

# **An investigation on environmental scanning and growth strategy in high tech small and medium sized enterprises**

Dr Azhdar Karami (Bangor University, UK)

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## **Abstract**

The idea that environmental scanning can be a key factor to sustained competitive advantage calls for the integration of business strategy and environment. Not surprisingly, environmental scanning is widely viewed as the first step in the process linking strategy and environment. The main debate in strategy and environment is nowadays concerned with the primary importance of environmental scanning to strategy formulation and implementation. More specially, effective scanning of the environment is seen as necessary to the successful alignment of competitive strategies with environmental requirements and the achievement of outstanding performance in SMEs. This paper explores the above relationship in the British electronic manufacturing industry. It is based on the empirical evidence and the findings of a survey of 132 Chief Executive Officers' (CEO) views on environmental scanning and strategy in SMEs. It is concluded that, there is a significant relationship between increasing the environmental scanning of the firm, and the success of the firm's performance in small and medium sized manufacturing firms in electronic industry. Accordingly, because of dynamic aspect of electronic industry, obtaining information on several aspects of environmental sectors facilitates alignment between business strategy and environment.

## **Introduction**

Strategies followed by business usually include a plan of action and policies intended to create a competitive advantage in the marketplace. Although much work has been undertaken to analyse and investigate strategy in large corporation, until recently there has been little concern with the environmental scanning in small and medium sized enterprises (SME) (Aram and Cowan, 1990; Foster, 1993; Lang et al, 1997; Smith, 1998). The idea that environmental scanning can be a key factor to sustained competitive advantage calls for the integration of business strategy and environment. Not surprisingly, environmental scanning is widely viewed as the first step in the process linking strategy and environment. The main debate in strategy and environment is nowadays concerned with the primary importance of environmental scanning to strategy formulation and implementation (Walters, 1993). More specially, effective scanning of the environment is seen as necessary to the successful alignment of competitive strategies with environmental requirements and the achievement of outstanding performance in SMEs. This paper explores the above relationship in the British electronic manufacturing industry. It is based on the empirical evidence and the findings of a survey of 132 Chief Executive Officers' (CEO) views on environmental scanning and strategy in SMEs. It is concluded that, there is a significant relationship between increasing the environmental scanning of the firm, and the success of the firm's performance in small and medium sized manufacturing firms in electronic industry. Accordingly, because of dynamic aspect of electronic industry, obtaining information on several aspects of environmental sectors facilitates alignment between business strategy and environment.

## **Environmental Scanning in SMEs**

SMEs increase their chances of success through making a serious attempt to work through the strategic issues embedded in the strategic management model (Wheelen and Hunger, 1998). For SMEs the key point is to focus on what is important-the set of managerial decisions that determines the long-run performance of the firm. The literature review shows that, a number of models have been proposed for strategic management in SMEs (Linneman, 1980; Green and Jones, 1982; Shuman and Seeger, 1986; Aram and Cowan, 1990; Foster, 1993; Berry, 1998; and Beal, 2000). The bases for all of these models is similar in their employed concepts. Before an organisation can begin strategy formulation, it must scan the external environment to identify possible opportunities and threats and its internal environment for strengths and weakness. It has been argued (Gable and Topol, 1987; Goldsmith, 1995) that analysing in strategic management entails both external appraisal (often called environmental scanning) and self examination (sometimes known as doing a strategic audit). Environmental scanning is the monitoring, evaluating and disseminating of information from the external and internal environment to strategists within the organisation. Thomas et al (1993) have found that, there is a positive relation between environmental scanning and profit. Choo (1999) argues that, Environmental scanning is the acquisition and use of information about events, trends and relationships in an organisation's external environment, the knowledge of which would assist management in planning the organisation's future course of action. Organisations scan the environment in order to understand external forces of change so that they may develop effective responses that secure or improve their position in the future (Gable and Topol, 1987). To the extent that an organisation's ability to adapt to its outside

environment depends on knowing and interpreting the external changes that are taking place, environmental scanning constitutes a primary mode of organisational learning.

