

THE NATURAL HISTORY OF A SUCCESSFUL, SMALL, YOUNG, HIGH-TECHNOLOGY COMPANY

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Abstract

This paper reports the natural history of a successful, young, small, high-technology company in Perth, Western Australia. This case study is part of an ongoing larger survey concerning the success factors for Small and Medium Enterprises (SMEs) in this sector of industry both in Australia and the UK. A detailed natural history of the company is presented in the context of existing models for success in the literature. Conclusions are drawn as to the fit of such models in this case, and as to how such models might be employed during the process of organising.

Keywords: SMEs; high technology SMEs; young SMEs; Australian SMEs; entrepreneurial firms; success factors

Introduction

The act of establishing a successful small/medium enterprise (SME) is a daunting one in any sector of industry or commerce. As highlighted by Litvak (1992), for those seeking to establish a small technology-based company, the challenges are even more numerous and complex. He argues that the technology-based industry and marketplace is characterised by long lead times from basic research to industrial application, short lead times in commercialization and accelerated obsolescence under global competitive pressures from new product and process innovations. Market opportunities are often short-lived, and technological breakthroughs can quickly wipe out success. Clearly, for such companies, how to compete and succeed in such a turbulent environment is a huge concern. Their success is also important at the national level, given their contribution to a technically advanced and innovative economy.

This paper reports preliminary findings from a case study carried out to inform an ongoing larger survey concerning success factors for high-technology SMEs in Australia and the UK. The background to this case is presented in the next section. This is followed by the case itself, in which a detailed natural history of a high-technology SME (referred to as "Itech") is presented in the context of existing models for success in the literature. Finally, conclusions are drawn as to the fit of such models in this case, and as to how such models might best be employed by practising managers.

Background

Our area of interest is in determining success factors relevant to managers of high-technology SMEs in Australia and the UK, given the difficulties and challenges identified above. As part of our preliminary investigations, we investigated a successful, young, small, high-technology company in Perth, Western Australia, with a view to informing future work and testing existing models for success from the literature. Our approach was to explore the natural history of this company from its genesis to the present day, in contrast to the 'snapshot' approaches (often quantitative surveys) which tend to prevail in the literature. This prevalence is perhaps not surprising, given the difficulties in carrying out follow-up surveys in a sector which evolves rapidly and has a high extinction rate. Litvak (1992) for example, reports that only 10 of 29 companies investigated in 1970 were still in independent operation in 1992.

Notwithstanding the turbulence for those researching this particular business environment, there is a significant body of work in the academic literature which may be relevant to those seeking to establish successful high-technology companies. However, there are few articles which directly address the notion of success factors. It should be noted that although the overall volume of published work in this area is impressive, it is rather diffuse and fragmented, reflecting a range of multi- and inter-disciplinary perspectives. Moreover, Shearman and Burrell (1988) comment (p. 93) that the usefulness of the conclusions of many authors in this field is limited by a lack of definitional clarity, often within the same article: "New technology-based firms are confused with SMEs, small medium firms (SMFs) small firms, small specialist firms, small units, small entrepreneurial firms, high technology firms and new technology-based small firms". Although this comment was made some time ago, in many instances it still holds true today: for example, Litvak (1992), does not define what he means by "small technology-based companies" in the article referred to above, although it is perhaps unfair to single him out, as he is by no means alone in this type of omission. Given this volume of work, and its complexity and ambiguity, it is beyond the scope of this paper to present a full literature review; nonetheless, some recent works pertaining particularly to the characteristics of, and success factors for high-technology SMEs can be highlighted here.

Concerning SMEs in general, a large amount of research was carried out in UK universities in the early part of this decade, funded by the Economic and Social Research Council (see Storey, 1992, for an overview). Other contributors include Macrae (1992) who describes the characteristics of high and low growth small and medium sized businesses in Scotland. On a more international note, Theng and Boon (1996) explore factors contributing to the failure of SMEs in Singapore. More specifically, Beamish et al (1993) compare the characteristics of SME exporters in Canada and the UK. The work of Rothwell and Zegfeld (1982) on product innovation has also been influential, this strand of activity being more recently continued by Romano (1990), who identifies factors which impact on product innovation to influence small business success.

