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Entrepreneurial Teams: Comparing High-growth Software Firms through Structure and Strategy

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Entrepreneurial teams

Comparing high-growth software firms through structure and strategy

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Abstract

Purpose – The purpose of this paper is to explore hypothesis that high-growth firms founded by entrepreneurial teams use a unique combination of organic structure and emergent strategy.

Design/methodology/approach – A quantitative study of 445 software development firms in the USA and 219 firms in Ireland was undertaken with a valid response rate of 22 per cent and 38 per cent, respectively.

Findings – Generally, all classifications of firms in the USA and in Ireland demonstrated a combination of organic structure and emergent strategy at the beginning of their existence. As the US firms grew older they moved towards a combination of organic structure and deliberate strategy, while Irish firms moved towards a combination of mechanical structure and deliberate strategy that was hierarchical and organised.

Research limitations/implications – The survey was conducted in only one industry and some firm classifications had small cell sizes.

Practical implications – The ambition of this study was to offer owner-managers an evidence-based structure/strategy combination that would support the attainment of high-growth.

Originality/value – This was the first occasion that the concept of a combination of structure and strategy was explored as an explanation for high-growth amongst firms founded by entrepreneurial teams.

Keywords Entrepreneurialism, Teams, Emergent strategy, Computer software, Ireland, United States of America

Paper type Research paper

Introduction

The evidence of a positive relationship between entrepreneurial teams and high-growth firms has been building over the past three decades, Watson *et al.* (1995) highlighted that the literature was still focused primarily on the individual. However, in more recent years, some investigations into the relationship between entrepreneurial teams and performance have emerged through writers such as Birley and Stockley (2000), Vyakarnam and Handelberg (2005) and Vanaelst *et al.* (2006) who highlighted the advantages of combining talents to create and advance an enterprise. However, given the body of evidence suggesting that high-growth firms are positively linked to entrepreneurial teams (Cooper and Bruno, 1977; Obermayer, 1980; Teach *et al.*, 1986; EFER, 1995; Thakur, 1999; Littunen and Tohmo, 2003), it has been surprising that a greater body of research has not been undertaken on this topic. This article challenges the orthodoxy of entrepreneurship as a solo practice and investigates the relationship between high-growth firms founded by entrepreneurial teams and the combinations of structure and strategy that they employ. The work analyses software firms both in the USA and in Ireland, thereby offering additional depth and insight to the findings. The ultimate ambition of the work is to identify a unique coupling of structure and strategy that is utilised by successful entrepreneurial teams, thereby offering those that follow a greater prospect of attaining high-growth, no matter what country a firm might have its origins.

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Understanding entrepreneurial teams

While it is some years now since Bird (1989) suggested that research concerning entrepreneurial teams was sparse and largely anecdotal, the study of entrepreneurial teams remains a relatively recent phenomenon and arguably still without great insight. One of the earliest definitions on the term "entrepreneurial team" was presented by Kamm *et al.* (1990) who stated that an entrepreneurial team consisted of two or more individuals who jointly establish a business in which they have equal financial interest. In later years, Cooper and Daily (1997) suggested that an entrepreneurial team involved a shared commitment to a new venture, Katzenbach (1997) proposed that what must be shared is accountability, while Cohen and Bailey (1997) advocated that entrepreneurial teams were a group of individuals who shared independent tasks and outcomes for these tasks. Following a comprehensive review of definitions on entrepreneurial teams, Schjoedt (2002) defined it as follows:

> An entrepreneurial team consists of two or more persons who have an interest, both financial and otherwise, in and commitment to the venture's future and success; whose work is interdependent in the pursuit of common goals and venture success; who are accountable to the entrepreneurial team and for the venture; who are considered to be at the executive level with executive responsibility in the early phases of the venture, including founding and pre-start up; and who are seen as a social entity by themselves and by others.

While the debate on the challenge of identifying a definition for the term "entrepreneurial team" could continue unabated for some time, a definition had to be used for operational purposes in this study, and the one selected was that highlighted by Cooney (2005) whereby an entrepreneurial team was defined as:

> Two or more individuals who have a significant financial interest and participate actively in the development of the enterprise.

