The High Growth in New Metal-Based Manufacturing and Business Service Firms in Finland

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ABSTRACT. This study examined the effects of the factors involved in the start-up situation and the first seven years' development on the subsequent high growth of firms. The criterion of success used in this study was high growth in business during the first seven years. The subjects were Finnish metal products manufacturing firms and business service firms established in 1990. The results indicated, firstly, that it is the internal networks of firms that bring about competitive advantage, innovations and efficiency. In these entrepreneurial team-driven firms a group of people participate in the strategic management of the firm. It was also found that co-operation between firms and changes in external personal networks contributed to a high rate of growth. The empirical results showed that new firms had equal chances for growth irrespective of their locality. On the other hand, growth was affected by changes in a new firm's competitive situation and by changes in strategic factors. The results also clearly indicated that high growth firms were characterised by rising productivity of labour at the same time as they were generating new jobs.

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1. Introduction

This article aims to contribute to our understanding of how new firms achieve a high rate of growth by analysing the effects of the factors involved in the start-up situation and during the first seven years' development. The firms in question were the best performing firms drawn from a group of new firms which were studied in a project focusing on their development during 1990–1997. Since the study consisted of firms with different performance characteristics, it was possible to compare the development of high growth firms with those performing less strongly.

Much of the entrepreneurship literature is concerned with explaining the factors behind successful firms. Some studies have contrasted firms that grow rapidly with those that grow marginally. According to the study by Fisher et al. (1997) the factors involved in very rapid growth may contribute to our understanding of success in general. Second, since rapid-growth firms are often job creators, ensuring that they prosper rather than stumble in a spectacular manner is of considerable economic importance. One notable inquiry into the determinants of high growth versus marginal survival (Cooper et al., 1994) found that the chances of both survival and high growth were positively associated with having a higher level of education, greater industry-specific know-how, and greater initial financial resources. In another recent study that directly compared low-growth with high-growth firms, it was found that the range and intensity of business networks was markedly higher in the firms that grew rapidly (Zhao and Aram, 1995).

The growth of firms has been evaluated in terms of management and the development of new

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activities as well as the reformulation of a firm's problems and goals. However, several authors have noted that there is no single theory which can adequately explain new business growth (Gibb and Davies, 1990). According to Gibb and Davies (1990), previous studies on growth have included four main types of approach: the impact of the entrepreneur's personal characteristics, the strategic factors affecting the firm's performance, sectoral and broader market-led approaches and organisational development approaches (e.g. Smallbone et al., 1995). Storey (1994) has identified three components of the growth of small firms. These are:

(1) the starting resources of the entrepreneur(s),
(2) the characteristics of the firm,
(3) the types of strategy associated with growth.

This paper focuses on Storey's key elements (Storey, 1994). In search of potential differences in these characteristics between high growth firms and other firms, this study compares Finnish firms in relation to founders' motives in starting up on their own account and in their individual background characteristics, changes in strategic factors, changes in networks, management styles and location characteristics. The study is specially concerned with new firms which have become established. The sample firms were classified into two performance groups on the basis of their performance during 1990–1997 (e.g. Smallbone et al., 1995). The main focus is on comparing the firms in the top "high growth" category with the other surviving companies. These high growth firms were identified on the basis of two criteria:

(1) Rapid growth: i.e. more than doubling sales turnover in real terms over the 1990–1997 period (1990 = base accounting year beginning in month of start-up).
(2) Significant size by 1997: i.e. reaching a minimum sales turnover of FIM 500 000.

The remainder of this article is organised into four sections. First, the aims of this study are stated in more detail. The factors explaining the differences between these two groups of firms are then discussed and analysed in relation to growth, management, networks and features of the environment. The data and research methodology is also reported in this section. The next section reports the findings of the study. Finally, conclusions are drawn about the differences between high growth firms and other surviving firms.

2. Aims of the study

2.1. *The framework of the study*

The purpose of this study was to investigate which of the factors involved in the birth, start-up and the first seven years' development of firms also had an effect on high growth. Here, the establishment of a firm is interpreted as a progressive phase-by-phase process which ends in 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 seen here as based on either experimentation, self-confidence or planning. Entrepreneurship based on experimentation may start as a part-time activity in which the business idea is tested in practice (Lehti, 1990). In entrepreneurship based on self-confidence the founder of the firm has a strong belief in his/her own capacity to influence events and to transform will into practical action (Reynolds, 1992; Shapero and Sokol, 1982; Timmons, 1976). Entrepreneurship based on planning conforms most closely with the process view (Krueger, 1993; Krueger and Brazeal, 1994; Krueger and Carsrud, 1993). Changes in the plans made during the first years of entrepreneurship are evidence of the effects of planning and/or changes in the action environment which could not to be taken into account during the planning phase. The following figure presents the study framework (Figure 1).

