

Factors Contributing To The Growth Of Small Manufacturing Firms: An Insight From Australia

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Abstract

This paper attempts to identify some firm- and industry specific variables that influence the growth of small firms by examining a sample of small manufacturing enterprises operating in the Illawarra region of New South Wales in Australia. The results reveal that older firms have poor performance compared to younger ones. Performance also varies with size but the relationship is complex with two opposing size components.

Introduction

The small business sector is a vital contributor to the overall performance of the Australian economy. Small business makes up 96.9 per cent of all business operations in the private non-agricultural sector and accounts for more than 56 per cent of private sector employment (DIST, 1995). Nevertheless, it is “folklore” that most small businesses discontinue within a few years of their start up. Of those continuing businesses, there is considerable variability in the rate of growth. Therefore, it is important to find out the causes of failures and discontinuations as well as the factors contributing to the success or growth of small enterprises. Moreover, these causes of failure and factors of success may vary from country to country, depending on the economic, geographical and cultural differences between countries. As such, empirical investigation into these aspects of small business in different country settings is needed because the findings of such research, while contributing to the literature, are useful to economic development planners as well as to individual entrepreneurs in the countries concerned.

The purpose of this paper is to examine a set of firm- and industry specific variables that may have an impact on the growth of small firms. It is based on a study of a sample of small manufacturing firms operating in the Illawarra region of New South Wales in Australia. Because the study is exploratory, it does not attempt to identify any entrepreneurial and managerial abilities or other specific characteristics associated with the successful operation of firms.

Review Of Literature

The previous research on factors contributing to the success or growth of small firms has primarily focused on the entrepreneurial, managerial or other personality attributes of owner-managers. Some of these will be outlined below. Few have examined the firm- or industry specific factors, which Tan and Tay (1994) claim are more significant than personality attributes in explaining the variance of growth in small business. Another limitation of previous studies are that they are based on small business in general, and those focusing on manufacturing firms are sparse as will be seen by the following review.

One of the studies that have focused on the effect of personality attributes of owner-managers on the success of small businesses in general is by Ibrahim and Goodwin (1986). Based on a survey of a sample of small firms in the retail, wholesale, service and manufacturing sectors, they asserted that entrepreneurial and managerial skills of owner-managers are key success factors in small business. Similar findings were also reported by Huck and Thaddeus (1991). Being more specific, Gaskill and Hyland (1989) identified six keys to a successful business which included people power, a business plan, a study of the competition, measurement of performance, not becoming too comfortable with progress, and financial reporting systems. Similarly, Beam and Carey (1989) reported that to be truly successful, small business owners must have a missionary zeal about their product or service, be willing to be personally involved in it, be willing to stick with the business, be able to define the market clearly and pay attention to details. According to Lee (1994), entrepreneurs who have a good strategic vision and professional skills are able to prosper in small business. Ghosh, Teo and Low (1993) reported that ability to satisfy customers, finding a market niche, good service, a good management team, and good networking are among the chief success factors quested. According to a study by Duchesneau and Gartner (1990), owner/managers in successful firms were shown to be more likely to have been raised by entrepreneurial parents, and have had broader business and start-up experiences. After examining several internal and external factors affecting growth of firms, Tan and Tay (1994) asserted that financial assistance provided by the government, prior experience of the entrepreneur, quality product/service, and good customer service contribute positively and significantly to the growth of small enterprises. In a similar study by Yusuf (1995), good management, access to financing, personal qualities and satisfactory government support were perceived to be the four most critical success factors in small business. In a study involving a sample of small manufacturing firms, Steiner and Solem (1988) found several success factors including managerial background and experience of owner/managers, adoption of new manufacturing technologies, availability of resources to adopt new technology, and competitive advantage. In a similar study, Chaganti and Chaganti (1983) identified innovativeness, know-how, creativity, and managerial competency as key success factors. While focusing on some firm-specific factors, Little (1987), Davidsson (1991), and Tan and Tay (1994) found that the age of firms is negatively correlated with their growth, indicating that older firms perform more poorly than younger ones. In a survey conducted in Japan, Wijewardena and Cooray (1995) found that firm size has a significant impact on the growth of small manufacturing firms, with relatively bigger firms in this sector performing better than smaller ones. Their survey also revealed that the firms with more skilled labour achieved a higher level of growth.

Methodology

Sample

The sample for this study consisted of 500 firms which were randomly selected from the Register of Manufacturing Industry of the Illawarra Regional Information Service (IRIS) after checking their addresses in the 1995 telephone directory. The criterion used for selecting the sample firms was that they belonged to the category of small manufacturing enterprises which are defined by the Australian Bureau of Statistics as manufacturing organisations employing less than 100 people (ABS, 1993).

