

## Chapter 8.9

# A Forecasting Concept for Virtual Organisations Supporting SMEs

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### ABSTRACT

Planning and management of Virtual Organisations (VOs) depends on accurate prognosis and forecasting of several organisational aspects. New and innovative business models such as the VO offer a variety of new options for SME to do business. This chapter presents a system-oriented view to understand planning and forecasting needs in VOs. The strategic issues in planning will be elaborated by using the cross-impact analysis. For the medium-term planning the focus lies on investigations based on the so-called collaborative network analysis. An industrial case study is introduced to demonstrate the application of the concept.

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### INTRODUCTION

#### **Virtual Organisations and Forecasting**

The organisational form of the Virtual Organisation (VO) can be considered as some type of business model innovation (Gassmann & Sutter, 2008). Consequently a VO can be seen as answer to the enormous market pressures due to the ever changing market environments showing e.g. discontinuities in trends, cost pressures and globalisation (Camarinha-Matos & Afsamarnesh, 2008; Mertens, 1993; Boutellier & Gassmann, 2008). Any kind of manufacturers – and especially small and medium sized enterprises (SMEs) – have responded to these conditions by forming collaborative relationships with suppliers, distributors and even customers

(Camarinha-Matos & Afsamarnesh, 2008; McInnerney, 2008) called Collaborative Networked Organisations (CNOs).

In the context of CNOs prognosis and forecasting have been discussed several years (e.g. Gassmann, 2008; Sturm et al, 1994), especially in the context of strategic management (Mintzberg, 1994). Wild (1982) pointed out that decision making on the issue forecasting and prognosis is indeed the most important information, which will be collected and used in the process of enterprise planning. Regarding the strategic management of SMEs all aspects of enterprise analysis and environment analysis are subject of prognosis and measurements. Trends in the macro environments, such as investments in new ICT (Information and Communication Technologies) solutions (e.g. Krauth, 1982), changes in competitive situation, and the evolving changes in resource and competence management of companies, do call for new forecasting methods and instruments. A classical systematisation of these methods and instruments differentiates quantitative and qualitative approaches (Bircher, 1976, Makridakis & Wheelwright, 1990; Götze, 1993). All these approaches have been developed for the usage in large companies. But are they also applicable for collaborating SME in Virtual Organisations?

Up to now, forecasting of business developments in Virtual Organisations has got some interest from both practitioners and academia (Gassmann & Sutter, 2008; Mertens, 1993). But, especially within harsh competition it becomes a key competence to better understand and foresee future developments. Boutellier et al (2008) have shown that a systematic planning of innovation processes can support the competitiveness dramatically. Also, McInnerney showed that forecasting can provide an enormous benefit to better understand customer requirements (McInnerney, 2007). Several other authors also state that the general trend towards more decentralization and cooperation towards virtual organisation can be observed (Gassmann & Sutter, 2008).

To summarise: SME are faced with tremendous pressure from the market and they need to better understand their own business models in terms of planning on a short, medium and long term basis. This chapter will interlink these subjects and will present first conceptual results supporting SME in their forecasting activities.

## **Objectives of the Chapter**

The main objective of this chapter is to set a basis for forecasting and prognosis concepts which could stimulate SMEs in their planning activities. The authors believe that this is very important because major trends such as continuous networking via Internet, new enterprise information systems and permanently changing market conditions are especially critically for non-prepared SME. This means that accurate strategic and operational planning and forecasting is essential for their survival (Gassmann & Sutter, 2008). Unfortunately the usage of EIS (Enterprise Information systems) tools for systematic planning and forecasting in SME is still in its beginning when comparing it with multinational companies (Rank, 2003; Wald, 2003; Boutellier et al, 2008). Especially here the usage is mostly limited to shop-floor oriented approaches such as production planning and control. This requires stable production forecasts depending on an accurate planning of the business itself. Within these developments heavy debates about the organisational form of SME and their role in enterprise collaborations have started. The SME have to accept the shift from a limited environment to a global dynamic collaboration and competition within connected networks. Indeed this also implies a set of new challenges which need to be understood (Wildemann, 2008). SME have to coordinate a much higher number of inter-organisational relationships between each other and they have to understand business developments in forefront.

The aeronautical industry delivers a useful example (Airbus production network) in which

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