The analysis of a firm's start-up situation makes it possible, utilising 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, the general situational factors describing the firm's 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 the network theory a firm's local envi-

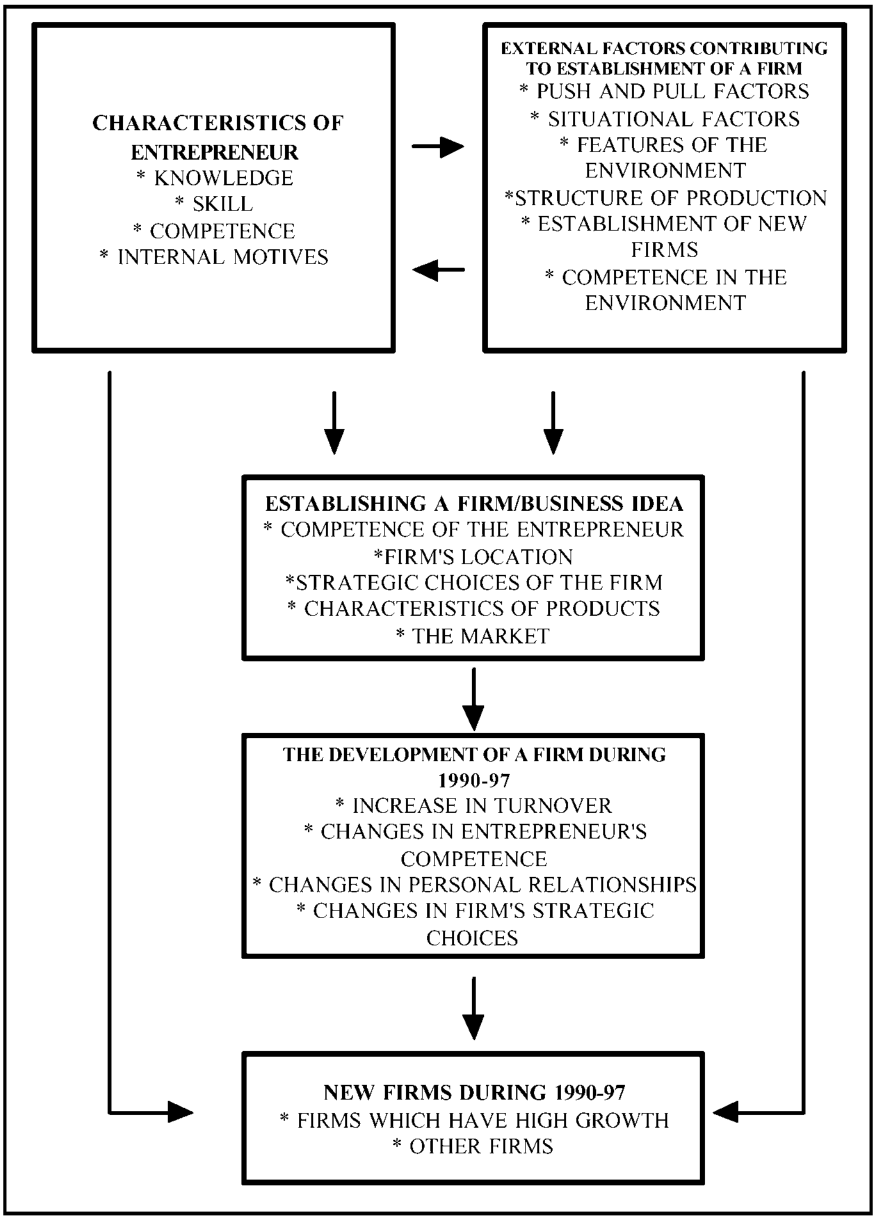

Figure 1. Study framework showing the growth of new firms.

ronment 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. In this study the situational factors are divided into the following groups:

- the entrepreneur's know-how and characteristics (Evans and Leighton, 1990; Ray, 1993; Storey, 1994; Vesper, 1992);
- how the firm is managed (Carroll, 1993; Chrisman et al., 1998; Freeman, 1984, 1995);
- the functionality of the start-up plan (Cooper and Gascon, 1992; Sapienza and Grimm, 1997);
- efficient contact networks (Birley, 1985; Dubini and Aldrich, 1991; Johannisson, 1998);

- strategic choices, arrangements for the financing of the firm and other characteristics of the firm (Norman, 1976; Sandberg and Hofer, 1987; Storey, 1994);
- features of the local environment (Almus and Nerlinger, 1999; Armstrong and Taylor, 1985; Storey, 1994).