The purpose of "significant financial interest" was due to the recognition that only sporadically would it occur that all partners would have equal financial interest, and it also eliminated those who have invested small sums of money since they are unlikely to be critical constituents of the team. The question of what constitutes "significant" is not fully defined and can only be interpreted satisfactorily within a specific context. The intent of the phrase "participate actively" was designed to eliminate sleeping or silent partners (i.e. those who invest capital but do not involve themselves beyond seeking a return on their investment). Additionally, the definition excluded venture capital firms, banks, and other investment institutions since it was only concerned with individuals. The definition provided here offers a clear understanding of what is meant by the term "entrepreneurial team" and is utilised as the standard interpretation of the term throughout the remainder of this work comparing high-growth firms in the software industry.

It is arguable that high-growth firms can be detected in any industry. However, the literature implies that high-growth firms are most likely to be found in growth industries (Vesper, 1990; Gatignon and Xuereb, 1997). For the purposes of this research, the industry selected was the software industry as this market was experiencing growth in the selected countries of study and the industry had already been the subject of studies on team foundations that would make deeper comparisons possible. Nevertheless, some concerns about the work had also been identified since a number of writers believed that the link between structure, strategy, industry and performance was weak. Carter *et al.* (1992) had expressed surprise that strategy did not directly predict new venture survival, although they did find significant strategy/industry interactions in some industries, while Fombrun and Wally (1989) discovered that contrary to expectations, the relationship between strategy and structure failed to demonstrate a significant effect on the levels of performance of the enterprises scrutinised in their work. However, following considerable deliberation at the conclusion to the first phase of the research, it was determined that while being cognisant of these concerns, the literature review had identified an opportunity to analyse the structures and strategies employed by high-growth firms in the software industry.

Identifying appropriate structural configurations

As this study was an examination of the relationship between entrepreneurial teams, high-growth firms and the structures and strategies that they employed, the initial construct theorising focused on issues of organisational structure in the context of an evolving environment. Systems theorists such as Wiener (1948) and Katz and Kahn (1966) argued that organisations are continuously altering processes between the firm and the environment, necessitating complex multidimensional models concerning cause and effect relationships. Blau and Scott (1962) indicated that all firms include an informal element which correlated with the formal structure, while Thompson (1967) talked of "pooled, sequential, and reciprocal organisational coupling". "Modern" structural theorists (e.g. Bolman and Deal, 1984) remained true to the classical concept of efficiency although attracted by the neo-classical, behavioural and systems approaches. Organisational ecology theorists such as Hanan and Freeman (1977), Covin and Slevin (1991) and Zahra (1993) examined integrated firm level behaviour with firm level performance and the external environment, but this approach runs contra to the doctrine of rational sanction because its outcomes are attributed to chance or fortune, which by definition cannot be managed. Meanwhile, contingency theorists such as Lawrence and Lorsch (1967), Kast and Rosenzweig (1973) and Pfeffer (1982) took the view that there was no one best universal structure but instead emphasised the need for flexibility. While the merits of each of these perspectives could be vigorously debated, they do highlight how the overall philosophy of organisational structures has softened from the "scientific management" era of Taylor (1911) to the more modern notion of individual contingent composition.

Burns and Stalker (1961) analysed 20 industrial firms in the UK and the effects of the external environment on their pattern of management and economic performance. They distinguished five different kinds of environments ranging from "stable" to "least predictable" and they also identified two divergent systems of management practice and structure that were "mechanistic" and "organic". According to Burns and Stalker, the mechanistic system was a more rigid structure and was more appropriate to stable conditions whose characteristics are similar to those of bureaucracy, while the organic system was a more fluid structure appropriate to changing conditions and unforeseen circumstances that constantly arise, requiring actions outside defined roles. The location of authority in an organic system is by consensus, and the lead is taken by that person who is seen as most informed and capable. However, while firms are not hierarchical they are stratified. Commitment to goals is greater in the organic system and it becomes more difficult to distinguish between the formal and informal organisation. Also, the development of shared beliefs in the values and goals of organic systems are contrasted sharply with the monitoring of performance in the mechanistic system. The relationship between the mechanistic and organic system is not rigid according to Burns and Stalker, and an organisation moving between a relatively stable and changing environment may also move between the two systems. Thus the relationship is elastic and may oscillate between both forms. Each system is appropriate to its own set of conditions and neither is proffered as being superior under all circumstances. Burns and Stalker clearly stated that nothing in their experience justified that the mechanistic system should be superseded by the organic system in times of stability.

