1 Introduction

1.1 Research focus and thesis structure

This thesis contributes to the handling of environmental impact factors in the companies' strategic planning by analyzing the requirements and application opportunities of an empirical causality analysis procedure. The examination of causal relationships between environmental factors and company target figures becomes increasingly important under growing complexity and dynamism in companies environments (Grant, 2003; Garg, Walters, and Priem, 2003). Similarly, an increasing number of research demands appear which claim for new approaches on instrumental level to cope with uncertainty about environmental influences. Simon, Hitt, and Ireland (2007: 277) urge for "more and diverse resources" to deal with environmental uncertainty, while Merchant and Otley (2007: 787) still assess that "appropriate responses to uncertainty" are necessary. More precise, Aragon-Correa and Sharma (2003: 75) emphasize the need for new methods that offer the possibility to examine "interactions among variables" in the analysis of the company's contextual dependencies. Based on this comprehension of a broader interconnectedness between the environment and companies, Hutzschenreuther and Isreal (2009: 421) express that particularly "in the areas of strategic action timing and path dependency" analysis further theoretical and empirical research is essential in times of increasing environmental turbulence. The importance of such a time-dependent consideration of interaction effects between the environment and the company finally culminates in the claim for instruments that allow for causal relationship analysis (Rodriguez-Rodriguez, Saz, Bas, Carotand, and Jabaloyes 2010).

The task of environmental analysis, furthermore, constitutes the starting point of a key phase in the strategic management process, such as the accurate analysis and prediction are crucial for the future-oriented steering of any enterprise (Abebe, Angriawan, and Tran, 2010; Sawyerr, Ebrahimi, and Thibodeaux, 2000; Daft and Weick, 1984). This fact emphasizes the importance of environmental analysis for the development and the success of the whole strategic planning process. Helping managers to use quantitative models to support their decision-making and planning is not least therefore an important research topic (Power and Sharda, 2007).

The main goal of this thesis concerns the integration of an empirical causality analysis procedure into strategic planning with a special regard on environmental analysis. The development of such a procedure and its integration into the strategic planning process closes the research gap which emphasizes the importance of causal interaction analysis and claims for instruments to enable its execution. Since information has become an invisible asset which, when supplied properly, can be used to leverage other firm resources (Tippings and Sohi 2003), information about environmental impact factors' influence on company target figures constitute valuable information for several strategic planning tasks. Finally, the enhanced capability to gain insights into environment-company-interactions supports the goal to achieve "strategic fit" as a key concept of strategic management (Andrews 1971; Hofer and Schendel 1978; Zajac, Kraatz, and Bresser 2000): The capability to gain information on customers and markets helps to ensure that companies are more attuned to changes in the environment and can result in a competitive advantage in contrast to slower, ill-informed competitors (Barney, Wright, and Ketchen 2001).

Besides this contribution to strategic planning literature, further research fields are addressed and developed: The thesis' focus connects the pure macroeconomic analysis of national performance ratios with the business perspective of a single company's strategic planning. This connection is achieved, on the one hand, by disaggregating the analysis of economic institutions on company level and integrating empirical causality analysis mainly known from macroeconomics and operations research (OR) within the company's strategic planning activities, on the other hand. Strategic planners thereby receive new methods and procedures, especially regarding environmental analysis. For economists and OR, similarly, new research fields are opened. This connection is expected to gain importance as data availability increases and analytical methods advance over time.

The thesis' goal is addressed in five research questions (RQ):

RQ 1. Does an analytical-rational decision style affect strategic planning and its effectiveness?

In advance to the development of an empirical causality analysis and its application in strategic planning, a survey should reveal whether a more analytical-rational

decision-making style is really associated with a higher degree of planning effectiveness.

The survey's results are based on the responses of 89 companies from high-technology industries that were surveyed with a standardized questionnaire. The results show that an analytical-rational decision-making style is associated with less frequent misplanning and increased strategic planning satisfaction, in contrast to intuitive decision-making. The analysis furthermore indicates that an insufficient knowledge about the right application of analytical tools is the main inhibition to a more intensive usage of this decision-making style. These results emphasize that more research insights on tools and their application are necessary to improve strategic planning.

