

Innovation Management Practice in Irish SME's

David Mulligan¹, Owen O'Leary, David O'Sullivan

¹*DERI, National University of Ireland, Galway, Nuns Island Galway, Ireland*
david.mulligan@nuigalway.ie

Abstract

The topic of innovation management has received much attention from research, industry and state support in the past number of years. However, much of the research has focused on the large enterprises with much available financial wealth and planning infrastructure required, in order to be effective at managing innovation. This research has not greatly benefited SME's due to the key differences in industry practice between large, medium and small enterprises. A review of the literature has been conducted and synthesised in order to understand the factors that affect the innovation management process within SME's. A scorecard has been developed that reflects these factors and has been used to identify the needs and capabilities of SME's in order to effectively manage their innovation process. Four interviews have been conducted using this scorecard in order to identify and understand the needs of innovation management within supplier SME's in Ireland.

Keywords

Innovation management, Small and Medium Size Enterprises (SME), Knowledge management

1 Introduction

The underlying principle of this research, improved effectiveness of SME development, is being studied in the context of innovation management. Small and medium enterprises (SME) have proven to be one of the main sources for employment and economic growth throughout the EU. In the Irish context supplier SME's play an increasingly important role as large enterprises are continually outsourcing many of their operations and manufacturing components. Innovation plays an important role for the survival of many SME's, especially those that supply to original equipment manufacturers (MacDuffie, J.P. and Helper, S.R., 1997). Much of the core competencies of the original equipment manufacturer (OEM) is being condensed to critical research and development activities and core business and manufacturing processes. Hence there is an increasing level of product innovations that must come from the supplier SME's. Many of the success factors of innovation within SME's have been identified by Keizer (2002). According to a study by Keizer out of the 14 independent variables that could influence the innovation of SME's three remained significant to these efforts: using innovation subsidies, having links with knowledge centres, and the percentage of turnover invested in R&D. SME's are constantly bombarded with a number of requests from large enterprises to innovate on various processes and products.

In an attempt to help SME's to manage their innovation process, management by exception is the central strategy for the majority of SME's with little analysis of the impact or benefit of the change. In a modern world of intensive strategic demands the development and globalisation of SME's comes under much scrutiny from state support bodies and academics alike for their lack of overall progress. However SME's cannot be blamed for their roadblocks as much of the development research into the structures and systems required for effective innovation and development has supported large enterprise and is not compatible with the SME sector.

This type of problem is regularly encountered by SME's for example Carter and Jones-Evans (2000) summarises the findings of several studies on the low level of expertise for the use of ICT in the small business sector. This is despite the high level of uptake in the small firm sector of the

ICT technologies of up to 90% of small firms and 70% of micro firms. Common reasons are given for the lack of innovation in SME's such as motivation; start-up strategies; lack of resources and lack of knowledge (Chell, 2001; Bridge, 2003; Storey, 2002). The research in this area also identifies the lack of fit between each of these areas and the nature of the SME business sector.

This paper presents the findings of ongoing research into the factors that affect the ability of SME's in Ireland to innovate. More specifically this research will present the finding of a number of case studies in this area that are operating as SME Suppliers in the Irish context.

2 Literature Review

This research is interdisciplinary, drawing on work conducted in the fields of innovation management, SME development, strategic management, entrepreneurship and supplier management.

One of the largest emerging trends in the industrial sector in the past number of years has been the decentralisation and fragmentation of large enterprises. Increasingly large enterprises are focusing on a strict set of core competencies and outsource the remainder of their business processes to small and medium sized enterprises. Currently SME's provide 99.8% of business active within Europe and account for 68% of employment while business turnover accounts for 63% (Takis, 1997). The majority of these SME's employ less than 10 employees and small businesses have become a major contributor to private-sector employment and output. Together with start-ups SME's are reported to create between one and two third of all new jobs (ENSR 1997). There is a large consensus among the research community that SME's are a major employment and economic boosters in the European economy (Carter, S. and Jones-Evans, D., 2000; Keizer, 2002; Storey, D.J., 2002).