Research effort has also focused on SMEs with a technology focus, with some early work from Shearman and Burrell (1988), who discuss the nature of new technology based firms and their capacity for employment generation. Covin et al (1990) describe the effects of technological sophistication on strategic profiles, structures and the performance of organisations. Forrest (1990) addresses herself to business environment concerns with a study of the importance of strategic alliances to small-technology based firms. Weinstein (1994) has carried out a comparative study of small versus non-small companies in technology-based industry from the point of view of market definition. In terms of success factors, as referred to above, Litvak (1992) sets forth a set of guidelines as "winning strategies for small technology-based companies". Ackroyd (1995) has also identified the characteristics of successful small, UK-based information technology firms. A number of interesting, but perhaps less generalisable case studies can also be found, for example, Bouwen and Steyaert (1990) on the processes of organising in young, entrepreneurial firms, Martin et al (1991), who present a case study of a small business developing artificial intelligence applications; Latona and LaVan (1993), who record the implementation of an employee involvement programme in a small, emerging high-technology firm; Price and Chen (1993) who discuss how a Total Quality management Systems can be tailored for a small, high-technology company; finally, Pearson et al who discuss links between operations management activities and the high growth of small electronics firms.

The most relevant parallels to our interest in success factors for managers of high-technology SMEs were those of Ackroyd (1995), Covin et al (1990) and Litvak (1992). Ackroyd reports the discovery of some small but successful information technology firms in the north-west of England. Ackroyd's survey classifies almost one hundred such firms into three categories. The largest group were retailing organizations dealing in computer products and services (mail order companies, in essence), and could hardly be described as high-technology firms at all. Another group were highly specialist niche marketers, for example, one firm designed systems for producing carpet designs. The third group, which were of most interest to Ackroyd were classed as "dynamic IT companies", and are claimed to have highly distinctive features. In summary, they are:

- Very small staff numbers
- High turnover and value-added
- Variety of legal forms
- Small working teams as basic operating team
- Lack of orthodox structure
- Organizational boundaries indeterminate
- Informal affiliations and alliances crucial (internal and external)
- Few owned by, or affiliated to larger companies
- Organizational strategy and design follows staff competences and interests
- Staff multi-skilled knowledge workers
- Highly oriented toward customers
- High adaptability and mobility
- Growth by replication (not by increases in scale)

Ackroyd argues that these dynamic firms are adopting (to different degrees within the class) an organic structure, as opposed to a mechanistic one, a conclusion which supports the earlier work of Covin et al (1990) in America. Covin et al study the differences between the operation of high-tech and low-tech small firms, employing a distinction between macro- and micro-strategy variables. At macro-level, as well as organic structures, high-tech firms tend to have more entrepreneurial management styles; at microlevel, innovative marketing, patents/copyrights, new product development and customer service and support were important. One of their conclusions is that practically, heavy reliance on any small set of variables is likely to fail; from a theory-building perspective, they are attempting to generate a "tentative taxonomy of small firm strategic gestalts".

Ackroyd's (1995) work was of interest to us, although he was not directly addressing the question of success factors, as it was clear from an early stage that Itech fell into this category (as discussed in detail below). Ackroyd goes on to explore the macro-economic forces which have led to the emergence of this type of company. Our interest lies more in the micropractices of those seeking to successfully establish and manage them successfully. The classification poses an interesting research question: if such structures are successful, as both Ackroyd and Covin's (1990) work suggests (although 'success' is not defined), how do they arise in practice? What decisions are made by managers during the process of organising which lead to the adoption of this form? Can macro- and micro-strategies be formulated, linked, adopted and implemented in a formal-rational manner, or is the process far emergent and interpretive, as suggested by Mintzberg (1994)? Are there regional differences in Australia, as oppose to the UK and America? These questions are explored through the natural history presented below.