RQ 2. How can a causality analysis procedure be designed that enables the examination of connections between environmental impact factors and company target figures?

Based on the benefits of an analytical-rational decision support to strategic planning effectiveness and the prevailing research claims, this question aims to develop an approach which enables the analysis of causal relationships between environmental impact factors and the company's target figures.

The answer to this question takes place by transferring an empirical approach which enables causality analyses into the environmental scanning toolbox. The importance to empirically disclose causal relationships in strategic planning is emphasized theoretically and practically using the example of German construction turnover predictors. The study shows that empirical causality analysis enables a more comprehensive understanding of the companies' environments and their dependencies than a simple reliance just on intuition or experience.

RQ 3. How does such an empirical causality analysis work in strategic planning practice and does it really provide valuable decision support?

While the development of concepts is the one side, practical insights on the applicability and the actual benefits are the other side. The practical application should analyze and evaluate the developed empirical causality analysis procedure in order to reveal evidence on these aspects within a real business setting.

The case study is conducted in the strategic planning department of a consumer cosmetics manufacturer. A constructive research approach (CRA) design is used to accompany the causality analysis procedure with a structured implementation and evaluation framework. The results show that the procedure passes the weak market test criteria and provides some unique benefits to the company's strategic planning.

RQ 4. Are country-effects in consumer behavior still that heterogeneous that cross-country causality analyses are necessary for international operating companies?

While some researchers claim that globalization and internationalization align consumer demands in different countries, others suggest that country-specific characteristics in consumer patterns still dominate. This question should reveal some empirical evidence on the degree of market homogenization to assess if a differentiated cross-country application of causality analysis is still necessary.

The proceeding to answer this question starts with a disaggregation of institutional analysis for strategic planning purposes. Based on a classification of institutional factors, the causality analysis of economic institutions is applied in a cross-country setting covering France, Germany, and the UK. The results recommend that country effects should still be taken carefully into consideration in the strategic planning of companies which operate internationally.

RQ 5. How can the empirical causality procedure comprehensively support the strategic planning process?

The previous questions focus on the development and application of causality analysis to enhance environmental analysis as one crucial step within the strategic planning process. However, the procedure's full support during the whole strategic planning process can ensure a comprehensive application of causality analysis which enables a more analytical-rational decision making in strategic planning. Similarly, opportunities for further research can be outlined covering other aspects of causality analysis in strategic planning.

This question is answered using a conceptual analysis of the main application opportunities for the developed empirical causality analysis procedure in strategic planning. Within these aspects, the design and integration of the procedure into existing instruments is outlined.

These questions mainly frame the structure of this thesis. The next parts of this chapter review the background and consequences of increasing environmental dynamism and complexity and the prospects of empirical causality analysis to strategic planning. Chapter two takes a closer look at the diffusion, troubles and value-adds of analytical-rational decision support to strategic planning, following RQ 1. Chapter three is dedicated to the transfer and application of causality analysis based on vector autoregressive modeling for environmental scanning tasks. This includes the case study on the identification of early warning indicators in the German construction industry as proof of concept, which addresses RQ 2. Chapter four answers RQ 3 by applying the empirical causality procedure within the strategic planning of a manufacturing company of the consumer cosmetics market. Chapter five contains the causal analysis of institutional and company variables' influence on corporate performance in a cross-country setting, addressing RQ 4. The final integration of empirical causality analysis in the strategic planning process is outlined in chapter six and covers RQ 5. Chapter seven summarizes the main results of this thesis and offers limitations and suggestions for further research.

1.2 Increasing environmental dynamism and complexity as challenge for strategic planning

1.2.1 Challenges from the external environment

Increasing environmental dynamism and complexity challenge the companies' strategic planning to incorporate comprehensive information into business plans. This chapter provides the essential definitions and problems associated with environmental developments as basis for the further chapters.

