

Chapter 11

How to Survive in an Environment of Technological Changes: A Sustainable Technology Strategy for SMEs

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ABSTRACT

Technologies are a main source for the innovative evolvement of innovative products in small and medium enterprises (SME). In addition, the implementation of other technologies in the company can enable SMEs to address new application fields. If new technologies and their potential are identified and implemented into the company in a strategically convenient way, it can cope with the continuously growing requirements of the markets and participate in global economic growth. However, most SMEs do not examine strategic matters. The SMEs are not informed of or are scared by the laborious process behind such a strategy. In many instances, companies do not have a clearly enunciated corporate strategy or a vision of the future on which the technology strategy can be elaborated. This paper introduces a methodology for a sustainable technology strategy based on competence management through a technology-function matrix. The methodology targets SMEs and their specific conditions. Different benefits of the application of the methodology are presented within a use case.

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1. INTRODUCTION

Technologies provide a major basis for the development of innovative products in small and medium enterprises (SME) and at the same time they enable the expansion of new application fields (Zahra & Covin, 1993).

If the potentials of new technologies and markets are recognized in time and deployed in a strategically convenient way, enterprises can cope with the continuously growing market and technology requirements and participate in the global economic growth (Cooper & Edgett, 2009; Lowe, 1995).

On the whole, SMEs are aware that their technology competence is their most valuable asset which is being sold through their product portfolio (Zahra & Covin, 1993). They are also aware of the increasing global competition, the growing dynamics in technology development and consequently, the resulting decrease of the half-life period of this knowledge (Lichtenthaler, 2000).

Although SMEs are conscious of these issues, it is all that more surprising, that the majority of them lack in the technology strategy creation, forecasting and systematic decision making (Sahlman & Haapasalo, 2009; Goodman & Lawless, 1994).

In many cases the company does not have a clearly-enunciated corporate strategy or a vision of the future on which the technology strategy can be elaborated (Mintzberg, 1994; Porter, 1998).

In addition, according to Savioz (2006), the complexity of technology management issue is a serious problem not only for large companies, but even more for SMEs due to less available resources.

In conclusion, there is a distinctive need for a SME-specific technology strategy methodology which reduces complexity in the process and supplies relevant strategic market- and technology information using a minimal amount of resources.

2. APPROACH

To formulate a technology strategy for SMEs, it is necessary to understand, which technological profile the SME should establish to be compatible also in the future. Moreover, their technological framework also the addressed markets are of central interest (as the markets lead to relevant functions and therefore to relevant technologies). Friar (1985) also points out, that market pull and user needs plays a major role in the development of a technology strategy.

It is not surprising, given the nature of the issue at hand, that primarily the future development of both, technologies and markets, have to be investigated and analysed. The reason is very evident: foreseeable requirements evolution or -shifts within existing markets and the appearance of new interesting markets will influence the required technology profile of the SME. Hakanson and Zander (1986) suggest therefore, that the technology strategy should be developed in parallel with the corporate strategy because of their strong independency.

Due to these dimensions “market” and “technology” and the time orientation (actual state vs. potential future state), 4 areas of influence can be distinguished (Figure 1). In order to establish a valid long term technology strategy, all those four areas have to be examined and analysed.

The analysis starts with the actual state of technology (on a technology competence level) and actual addressed markets (on a requirements-level). The analysis of the actual state can be implemented quite easily, as SMEs often have a quite good picture on the actual requirements of their addressed markets and their technological competences. The identification of the future markets and new future technologies is rather more complex. These areas are much less apparent to SMEs as they rarely have them investigated systematically (Lichtenthaler, 2000; Shane, 2009).

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