The Quality Aspect of Dynamic Capabilities: Successful Practices of German Manufacturers in China

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The President:

Prof. Ernst Mohr, PhD
Abstract

Despite increasing interest in dynamic capabilities in the academic world, there still exists confusion about their precise definition, identification, function, and impact on firm performance (Zahra, Sapienza, and Davidsson, 2006). This thesis contributes to all four of those aspects.

I understand dynamic capabilities as organisational processes which modify a firm’s resource configuration to address environmental opportunities or threats. As every firm reconfigures its resources, every firm owns dynamic capabilities. However, reconfiguration of the resources per se does not ensure firm performance. The way reconfigurations are conducted defines whether the new configuration of resources responds better to environmental opportunities or threats. I argue that the characteristics of dynamic capabilities are what impacts firm performance, not their mere existence. I introduce the quality aspect for this discussion. The quality of dynamic capabilities is the degree of their usefulness for the firm in its efforts to compete in its market environment. I argue that various aspects shape the quality of a dynamic capability and thus its effect on firm performance.

Based on this idea, I phrase the following two research questions: Which elements influence the quality of a dynamic capability and therefore firm performance? Which dynamic capabilities have a high and significant impact on firm performance?

The empirical research starts with an inductive research phase based on the study of four manufacturing subsidiaries in China with a German parent company. The explorative inductive research phase indicates two dynamic capabilities with high impact on subsidiary performance: First, the decision-making process of the local top management team and second interfering processes of the German parent company. The research on these two processes reveals various quality aspects.

To generalise the findings, the thesis proceeds with a deductive research phase based on survey research and analyses of 61 German manufacturing companies in China. This results in a comprehensive, generalised model summarising the quality aspects of the two dynamic capabilities with the highest influence on firm performance.

The concept and findings regarding the quality aspect of dynamic capabilities have strong implications for the fundamental question of what dynamic capabilities are and how they function. The identification of those dynamic capabilities with highest impact on firm performance is an additional contribution to academia.

From a practical perspective, this thesis provides recommendations which deal with practices that positively or negatively influence the performance of German manufacturing companies in China. Accordingly, this thesis can be used to analyse and enhance the performance of German manufacturing subsidiaries in China.
Meiner Familie
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Part A

Theoretical Considerations and Research Procedure
1 Introduction

1.1 Theoretical Relevance of the Thesis

Highly volatile and dynamic market environments require frequent and unpredictable adjustments in resources and capabilities in order for companies to compete successfully (Teece, 2007). The dynamic capabilities-based view addresses this issue and focuses on the mechanisms of integrating, building, and reconfiguring internal and external competencies and resources (Teece, Pisano, and Shuen, 1997). Following Eisenhardt and Martin (2000), dynamic capabilities are basically processes in terms of strategic or organisational routines through which firms reconfigure their resources to respond to or create market change. As dynamic capabilities enable the firm to match external opportunities with internal strengths through the reconfiguration of internal resources, they ensure long-term advantages (Teece, 2007). Firms which lack dynamic capabilities derive only short-term benefits from their current resource configuration, which may fail to meet market requirements in the near future (Teece, 2007). Due to the increasing importance of dynamic market environments in the real world, many scholars have placed research on dynamic capabilities at the top of their research agenda (e.g. Daniel and Wilson, 2003; Lenox and King, 2004; Salvato, 2003; Teece, 2007; Teece et al., 1997; Zott, 2003).

Despite the increased attention since the publication of initial articles (e.g. Teece, Pisano, and Shuen, 1990), there is still confusion about the precise definition and function of dynamic capabilities. Zahra et al. (2006) review the most important definitions and observe inconsistencies, overlaps, and contradictions. Partially vague, tautological, endlessly recursive, and non-operational definitions of dynamic capabilities also contribute to the fact that dynamic capabilities are often seen as non-comprehensible or even non-existent (Eisenhardt and Martin, 2000). Not surprisingly, there exists no generally accepted framework for dynamic capabilities in academia (Zahra et al., 2006). However, even theoretically derived frameworks which allow the utilisation of the dynamic capabilities perspective for empirical investigations lack application in the real world. For example, Eisenhardt and Martin (2000) as well as Winter (2003) identify specific firm routines as dynamic capabilities (e.g. product development routines, strategic decision making or transfer processes). The quantity of routines as well as their complex mutual interrelations especially in larger firms cause problems when researchers perform investigations of dynamic capabilities and use them to explain overall firm performance. Therefore, the majority of the empirical work in the field of dynamic capabilities either concentrates on certain elements of
dynamic capabilities (e.g. Salvato, 2003; Lenox and King, 2004), dynamic
capabilities-related sub-processes (e.g. Cepeda and Vera, 2007; Kor and Mahoney,
2005), use the theory as an abstract explanation approach without reference to it in the
empirical analysis (e.g. Griffith and Harvey, 2001), use rather vague proxies to
measure dynamic capabilities (e.g. Boccardelli and Magnusson, 2006; Wu, 2006) or
fail to focus on them directly but, instead, concentrate on measurable moderating
factors of dynamic capabilities and their effects (e.g. Arthurs and Busenitz, 2006).
Rarely do authors concentrate on the configuration of dynamic capabilities and their
resulting impact on firm performance, such as, for example, Zott (2003) in his study
based on a computer simulation.

This dissertation focuses on dynamic capabilities and their impact on firm
performance and concludes with two major contributions to the research field of
dynamic capabilities. First, I identify dynamic capabilities with high impact on firm
performance. Second, I illustrate how dynamic capabilities consist of various elements.
The configuration of these elements determines the functionality of dynamic
capabilities and thus their impact on firm performance. To assess the configuration of
these elements, I introduce the quality aspect of dynamic capabilities. As dynamic
capabilities are intended to align the internal resource configuration with the firm's
environment, the quality aspect of dynamic capabilities indicates to what degree this
intended effect is fulfilled. According to Juran and Gryna (1988), quality describes
fitness for use. Accordingly, dynamic capabilities which ensure a superior resource
configuration are of high quality, while those which lead to an inferior configuration
are of low quality. The quality of dynamic capabilities defines the resource
configuration shaping the firm's products and hence its competitiveness (Zott, 2003). I
argue that it is not their mere existence but rather their quality that determines the
impact of dynamic capabilities on firm performance.

I conclude with a comprehensive and clear model which operationalises dynamic
capabilities and explains in detail their effect on firm performance.

1.2 Practical Relevance of the Thesis

“There is nothing as practical as a good theory” (Lewin, 1945: 129). Wacker (1998)
identifies good theory according to the following three virtues: First, good theory
provides a structured framework to analyse the current situation or problem of interest.
Second, good theory provides clear suggestions as potential approaches for practical
problems but also an explanation of why these suggestions help. Third, good theory is also an efficient way to solve problematic questions in practice.

From a practical perspective, this thesis focuses on a comprehensive investigation of German manufacturing companies in a highly volatile and dynamic market environment, the Chinese markets. Companies basically compete with their products in the markets in which they are active. Earlier research approaches, like the resource-based view (Barney, 1991; Penrose, 1958), suggest matching opportunities and threats in the external context with the internal resources of the company to identify opportunities and risks and shape unique selling positions. However, the more dynamic the environment is, the more this static perspective of matching firm and market configurations fails to ensure long-term, reliable rent creation (Teece, 2007).

The theory of dynamic capabilities addresses the performance of firms in volatile market environments. The dynamic capabilities perspective focuses on processes which frequently perform adjustments of the firm’s configuration to match the external conditions. Basically, dynamic capabilities are embedded in these firm processes, which perform frequent adjustments of the firm’s internal configuration (Eisenhardt and Martin, 2000).

This thesis employs Eisenhardt and Martin’s (2000) understanding of dynamic capabilities as easily identifiable firm processes which ensure the adaptation of the company according to its environment. In a first step, I identify the processes embedding dynamic capabilities that have a major impact on performance. In a second step, I investigate the characteristics of these identified processes to understand which process configurations result in high or low performance. This thesis points out that change per se does not imply competitiveness (Eisenhardt and Martin, 2000; Zahra et al., 2006). It is a question of the configuration of the change processes that determines whether their outcome, the frequent reconfiguration of the firm, has a positive or negative impact on firm performance. I introduce the quality aspect of dynamic capabilities and demonstrate how configurations of dynamic capabilities with a strong positive impact on firm performance are of high quality while others are of low quality.

The results of this thesis can be used to identify the major performance levers of German manufacturers in China and enhance their configuration. Configurations which enhance the quality of these processes are suggested and are based on comprehensive empirical research and theoretical reviews.
1.3 Structure of the Thesis

An extensive literature review reveals that previously performed research has not provided sufficient in-depth insight to explain why and how dynamic capabilities impact firm performance. This study was conducted in three distinct research phases, which is reflected in the three parts of this thesis: An initial literature review and definition of the research questions, a first inductive exploratory research phase based on case study research, and a second deductive testing research phase based on survey research.

Part A, the initial literature review, includes the identification of research gaps in the academic literature on dynamic capabilities and firm performance. In this part, I position the research idea of the thesis and ensure the relevance of the research topic. In the Introduction I provide a general introduction to the topic of this thesis from a theoretical and practical perspective. Based on that, the chapter Literature Review and Research Questions introduces the theoretical background of the thesis at hand, the theory of the dynamic capabilities. The review of theoretical and empirical contributions to the field reveals research gaps and shapes the two research questions of this thesis: Which elements influence the quality of a dynamic capability and therefore firm performance? Which dynamic capabilities have a high and significant impact on firm performance? The topic of the thesis is not researched by the theoretical and empirical academic literature. Thus, a two-fold sequential research approach consisting of an inductive and deductive research phase is necessary to avoid systematic errors in the findings. I derive the precise research approach in the chapter Methodological Approach.

Part B, the inductive research phase, consists of the analysis of four explorative case studies. This phase aims at the identification of dynamic capabilities with a major impact on firm performance. In order to derive quality aspects, the identified dynamic capabilities are examined for characteristics which are relevant for firm performance. The inductive research phase concludes with a preliminary model. The in-depth approach ensures the causality of relationships between identified variables of the model which guarantees, by definition, the internal validity (Scandura and Williams, 2000). Part B starts with a detailed description of the research design of the case studies conducted. Relevant details of the research preparation, the data collection, and the analysis methods of the data retrieved from the case studies are presented in the chapter Research Design of the Inductive Research Approach. The findings of the research phase result in propositions which I derive and present in the chapter
Empirical Findings from the Inductive Exploratory Research Phase. The propositions are based on qualitative and quantitative data from the four companies investigated. Part B concludes with a preliminary model, which is discussed in the chapter Toward a Preliminary Model.

Part C, the deductive research phase, builds on the preliminary model of the inductive research phase. In the chapter Development of Testable Hypotheses the propositions from the case study research are substantiated through a complementary literature review. The chapter concludes with a number of hypotheses as the basis for the survey method applied. The chapter Methodological Approach for the Empirical Survey provides details about the selection of the dataset, the operationalisation of the variables of the assumed relationships in the hypotheses, and the analysis techniques applied. The chapter Empirical Findings from the Deductive Testing Research Phase presents the findings, which consist of a confirmation, partial rejection or full rejection of the developed hypotheses. These are tested on data from 61 participating companies via statistical analyses. The result of the testing research phase ensures the generalisation of the findings of this study and therefore its external validity. The findings are discussed in detail in the chapter Discussion.

The chapter Conclusion summarises the theoretical as well as practical relevance of the findings. Finally, the thesis finishes with a discussion of the limitations of the study as well as recommendations for potential future research activities.
2 Literature Review and Research Questions

2.1 The Dynamic Capabilities Perspective

According to the theory of the resource-based view, valuable, rare, inimitable, and non-substitutable resources of the firm are relevant for sustainable competitive advantages (Barney, 1991; Conner and Prahalad, 1996; Nelson, 1991; Wernerfeld, 1984). The success of a firm in a competitive environment is dependent on the firm’s resources. These are defined as “stocks of available factors that are owned or controlled by the firm. Resources are converted into final products or services by using a wide range of other firm assets and bonding mechanisms such as technology, management information systems, incentive systems, trust between management and labour and more. These Resources consist, inter alia, of know how that can be traded (e.g. patents and licenses), financial or physical assets (e.g. property, plant and equipment), human capital, etc.” (Amit and Schoemaker, 1993: 35).

