) during 1969-1971 (calculated from Fitzgerald and Murphy, 1971, p. 33). In the UK this share was slightly above 2 per cent of the total industrial R & D spending during 1969-70 (British Plastics Federation, 1973).

It appears both from the present survey and the earlier surveys (McNamara and Sainsbury, 1969 and PIA, 1974) on the Irish plastics industry that nearly 70 per cent of the firms obtained technical information through their formal and informal associations with various foreign companies and groups. The rest are dependent upon the IIRS, trade journals and trade exhibitions for the purpose.

However, though such associations might prove beneficial as well as economic in the short run, the industry needs to re-orient its present strategy for the acquisition of technical expertise in the long run. Much greater technical efforts have to be made by the Irish companies in order to absorb rising prices of plastics materials and meet increased competition both at home and abroad. Besides intensifying research efforts through using IDA research grants, the companies must also make increasing use of the IIRS services and the results of research in Polymer Science already in progress in the Irish universities.

Like R & D activity, the relationship between firm size and invention constitutes another important, yet highly debated, area of recent research. For example, while Jewkes et al. (1969) and D. Hamberg (1963) provide convincing evidence in support of the small independent inventors, Galbraith (1956, p. 100) claims that invention is the preserve of large corporations and has become routinised in the R & D laboratories of the large firms. Many other studies (Kennedy and Thirwell, op.cit. and Norris and Vaizey 1973, Chapter 6) on the subject also present similar conflicting evidence.

However, a careful reading shows that such studies concentrate on the biggest firms in particular industries and discuss only the basic inventions involving radical new advances in knowledge. Consequently, the very small proprietor-inventors of the type discussed here and their ingenuity in introducing minor but significant improvements in products and processes escape academic attention. As an example, experience of five owner-managers from the present survey deserve special attention. Of these five inventors, one developed a “Perpetual Calendar”, one a “process for cutting plastic window blinds”, another a “Cutting Tool” (which the informant said reduced his original processing costs by at least 50 per cent) and two others a “Tile Table” (for cutting and decorating plastic sheets) and an “Advertising Sign” each. Save one (who has patented the process to an American company in exchange for an annual royalty of £25,000) none of these owner-managers patented their inventions and are inclined to use them as commercial secrets.

The remarkable characteristic of all these inventors is that only one of them had both a science degree and work experience in a large firm. The others were largely the craftsmen entrepreneurs having considerable work experience in plastic manufacturing companies. Research in all these firms is a non-routine, shop-floor activity involving more of technical expertise rather than R & D spending. The evidence is extremely limited and is also subjective (being based on the account of the owner-managers) but it suggests a continuing role of the small craftsman inventor. Yet, as in most developing countries, the small entrepreneurs in Ireland also face numerous financial problems to which we now turn.

3. THE PROBLEM OF FINANCE

The problems confronting the small entrepreneurs are varied in Ireland (IMI, 1971, p. 3 and Beirne 1972, p. 71). The respondents were, therefore, asked to identify those (from a given list) which most seriously impede the expansion of their business. In order of priority, lack of adequate finance topped the list (48.7 per cent) followed by the problem of marketing (43.5 per cent), lack of skilled labour, parts and components (38.5 per cent) and
shortage of space on site. Surprisingly, the problem of management came at the bottom of the list along with the problem of shortage of raw materials (28.2 per cent). This indicates the inability of the owner-managers to admit that their poor organisational skill may impose limitations on their performance.

A detailed analysis of the nature of problems faced in each area falls outside the scope of this paper. However, most of the problems faced by the small firms appear to be financial. The lack of funds, particularly that of long-term capital is a perennial problem for the small entrepreneurs in both the developed and developing countries (James Bates, 1971, p. 11). The main reasons are that to the banks, the small entrepreneurs are less attractive customers than the large firms. Disproportionately higher service charges incurred in administering small loans and greater risks involved (due to inadequate collateral) make the institutional lending agencies reluctant to provide them with credit. To these are added the indignation of many owner-managers towards financing through partnership or stock type associations. Such entrepreneurs are also highly critical of the government's financial assistance. To quote a typical comment: "I do not get any help from the government nor do I look for it. Their bureaucracy and delay cause unnecessary problems." Given the fact that nearly 70 per cent of the sample entrepreneurs found the overall government policy to be favourable for their growth, such views were unrepresentative of the total sample and reflected conservatism of the owner-managers concerned towards government assistance.

However, the repeated complaints of most of the entrepreneurs that a "government grant would come only when the sun shines" undoubtedly reflect the existence of an "equity gap" in the financing of small firms in Ireland which make their internal take-off exceedingly difficult. Such a finance gap becomes particularly prominent at the transitional stage of the development of a small firm when the size of the firm tends to outgrow effective one-man control and economically justifies hiring specialists for each management function. At this stage, operations need to become more sophisticated involving a greater division of managerial labour and permitting economies from buying and selling at a large scale, acquiring capital at cheaper terms and supporting large scale production and research. But due to scale barriers to entry into organised capital market for funds, such firms may often fail to develop efficient managerial structures and thus suffer from managerial dis-economics.