Most empirical research on environmental scanning has focused on relationships between scanning behaviours (frequency, scope, sources used, and interest) and environmental conditions such as environmental uncertainty, perceived threats and perceived opportunities (Daft et al, 1988; Tyler et al, 1989; Sawyer 1993; Lang et al 1997). While some of the other studies were found that investigated relationships between competitive strategies and environmental scanning (Tyler et al 1989; Jennings and Lumpkin 1992; Yasai Ardekani and Nystrom 1993; Bantel and Osborn, 1995). Tyler et al (1989) in their investigation of the relationship between different environmental conditions and the usage of different types of information sources by executives in formulating competitive strategy, found that: (1) high and low rich information sources were used less under highly changing, unpredictable environmental conditions than under stable, predictable conditions; and (2) low rich information sources (income statements, memos, or letters) were used more than high rich sources (face-to face discussions with workers, customers, or suppliers) under stable, predictable conditions. They also found that the executives in their 28-firm sample used more high rich information sources in formulating differentiation strategies than in formulating low cost strategies. These results suggest that environmental conditions affect the type of sources (low rich versus high rich) used by executives in selecting a competitive strategy (that is, low cost leadership or differentiation). Jennings and Lumpkin (1992) argued that the types of information that CEOs seek differ according to their firm's competitive strategies. This implies that strategy can determine scanning behaviour as well as be affected by it. This perspective deviated from the traditional view posited by Design School proponents that

environmental scanning and analysis are determinants of strategy rather than the products of it (Mintzberg 1994). Jennings and Lumpkin found support for their hypotheses that (1) firms following a differentiation strategy scanned their environments in search of opportunities; and (2) firms following a low cost strategy looked for threats to their survival. However, because the study included firms in only one industry, the generalizability of the results is limited. In a comprehensive study of the scanning systems of 179 small (50 employees) to large (more than 200,000 employees) manufacturing and service firms, among the relationships that Yasai Ardekani and Nystrom (1993) examined was that between firms pursuing low cost leadership and the scope and frequency with which they scanned their environments. Results indicated that firms with effective scanning systems pursuing low cost leadership scanned their environments more frequently and more broadly than those firms with ineffective scanning systems pursuing the same competitive strategy. Furthermore, the findings suggest that firms employing effective scanning systems achieve alignment between strategy and environment. Niv, et al (1998) in their recent research interviewed CEOs in 46 firms in regard to the pattern of the environmental scanning they performed. The results were analyzed to determine the degree of use of information systems by CEOs in their strategic decision making and to seek a link with the firm's success in introducing new products. The study indicates significant differences in the level of environmental scanning and in the use of information systems between firms that were more successful in introducing new products into the market and firms that were less successful. The differences are in the pattern and the frequency of conducting environmental scanning, in the number of computerized applications, and in the number of advanced marketing information systems (Niv et al, 1998). Simultaneously, Sven (1998) presented his work. He argued that, based on theories in

cognitive psychology, psychiatry, organisation theory, and empirical findings from case studies of 4 Swedish organisations, a theory of the nature of spontaneous environmental scanning is developed. The theory covers the cognitive base for this behavior and how it is influenced by organisational factors. The purpose of the theory is to form a fundament to organized environmental scanning.

Other findings indicated that organisational size was not a determinant of the effectiveness of scanning systems (Analoui, 2000). That is, small as well as medium sized and large organisations were able to develop effective scanning systems (Yasai-Ardekani and Nystrom's ,1993; Beal, 2000). More especially, some of findings of Beal (2000) appear relevant to this study of small and medium sized enterprises in electronic industry, it would be useful to review them. Beal (2000) indicated that, there are at least three plausible explanations for his recent research on SME and environmental scanning results. First, the set of questions used to measure scanning frequency may lack content validity. Although constructing the frequency of scanning indices similar to those adopted by Hambrick (1981) and Fahr et al (1984) resulted in reliable indices (Cronbach alphas ranged from 0.74 to 0.87), the indices may not have been content valid. While determining content validity is judgmental, Beal (2000) believes that the set of questions designed to capture CEOs' frequency of scanning constitute adequate coverage of the various environmental sectors scanned competitors, customers, suppliers, manufacturing and product development technology, economies (local, state, and national)-and the frequency (daily, weekly, monthly, quarterly, and annually) with which the sectors are scanned. Second, CEOs of small and Medium sized enterprises (SME) in manufacturing sector, constrained by their involvement in their firms' daily operations, may not have time for frequent scanning of their external

environments. Consequently, environmental scanning may be relatively infrequent. Relatively infrequent scanning should be reflected in low mean values in the frequency-of-scanning indices. The means of five frequency of scanning indices involving elements of the task environment (competitors, customers, technology, suppliers, and the firm, itself) show quarterly-annual gathering of information about these elements. Thus, scanning of the environmental sectors that arguably have the most impact on firm performance and the formulation/implementation of competitive strategy occurs relatively infrequently. This finding provides the most plausible explanation for the non significant relationships found between frequency of scanning and external alignment. Third, the frequency at which CEOs of SMEs scan their environments may not be critical to aligning their firms' competitive strategies with the stage of the industry life cycle in which the firms compete. Other factors such as scope of scanning, accurate assessment of opportunities and threats, and effective use of competitive information may be key. Finally it has been argued (Miller and Cardinal, 1994; Berry, 1998) that, the entrepreneur's strategic awareness and his or her perception of the benefits arising from environmental scanning within the SME will be a significant determinant of the success and survival of the SME in the long term. Berry (1998) in her recent research concluded that,