However, in a highly volatile market environment, the firm’s resources only explain temporary competitive advantages (Eisenhardt and Martin, 2000). Addressing this fact, Teece et al. (1997) shift the focus from the firm’s resource configuration to antecedent strategic and organisational routines that define these resource configurations according to the environmental conditions. Teece et al. (1997) call these routines the firm’s dynamic capabilities. Underlying concepts of the dynamic capabilities perspective are rooted in evolutionary economic concepts like the evolutionary theory of the firm (Nelson and Winter, 1982).

Increasing attention to the dynamic capabilities view in the academic world has resulted in a remarkable number of publications since the initial introduction of the theory in 1990 (Teece et al., 1990). However, reviewing key articles in this academic field, Zahra et al. (2006), Salvato (2003) as well as Schreyögg and Kliesch-Eberl (2007) uncover inconsistencies, overlapping definitions, and contradictions in the differentiation of dynamic capabilities from other capabilities. Table 1 presents definitions from those papers having a major influence on the current discussion of the topic. I identify level of influence by using the citation rate in the Thomson-ISI web of science database. The following brief analysis reveals that even within this small selection of definitions there exists disagreement in terms of the essence of dynamic capabilities, the effect of dynamic capabilities, and the identification of dynamic capabilities.

Focusing on the essence of dynamic capabilities, Teece et al. (1997) understand dynamic capabilities as a firm’s ability to integrate, build, and reconfigure
competencies to address environmental changes. For Eisenhardt and Martin (2000),
dynamic capabilities are not abilities but processes to address or initiate market change. Zahra and George (2002) regard dynamic capabilities neither as a firm’s abilities nor as processes but as capabilities to match customer demands and competitor strategies. Zollo and Winter (2002) introduce another synonym for dynamic capabilities as they regard them as patterns of collective activity. While some terms which are used to explain the essence of dynamic capabilities are synonyms, other terms differ fundamentally. For example, Becker (2004) defines processes as routines which consist of collective recurrent activity patterns. Accordingly, Eisenhardt and Martin’s (2000) understanding of the essence of dynamic capabilities is equivalent to that of Zollo and Winter’s (2002). However, they differ with Teece et al.’s (1997) understanding of dynamic capabilities as a firm’s ability that is detached from any process understanding. All of the scientists link the term dynamic capabilities to another known term to explain the essence of dynamic capabilities. However, all of the authors neglect to define in detail what dynamic capabilities are and what they consist of.

<table>
<thead>
<tr>
<th>Definition of Dynamic Capabilities</th>
<th>Source</th>
</tr>
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<tbody>
<tr>
<td>The firm’s ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.</td>
<td>Teece et al. (1997: 516)</td>
</tr>
<tr>
<td>The firm’s processes that use resources – specifically the process to integrate, reconfigure, gain and release resources – to match or even create market change. Dynamic capabilities thus are the organizational and strategic routines by which firms achieve new resources configurations as markets emerge, collide, split, evolve and die.</td>
<td>Eisenhardt and Martin (2000: 1107)</td>
</tr>
<tr>
<td>Dynamic capabilities are essentially change-oriented capabilities that help firms redeploy and reconfigure their resource base to meet evolving customer demands and competitor strategies.</td>
<td>Zahra and George (2002: 148)</td>
</tr>
<tr>
<td>A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness.</td>
<td>Zollo and Winter (2002: 340)</td>
</tr>
<tr>
<td>Dynamic capabilities are rooted in a firm’s managerial and organizational processes, such as those aimed at coordination, integration, reconfiguration, or transformation, or learning.</td>
<td>Amit and Zott (2001: 497)</td>
</tr>
<tr>
<td>The subset of the competences/capabilities which allow the firm to create new products and processes and respond to changing market circumstances.</td>
<td>Teece and Pisano (1994: 541)</td>
</tr>
<tr>
<td>Those that operate to extend, modify or create ordinary (substantive) capabilities.</td>
<td>Winter (2003: 991)</td>
</tr>
</tbody>
</table>

Table 1: Selected definitions of dynamic capabilities.

Focusing on the effect of dynamic capabilities, Teece et al. (1997) regard dynamic capabilities as relevant to addressing the environment in general, as long as it is
rapidly changing. Eisenhardt and Martin (2000) as well as Teece and Pisano (1997) limit the effect of dynamic capabilities on the firm’s market only, a subset of the firm’s environment (Bourgeois, 1980; Daft et al., 1988), which implies a true limitation in comparison to Teece et al. (1997). Amit and Zott (2001) do not refer to any effect of dynamic capabilities in their definition.

Focusing on the identification of dynamic capabilities, Teece et al. (1997) regard rapidly changing environments as necessary for the existence of dynamic capabilities. Eisenhardt and Martin (2000), Zahra et al. (2006) as well as Zollo and Winter (2002) contradict Teece et al.’s (1997) understanding and uncouple the existence of dynamic capabilities from the level of environmental dynamism or volatility. Zahra et al. (2006) describe this fundamentally different understanding as the greatest source of confusion in this research field.

To sum up, an analysis of the most important definitions of dynamic capabilities reveals fundamental contradictions. Expanding the analysis to more articles leads to the identification of further inconsistencies. Zahra et al. (2006) conclude from their extensive review that some researchers (e.g. Anand and Vassolo, 2002) tend to link the firm’s possession of dynamic capabilities to firm success. If this is the case, it would mean that unsuccessful firms do not have any dynamic capabilities. Zahra et al. (2006) consider this understanding as unsatisfactory and tautological.

2.2 Definition of Dynamic Capabilities

This thesis aims at opening the black box of dynamic capabilities to research the elements and effects of a dynamic capability in detail. Basically, I rely on Zott’s (2003: 98) understanding of dynamic capabilities, which regards them as “processes that guide the evolution of a firm’s resource configuration and operational routines”. I agree with Eisenhardt and Martin’s (2000) opinion that these processes are identifiable. To further specify these firm processes, it is necessary to identify the separate process steps which dynamic capabilities consist of.

Dynamic capabilities aim at matching internal resource configurations with the environment (Teece et al., 1997). Hence, it is valid to assume that dynamic capabilities include activities which lead to the identification of internal strengths and weaknesses as well as external opportunities and threats. The literature provides support for this idea: Lee, Lee, and Rho (2002), Zahra et al. (2006) as well as Lenox and King (2004) emphasise the firm’s ability to identify and exploit opportunities as relevant for the firm’s competitive advantage. Similarly, Teece (2007) recognises that firms have to

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search for, and explore relevant context aspects such as the market environment or the technology in which the firm is involved. Firms continually retrieve pieces of information and act accordingly. Considering this aspect, the process in which a dynamic capability is embedded starts with a process step which I call *information*. The process step consists of firm activities to retrieve relevant information which triggers adjustments of the firm’s resource configuration.

The next logical process step consists of the creation of potential reactions to the stimulus arising from the *information* process step. Therefore, the firm searches for potential alternative configurations of the firm’s configuration of resources and capabilities (Zott, 2003). In line with evolutionary learning categories (Campbell 1965), Zott (2003) calls this activity *variation*. Following evolutionary theory, variation emerges by chance (van de Ven and Poole, 1995). In the context of this thesis, variation can also result from planned activities (Aldrich and Pfeffer, 1976) such as imitation or experimentation (Zott, 2003).

The next logical process step is the assessment and selection of potential alternatives, which Zott (2003) subsumes under the category of *selection*. The firm’s potential resource configurations are assessed according to their presumed enhancement of the current configuration (Zollo and Winter, 2002) or their fit to the assumed change in environment (Zott, 2003). The alternative perceived as best is selected.

Finally, the firm implements the selected new resource configuration. Zott (2003) terms this process step *retention*. The implemented resource configuration remains until a new dynamic capability process results in a further modification.

Figure 1 summarises the logic structure of a dynamic capability in which information precedes the actual change process of variation, selection, and retention.

![Figure 1: Logic structure of a dynamic capability.](image)

The conducted analysis of the dynamic capability process results in the following definition of dynamic capabilities, which I use in this thesis:

*Dynamic capabilities* are organisational processes which modify a firm’s resource configuration to match environmental opportunities or threats. Dynamic capabilities consist of information-retrieving activities to unveil the need for change, variation of
The Quality Aspect of Dynamic Capabilities

the existing firm’s resource configuration, selection of appropriate configurations, and their retention through implementation.

This definition aligns with the statement that dynamic capabilities are “embedded in routine organisational processes that guide the evolution of a firm’s resource configuration and operational routines” (Zott, 2003: 98). Helfat and Raubitschek (2000) as well as Zollo and Winter (2002) give further support for the idea that dynamic capabilities are embedded in organisational processes. Additionally, the definition of dynamic capabilities details its elements by introducing the logic process steps of information, variation, selection, and retention. Following Eisenhardt and Martin (2000), this definition does not link the existence of dynamic capabilities with the level of dynamism of the firm’s environment or the firm’s success. I assume that every company possesses dynamic capabilities. The effect of the dynamic capability refers to the firm’s pursuit of a match between internal strengths and weaknesses and external opportunities and threats. Thus, this definition does not limit the effect of dynamic capabilities on markets (as suggested by Eisenhardt and Martin, 2000) or the general dynamic environment (as suggested by Teece et al., 1997).

2.3 The Quality Aspect of Dynamic Capabilities and Firm Performance

I agree with Eisenhardt and Martin (2000) as well as Zahra et al. (2006) with regard to their notion that the mere existence of dynamic capabilities in a firm does not result in competitive advantages or high performance. However, the literature research reveals a compelling interpretation of dynamic capabilities as indirectly influencing the firm’s performance (Zott, 2003; Eisenhardt and Martin, 2000; Helfat and Peteraf, 2003; Teece, 2007; Zahra et al., 2006). The indirect relationship results from the idea that dynamic capabilities originate and define the firm’s individual resource configuration, which shapes the firm’s competitiveness and therefore performance (Galunic and Eisenhardt, 2001; Kogut and Zander, 1992; Porter, 1994; Zott, 2003). The causal relationship is illustrated in Figure 2.
Dynamic capabilities aim at the perpetual adjustment of resource configurations. As every firm regularly undergoes modifications of its resource configuration, it is valid to assume that every firm possesses dynamic capabilities (Eisenhardt and Marin, 2000; Zahra et al., 2006). Accordingly, the impact of a firm’s dynamic capabilities on its performance is a matter of the configuration of the dynamic capabilities it utilises. Differences in the performance among a set of firms result from the individual configuration of their dynamic capabilities. Assuming that every profit-orientated organisation aims at achieving good performance, there arises the question of whether the individual configuration of dynamic capabilities serves this purpose. The degree of usefulness of the individually configured dynamic capabilities for the firm shapes its competitiveness in its market environment. As the term quality is defined as “fitness for use” (Juran and Gryna, 1988: 2.8), it is also valid to introduce the quality aspect for dynamic capabilities. Following this idea, the quality of a dynamic capability may function as a measure of its degree of performance in order to adjust the firm’s resource configuration to match environmental opportunities or threats in its ultimate pursuit of ensuring competitiveness.

The quality aspect allows the classification of a dynamic capability according to its quality level. Every firm has various dynamic capabilities as it also possesses various processes which result in a modification of a resource or a set of resources (Eisenhardt and Martin, 2000). The assessment of a distinct dynamic capability is therefore particular and depends on the nature of the process in which it is embedded. A configuration of the dynamic capability with a high and positive effect on performance is of high quality, while those with a lower positive or even negative effect on performance are of lower quality. Firms which possess dynamic capabilities of high quality outperform their competitors with dynamic capabilities of low quality.

