Networks and Local Environmental Characteristics in the Survival of New Firms

Hannu Littunen

ABSTRACT. This study seeks firstly to clarify which networks at start-up situation and early in life influence the survival of new firms. Secondly the study examines regional differences in the success of new firms. The subjects were firms which had closed down during their fourth to sixth year of operations, and they were compared with firms continuing in business. The results indicate, firstly, that it is networks internal to firm that create competitive advantage, innovation and efficiency. Secondly, management based on working in groups was emphasized in the firms that continued in business. In a typical family enterprise, ownership, management and family are united in a single entity. In other types of firms networks are seen as participating in the strategic management of the firm. Thirdly, close-downs were often caused by uncontrolled risks. A firm which fails after a successful start-up often tends to grow rapidly in the beginning, leaning on its product idea, but this rate of growth is too high from the viewpoint of the financing and the management of the firm. In firms which closed the growth objectives were too ambitions compared with the resources of the entrepreneur.

1. Introduction

This paper aims, firstly, to contribute to our understanding of the process of survival in new firms by analyzing the management capabilities involved the start-up situation and the critical operational phase. Secondly, the aim of this study is to examine the effects of location in a firm's success. The question of how to approach the success of firms can be seen from a firm's goals and its ways of realizing them. The goals of a firm are formed by its interest groups, such as the entrepreneur himself or other proprietor, the employees and firm's financiers (Carroll, 1993, 1995; Freeman, 1984). According to Freeman (1984, 1995), an interest group is any group or individual either affecting the activities of a firm or affected by them. The specific purpose of this paper is to model and operationalize these interest groups in order to study how new entrepreneurs use their networks as part of their management resources in running of a firm (Birley, 1985; Borch and Huse, 1993; Dubini and Aldrich, 1991; Johannisson, 1998).

Several studies have noted that the development and start-up of new firms is connected with the local environment (Armstrong and Taylor, 1985; Isaksen, 1996; Spilling, 1996; Storey, 1994; Storey and Wynarczyk, 1996). The central regional factors in the establishment and development of firms are local entrepreneurship, social networks, an innovative milieu, and flexibility of productional factors and institutional structures (D'Arcy and Giussani, 1993). Johannisson (1987) differentiated five dimensions of interaction between the competencies of the individual and those supplied by the environment: (1) motives, values and attitudes; (2) skills; (3) social competence; (4) insight; and (5) facts. The skills and know-how of the entrepreneur were emphasized as factors in the success of small firms. In part know-how in a firm is a result of the personal contacts and networks the entrepreneur has in relation to other firms, and the connections the firm has with organizations supporting the development of firms (Niittykangas, 1992; Johannison, 1987). Competition and interactive relationships are factors that maintain successful development by forcing and stimulating firms into flexibility (Niittykangas et al., 1994).

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University of Jyväskylä
School of Business and Economics
Centre for Economic Research
P.O. Box 35, FIN-40351
Jyväskylä
Finland
E-mail: littunen@tase.jyu.fi

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Generally, the most important factors in the survival of large firms are age, industry sector, size and location (Storey and Wynarczyk, 1996). The first 1–3 years of operations is the most critical operational phase for new firms as regards their survival; once firms have survived for three years, they can, with good reason, be described as having passed through the valley of death (Gibb, 1990). It has been argued that problems during the start-up phase of a firm explain closure during the subsequent critical operational phase (Argenti, 1976; Gaskill and Van Auken, 1993). In the present study, survival beyond the critical operational phase is the criterion of success.

This study examines the success (survival) of new firms and the factors affecting that success. First, the aims and the framework of the study are presented in more detail. A model explaining the success of firms is discussed and success is analyzed in connection with networks and location. Also a description of the data and research methodology is reported in this section. This is followed by the findings of the study. Finally, conclusions are drawn about the success of new firms.

2. Aims and procedure

2.1. *The framework of the study*

The first aim of the study is to clarify which networks, at start-up and during the critical operational phase, influence the survival of firms which are 4–6 years old. A second aim is to test for regional differences in the survival of new firms, and, if so, what kind of connections exist between the characteristics of the environment and the factors affecting the success of the firm, i.e. the characteristics of the firm and the entrepreneur.