Following the strategy route, Litvak (1992) takes a rather more direct approach to establishing success factors, with the presentation of the following guidelines for success:

- Pursue a global marketing niche strategy
- Concentrate on products for which competitive advantages can be sustained and enhanced
- Gain production flexibility and efficiency through subcontracting and investment in advanced manufacturing systems
- Incorporate product and process technology into strategic plans
- Develop the ability to obtain government R & D grants and to generate government business
- File for patents in OECD countries
- Promote corporate growth through strategic alliances
- Raise capital by giving up some equity ownership
- Provide equity participation to keep employees
- Develop a mission statement that captures the owners intent. The formulation of such a statement should involve the participation of key employees.

It is difficult to assess the relevance of Litvak's (1992) prescription to our case, as he does not provide details of organisational structure and activity. Although he addresses different variables and issues to Covin et al (1990), it could be argued that his is a macro-strategic approach. Notwithstanding our definitional caveat, the listing returns us to one of the research questions posed above, that is, are strategies rationally planned, or do they emerge? Again, this is explored through the natural history below.

Natural History of Itech

Methodology

The data presented below was obtained during two hour-long interview sessions with one of the founders of the company (the IT consultant), who was a personal acquaintance of one of the researchers. Written notes were taken during the interviews, which were also taped and later analysed aurally. We were allowed to question freely, with no areas identified as 'out of bounds' either before, during, or after the interview. Despite our efforts, we were unable to interview the other founder of the company, due to his business pressures. Two visits were made to the company premises, which we observed in their entirety. A documentary search was also carried out. The analysis of the data is presented below, beginning with an overview of the company's history, followed by estimated annual turnover, a profile of the company's employees and a brief discussion of the organisational structure. Finally, the success factors identified by an interviewee are presented.

Overview

Itech was established in 1990 by two partners, one who was previously working for a large conglomerate as an IT consultant (Tim), the other worked as an accountant in private practice (Jack). The business was established initially to sell the BigSystems accounts package to midsize businesses in Perth (with turnovers of \$AU5 - 50 million). Essentially an agency in these early stages, the company soon began to diversify into network design, "bits and pieces" and some software development (for example, a real estate package). This diversification occurred in response to opportunities arising, and the slow business cycle in the original agency business, due to the conservative nature of the accountancy business. A major change occurred at the end of 1992, when a sizeable government contract was obtained in Fiji, which led to the establishment of an office there. This is now largely managed by Jack, with Tim concentrating on the home business. By 1994, the software development side really took off, as the company spotted a gap in the market and developed a complementary product to the mainstream accounts package -- Ivision, in essence an executive information system, which is marketed worldwide. This sector of the business now performs so effectively that in March 1998, the company divested their small operations in network design and bespoke software development.

In the future, now that the growth curve is flattening (see Table 1, for details of approximate turnover) it is likely that the business will expand following an amicable split along the software development/agency divide.

Table 1: Approximate turnover of Itech by year	
Year	approx. turnover (\$AU)*
1990	150,000
1991	300,000
1992	600,000
1993	800,000
1994	1,000,000
1995	2,000,000
1996	3,000,000
1997	4,000,000
1998 (projected)	5 - 6,000,000
*15-20% of turnover now from Fiji operation	

Employees

The increase in the number of employees each year can be seen in Table 2. The breakdown of current employees by type is:

Directors	2
Programmers	7
Quality Assurance	5
Administrators	3
Marketing	2
Technical Support	2
Consultants	5

The main criteria for employment were given as:

- formal qualifications
- able to work autonomously
- easy to work with -- "fit in"

Staff turnover was highest in the administration area; on average, programmers stayed 5-6 years, which compares well with the industry norm of 3 years.