2.4 Identification of Research Gaps and Research Questions

The aspect of quality does not yet exist in the academic field of dynamic capabilities. Wang and Ahmed (2007) even question whether dynamic capabilities can be similar
across organisations, as capabilities result from unique and individual developments. In contrast with this view, Eisenhardt and Martin (2000) mention in their theoretical discussion that dynamic capabilities of successful companies reveal certain commonalities which can be identified as best practices. This classification refers to certain characteristics of the dynamic capabilities themselves. Eisenhardt and Martin (2000) receive further theoretical support from Zahra et al. (2006), who propose that the characteristics of dynamic capabilities themselves matter. My definition of dynamic capabilities is in line with Eisenhardt and Marin’s (2000) as well as Zahra et al.’s (2006). Eisenhardt and Martin’s (2000) and Zahra et al.’s (2006) theoretical perspective on dynamic capabilities provides some support for the idea that the quality of dynamic capabilities may impact firm performance.

Focusing on empirical studies in the field of dynamic capabilities, various authors note the scarcity of contributions (Salvato, 2003; Galunic and Eisenhardt, 2001; Boccardelli and Magnusson, 2006; Cepeda and Vera, 2007; Zahra et al., 2006). Table 2 and Table 3 show a selection of empirical studies in the academic field of dynamic capabilities. The selection is based on Wang and Ahmed (2007) and is further expanded by my own investigation of the current state of empirical work on dynamic capabilities. The majority of the articles selected use a qualitative research approach like case studies, which also reflects the explorative nature of the topic of dynamic capabilities.

Reviewing the content of the empirical contributions, it becomes obvious that no study works with multidimensional constructs of dynamic capabilities; instead, they employ simple proxies or constructs for investigating firms in general (e.g. Boccardelli and Magnusson, 2006; Sawyers, Pretorius, Oerlemans, 2007; Wu, 2006; Rindova and Kotha, 2001; Athreye, 2005). These approaches do not properly reflect the complexity of dynamic capabilities (Wang and Ahmed, 2007). Thus, they fail to analyse real-world phenomena from a dynamic capabilities perspective. Many empirical articles tend to use the theoretical perspective of dynamic capabilities only as an explanation approach without enhancing or even referencing the concept of dynamic capabilities in their empirical work (e.g. Griffith and Harvey, 2001; Levinthal and Myatt, 1994; Camuffo and Volpato, 1996; Delmas, 1999; Madhok and Osegowitsch, 2000; Majumdar, 2000; Holbrook, Cohen, Hounshell, and Klepper, 2000; Sako, 2004; Woiceshyn and Daellenbach, 2005). Some refer to dynamic capabilities only to discuss certain side effects of their findings (e.g. Tripsas and Gavetti, 2000).

Most contributions focus on certain processes which they investigate in the light of dynamic capabilities. The set of researched processes is quite diverse; however, the
The Quality Aspect of Dynamic Capabilities

majority concentrate on product development processes (e.g. Cepeda and Vera, 2007; Kor and Mahoney, 2005; Mosey, 2005; Henderson, 1994; Tripsas, 1997; Petroni, 1998; Deeds, DeCarolis, and Combs, 2000; Helfat and Raubitschek, 2000; Verona and Ravasi, 2003). Others concentrate on new firm formation processes (Newbert, 2005), restructuring processes of acquired firms (Meyer and Lieb-Dóczy, 2003) or firm acquisition processes (Karim and Mitchell, 2000; Roy and Roy, 2004), turnaround or fundamental firm transformation processes (e.g. Forrant and Flynn, 1999; Rosenbloom, 2000), research processes (Henderson and Cockburn, 1994; Helfat, 1997) or market entry processes (King and Tucci, 2002). The process perspectives usually fail with regard to proper operationalisations of dynamic capabilities or treat them as simple constructs. Many researchers focus on the outcome rather than on the process itself (e.g. Athreye, 2005).

Other empirical contributions focus on specific individual elements of dynamic capabilities such as organisational learning or capability development (e.g. Salvato, 2003; Lenox and King, 2004; Lampel and Shamsie, 2003; D’Este, 2002; Figureido, 2003; Álvarez and Merino, 2003; Mota and de Castro, 2004; George, 2005). Others investigate moderating factors of dynamic capabilities (e.g. Arthurs and Busenitz, 2006; Cepeda and Vera, 2006; Lehrer, 2000; Spanos and Lioukas, 2001; Lazonick and Prencipe, 2005) without any focus on dynamic capabilities themselves.

Zott’s (2003) simulation study is the only study with any reference to the impact of characteristics of dynamic capabilities on firm performance. The study is not listed in Table 2 and Table 3 as his simulation study approach is analytical and not empirical. Zott (2003) analyses how costs and learning for experimentation or imitation as well as the timing of the resource deployment impact firm performance. The application of simulation reduces complexity to focus on core elements of topics under investigation. Therefore, the resulting model may not reflect relevant elements in the real world (Chattoe, 1998; Davis, Eisenhardt, and Bingham, 2007; Fine and Elsbach, 2000). Davis, Eisenhardt, and Bingham (2007) suggest the simulation method as preferable for studies about simple theory. The theory of dynamic capabilities involves various processes (Eisenhardt and Martin, 2000) and has thus far failed to provide clear constructs (Zahra et al., 2006). Accordingly, simulation studies in this field are problematic with respect to gaining reliable insights or a comprehensive understanding.
The Quality Aspect of Dynamic Capabilities

<table>
<thead>
<tr>
<th>Source</th>
<th>Method</th>
<th>Dataset</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henderson (1994)</td>
<td>Qualitative</td>
<td>10 European and American drug firms</td>
<td>Comparison of random mode of drug discovery versus rational mode of drug discovery</td>
</tr>
<tr>
<td>Henderson and Cockburn (1994)</td>
<td>Qualitative/Quantitative</td>
<td>10 European and American drug firms</td>
<td>Impact of the firm's architectural and component competences on research productivity.</td>
</tr>
<tr>
<td>Camuffo and Volpato (1996)</td>
<td>Qualitative</td>
<td>Case: Fiat</td>
<td>Manufacturer equipment used in a firm's plant is the result of a learning process.</td>
</tr>
<tr>
<td>Tripsas (1997)</td>
<td>Qualitative</td>
<td>Case: Mergenthaler Linotype</td>
<td>External integrative capabilities and distributed R&amp;D sites influence dynamic technical capabilities.</td>
</tr>
<tr>
<td>Delmas (1999)</td>
<td>Quantitative</td>
<td>927 technology acquisitions.</td>
<td>Influencing factors on alliance formation for joint know-how innovation.</td>
</tr>
<tr>
<td>Lehrer (2000)</td>
<td>Qualitative</td>
<td>Cases: British Airways Lufthansa, Air France</td>
<td>Choice between revolutionary versus evolutionary capability regimes to develop revenue capabilities.</td>
</tr>
<tr>
<td>Helfat and Raubitschek (2000)</td>
<td>Qualitative</td>
<td>Case: Sony, Canon, NEC Inc.</td>
<td>Implication of coevolution of organizational knowledge, capabilities, and products on competitive advantage.</td>
</tr>
<tr>
<td>Rindova and Kotha (2001)</td>
<td>Qualitative</td>
<td>Excite and Yahoo</td>
<td>Dynamical coevolution of the organizational form, function and competitive advantage.</td>
</tr>
<tr>
<td>Griffith and Harvey (2001)</td>
<td>Quantitative</td>
<td>130 distributors from 4 different countries</td>
<td>International dynamic capabilities: Impact of resource/ market-based assets on power in relationships.</td>
</tr>
<tr>
<td>King and Tucci (2002)</td>
<td>Quantitative</td>
<td>208 business units of 174 separate firms</td>
<td>Impact of experience in market entries and current market on probability to enter new market.</td>
</tr>
</tbody>
</table>

Table 2: Selected empirical studies in the context of dynamic capabilities (published before 2003).
<table>
<thead>
<tr>
<th>Source</th>
<th>Method</th>
<th>Dataset</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Verona and Ravasi (2003)</td>
<td>Qualitative</td>
<td>Case: Oticon</td>
<td>Sources of product innovation, focus on knowledge creation, absorption, integration, and reconfiguration.</td>
</tr>
<tr>
<td>Lampel and Shamirle (2005)</td>
<td>Quantitative</td>
<td>400 firms in the movie industry</td>
<td>Effects of mobilizing and transforming capabilities, moderated by adoption.</td>
</tr>
<tr>
<td>Salvato (2003)</td>
<td>Qualitative</td>
<td>2 cases: Alessi and Modafl</td>
<td>Strategic evolution as a sequence of recombinations of core micro-strategy, resources, and routines.</td>
</tr>
<tr>
<td>Álvarez and Merino (2003)</td>
<td>Quantitative</td>
<td>Spanish savings and loan institutions</td>
<td>Influence of organizational resources and capabilities on adaptation mechanisms.</td>
</tr>
<tr>
<td>Sako (2004)</td>
<td>Qualitative</td>
<td>3 cases: Honda, Nissan, Toyota</td>
<td>Factors of sustained development and replication of organizational capabilities of suppliers.</td>
</tr>
<tr>
<td>Lenox and King (2004)</td>
<td>Quantitative</td>
<td>82 firms with 494 facilities</td>
<td>Development of internal absorptive capacity through internal information provision.</td>
</tr>
<tr>
<td>Woiceshyn and Daellenbach (2005)</td>
<td>Quantitative</td>
<td>2 cases from oil industry</td>
<td>Comparison of 2 different adoption processes for the same technology.</td>
</tr>
<tr>
<td>George (2005)</td>
<td>Qualitative</td>
<td>30 hours of interview data</td>
<td>Effects of experimental learning on the costs of capability development</td>
</tr>
<tr>
<td>Lazonick and Prencipe (2005)</td>
<td>Qualitative</td>
<td>Case: Rolls Royce</td>
<td>The impact of strategic control and financial commitment on innovation.</td>
</tr>
<tr>
<td>Mosey (2005)</td>
<td>Qualitative</td>
<td>5 SMEs in the UK</td>
<td>Development of dynamic capabilities for new-to-market products in SMEs.</td>
</tr>
<tr>
<td>Korr and Mahoney (2005)</td>
<td>Quantitative</td>
<td>60 medical equipment firms with IPO</td>
<td>Effects of dynamics, management, and governance of R&amp;D and marketing resources on performance.</td>
</tr>
<tr>
<td>Arthurs and Buennitz (2006)</td>
<td>Quantitative</td>
<td>134 pairs of firms</td>
<td>Impact of Venture Capitalists on dynamic capabilities in companies with IPO.</td>
</tr>
<tr>
<td>Wu (2006)</td>
<td>Quantitative</td>
<td>244 Taiwanese IT-firms</td>
<td>The effects of resources on performance influenced by the impact of dynamic capabilities.</td>
</tr>
<tr>
<td>Boccardelli and Magnusson (2006)</td>
<td>Quantitative</td>
<td>59 start-up companies</td>
<td>The effect of target-market or technology adjustments on survival for start-up firms.</td>
</tr>
<tr>
<td>Sawyers et al. (2007)</td>
<td>Quantitative</td>
<td>43 innovative SMEs</td>
<td>Effect of the number of identified dynamic capabilities on partnership success.</td>
</tr>
</tbody>
</table>

Table 3: Selected empirical studies in the context of dynamic capabilities (published since 2003).

To sum up, there exists no empirical work investigating the impact of the characteristics or detailed configuration of dynamic capabilities on firm performance. There is also no empirical or theoretical work discussing quality as a central aspect for
The Quality Aspect of Dynamic Capabilities

The effect of dynamic capabilities. Some theoretical articles hint at an influence of the configuration of dynamic capabilities on firm performance (e.g. Eisenhardt and Martin, 2000; Zahra et al., 2006) but providing no clear concept. It is worth mentioning that the concept of quality is used in other fields of strategic management: Doz and Prahalad (1988) explicitly use the term quality for their research on management. The academic field of total quality management deals with quality issues as well (e.g. Hackman and Wageman, 1995; Powell, 1995).

However, the quality aspect of dynamic capabilities and its impact on firm performance represent a clear research gap. Focusing the research on the elements of a dynamic capability which lead to a high or low quality of dynamic capabilities implicitly includes the question of whether dynamic capabilities influence firm performance. The following research question follows logically from the literature review and theoretical thought process:

Research question 1: Which elements influence the quality of a dynamic capability and therefore firm performance?

The logic structure of a dynamic capability (see Figure 1) provides the research framework to answer research question 1.