Situational factors often link the success of new firms with the kinds of entrepreneurial knowledge and skill considered to be important to growth (Cooper and Dunkelberg, 1987; Cooper and Gascon, 1992; Ray, 1993; Sapienza and Grimm, 1997; Storey, 1994; Vesper, 1992). 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. In this paper, how a firm is managed is seen as a central factor in the entrepreneurial competence of the individual.

In this study the motives for founding are divided into "push" and "pull" factors (Gilad and Levine, 1986; Storey, 1994). This model distinguishes those entrepreneurs motivated by a positive idea, those with specific knowledge of a market opportunity, and those primarily forced into entrepreneurship. The motivations of those attracted by the opportunity of perceived profit are in accordance with conventional economic theory. A negative motivation exists where the founder feels pushed into starting a firm under pressure of circumstances. Individuals may be dissatisfied with their present jobs or promotion aspects or may also be faced with the prospect of unemployment. The "pull" factors may also be psychological. Such individuals may have a desire to work for themselves or they may want to realise their ambitions. The founders of high growth compared to those of other firms might have had different motives for setting up in business. They could have been forced into founding a firm or might have found a new business opportunity in the market. Thus the variable Motives at start-up (external push and pull factors, internal motives) was constructed to reveal the motives behind founding a business. This leads to the first research hypothesis:

(1) An entrepreneur's positive pull factors will have a more positive effect leading to high growth than push factors or internal motives.

According to Low and MacMillan (1988) the network theory is increasingly being applied to entrepreneurial research. Entrepreneurial networks can be categorised into two types, informal and formal, deriving from different sources (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 recognised and able to acquire further resources. Second, a network with all its direct and indirect linkages gives the entrepreneur access to various segments of the environment (Johannisson, 1998). From the point of view of stakeholder thinking these segments could be nominated as the firm's interest groups. 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 have common inputs with a firm interact 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 an individual or 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).

The network theory also offers an approach to describing the development of the entrepreneur's know-how. Accordingly, it is not possible to limit the interrelations 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 activities. 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. Furthermore, several empirical studies confirm the hypothesis that entrepreneurial teams are more successful than single founders. Cachon (1990) emphasises the role of team members in bringing necessary 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 to ensure the firm's success. Overall the main argument for the advantages of teams is based on the positive effects of combinations of people with diverse personalities, characteristics, knowledge, skills and abilities (Vesper, 1990; Vyakarnam et al., 1997; Lechler and Gemuenden, 1999; Littunen, 2000). These contacts could be viewed as internal networks since they generally consist of team members.

According to Curran et al. (1993), whose view departs from that of network thinking, the importance of co-operational relations is dependent on the firm's situation, with excessive networking threatening the independent position of the entrepreneur. In other words, small entrepreneurs may have contacts with their surroundings, but the importance of these contacts is more limited than the network theory implies (Curran et al., 1993). From these theoretical starting points the research hypotheses concerning the informal networks of the entrepreneur were formulated in this study as follows:

(2) The use of internal networks as part of a new entrepreneur's management capabilities will have a positive effect leading to high growth.
(3) Entrepreneurs in high growth and other firms will have different networks.

Strategic choices of firms

The strategy of a new firm must be designed to utilise its management capabilities in order to attain its goals and ways of realising 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 growth in its industry sector (Porter, 1980, 1985). According to Mintzberg (1987), the strategy of a firm can be conceptualised as a plan, position in the market, vision concerning the future and the firm's state or as a model for actions in the stream of decisions. In this study the basic strategic choices of firms were studied as models for actions. The conceptualisation of a firm's strategy as a model for actions is based on the view in which the business plan and the operative management are connected. One purpose of this paper was to study how changes in the competitive situation of a firm affects its growth. For this reason the investigation of the firm's model for action is approached from the point of view of the firm's market orientation, whether a strategy of co-operation, focusing on the local market, or specialisation (Kettunen, 1985). In addition, firms concentrating on exports were assigned to a category of their own. In this study four categories based on the firm's market orientation were formed: sales as a subcontractor, concentration on local markets, specialisation as a strategy and internationalisation as a strategy. These strategies and management actions were studied in relation to products and markets, changes in ownership, changes in product and marketing policy, changes in production processes and changes in networks (Storey, 1994). On the basis of these theoretical starting points the fourth research hypothesis was framed as follows:

(4) A firm's strategy will have a direct and mediating effect on its high growth.