In fact, this appears to be substantiated by the heavy dependence of the small firms (Table 10) on private sources of capital (i.e., personal and family
Table 10: Relative importance of various sources of finance in the small firms

<table>
<thead>
<tr>
<th>Source of finance</th>
<th>At foundation</th>
<th>In 1973</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>No.</td>
<td>per cent.</td>
</tr>
<tr>
<td>Private domestic capital from non-banking sources</td>
<td>25</td>
<td>89-3</td>
</tr>
<tr>
<td>Borrowed from banks</td>
<td>9</td>
<td>32-1</td>
</tr>
<tr>
<td>Government grants</td>
<td>5</td>
<td>17-9</td>
</tr>
<tr>
<td>Equity capital</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Loans from specialised agencies</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>Over 50 per cent foreign financed</td>
<td>5</td>
<td>17-8</td>
</tr>
<tr>
<td>Less than 50 per cent foreign financed</td>
<td>1</td>
<td>3-6</td>
</tr>
<tr>
<td>Not ascertained</td>
<td>2</td>
<td>7-1</td>
</tr>
</tbody>
</table>

Total, (exceeds 100 because most firms used more than one source).

Source: Author's survey.

savings, share capital from friends and relatives and retained business profits) both at foundation and during the take-off periods. Though the use of external funds such as bank overdrafts and government grants increased over time, self financing mainly through retained profits still formed the overwhelming source of finance for the small firms.

Whether or not this heavy dependence of the small firms on self-financing affects their growth is explored by analysing the relationship between the size of initial capital and subsequent performance of the sample firms. The hypothesis is that if capital is the principal bottleneck and profits provide the major source of capital for general expansion under the existing production methods, the firms with small initial capital will also have lower rates of growth.

The Spearman's rank correlation between initial capital and subsequent performance (defined by the average rate of growth of firms between 1965 and 1973) of the 24 sample firms was positive (+0.15) but statistically insignificant at the 0-05 per cent level. This indicates that firms starting with smaller initial capital did just about as well in terms of growth as did the firms starting with large assets. Given the restricted access of the small firms to sources of capital, the results would suggest that a small initial capital might predispose them to use their capital more economically than the large firms. For firms with relatively large initial assets the implication of the result is that they could increase output without increasing their investment in additional fixed assets.

Capital shortage may thus be a mere illusion rather than a reality to the small industrialists as claimed by Schatz (1965) in the case of the Nigerian
entrepreneurs. This may, however, be true only for “venture” capital. The owner-managers may be able to start a venture with a relatively small amount of fixed capital (i.e., less than £2,000 in the case of three sample firms) either from their wife’s or their own savings, but they face serious difficulties in raising long-term working capital. Much of these financial difficulties may be due to their authoritarian management style, but necessary steps need to be taken to ensure a regular cash flow to those who exhibit the prospects for sustained growth.

V CONCLUSIONS

Let us now turn to the main conclusions of the study. We noted that a majority of the entrepreneurs were found to come from the business community endowed with commercial and technical skills. Despite considerable importance of agriculture in the Irish economy none of the sample entrepreneurs had a farming background. This may be due in part to the high level of technical skills required by the plastics industry. It also reflects the high level of intergenerational occupational mobility among the Irish entrepreneurs.

Most entrepreneurs in the industry made their debut into the industry in their mid-thirties and early forties. More than 70 per cent of them were found to be in the 31-49 years of age groups. The concentration of relatively older entrepreneurs in the smallest firms in particular contradicts the generalisation that the succession of family members to managerial positions (known as generation cycles) results in a higher proportion of younger executives in the small family firms.

The entrepreneurs in the plastics industry were found to be well educated. However, formal learning does not appear to have been influential in determining entrepreneurial success.

The entrepreneurs under study exhibit a keen perception of, and response to, economic opportunity, willingness to take risks and to adopt to changing market conditions. Their readiness to maintain high technical standards and search for new ideas is most noteworthy. However, the standards of management, particularly in the small owner-managed firms, appear to be low. Management in them is autocratic rather than participative. Although lack of funds may, in part, explain their reluctance to hire professional managers and consultants, the autocratic style of management may be largely due to their aversion to power-sharing and delegation of authority.
The above findings have the following implications. First, given the high degree of freedom of entry on a small scale with a relatively low threshold of initial capital, the plastics conversion industry may be considered a breeding ground for developing entrepreneurial talents in Ireland. Second, no unique firm size is conducive to technological progress in all industries. Small craftsmen entrepreneurs, conducting part-time informal research were found to make significant contributions to the technological progress of the Irish plastics industry. Given this, a national strategy for technological development will need to make provisions for a diversity of firm sizes. Third, though the small entrepreneurs have, on the whole, demonstrated their eagerness to grow and improve technologically, substantial scope for improvements in their management techniques and greater technical efforts remain. Given the diversity in educational and occupational backgrounds of the large and small firm managers and also the different environments within which they have to operate, management education and training needs of the two groups may be different. In particular, the management training for the small owner managers should put greater emphasis on “learning by doing”. This seems to be especially pertinent in view of the fact that most of the owner managers in the sample found the training facilities provided by the IMI to be too general (“text-book type”) and expensive. Fourth, given the limited resources of the state, programmes of assistance to the small-scale sector should be selective. They should be directed primarily to the entrepreneurs who appear to offer the best prospects for introducing growth oriented change and modernisation. Finally, in the light of the extensive financial support provided by the IDA to the small industrialists, the problem of “equity gap” raised by the entrepreneurs may not be correctly perceived. Yet it deserves close attention particularly by the banks and other financial institutions. An important step in this regard may be to ensure much closer liaison than exists now, between the lending institutions and the small industrialists in general.

REFERENCES


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