According to Eisenhardt and Martin (2000), a firm does not possess only one specific dynamic capability but rather the capabilities are many and varied. The review of empirical studies gives support for this view as there are articles which investigate various firm processes from a dynamic capability perspective. Every dynamic capability influences the firm’s resource configuration and thus also the performance to a certain degree. However, it is necessary to focus the analysis on those dynamic capabilities with a major impact on firm performance. An investigation of the quality aspect of dynamic capabilities with an inferior impact on firm performance might be influenced by those with a stronger impact.

Reviewing the empirical and theoretical contributions in the field of dynamic capabilities, there exists no contribution identifying the dynamic capabilities with a major impact on firm performance. As this aspect is essential for the answer to research question 1, this research gap is also covered and the following research question is developed:

Research question 2: Which dynamic capabilities have a high and significant impact on firm performance?
Summarizing both research questions, this thesis focuses on the effect of quality of dynamic capabilities with the highest impact on firm performance. The findings are summarised in a comprehensive framework which entails a linking of the logic structure of a dynamic capability with real firm processes. The research resulting from the research questions provides the identification of successful, high quality and unsuccessful, low quality dynamic capabilities.
3 Methodological Approach

Within the context of rigorous research methodology, the approach employed in response to the research questions must considered reliable and valid. Validity consists of internal, external and construct validity (Yin, 2003: 34; Gibbert, Ruigrok, and Wicki, 2008) and refers to the absence of systematic or non-random errors, while reliability ensures the absence of random errors in the research findings (Forza, 2002; Gibbert, Ruigrok, and Wicki, 2008). According to Kidder and Judd (1986: 26-29), internal validity implies the identification of correct causal relationships, while external validity defines the degree to which the findings are generalisable (Cook and Campbell, 1976; Sackett and Larson, 1990). Construct validity refers to the selection of proper operational measures for the concepts under investigation, and reliability ensures that the findings are repeatable (Scandura and Williams, 2000). According to Mook (1983) as well as Scandura and Williams (2000), external validity is logically based on construct validity and internal validity.

Theory building relies on existing academic literature and empirical data (Eisenhardt, 1989a). Regarding the research questions of this study, the literature does not provide any insights. As described earlier, no academic contribution provides knowledge about the quality aspect of dynamic capabilities (research question 1) or the identification of the dynamic capabilities with the highest impact on firm performance (research question 2). Eisenhardt (1989a) proposes the use of the case study method in situations when little is known about the investigated topic. Case study research does not rely on previously conducted studies and existing knowledge (Eisenhardt, 1989a). Wacker (1989: 375) remarks that the case study research approach facilitates the construction of “insightful relationships within a limited set of companies” through the investigation of a large number of variables. Thus, the case study research approach is a valid and favourable method for this study.

The inductive case study research phase of this thesis is based on four case studies in different firms. Following Eisenhardt’s (1989a) proposed approach, the case study analysis shapes the propositions, which address the initial two research questions. Based on the propositions of the case study research, a preliminary model is derived. In this model, the abstract model of the dynamic capability (see Figure 1) is linked to the identified firm processes (according to research question 2). The model also includes insights into relevant quality aspects of the identified dynamic capabilities (addressing research question 1). The process of the case study method, the retrieval of propositions and the development of a preliminary model are illustrated in Figure 3.
Following Gibbert et al. (2008), the internal validity of the propositions is ensured through the use of a clear research framework, pattern matching, and theory triangulation. Construct validity in case study research is ensured through the use of multiple information sources and the establishment of a logical chain of evidence (following Yin, 2003: 34). The use of case study protocols and the development of a case study database enhance the reliability of the findings from the case study research phase of this thesis (following Yin, 2003: 34). Retrieving data from several separate cases allows the treatment of each individual case as a separate analysis, which enhances external validity. Following Eisenhardt (1989a, 1991), the replication logic of sequential analyses enhances, on the one hand, the quality of the findings as it helps to identify patterns and decreases the influences of chance associations. On the other hand, replication logic also enhances the external validity of the research findings (Yin, 2003: 37). With four case studies conducted, this thesis fulfils the minimum requirement for cross-analyses as suggested by Eisenhardt (1989a). However, case study research is regarded as rather difficult in terms of achieving external validity (Numagami, 1998). Gibbert et al. (2008) even question that case studies ensure statistical generalisation. Therefore, the findings from the inductive case study research phase require further processing to address the external validity of the findings of this thesis.

Following Eisenhardt and Graebner (2007: 25), case study research functions as an excellent “bridge” between “qualitative evidence and mainstream deductive research”. This “bridge” is implemented in this study through the exploratory case study research. Based on the propositions, well-defined concepts, and the preliminary model from the inductive research phase, testing survey research aims at testing the boundaries of the model (Forza, 2002). Through the proper and careful selection of a representative dataset, the survey research phase enables the generalisation of the preliminary findings. Therefore, the use of survey research addresses the concerns regarding low generalisability of the findings resulting from the case study research. The deductive research phase is a reasonable and favourable complement to the case study research.
Figure 3: Logical chain of research activities, corresponding results, and transferred model implications for the three parts of this thesis.

For this study, the deductive testing research phase consists of an empirical statistical sampling and testing approach, specifically, a survey with statistical analyses of the retrieved data (following Wacker, 1998). Therefore, the preliminary findings of the case study research, the propositions, are enhanced through an extensive literature review, which ultimately results in testable hypotheses. Following Eisenhardt (1989a), a frequent comparison of the empirical findings from case study research with conflicting or similar literature enhances internal validity, raises the theoretical level, and improves the generalisability. With regard to the research questions of this thesis,
another argument arises that requires a brief literature review in order to specify testable hypotheses: Teece et al. (1997: 510) characterise dynamic capabilities as an “emerging and potentially integrative approach to understanding the newer sources of competitive advantages”. Also Eisenhardt and Martin (2000) highlight that dynamic capabilities address various research areas such as product development, alliance building, and strategic decision making. The review of the empirical research reveals the heterogeneity associated with the individual dynamic capabilities.

To sum up, the dynamic capabilities approach functions as an umbrella for various other academic perspectives and theories in which certain findings find a valuable theoretical context. Thus, the second research question addresses the search for these dynamic capabilities with a high and significant impact on firm performance. The explorative case study research phase results in the identification of the firm processes in which these sought-after dynamic capabilities are embedded. These findings open the door to an intensive search of the literature with regard to the processes identified. On the one hand, the propositions are compared to already existing knowledge and, in the case of research gaps in the literature, are formulated as hypotheses. On the other hand, the propositions are augmented through additional perspectives found in the literature to further enhance the preliminary model, and additional hypotheses are formulated. The resulting hypotheses are operationalised and the data retrieval proceeds with the structured questionnaire. Processing the responses from 61 German manufacturing companies in China, this research phase addresses the representativeness and therefore the external validity of the findings (Scandura and Williams, 2000). The survey results are statistically analysed, which leads to confirmed or rejected hypotheses. Based on this knowledge, the preliminary model is further broadened to a tested, comprehensive model.

For an overview, Figure 3 shows the sequence from the research questions, to the propositions (resulting from the explorative case study research phase), to the hypotheses (resulting from the literature review) to the final findings, the tested hypotheses. The detailed methods used for the inductive explorative research phase as well as for the deductive testing research phase are explicated in each corresponding part of this thesis.
Part B

Inductive Explorative Research Phase
based on Case Study Research
4 Research Design of the Inductive Research Approach

To ensure the traceability of the findings which result from this research phase, it is necessary to briefly introduce the overall process of the case study research which has been applied. According to Denzin and Lincoln (1994), Scandura and Williams (2000) as well as Gibbert et al. (2008), this information ensures the reliability of the findings.

Figure 4: Process of case study research (source: Adapted from Eisenhardt, 1989a).

The applied research procedure follows Eisenhardt’s (1989a) proposed sequence of activities for conducting a case study. The process used in this study is detailed in Figure 4. The process steps conducted are explicated in detail in the following paragraphs.

4.1 Preliminary Specification

The preceding theoretical part of this thesis provides two clear research questions as well as a research framework that arises from the logic structure of a dynamic capability as presented in Figure 1. Following Eisenhardt (1989a), the research questions provide a focus for the research during the case studies. Additionally, the framework provides a preliminary research set-up for the execution of the case study research and defines the fields in which research is done.

In particular, this preliminary specification prevents the researcher from becoming overwhelmed by the amount of data retrieved during the case study research. Finally, the preliminary specification results in more accurate data retrieval and therefore more precise findings.
4.2 Case Selection

The Chinese markets are highly competitive and volatile (Chang and Xu, 2008). As a fast-moving and volatile context requires firms to develop and frequently use dynamic capabilities to maintain sustainable advantages (Teece, 2007; Teece et al., 1997; Wang and Ahmed, 2007), it is valid to assume that every competitive firm in China frequently uses dynamic capabilities. Due to the high frequency of the use of dynamic capabilities, their qualitative differences are more obvious, and the processes are simpler in structure (Eisenhardt and Martin, 2000) and thus easier to identify than for firms in non-dynamic environments. To sum up, choosing cases in the Chinese market context facilitates my research and enhances the identification of potential quality aspects.

In selecting particular cases, I choose companies which I assume possess unique configurations of resources and routines which are not easily imitable by competitors. For the case studies, I select German manufacturing companies in China for a number of reasons: German companies are quite successful in industries which require a high specificity of organisational knowledge (Geppert and Matten, 2006). Accordingly, competitors cannot easily imitate successful practices, which ultimately results in higher variances among the cases. This enables the identification of unique instances of dynamic capabilities and corresponding quality differences. All potential companies must gain their major return through sales in the Chinese market. This selection criterion ensures that I am able to investigate companies that continuously adjust their processes as well as their products to stay competitive in the same regional market environment. All cases must be of medium size (between 50 and 500 employees) so that, on the one hand, the complexity of active dynamic capabilities is especially low due to rather simple corporate governance structures (Elbanna and Child, 2007; Snyman and Drew, 2003). On the other hand, the minimum of 50 employees supports the identification of certain patterns in the company processes. I assume that firms of this minimum size have reached organisational stability with established configurations of the most important processes. I only select companies that have been manufacturing for at least seven years in China so that my findings are based on company patterns that have already been established for a sufficient time (Evans, 1987). Companies that have conducted any extraordinary performance-relevant activities such as mergers and acquisition are excluded in order to reduce disturbing factors.
The selection of German manufacturing companies in China also implies the consideration of additional influencing factors compared to Chinese domestic companies, especially the aspect of subsidiary autonomy (e.g. O'Donnel, 2000). However, apart from the above-mentioned factors, there are other reasons supporting the selection of German companies in China. I assume that access to information sources in German companies is more feasible and the number of German companies in China is high, which enables a proper selection of cases from a large potential dataset.

<table>
<thead>
<tr>
<th>company type</th>
<th>employees</th>
<th>year established</th>
<th>industry</th>
<th>export</th>
<th>performance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alpha</td>
<td>WFOE</td>
<td>205</td>
<td>Machinery</td>
<td>40%</td>
<td>superior</td>
</tr>
<tr>
<td>Beta</td>
<td>EJV</td>
<td>300</td>
<td>Machinery</td>
<td>10%</td>
<td>good</td>
</tr>
<tr>
<td>Gamma</td>
<td>EJV</td>
<td>175</td>
<td>Machinery</td>
<td>40%</td>
<td>medium</td>
</tr>
<tr>
<td>Delta</td>
<td>WFOE</td>
<td>250</td>
<td>Electrical Equipment</td>
<td>17%</td>
<td>superior</td>
</tr>
</tbody>
</table>

Legend: WFOE: Wholly Foreign Owned Enterprise; EJV: Equity Joint Venture

Table 4: Characteristics of the selected cases.