A questionnaire was mailed to the owner/manager of each firm. A reply-paid envelope was also sent for easy returning of the completed questionnaire. A total of 142 firms responded to the questionnaire, giving a response rate of 28.4 per cent. Given the nature of small firms and the low response usually associated with most mail surveys, this response rate can be considered reasonably adequate. Six of the responses received were not useable due to incomplete data. The rest of the responses representing 136 firms were used in the study. A profile of these firms is displayed in Table 1.

Table I
PROFILE OF THE SAMPLE FIRMS - 1995

Firm Size by Employment	Firms %	Form of Organisation	Firms %	Age of Firms	Firms %
1 - 10	54.2	Sole proprietorship	12.6	1 - 10	31.1
11 - 20	23.7	Partnership	16.8	11 - 20	26.9
21 - 30	7.7	Trust	4.2	21 - 30	20.2
31 - 40	3.4	Proprietary Company	63.9	31 - 40	13.4
41 - 50	4.2	Unlisted Public Company	2.5	21 - 30	5.0
50 - 100	6.8			Over 30	3.4
Nature of Market Competition		Firms %	Exports/Sales Ratio (%)		Firms %
No competition		0.9	0		84.8
Slight competition		3.5	1 - 5		10.1
Moderate competition		21.7	6 - 25		1.6
Strong competition		56.5	26 - 50		1.0
Severe competition		17.4	51 - 100		2.5
Type of Industry			Firms %	Annual Sales Growth %	
Food, beverages and tobacco			8.4	9.1	
Textiles, wearing apparel and leather products			6.0	23.8	
Wood, wood products and furniture			20.5	11.4	
Paper, paper products, printing and publishing			7.2	4.7	
Chemical, petroleum, coal and plastic products			14.5	9.1	
Non-metallic mineral products			6.0	12.8	
Basic metal products			12.1	21.0	
Fabricated metal products, machinery and equipment			25.3	9.0	

Source: Survey data

Nearly 78 per cent of firms in the sample employ less than 20 persons and only 11 per cent have employees ranging from 50 to 100. The majority of firms (63.9%) operate as proprietary limited liability companies while most of the others are sole proprietorships and partnerships. Nearly 78 per cent of firms are 20 years of age or below, and only about 14 per

cent are over 30 years. Basically almost all firms face considerable degree of competition in the product market, with nearly 74 per cent facing extensive competition. Almost 85 per cent of firms sell their products only in the domestic market. Even among the firms participating in export trade they mostly have a very low percentage of exports in relation to their domestic sales. The sample firms fall into eight categories of International Standard Industry Classification (ISIC). The annual sales growth of firms in terms of industry groups has ranged from 4.7 to 23.8 per cent during the 1990-1994 period. About 18 per cent of firms fall into the two industry groups (textiles, wearing apparel, leather products, and basic metal products) which have achieved substantial sales growth (i.e. 21 and 23.8 per cent).

Analytical Technique

Because of the difficulty of obtaining realistic information on profits earned, the firms that have reported increased sales during the period from 1990 to 1994 have been taken in this study as growth firms. This is in conformity with the studies by Steiner and Solem (1988), Cuba, Decenzo and Anish (1983), Khan and Rocha (1982), and the US Small Business Administration (1980) which have reported sales growth as a key indicator of small business success and overall performance. It is hypothesised that the growth is significantly influenced by the following set of variables: firm size, age of firms, employment of skilled workers, market competition, export orientation, and type of industry. To examine the possible relationships of these variables to growth, we employ the following multiple regression model:

$$GR = f(SZ, AGE, SW, MC, EO, DF, DT, DW, DP, DC, DNM, DBM, DFM)$$

The variables (with expected sign in parenthesis) are listed below:

- GR = Growth (represented by annual growth of sales)
- AGE = Age of firm (+ or -)
- SZ = Size of firm, defined as the total number of employees (+)
- SW = Skilled workers, calculated as the ratio of skilled workers to total employees (+)
- MC = Market competition, ranked from 1 (no competition) to 5 (severe competition) (- or +)
- EO = Export orientation of firm, measured as the ratio of exports to total sales (+)
- DF = A dummy variable which is 1 if the firm belongs to the food, beverages and tobacco group and 0 otherwise (+ or -)
- DT = A dummy variable of firm which is 1 if the firm belongs to the textiles, wearing apparel and leather products group and 0 otherwise (+ or -)
- DW = A dummy variable of firm which is 1 if the firm belongs to the wood, wood products and furniture group 0 otherwise (+ or -)
- DP = A dummy variable of firm which is 1 if the firm belongs to the paper, paper products, printing and publishing group 0 otherwise (+ or -)
- DC = A dummy variable of firm which is 1 if the firm belongs to the chemical, petroleum, coal and plastic products group 0 otherwise (+ or -)
- DNM = A dummy variable of firm which is 1 if the firm belongs to the non-metallic mineral products group 0 otherwise (+ or -)
- DBM = A dummy variable of firm which is 1 if the firm belongs to basic metal products group 0 otherwise (+ or -)