The establishment of a firm is interpreted as a progressive phase-by-phase process which begins with a specific business idea on the basis of which the firm is set up (Bygrave and Hofer, 1991; Gartner, 1985; Reynolds, 1995). The decision to found a firm is based on either experimentation, self-confidence or planning. Entrepreneurship based on experimentation may begin as a part-time activity in which the business idea is tested in practice (Lehti, 1990). In entrepreneurship based on self-confidence, the founder has a strong belief in his own power to influence events and the ability to transform his will into practical action (Reynolds, 1992; Shapero and Sokol, 1982; Timmons, 1976). Entrepreneurship based on planning conforms most strongly with the process view (Krueger, 1993; Krueger and Brazeal, 1994; Krueger and Carsrud, 1993). Changes in plans made during at start-up and in the starting phase of entrepreneurship are evidence of defects in planning and/or changes in the action environment which could not be taken into account during the initial planning phase.

The analysis of a start-up makes it possible, on the basis of the idea underlying contingency theory, to evaluate the factors affecting the birth of new firms on a scale broader than allowed by the push and pull theory (Gilad and Levine, 1986; Storey, 1994). Also, general situational factors describing the immediate surroundings and the individual's phase of life at start-up are included in the analysis. The opportunities for entrepreneurship are connected with the production structure of the region (Isaksen, 1996; Spilling, 1996). On the other hand, from the viewpoint of network theory the firm's local environment should provide the means for efficient contact networks. The various situational factors that describe the founder's phase of life at start-up can be seen as reflections of the overall situation of the economy, and it is these that provide the link between founder's previous experience and the start-up situation. The situational factors can be classified into seven groups:

- the importance of previous work or entrepreneurial experience in making the decision to become an entrepreneur (Cooper and Dunkelberg, 1987; Ray, 1993; Vesper, 1992);
- previous basic and professional education and training (Cooper and Cascon, 1992; Evans and Leighton, 1990; Storey and Wynarczyk, 1996);
- how the firm is managed (Carroll, 1993; Chrisman et al., 1998; Freeman, 1984, 1995);
- functioning interest and communication networks (Birley, 1985; Borch and Huse, 1993; Dubini and Aldrich, 1991; Johannisson, 1998);
- the strategic choices of the firm (Norman, 1976; Sandberg and Hofer, 1987);
- functionality of the start-up plan (Cooper and

Cascon, 1992; Sapienza and Grimm, 1997; Stinchcombe, 1965);
- features of local the environment (Almus and Nerlinger, 1999; Armstrong and Taylor, 1985; Isaksen, 1996; Spilling, 1996; Storey, 1994).

As stated earlier, past studies have indicated that various situational factors often link the success of new firms with specific kinds of entrepreneurial knowledge and skill. In small firms the competence of the entrepreneur and the firm are tightly