Hence it is of extreme importance to the European economy that the SME sector improves and develops. According to Keizer (2002), innovation is among the most important means through which SME's can sustain and improve their level of competitiveness in the market. Keizer further identifies the key factors that influence the ability of SME's to innovate such as innovation subsidies, having links with knowledge centres, and the percentage of turnover invested in R&D. In relation to supplier SME's, their innovation plan must also consider a number of the OEM requests. Supplier SME's play a vital role in the innovation process and the suppliers' ability to innovate is becoming an indicator for supplier selection by many OEM's. This is placing more demands on the suppliers as they often have several customers of varying products and varying levels of contribution to the suppliers own business. The over allocation of resources is often a major problem for suppliers, especially those of SME status, and may inhibit the role of the supplier to innovate. Many supplier SME's do not change to the level required in order to be successful (Keizer, 2002; Kane, 1999). Between 50% to 70% of change projects fail to achieve their targets (Hammer *et al.*, 1995; Burnes, 1996; Tidd *et al.*, 1997). Among the many causes of failure of innovation, there are five that constantly appear in literature: (1) poor goal definition, (2) poor action alignment, (3) poor allocation of teams and resources, (4) poor feedback of results, (5) poor performance monitoring (Dooley and O'Sullivan, 2003). Mulligan *et al.* (2003) further extends this from the literature review on supplier SME's to include poor collaboration between customers and suppliers and accurate interpretation of requests from customers.

Many of the suppliers may not have the technical capabilities or expertise to innovate or collaborate with manufacturers on innovation and product development projects (Wasti and Liker, 1997). However according to a FORFAS study (an Irish state body) many SME's who play the role of the supplier have the information technology infrastructure required to innovate. Expertise in these SME's may be lacking in terms of skill and may be low in terms of resources available to innovate.

Much of the strategic and development issues in SME's lies with the owner manager/entrepreneur. Much of the literature in the area of entrepreneurship has attempted to map the personality traits of the entrepreneur. One of the key motivation factors for starting the business is to have high levels of control (Vecchio, R. P., 2003). Hence the innovation process may be constrained by the motivation of the owner manager to relinquish control of some of the various functions within the business in order to innovate. Further to this literature research in this area also state that many of the entrepreneurs start-up strategies are often characterised by a lack of resources (McGrath, R. G., 2000). This may affect the further development of the SME's and hence constrain the growth of the organisation. The motivation for supplier SME's to become involved in the innovation process may be ambiguous and often may not warrant the investment of resources for some customers. The impact of collaboration with suppliers can become more difficult and may even have a negative impact on the OEM if there is no clear motivation (McCutcheon et al., 1997; Gulati, 1998). It is important for suppliers to establish a set of core competencies in which it is beneficial for them to partake in the innovation process. The selection of projects should be based on these core competencies and should support the overall objectives of the organisation.

All of the projects and the development work in the SME should align with an effective strategic development process of the SME. However SME strategy differs greatly from that of the large enterprise. Studies by Pearce (1983, 1984), were unable to show that formalised planning had any positive impact on superior performance in the SME sector. The strategic advantage of an SME for start is that they are small and versatile and can change quickly to emerging industrial needs. Secondly the key resource of an SME is the human resources (Carter and Jones-Evans, 2000). Thus as a development strategy SME's should focus on more human resources elements such as training and collaboration as opposed to infrastructure and technology (although the later are none the less important).

With regard to new product introductions a total of eight studies have been reviewed by Storey (2002) in order to identify the fastest growing SME's, with five of these suggesting that the more rapidly growing firms are more likely to have make new product introductions. The remaining three studies did not find this to impact upon firm performance. The studies analysed by Storey identified that technological sophistication, market positioning and new product developments are among the most important factors for SME's strategic importance.

Coupled with many of the operational aspects of small business planning and development SME's are extremely sensitive to the business environment that surround them such as legislation, state support, outside experience of members, values and motivations, age of the firm, industry sector to name a few (Storey, 2002). Many models have been put together by various authors in order to try and understand the affects that these environmental factors have on the small firm sector (Atkinsona and Meager, 1994; Baliga and Hunt, 1988; Zacharakis, A. L. et al. 2000). Each of these models aims to assess the various impacts of varying environmental factors on the development of SME's.