Features of the environment

In considering the birth of a new firm, the effect of its immediate surroundings is considerable, given that a significant share of births occur within the entrepreneur's home district and that these firms' business activities are often directed at the local market. The development and start-up of new firms is most likely to be successful in regions that have the following features: most of the firms in the region are small; most of the employees have business managerial know-how; the level of education in the region is high – especially the percentage of persons with high technical education; the economic life of the region can be characterised as active; the people living in the region have property that can be used as security for a loan; and industry in the region is not restricted to lines of business where entering the market is difficult (Armstrong and Taylor, 1985). Storey (1982) has shown that the most backward areas lack the features presented above. The production structure also affects the strategic choices of new firms. Owing to the influence of the local production structure, starting a new firm is often a question of reorganising existing business activities (Littunen, 1991).

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 in regions where the environment offered good opportunities for innovation and differentiation. A more developed production structure lowers market entry barriers with the consequence that 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 fifth hypothesis:

(5) A firm's location will affect its growth.

In this paper the regional units are subregions, which are formed from two or more municipalities. The subregion is relevant to entrepreneurial activities because it usually corresponds to the area served by the market, labour market and co-operative network of small firms. The Finnish subregions have been classified into four categories according to their industrial structure (Pikkarainen, 1993, in which seven types of regions are distinguished). The four categories used here are based on Pikkarainen's original seven types as follows: (1) the capital area; (2) centres where service industries are dominant and centres where the industrial structure is highly versatile; (3) industrialised 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 in order to carry out the regional examination with the data described above. However, this four-category solution can also be justified on the grounds that the characteristics of the grouped regions are similar (for statistical information on the regional categories, see Littunen et al., 1998).

2.2. *Data collection and subject*

The study reported here is part of a longitudinal research project which has followed the development of 200 SMEs in metal-based manufacturing and business services since their start-up in 1990 (Littunen, 1992). In that year the total number of SMEs established in these two sectors of industry in Finland was 2,583, which accounted for nearly 12% of the total number of firms in the two sectors. These sectors were chosen because of their primacy among Finnish SMEs. Metal-based manufacturing is the most important of these sectors. The sampled firms in this category manufacture (a) metal products and machinery, (b) electronic and electrical equipment, and (c) vehicle machinery and equipment.

Since the 1980s, the greatest volume and rate of small business growth in Finland has been in the information-intensive business services sector (Tervo and Niittykangas, 1994). The sampled business service firms came from the following areas: technical and engineering services, computer services, market research, legal consulting, and other professional and scientific services.

The study employed a stratified sampling technique where the strata were the firm's size and line of business. The selection of the strata resembled Neyman's allotment (Pahkinen and Lehtonen, 1989). Sampling from the different strata was done through simple random sampling, which requires that observations are weighted to correspond to the general population in the two sectors ($N = 2{,}583$).

The owner-managers were personally interviewed for the first time at the beginning of 1992. Follow-up data were collected annually through telephone interviews held between 1993 and 1996 and in 1998. In addition, each year the first author conducted 20–25 interviews personally in order to spot possible inaccuracies in the telephone interviews. For the first personal interviews, 200 firms were selected as subjects from the SME register of Statistics, Finland. Interviewers were recruited to carry out the fieldwork. They were given a half-day training session including written instructions on interviewing. The aim was to ensure the consistent interpretation of the questions used in the course of the interviews.

The sample consists of 138 metal-based manufacturing firms and 62 business service firms from all over Finland. At the four-year follow-up 134 firms continued to function, although for nine of these firms data for the measure of growth was missing, 38 firms had closed down and 28 firms refused to participate in the two follow-up phases. After the fifth year of operations 128 firms were still trading. At the seven-year follow-up 86 firms had survival, 55 firms had closed down and 59 firms refused to participate in the follow-up. Thus the present study concentrates on the 86 surviving firms (98 when weighted). About 65 percent of the high growth firms in the sample were business service firms and about 35 percent were in metal-based manufacturing.