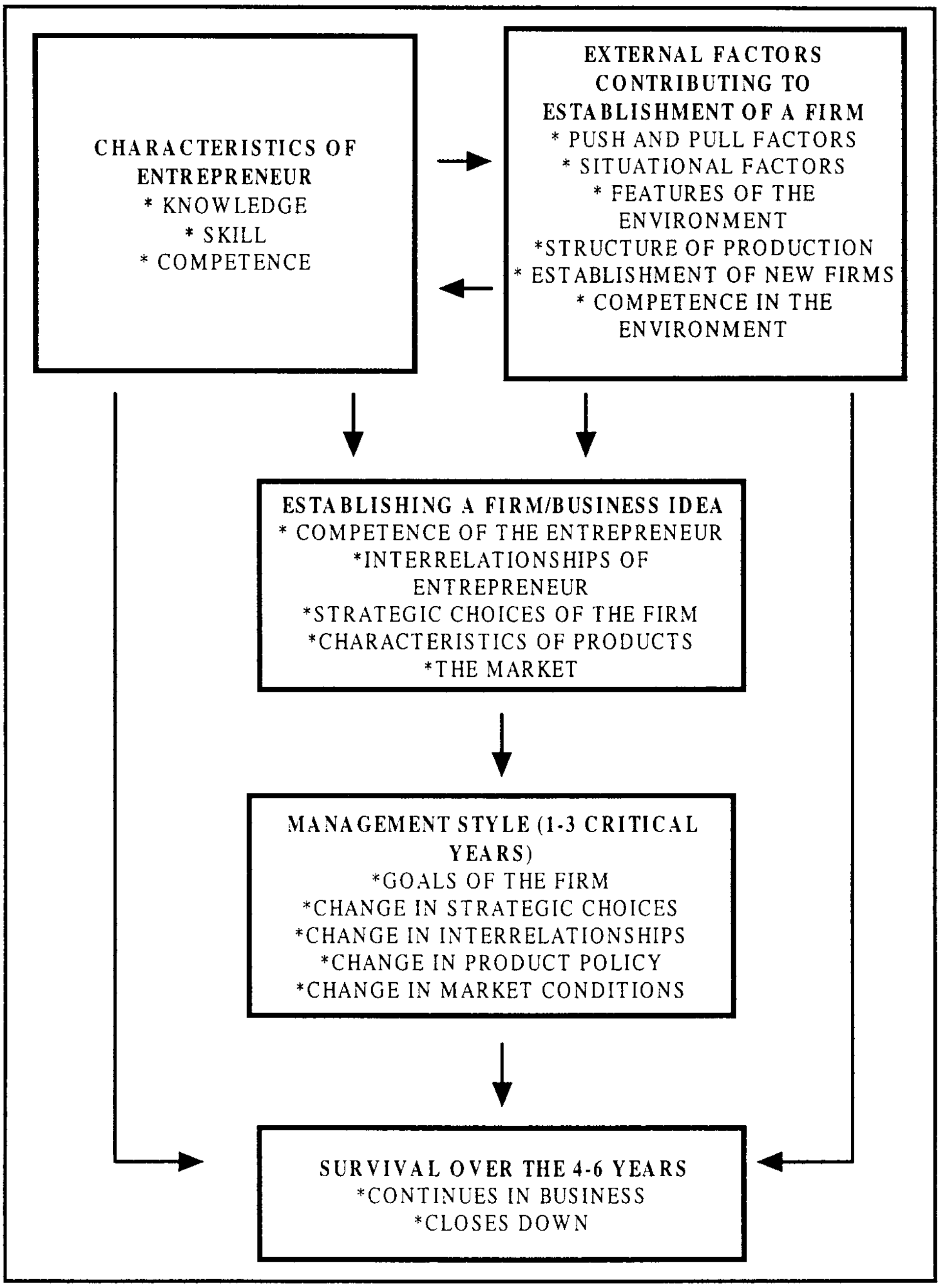

Figure 1. Study framework: factors explaining the survival of new firms.

linked with each other. Some of the qualifications required by an entrepreneur are related to the level of competence at her or his disposal, others to the entrepreneur as an individual and her or his way of acting. Similarly, the experience and skills of the entrepreneur have been linked to decisions regarding strategy (Eisenhardt, 1989; Vesper, 1990). In this paper, how a firm is managed is seen as a central factor in entrepreneurial competence.

According to Low and MacMillan (1988), network theory is increasingly applied in entrepreneurship research. Entrepreneurial networks can be categorized into two types derived from different sources: informal and formal (Birley, 1985; Johannisson, 1985). Informal entrepreneurial networks consist of personal relationships, families, and business contacts. Formal networks consist of venture capitalists, banks, accountants, creditors, lawyers, and trade associations (Das and Teng, 1997). There are many methodological advantages in studying entrepreneurial networks in small firms (Johannisson, 1990). First, the entrepreneur must be explicit about her or his personal network in order to become recognized and able to command further resources. Second, all direct and indirect linkages in that network give her or him access to various segments of the environment (Johannisson, 1998). From the point of view of stakeholder thinking these segments could be argued to constitute the interest groups of a firm. In stakeholder thinking the firm and its activities are seen through the intentional action of the relevant interest groups. The idea is that those groups which share inputs with a firm, through their interaction with it, and render its operations possible. In the long run the firm must operate in such a way that each stakeholder is satisfied with what they as a group give and with what they receive. The more dissatisfied the main stakeholders are, the more certain it is that the firm will close down (Freeman, 1984, 1995; Carroll, 1993; Calton, 1993; Näsi, 1995).

Network theory also offers a way of describing the development of the entrepreneur’s know-how. From the point of view of the entrepreneur’s developing know-how interrelations are not limited only to those between market and firm. From the network thinking point of view the personal relationships of the entrepreneur describe the entrepreneur’s activities in developing his or her entrepreneurial skills. They form an independent field of know-how which supplements the entrepreneur’s training and work experience. It is possible to see the versatility and number of these relations as enhancing entrepreneurship. These personal relationships could be viewed as external networks since they are usually limited to the entrepreneur’s environment. According to Curran et al. (1993), whose view deviates from that of network thinking, the importance of co-operational relations is dependent on the particular situation of the firm and excessive networking threatens the independent position of the entrepreneur. In other words, small entrepreneurs have contacts with their surroundings, but the importance of these contacts is more limited than network theory implies (Curran et al., 1993).