Duncan (1972: 314) defined the external environment consisting of the "relevant physical and social factors outside the boundaries of the organization" which contain customer, supplier, competitor, socio-political, and technological components. These sectors can be allocated to the two layers of the task and the general environment (Bourgeois, 1980). The task environment considers sectors which have a direct transaction with the company, such as customers or competitors, while the general environment refers to sectors that affect organizations indirectly, such as economics

or social developments (Daft, Sormunen, and Parks, 1988). Research revealed, however, that the sectors' factors and their importance distinctly vary across industries and regions (Stewart, May, and Kalia, 2008; Tan, 2002; May, Stewart, and Sweo, 2000; Elenkov, 1997), which hampers the development of a more general classification of the companies' environment.

The further progress of global trends, such as globalization or individualization (Aksin and Masini, 2008; Castrogiovanni, 2002), causes increasing dynamism and complexity in the companies' environments (Mason, 2007; Glass, 1996). Environmental dynamism, also referred to as instability or turbulence, is thereby manifested in the variance capturing the rate of change occurring in the environment (Baum and Wally, 2003; Dess and Beard, 1984). Environmental complexity, or heterogeneity, concerns the variation in the company's market which requires diversity in production and marketing orientations (Porter, 1998).

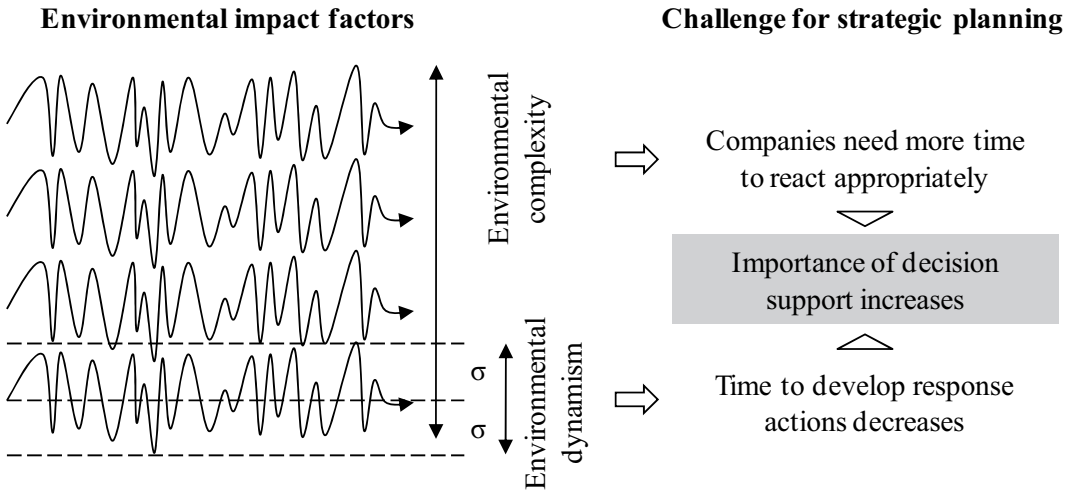

Figure 1: **Environmental dynamism and complexities' challenge**

Research produced different classifications for the consequences of these global trends' further driving forces. D'Aveni (1998) defines four fields that contribute to an ongoing increase in hostility, turbulence, and uncertainty in the markets. These fields contain increasing consumer expectations, technological revolutions, falling entry barriers around nations as well as industries and collectively operating groupings of firms in the same supply chain (keiretsus) or across industries (zaibatsus). Sirmon, Hitt and Ireland (2007) trace the increasing environmental uncertainty back to three elements encompassing changes in industry structure, market demand and the

probability of environmental shocks. However, each company has its own set of external impact factors in the environment which create the company's own degree of environmental dynamism and complexity, dependent on the particular industry and customer focus.

Both characteristics, dynamism and complexity, set high demands on the company's decision making capability. A main challenge concerns the *reduction of environmental uncertainty perceived by the decision maker*. Uncertainty is thereby defined as the individuals' feeling to be lacking sufficient information or the perceived inability to discriminate between relevant data and irrelevant data (Gifford, Bobbitt, and Slocum, 1979). The attached term "environmental" suggests that the source of the uncertainty lies in the company's environment (Miliken, 1987). Miliken (1990) distinguishes between three types of uncertainty and assigns specific tasks to these types, shown in figure 2.