The subject firms were mostly small: about 60 percent had less than five employees, and were often dependent on the entrepreneur's own labour and that of his/her family. This was of great importance for the implementation of the study. The connection between the firm and the entrepreneur was strong. The strategy of the firm was chosen by the entrepreneur. Over 45 percent of the entrepreneurs in the study had basic education no higher than elementary school. Empirical studies suggest that new entrepreneurs start their firms by relying on work experience gained earlier as employees in a firm owned by someone else. Most of the new entrepreneurs had come from small or middle-sized firms, a fact which emphasises the firm's structure in the start-up process. In most of the firms investigated the selection of products was in the first place based on the entrepreneur's previous work experience. Other important factors affecting the choice of the firm's product were a combination of previous work experience and vocational training and identifying the needs of customers in the market.

The data were analysed by grouping the features of the respondents and their firms by means of cluster analysis. The aim of these groupings was to unify the rather varied interview data. One-way analysis of variance and logistic regression analysis were used as statistical techniques in locating differences between high growth and other firms and their owner-managers in the selected attributes. The variables in the models are explained in the appendix.

3. Findings

This study examines, firstly, the motives behind the setting up of new Finnish high growth and other firms. Among the high growing firms' owners, positive situational and "pull" factors such as business opportunities were more frequently cited as underlying motives for starting-up. Among the other firms' owners, the motivating influences were more often unemployment or fear of redundancy, and internal motives (contingency coefficient, $p = 0.003$).

Secondly the importance of management capabilities, in terms of internal/external networks, and the importance of strategies and location for the high growth of new firms was investigated. Networks as part of the management capabilities of a new entrepreneur are important resources that show that a firm has, at least to some extent, been able to meet the expectations of all its interest groups, which usually ensures its success (Freeman, 1984, 1995). Thus Freeman (1984) sees the interest groups around the entrepreneur as belonging to an enlarged sphere of management. In this context, the management capabilities are measured in terms of different styles of management (Freeman, 1984, 1995). The management styles of firms were described according to four different dimensions: group management (2 items), action planning (6 items), innovativeness (4 items), and interactivity (2 items). No differences were seen in group management, action planning and innovativeness. Interactivity was given more emphasis in the other firms (Table I).

Using cluster analysis the firms were classified into three categories portraying styles of management according to the participation in the firm's management of different interest groups (Table II). The situational style of management characterises the entrepreneur who takes an independent position and does not make very much use of personal networks. In the network building style the entrepreneur has obtained ideas about how to manage a firm through discussions with customers as well as with his entrepreneurial and other business contacts or with specialists. In the group management style the key affairs of the firm are managed by a group of people. Applying the definitions for entrepreneurs and entrepreneurial teams should enable the groups founding, owning, managing, and planning for entrepreneurial, high growth ventures to be clearly identified as entrepreneurial teams (Carland et al., 1984; Ensley and Banks, 1992; Ensley et al., 1998).

In Table II the network building style and group

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

Dimensions	High growth firms (mean)	Other firms (mean)	F-prob.
Group management	3.77	3.40	0.151
Action planning	3.58	3.33	0.063
Innovativeness	4.07	3.99	0.547
Interactivity	3.52	4.13	0.000**

* A 5-point scale has been used in the indicator. The results have been weighted by factors calculated from the basic data set and initial random samples of the study.

TABLE II
Firms' styles of management in high growth and other firms

	High growth firms	Other firms	Total
Situational style	18.8	10.2	14.1
Network building style	22.2	58.7	42.3
Group management style	59.0	31.1	43.6
	100.0% (n = 44)	100.0% (n = 54)	100.0% (n = 98)

management styles were clearly more common styles of management than the situational style. There was a distinct association between the management styles of the high growth firms compared to the other firms (contingency coefficient, p = 0.001). The group management style was stressed in high growth firms. About 59 percent of the high growth firms did not count solely on the entrepreneur's resources, but key affairs in these firms were managed by a group of people. In about 59 percent of the other firms the network building style was dominant.

The business idea behind the setting-up of a new firm and the goals of the firm often change during the early years of entrepreneurship. By utilising Storey's (1994) key elements in the growth of small firms to study the starting resources of the entrepreneur and the characteristics of the firm together with the changes in its strategy, it is possible to interpret the measures taken to develop a firm as part of the firm's growth process (Storey, 1994). Table III presents four logistic regression models describing high growth vs. other firms, where management style, co-operational relationships, the firm's location and changes in the firm's strategy have been adjusted to take account of the various characteristics of both firm and entrepreneur which contribute to the business idea. The starting point in the models was that the factors explaining a firm's high growth will vary according to the strategy chosen. A model was formed for each of the four models for action (Table III). The variables are presented in more detail in the appendix.