Following Eisenhardt (1989a), I select the cases of this study according to theoretical aspects, not by random choice. The case study approach does not allow a high degree of statistical generalisation (Numagami, 1998). However, the careful selection of several case studies with certain variations supports at least a certain degree of analytical generalisation of the findings (Eisenhardt, 1989a). The investigation of several independent cases facilitates the identification of cross-case patterns (Eisenhardt, 1989a). When each study in the group of case studies is treated as a separate experiment, the repeated comparisons of the findings from the individual cases result in further refinement (Eisenhardt, 1989a; Yin, 1984). Therefore, I select four subsidiaries of German manufacturing companies in China. All of the selected companies fully meet the above-mentioned theoretical selection criteria. Following Eisenhardt and Graebner’s (2007) suggestions, I ensure a certain degree of variation among the cases by selecting companies which are from two different industry sectors, are located in different provinces, are of different company types, and show different performance achievements.
Table 4 summarises the specification of the selected companies with regard to the criteria that are relevant for the selection. The company type describes the ownership type, either a wholly foreign-owned enterprise (WFOE) or an equity joint venture (EJV). The number of employees in 2006 varied from 175 for Gamma to 300 for Beta. All of the companies have been manufacturing for at least nine years in China, either in the machinery industry, as in the case of Alpha, Beta, and Gamma, or in the electrical equipment industry, as in the case of Delta. All of the cases sell the majority of their produced goods to the Chinese domestic market. The firm performance value results from a classification of the firms according to their return on employee performance. In a first step, the three companies from the machinery industry are classified. As all of the firms claim to be successful and competitive in the Chinese market, the values range from “superior” for Alpha, which has the best return on employee performance, and “good” for Beta, to “medium” for Gamma, which has the worst return on employee performance. In a second step, Delta’s performance value results from the assignment of its return on employee value to the classification developed for Alpha, Beta, and Gamma. Murphy, Trailer, and Hill (1996) provide support for the validity of the measure of return on employees for firm performance. Using return on assets, an alternative, well-established performance measure in management research (Dess and Robinson, 1984), is inappropriate as Gamma leases most of its production assets and specifies its assets values as very low compared to the other firms. This fact distorts the measure and would result in an inaccurate performance classification.

4.3 Crafting Instruments, Retrieving and Analyzing Data

Using various data retrieval methods and data sources to collect diverse qualitative and quantitative data, this triangulation approach ensures the construct validity of the findings (Jick, 1979; Yin, 2003: 97). For each case I conduct a semi-structured interview with the leading top manager for 1.5 to 2 hours. I structure the interview questionnaires with open and closed questions according to the logic structure of a dynamic capability (as shown in Figure 1). Regarding the content, I augment the findings from a preliminary literature review with findings from preparatory interviews with nine experts. The interviewed experts are active either as consultants to manufacturing firms in China or as leading managers of manufacturing companies with activities in China.
Company reports and company websites provide further general information about the products, subsidiary location, ownership type, number of employees, and implemented production standards for every case. Additionally, I use the database of the German chamber of foreign trade in China to gather contact information for top management team members, turnover, number of employees, name and location of the German parent company, and the date of establishment of the Chinese subsidiary. The different approaches for data retrieval ensure that I have gathered a sufficient amount of information for a comprehensive understanding of each individual case as well as patterns across all cases.

The retrieved data flow into separate case study databases for each individual case and thus enhance the reliability of the research approach (Yin, 2003: 101). In a first analysis, I classify and cluster certain in-case findings according to the theoretical framework. The analysis proceeds with the identification of common patterns among the cases, which yields insights from different perspectives. To facilitate the comparison and interpretation of data and identification of patterns, I develop tables and diagrams of different types for the quantitative and coded qualitative data. Eisenhardt (1989a) explicitly recommends these methods to facilitate the analysis of various and heterogeneous data. Following Yin (2003: 133-137), I use cross-case synthesis to reject or confirm in-case patterns. The cross-case analysis enables me to detect the distinct characteristics which shape the quality of the respective dynamic capabilities.

4.4 Shaping Propositions, Enfolding Literature, and Reaching Closure

The goal of this phase of the research is an exploration of the topic guided by the research framework and the research questions. As suggested by Eisenhardt (1989a) as well as Eisenhardt and Graebner (2007), I put strong emphasis on a combined interpretation of the collected qualitative and quantitative data to develop propositions from a broad and comprehensive perspective. Following Yin’s (2003: 120-122) analytical method of explanation building, the findings obtained from the cases are considered through various theoretical lenses to explain the identified phenomena. This approach further enhances the internal validity of the findings (Eisenhardt, 1989a). Finally, I elaborate certain factors to identify quality aspects that are performance relevant for the organisations investigated. After the completion of the four case studies, the explorative research process reaches a sufficient degree of saturation.
Further research would yield only marginal new findings and would have a high cost in terms of efforts and time. The following chapter presents the findings derived from the case study research. Following Eisenhardt’s (1989a) suggestion, the presentation is structured according to the research framework of the case studies in order to give focus to the particular findings.
5 Empirical Findings from the Inductive Exploratory Research Phase

5.1 Firm Performance as a Proxy for the Quality of Dynamic Capabilities

Dynamic capabilities are seen as impacting firm performance (Teece, 2007). To date, the logic chain between dynamic capabilities and firm performance has been only theoretically developed (e.g. Zott, 2003; Eisenhardt and Martin, 2000; Helfat and Peteraf, 2003; Teece, 2007; Zahra et al., 2006). Thus, this analysis concentrates on the causal relationship between dynamic capabilities and firm performance.

Zott (2003) argues that dynamic capabilities indirectly influence firm performance as they shape those resources with which companies ultimately compete. Dynamic capabilities are by definition those processes that define the firm’s resource configuration. Thus, it is necessary to analyse whether a modification of these resources impacts firm performance.

For this thesis, I use the firm’s products and processes as proxies for the firm’s resource configuration, as suggested by Helfat (1997), Teece et al. (1997), Zott (2003) as well as Verona and Ravasi (2003). Logically, the firm’s dynamic capabilities develop the firm’s products and processes, and they shape the firm’s competitiveness in the market environment.

<table>
<thead>
<tr>
<th>company</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
<th>Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>product innovations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>product enhancements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>process innovations</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>process enhancements</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Question: “How would you assess the impact of product innovations, product enhancements, process innovations, and process enhancements on firm performance in 2006?”

Values: Four-point Likert scale items, ranging from $1$: “rather high” to $4$: “rather low”

Table 5: Perceived impact of product and process modifications on firm performance.

Table 5 presents the results of the case study analysis with regard to the impact of modifications of products and processes on firm performance. For more detailed insight, it is helpful to differentiate between enhancements and innovations of products.
and processes. The managers are asked to assess the perceived impact of enhancements and innovations of products and processes on firm performance in the year 2006. For this question, the questionnaire provides a four-point Likert scale ranging from “rather high” to “rather low”. The manager from Beta indicated that they did not implement any product enhancements in 2006. Therefore, the table does not show any value for the according entry (“n/a”).

Column “Ø” in Table 5 presents the mean values of all answers. As the mean values for the impact of innovations and enhancements for products and processes tend to be rather high, it is valid to conclude that dynamic capabilities impact firm performance. The analysis reveals differences in the impact of product or process modifications on firm performance. For example, the impact of product innovations of performance varies from high for Delta to rather low for Beta. This finding gives some support for the initial idea of this study, namely, that modifications of the resource configuration per se do not enhance the competitive position of the firm. More important is how the modifications are conducted. The quality aspect of a dynamic capability measures whether the dynamic capability leads to beneficial or disadvantageous modifications of the firm’s resource configuration. Changing the direction of this causal relationship, it is valid to draw conclusions regarding the quality of a firm’s dynamic capabilities based on the company’s performance. Accordingly, performance is a proper measure for the assessment of the quality of various dynamic capabilities in different firms.

5.2 Identification of Dynamic Capabilities with Major Impact on Firm Performance

Prior research identifies many processes in which dynamic capabilities are embedded. A considerable number of publications concentrate on research and development processes, often with a focus on product modification (e.g. King and Tucci, 2002; Korr and Mahoney, 2005; Lazonick and Prencipe, 2005; Mosey, 2005; Verona and Ravasi, 2003). Other researchers focus on knowledge management processes (e.g. Sawyers et al., 2007; Cepeda and Vera, 2007) and learning processes (e.g. George, 2005). Eisenhardt and Martin (2000) mention alliance and acquisition routines or strategic decision making. Newbert (2005) concentrates on new firm formation processes as dynamic capabilities, while King and Tucci (2002) investigate dynamic capabilities as market-entry processes. Meyer and Lieb-Doczy (2003) focus on restructuring processes of acquired firms in their investigation of dynamic capabilities.
Identifying those processes with a major impact on the firm’s resource configuration, I refer to the logic structure of a dynamic capability, as presented in Figure 1. To facilitate the quest for dynamic capabilities with a major impact on the firm performance, I concentrate on the identification of actor groups who conduct selection activities. I divide all of the potential actors of a firm into four distinct groups: The actors who belong to the German parent company of a Chinese subsidiary, the local top management team of the subsidiary, the lower local management, and, finally, local workers or other employees. The managers in all of the case studies were asked about the relative impact of each identified group; the analysis of their responses reveals a clear picture: Table 6 shows that, with an average relative impact of 56.25%, the local top management team is the actor group with the highest impact on the configuration of the products and processes in the local subsidiary. Actors from the parent company who perform selection activities with impact on the Chinese subsidiary represent the second most important group, with a relative average impact of 26.25%. With respect to the impact of the lower local management and local employees, the interviewees only perceive a relative average impact of 17.5%.

Table 6: Contribution to decisions with high impact on the performance of the subsidiary.

<table>
<thead>
<tr>
<th>company</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
<th>Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>local top management</td>
<td>45%</td>
<td>90%</td>
<td>70%</td>
<td>20%</td>
<td>56.25%</td>
</tr>
<tr>
<td>team</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>parent company</td>
<td>45%</td>
<td>10%</td>
<td>10%</td>
<td>40%</td>
<td>26.25%</td>
</tr>
<tr>
<td>lower management/</td>
<td>10%</td>
<td>0%</td>
<td>20%</td>
<td>40%</td>
<td>17.50%</td>
</tr>
<tr>
<td>employees</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Question: “To what degree do the local top management team, the parent company, the local lower management, local employees or others decide about company developments that have high impact on the performance of the Chinese subsidiary?”

Values: Percental influence as answered by interviewees; values for lower management/employees are added. Ø is the arithmetic mean value for every group of actors.

Beta and Gamma indicate that their local top management team has a very strong influence, making 90% and 70% of the decisions, respectively, of all decisions with high impact. Beta’s manager noted that “we get certain guidelines [from the German parent] but, finally, we [the members of the local top management team] decide”. Alpha’s manager estimated an equal impact from the German parent and the local top management team (45%). In contrast to the other cases, Delta’s manager assessed the impact of the local top management team at only 20%, but at 40% for the local lower
management team and the parent company. Delta’s manager commented on this distinctive configuration thusly: “[w]e always involve the lower management. They are ultimately the ones who implement [the decisions] – that is important.” Thus, the decision-making process on site is highly coordinated between the top management team and lower levels. This implies that the local top management team has a highly significant impact on the resource configuration. The qualitative findings relativise the contrasting figures for Delta.

The findings indicate that the focus of my research should be on the decision procedure of the local top management team. The other groups of actors, namely, the German parent company as well as the lower management and employees, are involved in processes and have only a minor impact on the firm performance. A brief review may shed more light on my choice of focus: Comparing the logic structure of a dynamic capability with findings from the strategic decision-making process (Iansiti and Clark, 1994; Mintzberg, Raisinghani, Théorêt, 1976; Nutt, 1984) reveals remarkable similarities. Additionally, Zahra et al. (2006) as well as Eisenhardt and Martin (2000) explicitly name the decision-making process as a dynamic capability. Thus, the decision-making process of the local top management team is the dynamic capability in which the top managers are involved as actors. The conclusion I draw from the findings of both the set of case studies and the theoretical review is that the decision-making process of the local top management team is considered to be the dynamic capability with the highest impact on the performance of the Chinese subsidiaries. The findings lead to the following proposition:

Proposition 1: The decision-making process of the local top management team is the dynamic capability with the highest impact on the firm’s performance, followed by influencing processes of the German parent company, and, finally, by the influence of the local lower management and employees.