Several studies have found that team-driven ventures are more successful than non-team ventures (Bird, 1989; Rich and Gumpert, 1985). Cachon (1990) concluded that team members bring needed skills to the enterprise and Gartner (1985) comments that teams are necessary for firms in highly technical industries because of the wide array of skills needed for the firm’s success. These contacts could be viewed as internal networks since they generally consist of the team members. From these theoretical starting points the first research hypothesis in this study concerning the management capabilities was formulated as follows:

(1) the use of internal networks as part of a new entrepreneur’s management capabilities will have a more positive effect on the firm’s success than the use of external networks.

Measures of management capabilities. In a test of a first hypothesis, the survival of a firm will depend upon the entrepreneur’s ability to use networks as part of his or her management capabilities. In this context, the management capabilities are firstly measured in terms of different styles of management (Freeman, 1984, 1995). Four styles of management have been distinguished (Ensley et al., 1998): group management (2 items), action planning (6 items), innovativeness (4 items) and interactiveness (2 items). Using cluster analysis, firms were classified into three categories reflecting management styles according to participation by different interest groups. The situational style emphasizes the entrepreneur who takes an independent position and makes little use of personal networks. In the network building style the entrepreneur obtains management ideas through discussions with customers, as well as with entrepreneurial and other business contacts or specialists. In the group management style the key affairs of the firm are managed by a group of people. Utilizing the definitions for entrepreneurs and entrepreneurial teams, groups founding, owning, managing, and planning for entrepreneurial, high growth ventures should clearly be identified as entrepreneurial teams (Carland et al., 1984; Ensley and Banks, 1992; Ensley et al., 1998). Secondly, the effects of external personal networks on the success of a firm are investigated. The following measures were used to describe firm's external networks: co-operation between firms in the start-up phase and changes in external personal networks during 1992–96. The latter measure consisted of discussions with personal friends of the entrepreneur concerning the business and it was calculated on two occasions, in 1992 and in 1996 (appendix).

The strategic choices of a firm

The strategy of a new firm must be designed to use its management capabilities in order to attain its goals and ways of realizing them (Freeman, 1984, 1995; Carroll, 1993; Sandberg and Hofer, 1987). Without such a strategy there is little hope that the firm will able to achieve success in its industry sector (Porter, 1980, 1985). These strategy and management actions are considered in relation to products and markets, changes in products and marketing policy, changes in production processes and changes in management capabilities (Storey, 1994). In exploring the strategic behavior of firms, a framework in which strategic choices are characterized by the concept of the business idea was used (Norman, 1976). This concept has been constructed to suit small enterprises. The focus is on creativity, flexibility, and 'a strategy of small steps'. The key feature is the business idea – a combination of product line, markets, and ways of conducting business. The networks of entrepreneurs are studied through business-idea thinking, in which the interrelationships of entrepreneurs are seen as related to the requirement for compatibility between products, customers and mode of operations. The second research hypothesis follows from the above discussion:

(2) A firm's strategy has a direct and moderating effect on its success.

Measures of strategic choices. In this context, the measures describing the products and markets during start-up phase were as follows:

- industry sector; the success of a firm will vary in different sectors of industry (Almus and Nerlinger, 1999; Phillips and Kirchhoff, 1989; Porter, 1980, 1985; Storey, 1994).
- number of products, main product, customers as users of the firm's products and focus area of marketing; these are all important strategy components in the success of a firm (Norman, 1976; Porter, 1980, 1985; Smallbone et al., 1995; Storey, 1994).

Secondly, in relation to the above hypothesis the process of strategy was interest in this study. The following measures were used to describe changes in the strategy components during the critical operational phase:

- changes in product policy , changes in production processes, changes in market conditions and changes in business; as a firm grows and develops, strategy components continue to be critically important (Kazanjian, 1988). Phillips and Kirchhoff (1989) considered that growth improves the chances of survival (Almus and Nerlinger, 1999; Storey, 1994). Changes in strategy processes are key factors in the success of a firm (Norman, 1976; Porter, 1980, 1985; Smallbone et al., 1995).