The estimated models explained the location of the observations in the examined groups rather well. Out of all the observations made, 92.9–94.1% were classified correctly by the logistic regression models. The high classification rates (91.9–94.6%) of the models were mostly based on the successful grouping of the high growth firms, although the firms in the other group were also classified correctly. In all four models the following variables received statistically significant values: motives for establishing a firm, vocational training, style of management (1), change in market conditions, change in production process, change in external personal networks, co-operation between firms, and change in product policy type (2). It is noticeable that the variable "line of business" did not obtain a significant value in these models (Table III).

The first research hypothesis addressed the motivational factors influencing the founders prior to start-up. The results were very interesting. Among the high growth firms' owners, situational factors or positive ("pull") factors such as the possibilities provided by the market situation or previous customer contacts were more frequently cited as underlying motives for start-up. Among the other firms' owners, the motivating influences were more often unemployment or its threat, or internal motives and values (Table III).

Firms which had experienced changed market conditions in the third year of operation were well represented in the group of firms which had high growth. In a small high growth firm the personal relationships of the entrepreneur are part of the know-how controlled by the entrepreneur. By increasing his or her personal relations networks the entrepreneur is able to create new models for action with the persons and organisations supporting the business (Johannisson, 1998). The findings of the present study showed that management based on working groups was emphasised in the high growth firms. These entrepreneurial

TABLE III
The significance of the four models describing the high growth of new firms (variable to be explained: other firms vs. firms which have high growth)

Variables	Subcontracting (significance)	Local market (significance)	Specialisation (significance)	Internationalisation (significance)
Start-up phase:				
Motive	0.0836	0.0522*	0.0995	0.0679*
Motive (1)	0.0536*	0.0240*	0.0327*	0.0268*
Motive (2)	0.0277*	0.0151*	0.0382*	0.0213*
Planning of the start-up process	0.8639	0.9506	0.2921	0.9415
Firm's location	0.2241	0.2152	0.3477	0.2548
Location (1)	0.6998	0.7360	0.4707	0.8874
Location (2)	0.1704	0.1331	0.0731*	0.1446
Location (3)	0.2528	0.1784	0.9021	0.1530
Line of business	0.2255	0.1465	0.0922	0.1193
Focus of marketing area	0.2658	0.2122	0.3217	0.2466
Marketing area (1)	0.2206	0.2158	0.2845	0.2377
Marketing area (2)	0.2283	0.1585	0.1596	0.1596
Main product	0.1882	0.1603	0.8864	0.1627
Financing at start-up	0.7343	0.9505	0.7026	0.9486
Expert help in the start-up	0.0458*	0.0269*	0.0922*	0.0331*
Nature of start-up decision	0.0656*	0.0682*	0.1338	0.0801
Vocational training	0.0721*	0.0274*	0.0338*	0.0327*
Work experience	0.0882	0.0381*	0.0455*	0.0502*
Third year of operation:				
Style of management	0.0749*	0.0472*	0.0720*	0.0572*
Style (1)	0.0610*	0.0541*	0.0574*	0.0500*
Style (2)	0.1007	0.1093	0.1649	0.1322
Change in product policy	0.3624	0.4426	0.0987	0.4949
Change in production process	0.0332*	0.0290*	0.0232*	0.0288*
Change in market conditions	0.0608*	0.0662*	0.0548*	0.0542*
Change in external personal networks	0.0420*	0.0187*	0.0286*	0.0228*
Co-operation between firms	0.0604*	0.0395*	0.0446*	0.0456*
Firm's strategic choice	0.4211	0.5874	0.0647*	0.7045
Sixth year of operation:				
Change in product policy	0.0906	0.0770	0.0969	0.1014
Product policy type (1)	0.4848	0.5569	0.3066	0.5759
Product policy type (2)	0.0291*	0.0236*	0.0333*	0.0326*
Change in production process	0.7871	0.8345	0.4757	0.9923
Change in ownership (between 1–6 years of operation)	0.7210	0.8333	0.7660	0.9547
Constant	0.0377*	0.0223*	0.0249*	0.0201*
–2 log likelihood χ^2-test quantity	0.9113	0.9030	0.9658	0.8996
df	57	57	57	57
Total classification rates (%)	92.9	94.1	94.1	92.9

* $P < 0.07$.

teams bring to the firm the skills needed for the strategy development process (Cachon, 1990; Vesper, 1990; Vyakarnam et al., 1997; Ensley et al., 1998; Lechler and Gemuenden, 1999; Littunen, 2000). In addition high growth was also explained by the adequacy of the entrepreneur's vocational training.