*“the technical entrepreneur's strategic awareness will determine the nature of planning used within the SME. The strategic awareness of the entrepreneur will be heightened by exposure to strategic management techniques within another organisation prior to business start-up or alternatively through contact with individuals who are aware of the benefits strategic planning may bring to the business” (Berry, 1998, p.464).*

As a final point, no strategic planning will be implemented in SMEs where the senior managers or entrepreneurs exhibits a lack of strategic awareness.

### **Sample and data**

The sample has been drawn from the 508 small and medium size manufacturing enterprises in electronic industry in the UK. The SMEs targeted for the current study by using British Standard Industrial Classification (SIC). The SIC for the United Kingdom covers the provision of all goods and services and is compiled in accordance with internationally approved standards. In order to frame the sample, two different registers, a) The Authority of the British Industry Vol. 1 (Products and Services), and Vol. 2 (Company Information); and b) Smaller UK Companies Handbook Vol. 1, and Vol. 2, were used. In general 508 manufacturing companies which employed less than 250 employees and have had less than £50 million annual turnover in the last financial year, were selected. The companies were identified using the UK (SIC) based on two criteria: a) having less than 500 employees, and b) having less than £50 million turnover in the last financial year. These two criteria have been used widely in literature in defining the SME (Hertz, 1982; Preston et al, 1986; Smith, 1998). The main research instrument was mail questionnaire. However a sub-sample of 12 managing directors have been interviewed. Data were collected via mail surveys from 132 (for a %27 response rate) CEOs of the SMEs of electronic manufacturing industry in the UK. A personalised cover letter that explained the purpose of the study and provided assurances

regarding the confidentiality of collected data accompanied each questionnaire. Managing directors were urged to personally participate in the survey. In order to minimise response bias, the participants were also provided with pre-addressed envelopes to enable them to return the completed questionnaires directly to the researcher. For the purpose of this study, the first section of the questionnaire investigates the demographic characteristics of respondents. Respondents will be asked about their age, sex, their status within the organisation, experience, education, and functional background. Age is highly correlated with total work experience, organisational tenure, and industry tenure. The second section of the questionnaire investigates the firms method for , and extent of environmental scanning. This examines both internal and external factors affecting the business in order to develop a picture of the managers awareness of the environment in which his firm operates. External environment of the firm consist of two distinguished societal environment and task environment variables. Societal environment include economic, technological, sociocultural, and political legal variables. While task environment includes industry force variables. In contrast, internal environment of the firm consist of structure, culture, and resource variables. For instance each respondent will be asked to indicate that, to what extent external variables drive the company's strategy? In this research the company performance variable was measured by self-reported ratings of the respondents concerning the indicators of achievement of the intended outcomes, financial performance, and implementation of plans within the expected time and predicted cost. A 5 point Likert type scale ranging from 1 (low extent of success) to 5 (high extent of success) was applied. This self - reporting rating of performance is widely used in SMEs strategy research (Gable and Topol, 1987; Rangone, 1999; Analoui, 2000).

## **Finding and discussion**

In order to analyse the data and consequently discuss the results, the collected data was summarised using descriptive statistics. Of 508 distributed questionnaires, surveys were returned from 132 CEOs for a response rate of 27 percent. Descriptive data analysis shows that, majority of respondents (N=116, 88%) were male, while only 12% of respondents (N=16) were female. The respondents' minimum number of total years work experience was 8 and maximum was 42 years. Also, 73% of respondents reported that they have had formal management training. The number of employees of the firms varied from minimum (N=16) to maximum (N=492). As mentioned earlier, we measured the firm size using number of employees and annual turnover of the firms. Accordingly, the amount of turnover of the firms in the last financial year was between £1.25 million to £50 million .