Despite the research approach there is an underlying consensus that SME's by and large are of extreme importance to economy. The key competitive advantage of SME's lies in the human resources. The research to date has also found that internal planning and communications occurs on a rather ad hock basis unless designed from the outset. It is also largely been conceded that SME's will not evolve or develop unless they innovate. There are a number of key factors that affect the innovation process within SME's such as research and development investments, state funding, links to knowledge centres, links to customers, collaboration and systems and structures to manage the process.

The research has drawn on these many different fields of literature, combining the elements to improve the development of SME's. The core of this research will be based on Keizers study that Innovation is key for SME's in order to progress and sustain a sufficient level of competitiveness.

3 Research Approach

The approach to this research followed that of Cormican (2003), which has been designed around four non-discrete phases, as shown in Figure 1. A number of interviews were conducted with a large enterprise and four follow up interviews were conducted with a number of their SME suppliers using a scorecard to capture best practice techniques (Table 1). The scorecard was used to capture the level of best practice within SME's. The goal of the analysis was (a) to understand supplier SME role in innovation management practices in each organisation and (b) to identify factors that facilitate innovation management in SME's.

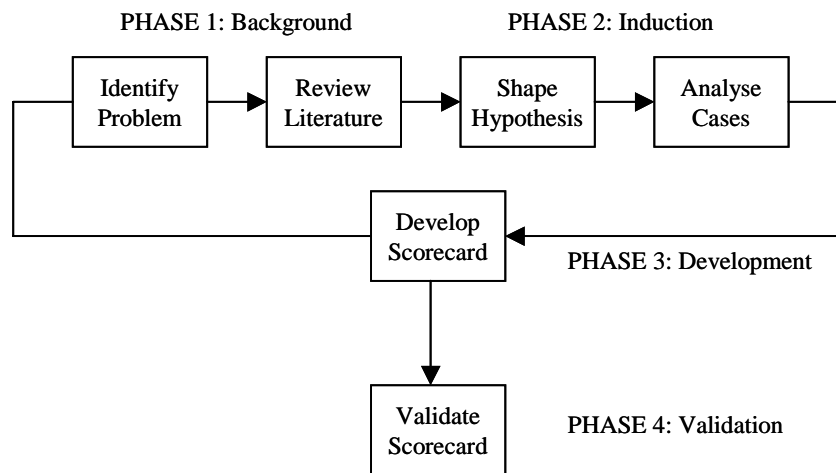


Figure 1: Research Methodology (Cormican, 2003)

4 Research Findings

Innovation audits can help managers and decision makers improve their innovation process (Patterson, 1998). They help to assess the degree of best practice in place. The SME respondents must agree or disagree with each of the statements that reflect best practice for innovation management. The list of statements is presented in Table 1. The statements were categorised around the five key areas identified by Dooley and O'Sullivan (2003) for effective innovation management. These were goals, actions, teams, results and collaboration and infrastructure. Organisations that score low have a poor fit between management practice and best practice and SME's that score high have a good fit between management practice and best practice. This allows managers to have an overview of their strengths and weaknesses with regard to managing innovation.

The scorecard was presented to four SME owner managers. The scorecard results were filled out and a number of interviews followed the results regarding the major issues in relation to innovation in SME's. Key findings from the study are now discussed below.

4.1 Goals

All SME owner managers agree that clear goal formulation and monitoring are important for effective innovation management. However in a number of the interviews awareness of the customer requirements outranked the relevance of strategy formulation. Goal formulation while important ranked as being one of the poorest in terms of capability with little time and resources allocated to the level of detail required for an effective business plan. There are currently little emphasis and capability on measuring performance and thus many of the projects are not measured in terms of their impact on the overall goals of the organisation.