In general, the basic strategy used by high growth firms was to build on an established product base and market position by identifying new markets for existing products in the critical operational phase of entrepreneurship (Smallbone et al., 1995). The study demonstrates clearly that the willingness and the ability to respond to new market opportunities in the critical operational phase are a vital characteristic of high growth firms. On the other hand the basic strategy used by the other firms was to build via existing markets in the critical phase of entrepreneurship. However, the findings of this study also indicated that some of the weakly performing firms had vigorously undertaken the development of new products in the sixth year of operation.

The factors explaining high growth varied according to the strategy adopted by the firm. The high growth subcontracting and local market firms had often been started as co-operative ventures between existing firms and were owned by other firms (significant variable; nature of start-up decision). The goal of family firms was often the development and support of the members of the founder's family, while in firms which originated in the reorganisation of existing firms the goal was profit, effectivity and growth (Donckels and Fröhlich, 1991). In local market firms, specialist firms and internationalising firms high growth was also explained by the adequacy of the entrepreneur's work experience in the field. Likewise, in subcontracting, local market and internationalising high growth firms with developing strategies, trust had been put in the entrepreneur's own know-how, as these firms had rarely used external expert help during start-up (see Baldwin et al., 1997; Mole, 2000).

According to the empirical results, new firms have equal possibilities for growth irrespective of locality. Locality was not a statistically significant factor in the models describing the growth of new firms, although it played a role in the survival of firms. These findings differ from those of Littunen et al., 1998, who found that closure was influenced by region. Closure most commonly occurred in service centre regions. It was typical of the firms that had closed down during years 1–3 that the problems which appeared in the start-up phase had been shunted 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 indicating a relationship between survival, growth and location (Storey, 1994).

Our results show also that jobs are created in the long term through the development of competitive businesses which succeed in substantially increasing their sales in real terms. Taking the 86 surviving firms as a whole, change in employment during the period 1990–1997 showed a significant correlation with change in real sales turnover (Table IV). The best performing firms thus accounted for the majority of additional jobs: the sample new high growth firms (which accounted for 22 per cent of all firms in the study) created 321 new jobs, an average of 7 additional jobs each over the seven-year period (Table IV).

4. Conclusions

The aim of this study was to examine the importance of management, networks, changes in strategy and features of the environment in the success of new firms. The criterion of success used in this study was high growth in business during the first seven years. The subjects were Finnish metal products manufacturing firms and business services firms that had started up in 1990.

According to the first hypothesis, the founders of high growth compared to other firms might have different motives for setting up a business. Among the high growth firms' founders, the presence of positive situational and "pull" factors were more important motivating and precipitating factors in the creation of a new business. Among the other firms' founders, the motivating influences were more often unemployment or fear of redundancy and often internal motives. The second objective was to compare the firms in management style and networks. Management through

TABLE IV
Change in employment 1990–1997 and growth

Category of firm	1990 Employees	1997 Employees	Net change	Percentage change	Mean change per firm
High growth firms (*n* = 43)	211	532	+321	+152.1	+7.4
Other firms (*n* = 40)	402	331	–71	–17.7	–2.0
Total (*n* = 83)	613	863	+250	+40.8	+2.9

interest groups and networks requires a well-balanced entity in which the right interest groups harmonise with each other. The empirical findings showed a clear connection between styles of management and the high growth of firms. In entrepreneurial team-driven firms a group of people participate in the strategic management of the firm, and these firms were found to have high growth more often than the others. In these firms the members of the entrepreneurial team participate directly in the activities of the firm, and also handle interest group relationships (Vesper, 1990; Vyakarnam et al., 1997; Lechler and Gemunden, 1999). The founders of a firm were also found to be the most important interest group as regards success (Carroll, 1995). The results showed that a firm's internal networks (= entrepreneurial teams) brings about great competitive advantage, innovations and efficiency. The findings of this study also demonstrate that co-operation between firms and changes in external personal networks are an important factor in achieving high growth, as the variables "changes in external personal networks" and "co-operation between firms" were significant in the four models.

According to the fourth hypothesis, a firm's strategy was expected to have a direct and mediating effect leading to high growth. The market environment is clearly a factor influencing the opportunities for growth. In most cases active strategies, particularly with respect to markets, were necessary to achieve growth over an extended period. Change in product policy (developing new products) in the third year of operation was not statistically significant. Obviously, the best performing new firms also pay some attention to their products, although they are more active in developing new markets in the critical operational phase of entrepreneurship. However it is clear that in order to survive over seven years, most firms had paid some attention to the competitiveness of their products or their products were more competitive than those of other firms in the start-up phase. As in the study by Smallbone et al. (1995), growth could not be explained by any single type of strategy. The most successful firms were characterised by an ability to make changes in their production process to complement an active market development strategy.