The Burns and Stalker (1961) paradigm of organic/mechanistic dimensions was considered most apt for this study since it argued that a firm could move between these points depending upon its circumstances. High-growth firms in quickly changing environments should be organic, but as the firm grows or the environment stabilises it may move to a more mechanical format, although it can also move back again if conditions alter. These firms differ from non-high-growth firms because of the need to adapt quickly which the organic system allows them to do more easily. Burns and Stalker would argue that bureaucratic organisations cannot adjust to environmental fluctuations in such a manner. Why teams and not individuals? As firms established by lone entrepreneurs grow, they need to employ additional expertise at management level. The introduction of these managers begets roles, responsibilities and inevitably, hierarchy. To quote Olson (1987): "entrepreneurs often fail to move from a loose, informally run business to one which employs second level managers and a more formal system of planning, or organising, and control. Without these changes it can be extremely difficult to survive the growth phase". But entrepreneurial teams will not require such changes as the founders will already have the expertise within themselves and therefore as the firm grows the new people whom they employ will be positioned about them to support their activities in the organic configuration that has existed since the beginning. Therefore the first hypothesis is that:

H1. High-growth firms led by entrepreneurial teams in the software development industry use an organic structure.

The basis for this philosophy pivots on the capacity of the firm to structurally realign itself to the environment as promoted by the contingency theorists.

Selecting the pertinent strategy

In selecting an appropriate strategy model for this study, the issue of whether structure follows strategy (Chandler, 1962) or strategy follows structure (Peters, 1992) inevitably arose. In the literature, Williamson (1975) took the view that strategy needed to be resolved first, and that the organisational structure followed thereafter. Whittington (1993) believed that the Classical and the Evolutionary approaches that structure follows strategy were too simplistic. He suggested that the Systemic approach was to be sensitive to context, and the Processual approach was not to expect the relationship between structure and strategy to follow the neat sequential logic of the Classicists. Whatever the optimal theoretical base might be, Whittington argued that the matching of strategy with structure was clearly critical to a firm's performance. Lynch (1997) discerned five main criticisms to the "strategy follows structure" process and asserted that the type of structure is as equally important as the business area in developing a strategy, and that the structures may be too rigid and bureaucratic in a rapidly changing environment. He also argued that the role of top and middle management in the formation of strategy needed to be reassessed, while Hammond (1994) propounded that top-level executives were generally unable to formulate strategy by themselves, thus necessitating strategy formulation becoming a process involving multiple levels of the firm. Hofer (1975) saw a significant relationship between strategy and the contingency theories of business, enabling the development of decisions during changes in the life cycle, or when any other variables in the environment alter. By extension this would lead to the continual revaluation of appropriate structural configurations.

But does engendering a flexible, free flowing, adaptive organisation necessarily lead to chaos and lack of planning? One could argue that there is no justification for a ready-fire-aim approach while also suggesting that entrepreneurs should play with and explore ideas, letting their strategies evolve through a seamless process of guesswork, analysis and action. This viewpoint leads to the question of whether strategy should be deliberate or emergent, or can entrepreneurial activity be both. It can be deliberate in the sense that a clear direction or challenge has been established by the chief executive, and emergent in the sense that the details of the actions are seldom planned far in advance. Mintzberg (1989) saw deliberate and emergent strategies as forming two poles of a continuum along which one would expect real-world strategies to fall. Mintzberg argued that strategies could form as well as be formulated, that they could appear without clear intentions and converge into patterns. He postulated that a primary difference between these two alternatives is the willingness to learn; deliberate strategy prohibits learning once the strategy is devised while emergent strategy nurtures it.

For a high-growth firm to thrive it must be able to respond quickly to environmental changes, particularly if it participates in a rapidly changing market (e.g. software development). Whereas an entrepreneurial team might desire an emergent strategy, a high-growth market will demand it. Therefore, while long-range planning in the software industry is considered one year in advance, it nevertheless needs to be constantly evolving and subject to change. The second hypothesis therefore is:

H2. High-growth firms led by entrepreneurial teams in the software development industry will use emergent strategies.

Whilst a software company needs to have a blueprint of its future, it must also be capable of responding and reacting to changing customer needs, be sensitive to market revision, and be understanding of both evolution and fluidity within their strategic thinking. As highlighted above, it is the proposal of this study that software development firms founded by entrepreneurial teams are in a particularly strong position to achieve these characteristics.