Year	Number (Perth*)
1990	2
1991	5
1992	8
1993	12
1994	16
1995	18
1996	20
1997	26
1998 (projected)	29
*plus 4 in Fiji	

Organisation structure

Until around the end of 1994, structuring was resisted, with only the founding partners being distinguished informally as the senior management team, with the rest of the organisation being flat, with groupings around projects. At the end of 1994, a hierarchical level was introduced when the administrative staff started to be managed by an accountant. Around mid-1997, after a number of failed experiments, a manager for client services was appointed from outside.

The flatness of the structure reflected the preference for autonomous working of the founding partners -- "not an ego trip place".

Success factors specified by Tim

In order of response:

- never borrowed money
- good partnership, trust previously established
- high skill level of employees
- know the business
- good technical back-up to foster trust and confidence from customers
- good after-sales support
- luck -- right time, right place, particularly the Fiji development
- spotting a gap in the marketplace (Ivision)
- good social atmosphere

- don't expand too fast internationally and compromise your local market

Conclusions

In every characteristic of organisational structure and dynamics, Itech is an archetypal antipodean instance of the grouping of successful IT firms identified by Ackroyd (1995) in the UK. Employees are highly skilled, flexible, autonomous working teams are the order of the day. The natural history and projected future of Itech reveal the characteristic pattern of growth which does not embrace increases in scale, but instead, there is a preference for offloading excess operations until an optimum moment for division and growth by replication takes place. Our findings are also in accordance with those of Covin et al, with one key distinction: in contrast with their identification of high external financing as a significant factor, Itech rated not borrowing as one of the most important factors in their success. Whether this is an exception to the generalisation, or a regional difference is one of the factors which will be explored at a later date.

The main usefulness of our study, however, was that in its use of the natural history method, we were able to explore in a longitudinal manner, the twists and turns of the company's development and the decisionmaking processes which led to them. The most significant events in the company's history, in Tim's view, were linked to three conscious decisions:

1. not to borrow money from external sources (a formal-rational, planned decision, in response to memories of the economic turbulence in the 1980s, reinforced by the current economic downturn in the Pacific Rim)
2. to develop the Ivision product (responding to a gap in the market -- an emergent strategy)
3. to set up the Fiji operation (responding to a chance opportunity -- an emergent strategy)

The other characteristics of the company, such as flexible, autonomous working teams and informality were outcomes not of conscious decision making processes, but were reflections of Tim's own personality, as evidenced by the emphasis on the company being "not an ego trip place" plus the emphasis on employees having to "fit in" and the difficulties encountered when they did not. The business experience of Tim and Jack, in sensitivity to the prevalent macro-economic zeitgeist, also led to the largely unconscious choices of highly skilled employees and a strong emphasis on customer service, as evidenced by much use of the word "obvious" in the interviews.

In conclusion, high-technology small firms which have the characteristics identified by Ackroyd (1995) may well stand a better chance of success in the current climate than those who do not. The successful companies studied by Litvak (1992) and Covin et al (1990) may well identify whether certain variables or practices are factors in their success. Our findings for Itech are in accordance with these earlier works, and go a little way to validating their findings, with one main exception (whether or not to obtain external finance), for another region. However, what these works all have in common is that they are a snapshot of a point in time: 'getting there' has not been addressed. In our case, 'getting there' was not the outcome of any formal conscious strategy at either macro- or micro-level, nor were Itech aiming at any particular structure. Itech arrived at their present level of success through, with few exceptions, an accumulation over years of the outcomes of micropractices emanating from the personalities, and high level of expertise of the individual managers concerned and chance environmental events. In other words, in this instance, successful practice was context-bound, not a 'given' social reality. In this, we are in broad agreement with Mintzberg's (1994) critique of formal strategy planning.

To conclude, the identification of success factors for high-technology SMEs cannot be interpreted or used as a recipe for achieving success, as we know little about the processes of organising. However, the agreement in the literature strongly indicates commonality of outcome, so they clearly have value for practitioners as a target to aim for. As there is a gap in the literature, we intend to investigate whether there is commonality of process as well as outcome. As it is not possible to generalise from one case, this is the focus of the ongoing work which this preliminary study has informed.

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