According to this finding, further research should concentrate on the decision-making process of the local top management team to identify relevant aspects which influence its outcome. Additionally, I research the influencing processes of the German parent company as well as the decision-making processes of the lower management and employees with less emphasis due to the relatively low importance of these processes.
5.3 Quality Aspects of the Top Management Team Decision-Making Process

A brief review of the decision-making process literature demonstrates that this field is already well-covered by various research studies (e.g. Elbanna and Child, 2007; Goll and Rasheed, 1997; Papadakis, Lioukas, and Chambers, 1998; Fredrickson and Mitchell, 1984; Eisenhardt, 1989b; Baum and Wally, 2003). Accordingly, it is valid to question whether it is necessary to proceed with the research at this point.

There are several strong reasons why it is necessary to conduct further research. First, the context of the decision-making process does matter. Wilson (2003) shows that findings in the field of the decision-making process lack universalism and depend on the regional context. Reviewing the academic literature with a focus on decision-making processes, Elbanna and Child (2007) as well as Pettigrew, Thomas, and Whittington (2002) assert that most knowledge results from studies in the United States or in the United Kingdom. Brouthers, Brouthers, and Werner (2000) as well as Elbanna and Child (2007) conclude that research in the field of decision making in other countries is very promising. To sum up, the existing knowledge is not easily transferable to the research unit of this study.

Second, even in a comparable context, research about decision-making processes has yielded conflicting findings (e.g. West and Schwenk, 1996). These contributions suggest that even findings from research studies in the Chinese context are not easily transferable. Given the extreme dynamism of the Chinese market context (e.g. Cooke, 2008), findings quickly become outdated. Findings from studies which focus on the Chinese context are not easily transferable due to the quick developments in the Chinese market.

Third, the research on decision-making processes provides a significant number of research perspectives. However, research usually concentrates on specific factors or aspects and does not cover the overall process. For example, Fredrickson (1984) researches aspects such as the number and qualification of the actors involved in the decision-making process. Elbanna and Child (2007) focus on process characteristics such as the impact of rationality or intuition without reference to the actors involved in the process. Daft, Sormunen, and Parks (1988) as well as Garg and Walters (2003) concentrate on scanning activities as activities which prepare individuals to make decisions. Frink et al. (2003) explicitly focus on the impact of gender diversity of the top management team on the decision-making process. Other authors focus on various other demographic factors of the top management team and their possible impact on
the decision-making process (e.g. Keck, 1997; Smith et al., 1994; Hambrick and D’Aveni, 1992). Others concentrate more on cognitive diversities of the management team (e.g. Amason and Sapienza, 1997; Olson, Bao, and Paraytiam, 2007; Mooney, Holahan, and Amason, 2007). The variety of research perspectives makes the task of choosing certain perspectives while rejecting others especially difficult.

To sum up, findings in the field of decision-making processes are not easily transferable due to the impact of differing contexts; findings from the Chinese context are likely outdated; and the various aspects identified raise the question of which aspects are genuinely relevant. Thus, it is necessary to conduct my own research in this field. Based on the structure of information, variation, selection, and retention, the following analysis concentrates on the decision-making process of the local top management team.

5.3.1 Information for the Decision-Making Process of the Local Top Management Team

Following Aguilar (1967), I regard any “activity to acquire information” (Aguilar, 1967: 1) as belonging to the information step of the dynamic capability. Such activity "involves simply an exposure to and perception of information" (Aguilar, 1967: 18) and precedes interpretation processes (Daft and Weick, 1984; Hough and White, 2004). Dill (1958), Duncan (1972), as well as Aldrich and Pfeffer (1976) understand the environment of a firm as a perpetual flow of information. The stimulus for the later steps of the dynamic capability emerges as soon as “a difference between information on some actual situation and some expected standard” is perceived and “a cumulation of stimuli reaches a threshold level” (Mintzberg, Raisinghani, and Théorêt, 1967: 253-254). The processes of information retrieval are very individualised (Hough and White, 2004; Sadler-Smith, 1998; Walsh, 1995). According to Garg, Walters, and Priem (2003), it is useful to identify in a first step the various domains and channels used for the retrieval of information.

Table 7 shows all of the domains and information channels identified. As expected, the findings show various domains in which the researched companies focus their scanning activities. For my research framework it is useful to cluster the information sources into company-external domains (e.g. customers, competitors, legal and economic environment), company-internal domains (e.g. finance, distribution, production) as well as the domains of the parent companies.
Table 7: Information domains and channels of the investigated companies.

<table>
<thead>
<tr>
<th>company</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>domains</td>
<td>&gt; customers</td>
<td>&gt; legal environment (regulations)</td>
<td>&gt; legal environment customers</td>
<td>&gt; customers</td>
</tr>
<tr>
<td></td>
<td>&gt; competitors</td>
<td>&gt; capital market</td>
<td>&gt; economic environment</td>
<td>&gt; competitors</td>
</tr>
<tr>
<td></td>
<td>&gt; subsidiary internal domains (finances, R&amp;D, distribution)</td>
<td>&gt; customers</td>
<td>&gt; technological environment</td>
<td>&gt; subsidiary internal domains (costs and quality of production)</td>
</tr>
<tr>
<td>channels</td>
<td>&gt; local distribution partner</td>
<td>&gt; weekly top management meetings</td>
<td>&gt; German HQ suppliers and other companies</td>
<td>&gt; own sales organization</td>
</tr>
<tr>
<td></td>
<td>&gt; after sales service</td>
<td>&gt; local government</td>
<td>&gt; personal contact of top managers to other managers workshops</td>
<td>&gt; network of distribution partners</td>
</tr>
<tr>
<td></td>
<td>&gt; direct, informal, personal contact to customers</td>
<td>&gt; financial institutions</td>
<td>&gt; company events</td>
<td>&gt; direct customer contact</td>
</tr>
<tr>
<td></td>
<td>&gt; exhibitions</td>
<td>&gt; chamber of Trade contact to customers</td>
<td>&gt; external consultants</td>
<td>&gt; own market research team</td>
</tr>
<tr>
<td></td>
<td>&gt; monthly top management meetings</td>
<td>&gt; external lawyer</td>
<td>&gt; employees</td>
<td>&gt; exhibitions</td>
</tr>
<tr>
<td></td>
<td>&gt; weekly production meeting</td>
<td>&gt; after sales service</td>
<td>&gt; customer inquiries</td>
<td>&gt; regular management meetings</td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; subsidiary units (procurement)</td>
<td>&gt; customer visits</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>&gt; exhibitions</td>
<td>&gt; exhibitions</td>
<td></td>
</tr>
</tbody>
</table>

Question: “Which domains and channels are the major important information sources for preparing decisions on the top-management level?”

To shed more light on the relation between information retrieval and performance, a deeper insight into specific and unique processes and activities of each company is necessary. Compared to the other companies, Alpha, which is superior in terms of performance, has a very interesting approach to information retrieval. Alpha’s information retrieval activities put strong emphasis on its customers and their current as well as future needs. Alpha retrieves valuable information through its Asian distribution partner, who handles all of Alpha’s sales in China. Alpha’s manager remarked that “we concentrate on the construction of machines while our distribution partner forwards those customers’ requirements, which we have to meet in order to remain successful”. Due to the fact that the distribution partner is Asian and experienced in the Chinese market, he has “completely different options for retrieving information from the Chinese market”. However, Alpha’s manager admitted that the distribution partner partly provides information with the intention of influencing certain product characteristics, especially the price, to improve his sales pitch and, finally, his profit. Moreover, he provides information on a half-yearly basis, as the trade fairs which he uses to assess his competitors take place every six months. Therefore, Alpha retrieves even more and qualitatively better information by intensively cultivating customer relations that grow out of the after-sales. Alpha’s manager assessed the service activities requested by end-users in the event of problems.
as important information sources for improving Alpha’s products in terms of quality or functionality. Over time, Alpha established an informal and regular contact with “one-third to one-half of our customers,” whom Alpha can contact “to ask questions, even if we did not get a service request from them”. This enables Alpha to stay very close to its customers’ needs. Additionally, Alpha’s manager highlighted the importance of company-internal information sources. Alpha relies on the information flows from its customers and also from its internal finance department as well as its research and development department.

Similarly to Alpha, Delta embeds an independent and experienced Asian distributor for its information retrieval activities. As a result, Delta benefits from a common product management team whose members “scan the information frequently, almost on a daily basis” focusing especially on customers and competitors. Like the manager at Alpha, Delta’s manager also highlighted the importance of company-internal domains, especially the production processes. Delta regularly retrieves information about the level of production costs and quality of the products.

In contrast to Alpha and Delta, Beta concentrates its scanning efforts on the general environment as well as on the legal and regulatory environments. Beta’s manager explained that his company depends on the regulations concerning the provision of bank loans to customers. He further explanation that Beta’s “market highly depends on governmental regulations. We highly depend on them.”

 Gamma also concentrates its efforts on the legal environment. Gamma’s manager explained that “in China, there are still many fundamental decisions today and those always result in a reconsideration of our activities, especially because legislation is still being developed. Every year, we have new laws.” Concerning product or customer information, Gamma absorbs direct customers’ inquiries for product enhancements. However, Gamma’s manager especially emphasised the importance of general trend reports as well as analyses of the market in China. Gamma retrieves reports and expert opinions from marketing intelligence at its German headquarters.

Analysing and assessing the interview statements about the identified information streams results in a classification of the investigated firms into two distinct groups. Alpha and Delta have established a search process with a special focus on first-hand information from their customers. The products result from the well-organised processing of external stimuli and information provided by firm-internal departments. In contrast to this approach, Beta and Gamma rely on second-hand information about customers or focus on general sources which provide information about legal, economic, technological or financial aspects. As Alpha and Delta are on a superior
performance level, the findings may suggest that Alpha’s and Delta’s approach to information retrieval leads to better performance. Details from the interviews give further support for this idea. Beta’s manager mentioned that “the [Chinese] market moves so quickly that you can easily run in the wrong direction if you rely on old information.” Alpha’s manager noted that “if we introduce a new product at a fair, it takes the first competitor about six months to copy the product one-to-one. Sometimes, it is really amazing how that works.” The managers from Beta and Gamma provided similar statements, which indicates a certain consensus on this topic.

Screening the academic literature with regard to this insight, I find support in Garg et al. (2003), who find that the emphasis of the information retrieval process on the task sector (consisting of customer, competitor, and technological sector) has a highly significant and positive impact on sales growth. Daft et al. (1988) identify a positive and significant relation between the frequency of information retrieval and the firm’s return on assets.

Drawing conclusions from the qualitative and quantitative data as well as the findings from the brief literature review about the impact of information retrieval, I present the following proposition.

Proposition 2: An information retrieval process with an emphasis on the customer has a positive impact on subsidiary performance.

However, an exclusive focus on the retrieval of information on customers is not sufficient. The findings from Beta and Gamma support the insight that information retrieval efforts in the general environment, especially the regulatory domain, are necessary. However, conducting information retrieval in the general and legal environment only ensures the conformance of the firm’s operations with current Chinese law and regulation.
In Figure 5 the left-hand side indicates the sources from which local top management teams receive information to prepare decisions. There are three sources of information: Information stemming from the operational level of the subsidiary, information provided by the German parent company, and information which flows from the environment into the firm. On the right-hand side, the figure shows which characteristic is performance relevant. Following proposition 2, information retrieval activities emphasising customers positively impacts the subsidiary’s performance.

### 5.3.2 Variation in the Decision-Making Process of the Local Top Management Team

Zott (2003) describes the activities in the variation step as efforts to imitate or experiment, with the aim to vary the firm’s configuration of products and processes. This process step basically results in suggestions of ‘new ways of doing things’ (Lovas and Ghoshal, 2000: 890). Following Lovas and Ghoshal (2000), I concentrate on the sources of variation to identify the actors who are involved in activities which lead to the variation of the resource configuration.

By definition, a firm's research and development department concentrates on the development of new products and processes (OECD, 2002: 30). Research and development is, in essence, the "search for new products and processes" (Teece, 2007: 

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**Figure 5:** Information flows for the preparation of decisions by the local top management team.
Therefore, it is valid to conclude that research and development efforts result in new potential variations of products and processes.