Features of local environment

According to Smallbone et al. (1993) and Storey (1994), there is a strong correlation between a firm's location and its growth, firms located in urban and remote rural areas of the United Kingdom being likely to grow least rapidly (Storey, 1994). According to Storey and Wynarczyk (1996), locality is of greater significance in explaining the survival/non-survival of young firms. Storey (1994) also found that geographical areas with high rates of new firm formation are also those which have the highest death rates. Littunen et al. (1998) found new firm closures in metal products manufacturers was higher in regions with high rates of new firm formation, and where the environment offered good opportunities for innovation and differentiation. A more developed production structure lowers market entry barriers and so individuals lacking entrepreneurial skills start firms more often in these, than in other regions. On the other hand, Almus and Nerlinger (1999) found that location had only a minor influence on the growth of new technology-based firms. This implies a third hypothesis:

(3) A firm's location will affect its success.

Measure of location. In this paper the regional units are subregions, comprising two or more municipalities. The subregion is relevant to entrepreneurial activities because it usually corresponds to the market area, labor market area and area of co-operation of small firms. Finnish subregions have been classified into four categories according to their industrial structure (Pikkarainen, 1993 – there are seven types of regions in the original classification). The four categories are based on the original seven types as follows: (1) the capital area; (2) centres where service industries are dominant and centres where the industrial structure is diverse; (3) industrialized urban areas and rural areas where manufacturing is dominant; and (4) rural areas where service industries and/or primary production are dominant. Restricting the categories to four is necessary to conduct the data analysis, but justified because the regions are homogenous (For statistical information on the regional categories, see Littunen et al., 1998).

2.2. *Data collection and subject*

Improving the survival of new firms is an international problem. Approximately 13% of the new firms established in Europe close during their first year of business, and only 55% survive for five years (Statistics Finland, 1995). Smallbone (1990) found that the discontinuance rate in the first 2.5 years was approximately 37%. According to a German study, 76% of new firms continued in business for two years and 62% to five years after start-up (Bruderl et al., 1992). Several studies have reported average failure rates ranging from a high of 71% to a low of 31% in the first five years of a new firm's life (Phillips and Kirchhoff, 1989; Baldwin and Gorecki, 1991; Williams, 1993). In one study it was found that over 90% of the failed business were less than ten years old (Watson and Everett, 1996). Surviving and rapidly growing firms, however, are of great importance both locally and nationally: it is these firms which really create employment, since their share of new jobs has been estimated to be high as 16% (Foley and Green, 1989).

This follow-up study employed a stratified technique where the strata were firm's size and line of business. The selection of the strata resembled Neyman's allotment (Pahkinen and Lehtonen, 1989). The sampling was done from the different strata through simple random sampling, which requires that observations are weighted to correspond to the general population. For the first personal interviews with the entrepreneurs (n = 200), 138 metal product manufacturing firms and 62 business service firms were selected from the register of firms of Statistics Finland (N = 2583). The firms established in 1990 were interviewed for the first time at the beginning of 1992. The

TABLE I
Differences between the dimensions describing the management of firms; one-way analysis of variance[1]

Management style	Functioning firms (mean)	Closed down firms (mean)	F-prob.
Group management	3.64	3.10	0.102
Action planning	3.42	4.36	0.000**
Innovativeness	3.98	4.26	0.107
Interactiveness	3.83	4.27	0.055*
	(n = 117)	(n = 17)	

[1] A 5-step scale has been used in the indicator. The results have been weighted by factors calculated from the basic data set and random samples of the study.

TABLE II
Management style and business survival

Categories	Functioning firms	Closed down firms	Closure rates (%)
Situational style	17	1	5.8
Network building style	43	12	27.9
Group management style	57	4	7.0
Total	117	17	14.5

TABLE III
Continuity in business (Dependent variable: staying in business/closing down