According to the fifth hypothesis, local environmental characteristics affect the growth of a firm. From the point of view of the contingency theory, the growth and start-up of a firm cannot be investigated without taking into consideration change in the action environment and its features. The decision 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. The firm's local environment affects its survival in the critical operational phase (Littunen et al., 1998). According to the results of this study, new firms have equal chances for growth independently of their locality. The firm's region was not a statistically significant factor in any of the four models describing the growth of new firms.

In interpreting the findings of this study, two limitations should be observed. Firstly, since the study was restricted to firms in two industries, caution must be exercised in generalising the results across other sectors. Secondly, at the time the research was conducted the Finnish economy was in the middle of a recession, which undoubtedly affected the results. Future studies, conducted during a less turbulent time period and with bigger samples from a wider-range of industries and regions, would yield more conclusive findings. This study also has implications for policy makers. According to the findings of this study high growth firms were increasing their labour productivity at the same time as they were generating new jobs. Overall this implies that the situation of newly-established firms should be more central in implementing SME policies. As far as the development of new firms' activities is concerned, entrepreneurial courses should lay more emphasis on the requirements of entrepreneurship and on the content of individual business activity plans, as entrepreneurs cannot necessarily put advice into practice, and therefore need assistance at the implementation stage. Also, it is recommended that the ProStart business plan programme and the PostStart launch programme of the Finnish Ministry of Trade and Industry are backed up by a follow-up programme over the first three years of entrepreneurship which would aim at developing the business plan with the emphasis on the firm's needs. It would also help policy makers to choose the new firms with the highest growth potential, since growth tends to be a discontinuous process (Smallbone et al., 1995).

Appendix. Variables used in logistic regression models

Variable	Values of variable
Firm's strategy:	
Focus of marketing area	0 = present customers/1 = new customers/2 = present and new customers
Marketing area (1)	0 = present customers/1 = present and new customers
Marketing area (2)	0 = new customers/1 = present and new customers
Firm acting as subcontractor	0 = no/1 = yes (over 50% of sales)
Firm acting in the local market	0 = no/1 = yes (100% of sales)
Specialised firm	0 = no/1 = yes
Internationalised firm	0 = no/1 = yes (export firm)
Main product	0 = different from that of competitors/1 = similar to that of competitors
Change in product policy (3rd year)	0 = stability/specialisation/1 = highly specialised
Change in production process (3rd year)	0 = capacity has grown/1 = capacity has remained unchanged
Change in market conditions (3rd year)	0 = concentration on key customers/1 = expanding the market area, increasing the market
Co-operation between firms	0 = no/1 = yes
Change in product policy (6th year)	1 = specialisation/2 = stability/3 = highly specialised
Product policy type (1)	0 = specialisation/1 = highly specialised
Product policy type (2)	0 = stability/1 = highly specialised
Change in production process (6th year)	0 = capacity has remained unchanged/1 = capacity has grown
Change in ownership	0 = ownership had not changed/1 = ownership had changed
Strategic decision-making:	
Planning of the start-up process	0 = not as planned/1 = as planned or better
Changes in external personal relationships	0 = no personal networks or no changes in personal networks/1 = increase in personal networks
Style of management	1 = situational management style/2 = network building style/ 3 = group management style
Style (1)	1 = situational management style/2 = group management style
Style (2)	1 = network building style/2 = group management style
Expert help in start-up	0 = no/1 = yes
Firm's characteristics:	
Firm's location	1 = capital area/2 = service centres/3 = industrialised urban areas/4 = rural areas
Location (1)	0 = capital area/1 = rural area
Location (2)	0 = service centres/1 = rural area
Location (3)	0 = industrialised urban areas/1 = rural areas
Motives at start-up	1 = pull or situational factors/2 = unemployment or treat of it/3 = internal motives
Motive (1)	0 = pull or situational factors/1 = internal motives
Motive (2)	0 = unemployment or treat of it/1 = internal motives
Nature of start-up decision	0 = family business, 1 = shareholders in firm
Financing at start-up	0 = mostly part capital investment of entrepreneur 1 = mostly part loan financing
Line of business	1 = metal industry, 2 = business services
Entrepreneur's qualifications:	
Vocational training	0 = no vocational education/1 = vocational training
Work experience	0 = one-sided/1 = many-sided

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