Please circle the extent to which you agree or disagree with these statements 1 represents strongly agree and 5 represents strongly disagree					
STATEMENT	SCORE				
GOALS					
Requirements of key stakeholders are concisely defined and easily accessible	1	2	3	4	5
Strategies for change are concisely defined and communicated	1	2	3	4	5
Indicators of performance are defined that foster an improvement culture	1	2	3	4	5
Performance Measures are defined that relate to strategies	1	2	3	4	5
There are embedded routines in place for effective organisational development	1	2	3	4	5
ACTIONS					
Problems are effectively identified and solved systematically	1	2	3	4	5
Actions (e.g. Project portfolios) are concisely defined, ranked and managed	1	2	3	4	5
Actions need to be ranked and managed closely	1	2	3	4	5
Actions are reactive based and are highly dependant on customer interaction	1	2	3	4	5
Generating knowledge is an important aspect of your innovation process	1	2	3	4	5
TEAMS					
Team members are visibly allocated to defined actions	1	2	3	4	5
Teams are created to generate new knowledge	1	2	3	4	5
Knowledge is accessed from outside sources	1	2	3	4	5
Using accessible knowledge is important and encouraged	1	2	3	4	5
Embedding knowledge in processes, products and/or services	1	2	3	4	5
Regular training of staff and improvement of personal skills	1	2	3	4	5
RESULTS					
Knowledge is effectively managed, controlled and maintained	1	2	3	4	5
Results of performance clearly indicate progress towards firm targets	1	2	3	4	5
Goals are effectively related to actions, actions can be easily traced to goals	1	2	3	4	5
Projects are effectively executed	1	2	3	4	5
Lessons learned from each project contributes to the next	1	2	3	4	5
COMMUNICATION AND COLLABORATION					
Collaboration with customers is essential for continued success	1	2	3	4	5
Collaboration is efficient and effective	1	2	3	4	5
A clear logging and tracking of all customer problems is easily accessible	1	2	3	4	5
All relevant staff has access to email and internet	1	2	3	4	5
All relevant staff are trained in email and internet compliant	1	2	3	4	5
Your organisation collaborates effectively with outside knowledge sources	1	2	3	4	5
TECHNOLOGY AND INFRASTRUCTURE					
Every employee has access to a desktop computer when needed	1	2	3	4	5
All computers are networked	1	2	3	4	5
There are servers available for the hosting of websites and web applications	1	2	3	4	5
Software has an advantage to the efficiency of your organisation	1	2	3	4	5

Table 1: Scorecard for assessment of innovation management in SME's

4.2 Actions

Actions within an SME are by and large reactive based due to the lack of resources and time available hence it was deemed important to prioritise and select problem-solving project that had the greatest impact on goals. However very few of the SME's interviewed showed any capability in this area. In fact this was one of the poorest in terms of performance. Interviews revealed that most of the problems in relation to managing the actions and projects of an organisation was the over allocation of resources to the project portfolio and lack of ownership of the projects by the staff members.

4.3 Teams

According to many authors the human resources are the key competitive advantage of an SME and are their most important asset. While the SME's interviewed concurred with this view the finding of the research has shown that very few of the if any of the organisations appear to manage or take full advantage of their employees and teams for competitive advantage. For example there was a clear absence of accountability within organisations of team members to tasks. Nor were teams used for problem solving activities. Finally team skills were not managed or updated for the further development of the organisation nor is tacit knowledge of the employees harnessed for the decision making of top management.

4.4 Results

Results of project and results of strategies were considered to be one of the most important aspects of SME development from the owner managers that were interviewed. Deployment of actions to goals was found to be the most important however this rated as one of the weakest as did internal use of knowledge and the management of it. From the analysis of the results section the SME's did not appear to have any formal evaluation of impact of project results to the overall success of the organisation.

4.5 Collaboration and Communication

Many of the authors have emphasised the importance of collaboration as a means of competitive advantage for many of the SME's. The results of the study have shown that it is important for the continual operation of the organisation however none of the interviews have shown this to be a problem. All companies interviewed revealed that collaboration with universities and state organisations (external knowledge bases) was important and that there was no apparent problems. However collaboration with customers while ranked extremely important for supplier SME's was shown to be inefficient and non satisfactory. Change requests were not monitored satisfactorily within the organisations and there was often repetition in the problems that were being tracked in relation to quality, delivery times etc. In terms of IT skill levels and IT systems required the supplier SME's still used unstructured forms of collaboration technology and had sufficient level of skill to execute these systems. Much of the collaboration that takes place within the supplier SME's appears to be face to face and on an ad-hoc informal basis and when technology is used it is in an unstructured environment. Hence much of the knowledge may be lost.