Variables	Coefficient	Standard error	Significance
Start-up phase:			
Co-operation between firms	–0.3414	0.4189	0.4151
Industry sector	1.1168	0.5227	0.0326
Number of products	0.6884	0.4509	0.1268
Main product	1.0670	0.4996	0.0327
Focus of marketing area[1]	1.3822	0.6577	0.0356
Focus of marketing area[2]	–0.6041	0.4304	0.1605
Customers as users of the firm's products	1.1535	0.6437	0.0731
Firm's location	0.0694	0.4748	0.8838
Critical operational phase:			
Style of management	1.0605	0.4601	0.0212
Changes in external personal networks			0.6949
Networks type (1)	0.7373	0.7711	0.3390
Networks type (2)	0.4435	0.7829	0.5711
Networks type (3)	–0.7309	1.0872	0.5014
Changes in product policy			0.0887
Product policy type (1)	–0.5406	0.5519	0.3273
Product policy type (2)	–1.0390	0.8667	0.2306
Changes in production process	–1.8938	0.7293	0.0094
Changes in market conditions	1.5420	0.6607	0.0196
Changes in business	–0.9018	0.4982	0.0703
Constant	–1.9055	0.7039	0.0068

–2 log Likelihood χ^2-test quantity 1.0000.
df = 105.
Total classification rate = 92.6%

follow-up data were gathered through telephone interviews during the years 1993–96. However, during each year the author conducted 20–25 interviews personally in order to spot possible inaccuracies in the telephone interviews.

In this study after 3 years 158 firms remained in business and 29 firms had closed. 13 firms refused to participate in this follow-up phase. After year 6 110 firms were still trading. Between years 4–6 18 firms had closed and 30 firms refused to participate further. Thus the present study focuses on 110 continuing firms and 18 closed firms (weighted factors the existing firms totaled to 117 and failed firms 17; see Table I). Here a comparison is made between those firms which continued with those which closed during years 4–6 (Littunen, 1992).

The subject firms were mostly small, about 60 percent with under five employees, and dependent on the entrepreneur's own work and that of her or his family. This was of great importance for the study. The connection between the firm and the entrepreneur was strong. Firm's strategy was chosen by the entrepreneur. Over 45 percent of the entrepreneurs included had not been educated beyond elementary school. Other empirical studies indicate that new entrepreneurs often start their firms by relying on prior work experience. In this study most new entrepreneurs came from small or middle sized firms, a fact which is mirrored in the firm's structure in the start-up process. In most of the firms investigated the selection of products was initially based on the entrepreneur's previous work experience. Other important influences were a combination of previous work experience and vocational training, and identifying the needs of customers in the market (Littunen, 1992).

The interviews in the first phase of the study formed the basis for the investigation of the success of the firms. The results of the basic data were studied by grouping the features of the entrepreneurs and firms by means of cluster analysis. The aim of the groupings was to simplify the interview data, which was highly versatile. The results of the follow-up data obtained through the interviews were grouped in the same way. Continuing in business was studied by means of one-way analysis of variance, contingency coefficient and using logistic regression analysis.

3. Findings

This study examines, firstly, the importance of management capabilities, in terms of internal /external networks, and the importance of strategies for the survival of new firms. Networks as part of the management capabilities of an new entrepreneur are important resources that show that a firm has, at least to some extent, been able to meet the expectations of all of its interest groups, which usually ensures its survival (Freeman, 1984, 1995). Thus Freeman (1984) sees the interest groups around the entrepreneur as belonging to an enlarged sphere of management. Secondly the role of location in the survival of new firms was investigated. According to Johannisson (1998) a major characteristic of entrepreneurial networks is the spatial dimension. It is important to consider the both social and spatial dimensions, when researching networks in relation to the economic features of firms (Johannisson, 1998; Storper, 1995).

Table I shows there are no differences in group management and innovativeness between the surviving and non-surviving firms. However, in the firms which closed business planning and analysis of the environment were more likely to be emphasized than in surviving firms. This confirms the findings of Curran et al. (1993) in the sense that, although small firms have contacts with their surroundings, these contacts do not support the operation of these firms to an extent that influence survival.

Table II shows that the network building and group management styles were more common styles of management than the situational style. A distinct connection emerged between the management style of firms and their survival (p = 0.037). In team-driven firms the closure rate was only seven percent as against about 28 percent in firms that used the network building style of management. This finding tends support the first research hypothesis, which was that the use of internal networks as management capabilities will have a more positive effect on the firm's success than the use of external networks. Overall the main argument for the advantages of team-driven firms is based on the positive effects of a combination of people with diverse personalities, characteristics, knowledge, skills and abilities (Lechler and Gemuenden, 1999; Vesper, 1990).