Research methodology

The principal objective of this study was to determine what structures and strategies were employed by high-growth firms founded by entrepreneurial teams. The study concentrated on the software development industry for a number of reasons: the large number of studies already carried out in this area; the above average incidences of high-growth firms and entrepreneurial teams; and the growth of the industry sector generally. Initially two industry experts were interviewed, as well as three academic experts, so as to build a profile of the industry. Additionally six CEOs of software development firms were selected randomly and in-depth interviews were held with them ascertaining their viewpoints regarding the hypotheses developed from the literature review. These diverse backgrounds enabled a fine-tuning of the theoretical base to be completed before undertaking a postal survey to test the propositions. Additionally, through the work of Burns and Stalker (1961) and Mintzberg (1989) highlighted earlier, a structure – strategy configuration was developed. The basic supposition engendered from this work was that high-growth firms led by entrepreneurial teams in the software development industry uniquely employed organic structures coupled with emergent strategies, as positioned in Figure 1.

One of the central arguments to the research was that because the software development industry was growing rapidly (with products having an increasingly shorter lifecycle), there would be a compulsion for firms in the industry to move with alacrity. It was then theorised that firms founded by entrepreneurial teams could do this more effectively since they had a looser structure and a more diffuse base of skills from inception, and that through group dynamics they could generate a broader range of strategies for adoption. Given previous studies on the success of entrepreneurial teams, research indicated that the combination of two or more entrepreneurs would thereby offer a greater possibility of high-growth being achieved within such an industry, although it was not suggested within this proposition that this tenet would be equally valid for all industry environments. For the purposes of this study, high-growth was defined as the ability to grow (in terms of people employed) above industry averages over the lifetime of the firm. Those firms that achieved high-growth in the short term, before once again declining, were not considered high-growth firms.

The first survey was undertaken in the USA and it was later repeated in Ireland. A number of parameters were set in order to target the list of appropriate firms for the survey more effectively: companies could be no more than ten years old (because of memory decay and rapid market obsolescence); its head office had to be based locally (i.e. it was not a subsidiary or part of a major company whose central office was elsewhere); and it was a private company (earlier in-depth interviews had revealed that public companies behaved differently in terms of structure and strategy). This process generated a valid population of 420 firms in the USA and 219 firms in Ireland. A valid response of 93 firms (22 per cent) was received in the USA and 77 firms (35 per cent) in Ireland. The firms were classified according to the number of founding members in the firm and by growth in employment as follows: High-growth firms founded by individuals, High-growth firms founded by teams, Non-high-growth firms founded by individuals, Non-high-growth firms founded by teams.

The questionnaire used a five-point Likert scale which enabled scores to be compiled for each firm's structure and strategy, and these scores meant that each firm could then have its position plotted onto Figure 1. Furthermore, it allowed aggregated scores to be developed for each of the four firm classifications identified in the study and these were also plotted onto Figure 1, thereby enabling simple diagrammatical comparisons to take place. Additionally, because the questions were concerned both with the starting position of the firm and its present position, it was possible to track the progress of each firm (and classification) over time. The use of the Likert scale in

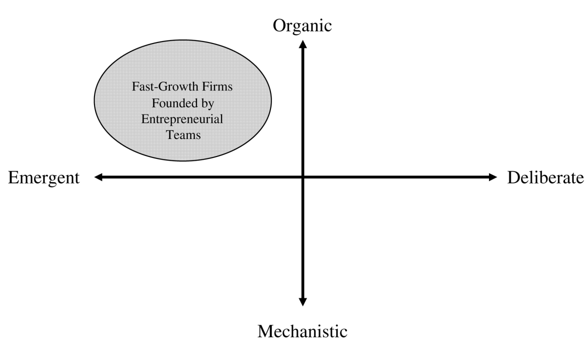

Figure 1.
Theoretical framework

section 3 of the questionnaire permitted the identification of the most popular growth strategies utilised by the different firm classifications. Sections 4 and 5 of the questionnaire were used to help classify each firm.

Discussion

Possibly the most interesting finding to emerge from the survey was the difference between the movements of the US firms over time in comparison to Irish firms. Figure 2 broadly exhibits how this shift occurred.