4.6 Technology and Infrastructure

There is a continual debate among the academic world in relation to the use of information systems and their benefit among the SME organisation. The study has revealed that many of the organisations have a network, email and internet available and use them during their daily business operations however none of the structured software's such as SAP appear to be installed successfully within the organisations and while software's like this are deemed to be beneficial the customisation and installation of these packages appear to be too costly and time consuming for the SME to avail of.

4.7 Summary of results

The organisation chosen for this study were suppliers SME's in the Irish manufacturing industry. The results of four of the respondents were aggregated and plotted in figure 2. The results of the study identified that effective innovation depends on the management of goals, actions, teams, results, collaboration and technology and infrastructure. However there is an apparent lacking in the structures and systems in place to manage these with the exception of internal collaboration. Customer collaboration is met with some inefficiency despite its importance and the harnessing of knowledge within the management process is clearly lacking.

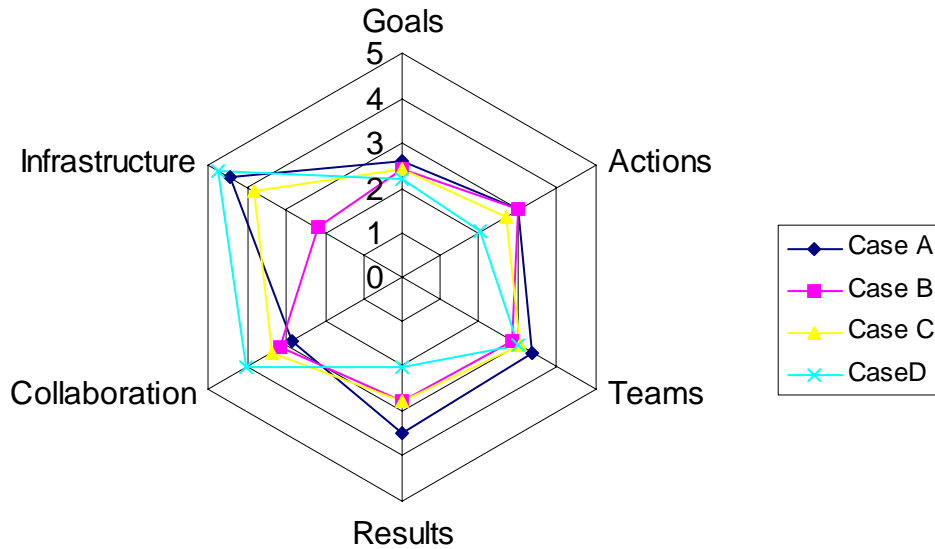


Figure 2: Comparative analysis of study

5 Conclusions

In today's changing world innovation management is becoming one of the key drivers for change and competitive advantage within industry. Supply chains need to respond rapidly to these emerging changes so as to get the product to the customer more rapidly. It is increasingly clear that in order to achieve the goals of an organisation SME's must monitor the innovation process. Supplier SME's must also comply with this as well as managing the collaboration with their customers. SME's can also make substantial improvement by managing the knowledge assets of their organisation. This can only be done by putting more effective structures and systems in place to capture the knowledge of the organisation rather than adopting the current ad-hoc approach to information transfer. It is interesting to note that Cormican and O'Sullivan (2003) study has identified the need for cultural change and high levels of trust required within a large organisation in order to support knowledge management and product innovation management, an element that is missing from both SME and large enterprises. Keizers study has found that collaboration with other firms is theoretically of sound and beneficial practice however through informal discussion there appeared to be little interest and activity in this area from SME's.

This paper presents best practice model that aims to facilitate supplier SME innovation management in a dynamic environment. Analysis of the study revealed a number of common traits that inhibit the innovation management capabilities of supplier SME's. Performance is very rarely assessed due to lack of structures and systems in place and poor goal definition. Teams, one of the greatest assets of an SME are not properly managed and utilised in order to execute project plans. Communications are also imperative throughout SME's however significant efforts need to be made to improve the communications between customers and suppliers. Harnessing and using knowledge internal in the organisation is important for innovation but SME suppliers are unable to take advantage of their knowledge assets largely due to poor management and the absence of the required of structures and systems.

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