The business idea behind the setting-up of a new firm and the goals of the firm often change during the critical operational phase of entrepreneurship. By studying the strategic changes in a firm together with the changes its networks by means of business-idea thinking, it is possible to interpret the measures taken to promote growth as one part of the entrepreneurs' learning process (Norman, 1976). Table III presents a logistic regression model describing continuity in business where management capabilities and firm's location were adjusted to take account of the various strategic factors contributing to the business idea. The variables are presented in more detail in appendix.

The estimated model explained the location of the observations in the two groups of firms extremely well. Of the total observations, 92.6% were classified correctly by the logistic regression model. The statistically significant variables were "industry sector", "focus of marketing area[1]", "main product", "style of management", "changes in production process" and "changes in market conditions". As in Almus and Nerlinger (1999), Philipps and Kirchhoff (1989) and Storey and Wynarczyk (1996) industry sector explained success in business. In comparing the survival rates between the metal industry and the business service firms, a larger percentage of business service firms were still in business after six years. In 1996, sixty-three of the metal industry firms and eighty-six of business service firms were still trading (contingency coefficient, $p = 0.001$).

The firms continuing in business after the critical operational phase were often on the way to becoming specialized and growth, but the risks taken by these firms were under control. This finding indicates that firms which survive will little grow (Almus and Nerlinger, 1999; Phillips and Kirchhoff, 1989; Storey, 1994). Firms were able to withstand unexpected changes, among others in the market situation, and had not made the mistake of overestimating demand. In surviving firms, customer networks had often been based on key customers, and the production of innovations was based on careful product development in the critical operational phase. Also, management based on working in groups was emphasized in the firms that continued in business. These entrepreneurial teams bring to the firm the skills needed for the strategy development process (see Cachon, 1990; Ensley et al., 1998; Timmons, 1979).

The firms which closed in years 4–6 had invested very heavily in product development and at the same time expanded their market area during the first 1–3 years of operations. The high degree of specialization of these firms led to growing risks which they had offset through their connections in the environment. It was not, however, possible to compensate for the in adequate entrepreneurial competence by building a network with customers, or with other business contacts in entrepreneurial circles or elsewhere. The failure of these firms can therefore be related to the consequences of too early aspirations for growth (Barrow, 1993). It suggests that, if there are gaps in the entrepreneur's competence, the network building style exerts a clear negative influence on survival. In addition, the findings that the variables "co-operation between firms" and "changes in external personal networks" were not significant in the model support this opinion.

The results of the present study suggest that changes in a firm's competition situation, management style and the competence of the entrepreneur, but not locality, affect survival. It implies that new firm survival is not influenced by locality. A successful start-up also distinguished the firms that had closed down between 4–6 years of operations. These findings differ from Littunen et al. (1998), who found that region influenced closure of a new business. Closure was most common in service centre regions. Typical of the firms that had closed down years 1–3 was that the problems which appeared in the start-up phase had been moved forward. Such a firm was established on the basis of unrealistic expectations and its performance cannot, throughout its short business life, have been anything but weak. Also these findings were not in accord with earlier findings between survival, growth and location (Storey, 1994).

4. Conclusions

This study has examined, the importance of networks as management resources and the local environment in the success of new firms. The criterion of success used was business survival for four to six years. The subjects were Finnish metal products manufacturing firms and business services firms established in 1990.

According to the first hypothesis, the performance of new firms depends upon more internal networks than external networks. Management through interest groups and networks requires a well-balanced entity in which the right interest groups and processes are adjusted to each other. The empirical results showed a clear connection between style of management and the survival/non-survival of firms. In entrepreneurial team-driven firms a group of people participates in the strategic management of the firm, and these firms were found to have survived more often than the others. In these firms the entrepreneurial team participate directly in the activities of the firm, and also handle interest group relationships (Lechler and Gemunden, 1999). The owners of a firm were also found to be the most important interest groups as regards success (Carroll, 1995). In a typical family firm ownership, management and family are combined into a single entity (Hoy and Verser, 1994; Littunen and Hyrsky, 2000). In non-family firms the shareholders can be assumed to the strategic management. The findings were supported by the differences found in the internal and external networks. The results showed that a firm's internal network provides stronger competitive advantage, innovation and efficiency than a loose external network. New entrepreneurs have external contacts with their environment, but these business contacts were more limited, as implied by network thinking (Curran et al., 1993).