In the first part of the questionnaire we examined the CEOs' perception of environmental scanning as the first step in strategic management process in SMEs. Environmental scanning is the acquisition and use of information about events, trends and relationships in an organization's external environment, the knowledge of which would assist management in planning the organization's future course of action. Organizations scan the environment in order to understand external forces of change so that they may develop effective responses that secure or improve their position in the future. To the extent that an organization's ability to adapt to its outside environment depends on knowing and interpreting the external changes that are taking place, environmental scanning constitutes a primary mode of organizational learning. The CEOs were asked to indicate to what extent internal and external environment

factors affect their firm's strategy. In this regard we have chosen five factors including a) economic trends b) technological changes c) political and legal developments d) social and cultural trends and e) competitors. Analysis of the data show that, majority of the respondents (%91) indicated that technological changes affects too much the strategic decision making of the firms. In contrast, political and legal developments affects the strategic decision making process less than the other factors. The findings show that, the respondents ranked the degree of impacts of environmental factors on the firm's decision making process as follows. 1<sup>st</sup> priority: technological changes, 2<sup>nd</sup> priority: competitors, 3<sup>rd</sup> priority: economic trends, 4<sup>th</sup> priority: social and cultural trends, and finally 5<sup>th</sup> priority: political and legal developments. In order to find the impact of environmental forces which influence the SMEs, we tested the five force model (Porter, 1980). The result of the analysis show that, five external forces including bargaining power of buyers (Mean = 3.71, SD = 0.88), bargaining power of suppliers (Mean = 3.09, SD=0.91), rivalry among existing firms (Mean = 3.73, SD=0.99), threat of new entrants (Mean = 3.12, SD=0.95) and finally threat of substitute products (Mean = 3.32, SD = 1.12) influence the strategy making in electronic industry. Accordingly, the respondents were asked to rank the above factors based on their importance on firm's strategy making process. We found that, bargaining power of buyers (62.8%) was the most important factor. Accordingly, rivalry among existing firms (62.1%) was the second priority. Also threat of substitute new products (40.7%) was the third priority. In contrast, threat of new entrants (28.1%) and bargaining power of suppliers (25%) have not strongly influenced the strategy making in targeted firms. As discussed already, the study relies on perceptual measures of the firm performance. In order to measure the firm performance, respondents were asked to indicate on five-point scales, ranging from 1 =very unimportant to 5=very

important, the degree of importance they attached to each of financial performance indicators. This method widely has been used in previous researches (Beal, 2000). The respondents were further asked to indicate the extent of their satisfaction with their firm's performance along each of the performance indicators. In order to analyse the impact of environmental scanning on firm performance all of the firms that responded to our survey were ranked to three categories based on their performance namely, high performance, moderate performance, and low performance. This method already has been used largely in similar researches (e.g. Campbell, 1993; Smith, 1998; O'Gorman and Doran, 1999). Of all the 132 firms that responded to the survey, 52 were ranked in the top performing quartile (high performance), 41 in moderate performance, and 39 were ranked in the lowest performing quartile (low performance). We excluded the firms with moderate performance and consequently compared the percentage of the high-performer and low-performer firms, which included component in their mission statements. In this study, we examined CEOs perceptions of importance of having formal environmental scanning on the firm performance. Majority of respondents ( $N=107$ , 81%) considered formal scanning system as an essential factor in increasing firm performance. While only 8% of respondents ( $N=10$ ) believed that, having scanning system is not important in developing firm strategies and achieving its objectives. It has been concluded that, high performance firms put more emphasis on formal and co-ordinated scanning system. In comparison, low performance firms put more emphasis on informal and low frequency of environmental scanning. The results of this study show that, high performance firms put more emphasis on formal scanning system than low performance firms. Perhaps, because of the dynamic nature of the electronic industry (Young, 1985) the firms have targeted needed to develop a long term scanning system.

## **Managerial implications**

In this article we have explored the CEOs' perceptions of environment scanning in small and medium sized enterprises. We attempted to shed light on the importance and purposes of environmental scanning and its relationship with firm performance in SMEs in electronic industry. The major implications of this study are as follows:

1. It has been found that, environmental scanning is significantly related to the firm performance. Therefore, planning and implementing environmental scanning is a strategic activity in SMEs. In order to apply the strategic management system in the firm and benefit from it, it is particularly important to consider the environmental scanning activity as a base of strategic management.
2. The environmental scanning were being used for different reasons. There are different benefits from having formal scanning system for SMEs. In this regard, scanning system is necessary for formulation and planning business strategies, increasing profit and growth rate of the firm, and developing the firm's adaptability with unexpected environmental changes in turbulent marketplace. Therefore it is recommended to the practitioners and SMEs' managers to establish and develop a dynamic and formal and particularly a sustained and controlled environmental scanning system.
3. Finally, although by and large, increasing firm performance is positively related to having scanning system, but the blind adoption of such systems used in large firms, is perhaps inappropriate for SMEs. In this respect the technical entrepreneur's strategic awareness

can play a significant role in determining the nature of scanning system used within the SMEs.

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