DFM = A dummy variable of firm which is 1 if the firm belongs to fabricated metal products, machinery and equipment group 0 otherwise (+ or -)

The AGE variable is included in the model because very young firms which survive would tend to grow rapidly due to innovative ideas and dynamic management together with the fact that they are less likely to attract the attention of major industry players (Little, 1987; Davidsson, 1991; Tan and Tay, 1994). Older firms on the other hand may be better placed to achieve stronger growth because of their greater expertise and experience. Thus, the expected coefficient of AGE variable can be either positive or negative. It is also possible that larger firms grow faster than smaller ones due to their ability to employ more skillful managers and workers and to acquire more efficient production facilities (Sandesara, 1966). Accordingly, the expected coefficient of the SZ variable is positive. Similarly, since skilled workers can be assumed to contribute significantly to growth of a firm (Wijewardena and Cooray, 1995), the coefficient of SW is likely to be positive. Firms facing less competition in the market may be able to have more sales, contributing to faster growth. On the other hand, the greater the competition the more efficient and dynamic a firm may be. A firm facing no or little competition may rest on its laurels. Therefore, the coefficient of MC variable may be either negative or positive. Also, firms which are active in export trade may be relatively more capable of increasing their sales, leading to a positive coefficient for the EO variable. In addition to the above, growth of certain firms may be attributable partly to the specific nature of the industry in which they operate. In order to capture such industry-specific features, eight intercept dummy variables (DF, DT, DW, DP, DC, DNM, DBM, DFM) are used for the eight product groups to which the sample firms belong.

Results

The model specified in the previous section was estimated using ordinary least squares. Although dummy variables (DF, DT, DW, DP, DC, DM, DBM and DFM) representing eight industry groups were included in the model to capture any industry-specific effects, the experimental runs indicated that they were statistically insignificant. Therefore, they were dropped from the model in the final runs. In the estimation of results, the three variables of AGE, SZ, and SW were used both in linear and log forms. Since the log form produced a better fit than that of the linear form, the final results in respect of these three variables have been reported in both tables in the log form. The results produced by the model after omitting dummy variables are reported as Equation 1 in Table 2. In Equation 1, however, the coefficients of skilled workers (SW) and market competition (MC) are not significant and their *t*-ratios are less than one. Hence, the model was re-estimated after omitting these two variables. The final results are presented as Equation 2 in Table 3. It is clear from this table that after the deletion of SW and MC the statistical significance of the overall regression has improved. This variable deletion is statistically acceptable in terms of the *F*-test for variable deletion [$F(2, 73) = 0.195$]. Thus, our interpretation of results is based on Equation 2. This equation is statistically significant at 5 per cent level.

Table 2

REGRESSION RESULTS - EQUATION 1

Constant	10.90	(0.93)
LAGE	-5.29	(-3.16)
LSZ	12.73	(1.90)
LSZ ²	-2.41	(-1.81)
LSW	0.58	(0.30)
MC	-0.88	(-0.51)
EO	0.15	(1.06)
R ² = 0.14		
F-statistic = 2.06		

Note: *T*-ratios are given in parenthesis.

Table 3

Regression Results - Equation 2

Constant	10.16	(1.27)
LAGE	-5.27	(-3.18) **
LSZ	12.47	(1.91) *
LSZ ²	-2.39	(-1.85) *
EO	0.15	(1.15)
R ² = 0.14		
F-statistic = 3.05		

Note: *T*-ratios are given in parenthesis, with significance levels denoted as: * significant at 5 per cent; **significant at 1 per cent.

The coefficient of AGE is significant at 1 per cent level with a negative sign. This suggests that older firms have poor performance compared to younger ones. A possible reason for this may be that younger firms in the small-scale sector are more dynamic and innovative in management. This finding is compatible with the situation reported by Little (1987), and Tan and Tay (1994) in respect of small manufacturing enterprises in India and Singapore respectively. The coefficient of SZ is significant at 5 per cent level with a positive sign, indicating that relatively bigger firms in the small-scale sector demonstrate higher sales growth. When the SZ variable is squared to capture any further effect of firm size on growth performance it also produces a statistically significant coefficient, but with a negative sign. Interestingly, the coefficient of SZ² is less in magnitude than that of SZ. The interpretation of this is that although the larger firms in the small-scale sector perform better, the importance of the size factor in growth performance diminishes with the increase of firm size. In the case of EO, the *t*-ratio is greater than unity even though it does not attain statistical significance. Thus, there is weak statistical support for the hypothesis that greater export orientation leads to better growth performance.

Conclusions

The results of the study suggest that older firms, in general, have poor performance compared to younger ones. Performance also varies with size but the relationship is complex with two opposing size components. It is important to note that the firms studied, although representative of small industry in the Illawarra region, may not be representative of small industry throughout Australia. Despite this limitation, the study provides some insight into factors affecting growth in small manufacturing firms in Australia.

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