According to the second hypothesis, a firm's strategy has a direct and moderating effect on its success. Firstly, the results showed that sector of industry affected continuing in business. Past studies have also indicated that economic sector is connected to the success of firms (Audretsch, 1991; Cressy, 1994; Phillips and Kirchhoff, 1988; Storey and Wynarczyk, 1996). Secondly, an interesting result was that business planning, analysis of the environment and interaction were emphasized in the firms which had closed down. The firms' eagerness to grow and their high level of specialization had often led to a situation of growing risk which they had tried to level down through their business contacts. However, in spite of the interrelationship between these factors the firms' uncontrolled risks had led some of these firms to close down. The market environment is clearly a factor influencing a firm's opportunities for growth and survival. In most cases active strategies, particularly with respect to key customers, were necessary to achieve survival over an extended period. However, it is clear that in order to survive, most firms had paid some attention to the competitiveness of their products by engaging in product development. The findings indicated that survival could not be explained by any single type of strategy (Smallbone et al., 1995). The successful firms were characterized by the ability to make changes in their production processes to complement an active market development strategy.

According to the third hypothesis, local environmental characteristics affect survival in years 1–3 (Storey and Wynarzyk, 1996; Storey, 1994). From the point of view of the network theory, start-up and continuing in business cannot be investigated without taking into consideration changes in the action environment and its features (Johannisson, 1998). The determination to start a firm is a decision to invest in which the firm's local environment and the features of the action environment condition the firm's strategies. However, the findings of this study contradict other findings (Smallbone et al., 1993; Storey, 1994) that regional differences contribute to the success of new firms. Although the firm's local environment affects its survival during the critical operational phase (Littunen et al., 1998), new firms have equal chances of surviving 4–6 years irrespective of their locality. Instead, changes in the competition situation and the firm's strategy affected survival over 4 to 6 years.

Entrepreneurs and the processes they use in starting their firms will vary by line of business, region and their background. In interpreting the results of this study certain central limitations should be kept in mind in planning future research. First, because this study was restricted to two lines of business, caution must be exercised in generalizing the results to other industries and start-up firms. Second, the results indicated that locality did not affect the survival of firms. Future studies, bigger samples from a wider range of industries and regions, could yield more conclusive findings. The findings of the present study also have further implications for policy makers. As far as the development of new firms' activities is concerned, entrepreneurial courses should lay more emphasis on the requirements of entrepreneurship, and the content of individual business activity plans, as entrepreneurs cannot necessarily put advice into practice, and therefore need assistance at the implementation stage. The eagerness of the closed firms to grow was based on unrealistic expectations. Therefore it is recommended that the ProStart business plan programme and the PostStart launch programme of the Ministry of Trade and Industry of Finland are backed up by a follow-up programme to assist once the new firm becomes established. Such a programme would aim at helping to develop the business plan by laying an emphasis on the firm's needs and controlling the new firm's excessive eagerness to grow.

Appendix

Variables used in logistic regression model

Dicotomic variables	Classes of dicotomic variables
Start-up phase:	
Co-operation between firms	1 = no co-operation / 2 = decisive co-operation
Industry sector	1 = metal industry / 2 = business services
Number of products	1 = one product / 2 = several products
Main product	0 = different from that of competitors / 1 = similar to that of competitors
Focus area of marketing[1]	1 = present products / 2 = present and new products
Focus area of marketing[2]	1 = present customers / 2 = present and new customers
Customers as users of the firm' products	0 = has used comparable products / 1 = has not used comparable products
Firm's location	0 = capital area, industrialized urban areas, rural areas / 1 = service centres
Critical operational phase:	
Style of management	1 = situational management style and group management style / 2 = network building style
Changes in external personal networks	
Networks type (1)	1 = no personal networks / 2 = increase in personal networks
Networks type (2)	1 = decrease in personal networks / 2 = increase in personal networks
Networks type (3)	1 = no changes in personal networks / 2 = increase in personal networks
Changes in product policy	
Product policy type (1)	1 = specialized / 2 = highly specialized
Product policy type (2)	1 = stable / 2 = highly specialized
Changes in production process	0 = used capacity has grown / 1 = used capacity has remained unchanged
Change in market conditions	1 = expanding the market area / 2 = increasing the market share and concentrating on key customers
Changes in business activities	1 = few changes / 2 = a lot of changes

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