Generally, both the US and the Irish firms (of whatever classification) demonstrated a combination of organic structure and emergent strategy at the beginning of their existence. It is arguable that the business culture of the software industry is informal, and since the industry is growing quickly, firms must be flexible and fluid. This could explain why most firms in the surveys began with a combination of organic structure and emergent strategy. Additionally, the software industry is frequently concerned with writing programs and inventiveness for tailored product or service offerings. Such innovation requires an environment that is loose rather than hierarchical. Production lines are not a common feature of this industry and thus hierarchical structures are less appropriate. Possibly no structure/strategy combination other than organic/emergent was considered effective or even pertinent for the software industry. The organic/emergent combination could also be a function of the product-market choice, although this possibility was not strongly evident in the findings.

As the US firms grew older they moved towards a combination of organic structure and deliberate strategy. But Irish firms, beginning in the same position, moved towards a combination of mechanistic structure and deliberate strategy that was both hierarchical and organised. This may be explained by cultural and economic differences that reveal divergent entrepreneurial goals and ambitions. In-depth interviews earlier in the study had revealed that the lead entrepreneurs of the high-growth US firms frequently had a mindset that was focused on the firm eventually going public, from which they gain make substantial monetary rewards. To achieve this success, they generally offered many of their employees equity stakes and thus made them co-owners of the ambition. The lead entrepreneurs of Irish firms were more concerned with building ventures that were successful but over which they retained complete ownership. Irish entrepreneurs were less willing to offer equity to others, including employees and venture capitalists. This meant that as Irish firms grew in terms of employee numbers, the structures would become more hierarchical. This is possibly the result of differing cultures, but it may also be a function of the different

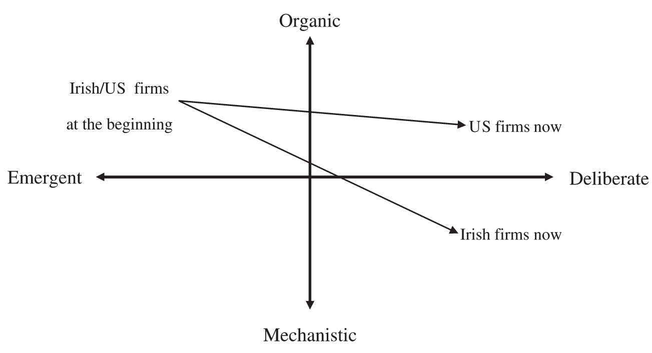

Figure 2.
Movement of US vs Irish firms

capital markets. In Massachusetts, the capital markets are very strong and there exists ample opportunity to go public. In Ireland, the capital markets are relatively small and there is limited potential for generating large wealth from going public. A significant finding from the surveys is that while Ireland's software industry is thriving and receiving world recognition, it is not a smaller version of the USA, nor will the combinations that are effective in the USA necessarily work in Ireland.

When examining the contrast between firms established by entrepreneurial teams and firms established by individuals, it was striking how strongly they differed between the surveys undertaken in the USA and in Ireland. Both of these firm classifications had an organic/emergent combination to begin with in the USA, but while firms founded by teams remained in that quadrant, firms founded by individuals moved to the organic/deliberate quadrant. However, the movement on the Irish survey was quite different. Firms founded by teams began in the organic/emergent quadrant but proceeded to the deliberate/mechanistic quadrant. Meanwhile, firms founded by individuals begin in the emergent/deliberate quadrant (the only classification to do so) and stayed within that quadrant.

The distinctions between the various firm classifications were also analysed and attention was given to the contrasting profiles in both regions surveyed. The primary differences for the firm classifications for each region were as follows:

- Firms founded by entrepreneurial teams – firms founded by entrepreneurial teams in Massachusetts encouraged the day-to-day decisions to be made by those with the greatest knowledge on that area, and strategies were encouraged to come from anywhere within the organisation. However, firms founded by entrepreneurial teams in Ireland relied on being fluid and team based but were less focused regarding product and service offerings.
- Firms founded by individuals – firms founded by individuals in Massachusetts had little export activity, a managed process towards disseminating strategies, and differentiation was the primary growth strategy. But firms founded by individuals in Ireland were less focused regarding product and service offerings, the CEO determined the strategies, and they had a high percentage of firms exporting between 10 per cent and 50 per cent of their sales.
- High-growth firms – high-growth firms in Massachusetts had a strong sense of focus regarding the product or service offering, they targeted growing market segments, increasingly shared information and advice, their strategies evolved from throughout the organisation, and the Finance function became ever more important. High-growth firms in Ireland by contrast had a broad "company focus" and "product mix", their principal growth strategy was attention to the needs of the customer, they were highly export orientated, and they had a strong presence in sales.
- Non-high-growth firms – non-high-growth firms in Massachusetts and in Ireland operated across a wide range of activities, their functional responsibilities were organic, and attention to customer needs was the primary growth strategy. Where the non-high-growth firms of both regions differed was in strategy, as strategies in the US firms were continuously emerging, but in Ireland they were predominantly determined by the CEO.