For the case study research conducted, the type of research on site is assessed. Influenced by the official definition of research and development by the OECD (OECD, 2002: 30), the classification of the research activities is designed to ensure a more sophisticated insight into the field of interest. Thus, product adjustments include all activities that result in product adaptations and smaller enhancements. Product developments entail more comprehensive modifications of the product. Basic research refers to innovation, either for products or processes. Process development is included as a summarising construct for process adaptations and process enhancements. Table 8 shows the related efforts in each field of research and development on site for the companies investigated. The presented figures represent the share of expenditures for product adjustments, product enhancement, process development, and basic research on site for each subsidiary investigated.

<table>
<thead>
<tr>
<th>company</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
<th>Ø</th>
</tr>
</thead>
<tbody>
<tr>
<td>product adjustment</td>
<td>70%</td>
<td>n/a</td>
<td>50%</td>
<td>60%</td>
<td>60%</td>
</tr>
<tr>
<td>product developments</td>
<td>20%</td>
<td>n/a</td>
<td>15%</td>
<td>20%</td>
<td>18%</td>
</tr>
<tr>
<td>process development</td>
<td>10%</td>
<td>n/a</td>
<td>15%</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>basic research</td>
<td>0%</td>
<td>n/a</td>
<td>20%</td>
<td>0%</td>
<td>7%</td>
</tr>
</tbody>
</table>

Question: “What share of your expenditures for research and development on site do you spend for product adjustments, product developments, process developments, and basic research?”

Table 8: Emphasis of the local research and development activities on site (Beta does not perform any research and development activities on site).

Beta’s manager explained that “research and development [at his company] is conducted in Germany for the whole global market”. As a result, Beta does not perform research and development on site in China. Hence, Beta’s manager indicated “0%” for each potential research area. With respect to the other three subsidiaries with research and development activities on site, the only firm with basic research on site is Gamma, with 20% of all research and development activities expenditures going to basic research. In terms of product adjustments, Alpha has the highest focus, with 70% of all research and development activities expenditures on site, followed by Delta, with 60%, and Gamma, with 50%. Also, in terms of product enhancements on site, Alpha
and Delta lead, with an emphasis of 20% of their research and development activities, followed by Gamma, with 15%. When the companies are compared directly, Alpha and Delta put more emphasis on product adjustment and development, while Gamma emphasises basic research.

To gain a more comprehensive insight into product and development activities on site, it is necessary to consider the role of the German parent company. As previously mentioned, in Beta's case the comprehensive research and development activities are performed in Germany. Alpha, Beta, and Gamma also report a high linkage to their respective German headquarters and their German competence centres. However, the extent of dependence differs among the selected cases.

Alpha contacts its competence centres in Germany only in the case of product innovations. “From there, we get the basic design and in China we just do the adaptation to match with local material characteristics, production conditions, and customer requirements. But the basic design comes from Germany.” This approach ensures, on the one hand, a high quality of the basic design due to the highly qualified employees at the German competence centres. On the other hand, based on its unique market experience, Alpha performs product adaptation activities to align with the local market requirements. However, Alpha's manager remarked that the process for product innovations is quite slow. He explained that “if our partner says that this machine is out-of-date [...] and the Chinese produce basically the same product with the same output for half of our price – ok, [we need the] next generation, new product. [...] And we are quite slow at that, because the German subsidiaries do not have something [ready]. [...] Then we need a new construction.”

Due to the focus of the local research and development activities on product adjustments and developments, Alpha performs those activities very quickly. Alpha benefits from its information retrieval activities from the information phase, as it utilises its knowledge for the adaptation and enhancement of products. In the case of product innovations, Alpha benefits from the experience of its German competence centres and their comprehensive knowledge base.

Delta has implemented a perpetual research and development process on site which also relies on rather autonomous activities: “We have an engineering department, a quality department, they continue the improvements” and give suggestions upon which the top management team decides, “or the decision is made in a discussion” with them. “We analyse what the benefit is and what the advantage is, and calculate the cost saving and so on.” This shows that there is a perpetual exchange between the top
management team and the research and development department on site. Similarly to Alpha, only the German competence centres conduct innovation research.

In contrast to Alpha and Delta, Gamma’s manager needs the approval of the German headquarters, even for minor product adjustments: “Product-related adjustments must be agreed upon with the German headquarters – because the competence centre is still located there. That is something we speak about during our meetings – they take place every half a year.” One of Gamma’s businesses is the development of new machines for the Chinese market. “We also develop new machines – but [...] only for the Chinese market” with specific characteristics that reflect the local requirements, as Gamma’s manager noted. Gamma is allowed to propose product adjustments, enhancements, and innovations. However, in order to proceed on site, any proposed modification requires the consent of Gamma’s German headquarters.

To sum up, Alpha and Delta explicitly stated that they benefit from the knowledge and experience of the German competence centres but at the cost of a slow response time. The configuration of the research activities leads to a focus on product adjustments and developments, with 90% of all research and development activities in the case of Alpha, and 80% in the case of Delta. Here, Alpha and Delta benefit from the comprehensive information they have previously retrieved, which they utilise in their local research and development activities. Gamma focuses only 65% of its efforts on product adjustments and developments. Twenty percent of its research and development activities are used for innovation research.

Alpha and Delta are superior in terms of firm performance (see Table 4), while Beta and Gamma are on a good or medium performance level. Linking this fact with the different approaches of research and development activities on site, the analysis favours Alpha’s and Delta’s approach. Qualitative information retrieved via interviews enriches the findings from the figure-based evaluation of the research and development emphasis. The case study findings lead to the following proposition:

**Proposition 3:** Concentrating the local research and development activities on product adjustments for the Chinese market has a positive impact on subsidiary performance.

Figure 6 summarises the flows of proposed product or process modifications to and from the local top management team of the Chinese subsidiary. In the context of this study, proposed product or process modifications are basically potential resource
configurations for the firm and therefore variations in the current resource configuration. Figure 6 shows two sources for variations for the decision-making process of the local top management team. First, local research and development activities lead to proposals of new resource configurations, and the local top management team decides on their implementation. Second, the parent company influences the development of new resource configurations in terms of products or processes in the local subsidiary. In the case of Alpha, Beta, and Delta, the German competence centres introduce product innovations. Based on those innovations, Alpha and Delta perform further adjustments for the Chinese markets through local research and development activities. For Gamma, local basic research results in product innovations, but the German headquarters has to decide on their introduction. Proposed variations are discussed between the local top management team and the local research and development department or the German competence centres. Thus, there is a steady back-and-forth flow of proposed variations. Concerning proposition 3, the aspect of responsibility for product adjustments, developments or innovations among the two sources defines the outcome of the process which ultimately influences the firm’s performance. Thus, as shown on the right side of Figure 6, the focus of local research and development activities (R&D) on product adjustments positively impacts subsidiary performance.

Figure 6: Sources for new product or process proposals as variations of the firm’s current resource configuration that are available to the local top management team.
The investigation of local research and development activities is interwoven with the autonomy of the subsidiary. This study provides a deeper insight through the detailed analysis of the relationship between the subsidiary and the German parent company.

Along with the research and development activities, all of the managers mentioned that they have implemented more or less formal systems to retrieve employees’ suggestions as a complementary source for variations. However, I will focus on this finding in the discussion of employee involvement. For the creation of further alternative variations, other activities, e.g., seeking good practical knowledge from outside sources such as consultants, reports or other subsidiaries or companies, may be useful as well. My interview partners mentioned those sources, but I could not discern any patterns of impact on performance for those factors.

5.3.3 Selection of Proper Alternatives by the Local Top Management Team

The selection phase of the dynamic capability entails those activities which ultimately result in a decision on proposed resource variations arising from the variation phase (Lovas and Ghoshal, 2000; Zott, 2003). This dynamic capability has been chosen according to the group of actors who perform the selection, namely, the members of the local top management team.

To focus the investigation within the case study research, a preliminary literature review shapes the theoretical lenses through which the case studies are examined.

The selection of proposed variations of products or processes by the top management team also represents the thematic core of the academic literature focusing on strategic decision making. Upper echelon theory (Hambrick and Mason, 1984) implies that a firm’s performance depends on the characteristics of its leaders, as they impact the firm’s development through their decisions. For my research, I focus on criteria that have been developed to characterise the top management team and its decision-making process in order to determine other aspects for the quality of the dynamic capability being investigated.

Despite criticism of the upper echelon approach (e.g. Murray, 1989), a significant number of research articles exist that focus either on demographic factors as proxies for cognitive processes or on individual human attitudes themselves (Kilduff, Angelmar, and Mehra, 2000).

Following the demographic approach, researchers investigate the impact of factors like racial diversity (Richard, Murthi, and Ismail, 2007; Richard, 2000; Richard, Barnett, Dwyer, and Chadwick, 2004), educational heterogeneity (Carpenter, 2002),
age diversity (Richard and Shelor, 2002; Kilduff et al., 2000; Norburn and Birley, 1988), functional heterogeneity (Keck, 1997; Michel and Hambrick, 1992; Smith, Smith, Olian, Sims, O’Bannon, and Scully, 1994), gender diversity (Richard et al., 2004; Frink, Robinson, Reithel, Arthur, Ammeter, Ferris, Kaplan, and Morrisette, 2003), or top management team average tenure (Carpenter, 2002) or team size (Haleblian and Finkelstein, 1993; Hambrick and D'Aveni, 1992). Following the cognitive approach, other researchers focus on cognition and affect-based trust (Erdem and Ozen, 2003), cognitive diversity (Olson, Bao, and Parayitim, 2007) or cognitive as well as affective conflicts (Mooney, Holahan, and Amason, 2007).

For this research, I follow the demographic approach, as demographic variables are more objective, easier to obtain, and result in easily graspable and explainable relationships of phenomena (Hambrick and Mason, 1984; Kilduff et al., 2000). The academic literature assumes that increasing team diversity implies a variance in ideas and perspectives, creativity as well as decision-making effectiveness, which ultimately results in a better performance (Knight, Pearce, Smith, Olian, Sims, Smith, and Flood, 1999). However, Keck (1997) remarks that the effect of team composition is closely related to context. Therefore, previously obtained findings are not easily transferable to the given research context and additional research becomes necessary.

In the qualitative interviews, I find support for the insight that Chinese managers contribute to the understanding of the Chinese markets through their knowledge of the Chinese context, while German managers contribute in terms of product, process, and management knowledge. Alpha’s manager noted that the Chinese “have completely different options for getting information from the Chinese market”. While Beta’s manager, who is German, remarked that “the German headquarters is represented by me and others on site”.

Accordingly, a nationally heterogeneous top management team with European and Chinese managers as well as managers from other parts of the world may result in a favourable constellation of information experts. While Chinese managers provide context knowledge, European managers provide product, process, and management knowledge. Managers from other parts of the world may additionally increase the set of perspectives in the top management team, which also increases the consideration of various knowledge sources in the selection. To sum up, national heterogeneity is measured as the heterogeneity of the composition of the local top management team in terms of the national origin of the individual members.

Additionally, I also include educational and functional heterogeneity measures in the analysis. According to Carpenter (2002), Keck (1997) as well as Eisenhardt and
Schoonhoven (1990), those factors may also have some impact on firm performance. Educational heterogeneity refers to the diversity in the educational background of the members of the top management team according to their highest academic degree which is defined by their academic titles. Functional heterogeneity is measured as the heterogeneity of fields of responsibility of the members of the local top management team.

\[
1 - \frac{\sum_{i=1}^{n} x_i^2}{\left( \sum_{i=1}^{n} x_i \right)^2}
\]

\(n\) : number of heterogeneity categories
\(x_i\) : number of group members in heterogeneity category \(i\)

Figure 7: Blau's measure of heterogeneity (source: Blau, 1977: 9).

For the comparison and measurement of diversity, I use Blau’s (1977: 9) index, as it is established in the academic research of top management teams (e.g. Richard et al., 2004; Carpenter, 2002; Kilduff et al., 2000). The formula is shown in Figure 7. For \(n\) heterogeneity categories, \(x_i\) represents the number of group members with a certain characteristic. The value of this measure ranges from 0, which is equivalent to no heterogeneity in a group, to a maximum close to 1, which represents high heterogeneity in a group.

Table 9: Diversity in the local top management team.