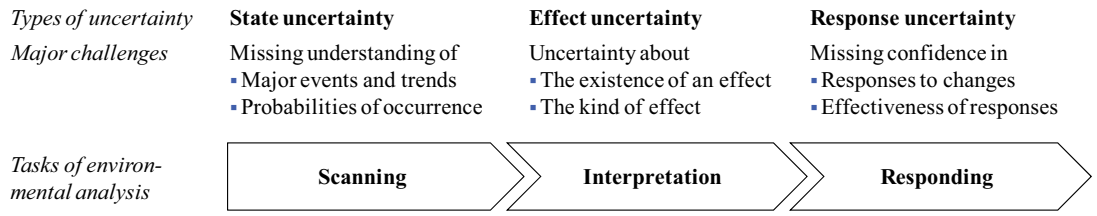

Figure 2: **Types of uncertainty, challenges, and tasks of environmental analysis according to Miliken (1990)**

This thesis addresses particularly the tasks of environmental scanning and interpretation.[1] These tasks represent the main input for the development of response actions.[2] To afford executives with an adequate degree of mastery in the development

[1] The development of accurate responses strongly depends on the particular resources of the company which would require a different research objective and design, involving the analysis of internal interactions and opportunities, such as flexibility across the value chain as a reaction to uncertainty (Sawhney, 2006), adaptions in R&D processes to environmental conditions (Bstieler, 2005), or marketing strategies in different environmental situations (Fink, Roessl, Kraus, Hanninen, and Ainamo, 2008).

[2] The tasks of environmental scanning and environmental interpretation are often combined because interpretation frequently takes place already during scanning activities. Accordingly, Hambrick (1981: 299) proposes a more comprehensive definition of environmental scanning as the "managerial activity of learning about events and trends in the organization's environment". Learning involves thereby both activities of recognizing (scanning) environmental events and trends and the estimation of possible consequences (interpretation). This thesis adapts this broader definition of environmental scanning due to the highly interrelated tasks in both activities.

of adequate responses to future developments, the companies surrounding must be studied more carefully and diligently (Miller and Friesen, 1983). The processes of environmental scanning and interpretation, therefore, contain crucial tasks for the success of each company. This is no sole reference to the recognition of negative shocks, once seen by Khandwalla (1973) who postulated to devote greater analytical efforts to understand and master threats. Equally, the markets' heterogeneity also creates multiple opportunities for firms to leverage their idiosyncratic capabilities and create value for customers (Miller, 2003).

1.2.2 Company reactions to environmental dynamism and complexity

Companies are still seeking with high intensity for new approaches, instruments and other opportunities to cope with dynamic and complex environments. Especially the companies' strategic planning, which pools the firm's long-term planning units, gains importance.

Several companies increase the emphasis on strategic planning within their organization by engaging a Chief Strategy Officer (CSO) that is responsible for corporate strategic planning on board level (Breene, Timothy, Nunes, and Shill, 2007). Even if a CSO is not officially introduced, the proliferation of senior strategy directors (SSD) or senior strategy executives (SSE) reflects an approach to respond more rapidly to environmental change (Angwin, Paroutis, and Mitson, 2009). Kaplan and Norton (2005) even recommend the establishment of an office of strategy management (OSM) which deploys a central coordinator that aligns the organization, develops, communicates, and reviews strategy as well as manages strategic initiatives and integrates strategic priorities with other support functions. Further significant changes in the strategy planning systems of major companies were reported (Grant, 2003; Ocasio and Joseph, 2008). These adjustments additionally emphasize the need to raise strategic planning efficiency and effectiveness in order to cope with dynamic and complex environments.

Previous attempts to describe and measure environmental impacts within the company's strategic planning unit revealed several weaknesses and frequently remained insufficient. The seven step approach to produce a business environment scanning system by Narchal, Kittappa, and Bhattacharya (1987) describes the