The high-growth firms of the surveys were heavily committed to sharing information and advice, and their strategies could come from anywhere in the organisation.

Meanwhile, the non-high-growth firms were more willing to have looser functional responsibilities for their employees, but the CEO was the principal strategic decision-maker. Firms founded by teams gave authority to the person with the greatest knowledge and the strategy could come from anywhere in the organisation (although in Ireland it was a managed process). Firms founded by individuals were again more willing to have looser functional responsibilities for their employees, and the strategy process was either managed or the CEO determined the strategy. The growth strategies were influenced by location rather than by classification, with firms in the US targeting growing market segments, while firms in Ireland concentrated on attention to customer needs. US high-growth firms and US firms founded by entrepreneurial teams had a focused approach to their product or service offerings, but all other classifications employed a wider range of activity. Irish firms had a high percentage of sales from export, while US firms founded by individuals showed a low percentage of sales from export. US firms placed a strong emphasis on the Engineering function, and high-growth firms were highly likely to bring on a Finance person as the firm matured. Irish firms placed a stronger emphasis on operations at the beginning and sales as the firms get older. Overall, the findings suggested a greater need by Irish firms to get organised in a structured, formal, hierarchical fashion as the firm matured.

The overall comparison between the US and Irish firms was that US firms were more willing to share information and advice, encouraged decisions to be made by those with the greatest knowledge in that area, had a focused approach to products and services, and targeted growing market segments. In contrast, Irish firms exported a much higher percentage of its sales, became more hierarchical as the firm matured, were less willing to incorporate the employees in strategic decision making, had a broad product and service approach, and placed a great emphasis on attention to customer needs. The broad product and service approach was possibly a result of the need to attract a wide variety of small customers at the beginning of the firm's existence in order to survive, and thereafter one could start to focus or differentiate in a more targeted fashion. The same was not true of US firms because a niche market could still attract large numbers due to the size of the population.

Conclusion

This paper explored and analysed the data generated from the questions asked of the software firms in Massachusetts and in Ireland. The principal findings were that:

- High-growth firms founded by entrepreneurial teams do not display a unique coupling of organic structure and emergent strategy.
- All classifications of firms (with the exception of Irish firms founded by teams) began with an organic/emergent combination.
- The movement of firms over time was divergent, with US firms moving towards an organic/deliberate combination, while Irish firms moved towards a mechanistic/deliberate combination.
- Firms founded by entrepreneurial teams in the USA (whether high-growth or non-high-growth) were the only firms to remain within the organic/emergent quadrant at both "start-up" and "now".

While these were the primary highlights, a number of other interesting results were additionally gathered.

The finding that unique combinations of structure and strategy were not observed among high-growth firms in the software industry of either country suggests the need to examine other factors that might explain the accelerated growth of organisations. It may be that the descriptors of structure as mechanistic and organic, and strategy as deliberate and emergent, are over simplified. Other dimensions of structure and strategy which offer greater complexity and calibration may be more fruitful. For example, Whittington (1993) argued that to consider strategic processes alone, whether deliberate or emergent, is not enough and that outcomes of strategy are also relevant. These outcomes may be conventional profit maximisation or may be more pluralistic in nature, even in the case of a for-profit organisation. A perspective offering pluralistic outcomes may well be more appropriate for high-growth firms in the software industry, particularly those founded by entrepreneurial teams.

The concern of the research analysis moved away from high-growth firms founded by entrepreneurial teams, and instead gave prominence to the differences between high-growth firms and non-high-growth firms, and between firms founded by entrepreneurial teams and firms founded by individuals. The principal lessons gained from studying high-growth firms were about sharing and inclusiveness. Whether the analysis concerned the structural configuration of the firm or its strategy formation, high-growth firms would inform their entire organisation of what was happening and look for opinion and contribution from the employees. It was this attitude of partnership, and togetherness in the growth of a venture, that separated this classification from all other firms. This attitude of sharing was not as strong in high-growth Irish firms as there still remained a residue of the desire by Irish entrepreneurs to retain control of their company.

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Further reading

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