<table>
<thead>
<tr>
<th>company</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>responsibility diversity</td>
<td>0.72</td>
<td>0.67</td>
<td>0.44</td>
<td>0.72</td>
</tr>
<tr>
<td>nationality diversity</td>
<td>0.64</td>
<td>0.44</td>
<td>0.44</td>
<td>0.48</td>
</tr>
<tr>
<td>educational diversity</td>
<td>0.80</td>
<td>0.44</td>
<td>0.44</td>
<td>0.56</td>
</tr>
<tr>
<td>overall diversity</td>
<td>0.72</td>
<td>0.52</td>
<td>0.44</td>
<td>0.59</td>
</tr>
</tbody>
</table>

Question: “For every member of the local management team, please insert the corresponding level of responsibility, national origin, and educational background.”

Values: Resulting Blau’s indices for every heterogeneity category and top management team. Overall diversity is the arithmetic mean of responsibility diversity, nationality diversity, and educational diversity.

Table 9 presents all retrieved diversity indices for the extracted factors as well as another constructed diversity factor that represents the overall diversity as a mean value of the retrieved indices. Thus, with an overall diversity index of 0.72, Alpha shows the greatest diversity. In terms of national and educational diversity, it is ranks
first, with 0.64 and 0.8, respectively. Together with Delta, Alpha’s top management team shows a diversity index of 0.72 with respect to the diversity of responsibility of its top management team. In contrast to Alpha, Gamma shows the lowest heterogeneity measures, with 0.44 in terms of national, educational, and responsibility heterogeneity.

Reviewing the results, it becomes obvious that Alpha, as the best performing company, excels in terms of team heterogeneity. The good-performing company Beta and the superior-performing company Delta show medium heterogeneity measures, while medium-performing Gamma shows the lowest heterogeneity measure.

To sum up, theoretical perspectives suggest a positive relationship between the heterogeneity of team members and firm performance. Studies conducted in this field yield heterogeneous findings, such as positive effects of heterogeneity (e.g. Frink et al., 2003; Keck, 1997; Richard et al., 2007; Carpenter, 2002; Kilduff and Angelmar, 2000; Smith et al., 1994), negative effects (e.g. Olson et al., 2007; Keck, 1997) or no effect at all (e.g. Richard, 2000). However, for the research context of this study, the quantitative evaluation of the composition of the top management teams from the companies investigated supports the idea of a positive relationship between diversity of the top management team and firm performance. Qualitative interviews provide further indications of individual capabilities due to the diversity of the national origin of members of the local top management team. The following proposition summarises the findings with respect to this specific aspect of the local top management team.

Proposition 4: Top management team diversity in terms of national origin, functional responsibility, and educational background enhances subsidiary performance.

The analysis of the demographic factors of the local top management team focuses on the decision makers themselves. However, focusing not on the decision makers but on the decision-making process itself opens up a new area for potentially interesting research findings.
All of the managers agreed upon the fact that a high pace in decision making and implementation in the Chinese market is necessary for competitive positioning. Beta’s manager mentioned that “especially in the Chinese market there is a need to decide quickly. Definitely, you must react quickly; it’s is an absolute necessity.” In the same vein, Delta’s manager explained that “[f]ast action and reaction is needed for [the] Chinese market in particular due to the fact that the market is growing very fast and the decision-making process for the market is very quick. You have to adapt to the changes very, very fast. Therefore, fast action and reaction are needed and, of course, proactive action is necessary.” Alpha’s manager further noted that “in China, if it is a private company, it is often led by one man. Well, this man makes the decisions [...] and then they do it.” In other markets, Alpha’s “competitors are organised in comparable structures [to Alpha]. There, they also discuss topics; they also have to comply with shareholder interests and so on.” In sum, not only the developing market but also quick and decisive Chinese competitors require quick decision-making processes to compete in the Chinese market successfully.

Thus, a slow pace in decision making raises the suspicion that this is not an intended process implementation but rather, it hints at a flawed aspect of the process. Table 10 shows the decision pace for product and process modifications for the companies investigated. Two figures are striking: The slow pace of decisions on product modifications for Beta and the slow pace for decisions about process modifications for Gamma. Beta noted that the obligatory involvement of the German competence centres for any product modification due to the lack of local research and development results in a very slow pace for any product modification. This effect was discussed in the section on variation activities for the decision-making process of the local top management team in chapter 5.3.2. Additionally, the topic will be discussed
under another research focus in the section on the relationship between the German headquarters and the Chinese subsidiary in chapter 5.4.

However, Gamma’s slow pace for process modifications is thus far unclear. Gamma’s manager explained that they are quite slow in this area because “it touches on the competencies and power of certain colleagues”. The academic literature addresses this issue, termed political behaviour, as an important characteristic of a decision-making process. According to Elbanna and Child (2007), political behaviour results from the situation in which top managers allow their own personal interests to become part of their decision-making process, take up positions conflicting with other positions in the team and form alliances due to conflicting goals. Ultimately, the most powerful member prevails. Elbanna and Child (2007), Child and Tsai (2005), Dean and Sharfman (1996) as well as Nutt (1993) identify a negative impact of political behaviour on firm performance. Gamma’s manager was the only interviewee who identify political behaviour as influencing the decision-making process. Alpha, Beta, and Delta did not report any comparable influences due to political behaviour. Relating this finding to the company performance of the firms investigated (see Table 4), the case studies suggest a negative impact of political behaviour on firm performance. The results from the case studies support the findings from the academic literature which focuses on studies in other contexts.

Summarising the findings from the quantitative and qualitative case study data as well as the findings from a literature review, the following proposition is put forward:

Proposition 5: Political behaviour of involved actors in the decision-making process negatively impacts subsidiary performance.

Other factors influencing the decision-making process which are under investigation in the academic literature, such as rationality (e.g. Dean and Sharfman, 1996; Elbanna and Child, 2007), intuition (e.g. Elbanna and Child, 2007; Khatri and Ng, 2000), formalisation (e.g. Baum and Wally, 2003; Papadakis et al., 1998), could not be identified in the case studies.
By definition, the top management team is the sole body responsible for decisions. The case study analysis supports this view, even though it also identifies influencing actors such as the German parent company or employees. These influences are reflected through information or variation activities in the decision-making process. The local top management team conducts the selection based on the preceding decision-making process steps. Figure 8 shows that the top management team is the sole body conducting decisions in the decision-making process of the local top management team. Therefore, the identified aspects which relate characteristics of the process step selection to firm performance only focus on the local top management team. On the right-hand side of Figure 8, the identified characteristics with implications for subsidiary performance are shown, summarizing the insights provided by proposition 4 and 5.

5.3.4 Retention as the Implementation of Decisions

The retention step of the dynamic capability refers to the final implementation of the selected variation of new resource configurations (Zott, 2003).

One interesting aspect of retention is the overall decision pace, from the first impulse in the information step of the dynamic capability to the final implementation of chosen new resource configurations in the retention step.

Reviewing the qualitative interviews, all of the managers agreed upon the fact that it is absolutely necessary to react quickly to changes in the Chinese market. This finding was highlighted during the analysis of the activities in the information step.
This assessment from the managers of the firms under research also matches the findings from the preparatory interviews of the case study research phase.

There is a strong need to react quickly to the volatile and dynamic environment, which requires not only a perpetual awareness of changes but also the logical modifications of the resource configuration. The dynamic nature of the Chinese market requires a regular adaptation of processes and products to match the customers’ requirements with regard to functionality and price. A quick modification of the products with which the company competes in the market is necessary to deal with the quick reaction of Chinese competitors. This means that the process from the initial information, to the resulting variation and selection as well as to the final retention has to be conducted at a quick pace.

Reviewing the academic literature, I find further support for a beneficial impact of quick decision pace on firm performance, especially in highly volatile markets in Eisenhardt (1989b), Baum and Wally (2003) as well as Jones, Lanctot, and Teegen (2000).

To sum up, the review of the qualitative data from the case studies enhanced through findings in the academic literature supports the following proposition.

Proposition 6: The speed of product and process modifications has a positive impact on subsidiary performance if the product with which the company competes is in strongly competitive.

As the market is highly volatile, it is valid to assume that there is also a requirement for the implementation of many product innovations, product enhancements, and process modifications. In the end, quantity reveals how often the decision-making process produces an outcome. Table 11 shows the number of implementations of modifications of products and processes for each investigated case in 2006.
Table 11: Number of implemented modifications of product innovations and enhancements as well as process modifications.

<table>
<thead>
<tr>
<th>company</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>product innovations</td>
<td>5</td>
<td>2</td>
<td>2-5</td>
<td>5</td>
</tr>
<tr>
<td>product enhancements</td>
<td>20</td>
<td>0</td>
<td>2-5</td>
<td>3</td>
</tr>
<tr>
<td>process modifications</td>
<td>50</td>
<td>27</td>
<td>5</td>
<td>10</td>
</tr>
</tbody>
</table>

Question: “How many product innovations, product enhancements, and process modifications did your subsidiary implement in 2006?”

Values: Total number of implemented product innovations, product enhancements, and process modifications.

Analysing the findings, it becomes obvious that Alpha, as one of the best performing companies (see Table 4), shows a high frequency of product innovation, product enhancement, and process modifications. Delta follows Alpha, even though Delta shows a relatively low number of product enhancements and process modifications. Gamma is the company with the third highest overall frequency of implementations of product and process modifications. Beta shows the lowest frequency of product and process modifications.

Beta’s manager explained that his company rarely modifies products as they are, for the moment, still superior in the Chinese market. Nevertheless, he admitted that “in the future [more adjustments of our products will be necessary] due to the fact that competition is increasing. This means that our product will no longer perform as strongly in the market compared to our competitors as it did some time ago.” Accordingly, the mere analysis of the number of adjustments of products and processes is too simple, as the current configuration of the products and the advance towards potential competitors is relevant as well. Alpha, Gamma, and Delta are already competing with Chinese companies in the Chinese domestic market, but do not enjoy Beta’s current advantageous position. The comparison of Alpha, Gamma, and Delta therefore suggests that the number of modifications of products and processes does have an impact on overall performance. Thus, the following proposition is stated.

Proposition 7: The number of product and process modifications implemented has a positive impact on subsidiary performance if the product with which the company competes does not show long-lasting superior characteristics compared to competing products.
Additional analyses, for example, of the specific focus of modification activities on certain products or processes or costs of adjustments, do not reveal any other distinct findings that must be referenced in this study.

With regard to the development of the research framework, the local top management team orders implementations of decisions for the local subsidiary within its decision-making process. Figure 9 shows the characteristics of the process step retention. The case study research reveals that the number of modifications actually implemented has a positive impact on firm performance. This finding is represented on the right hand side of Figure 9.

![Figure 9: Retention in the top management decision-making process.](image)

The retention process step concludes the decision-making process of the local top management team. It results in a modification of products or processes which represent the subsidiary’s resource configuration. The dynamic capability process which is embedded in the decision-making process comes to an end. Based on the new configuration of products or processes, the firm competes as long as this configuration is perceived as competitive. Perpetual information activities control for this aspect and trigger a new decision-making process if needed.

As the investigation of the decision-making process of the local top management team is finished, I proceed with the second most important dynamic capability, the decision-making processes in which the German parent companies influence the subsidiary’s products or processes (see Table 6).
5.4 Aspects of the Headquarters-Subsidiary Relationship

The academic literature encompasses a considerable number of works with a focus on headquarters and subsidiary relationships (e.g. Garnier, 1982; Baliga and Jaeger, 1984). Scientists use various theoretical lenses for investigations in this field such as transaction cost theory (Hennart and Park, 1994), agency theory (Roth and O’Donnel, 1996; O’Donnel, 2000), evolutionary theory (Kogut and Zander, 1993), network theory (Ghoshal and Bartlett, 1990) or learning organisation theories (Hedlund, 1994). However, the existing knowledge is not easily transferable to the research context of this thesis (e.g. O’Donell, 2000). It also remains unclear which perspectives and aspects provided by existing studies really matter in the investigation. To date, no study has focused on the dynamic capability which is embedded in processes between the subsidiary and parent companies. Thus, it is necessary to conduct a case study analysis on this topic as it provides an appropriate theoretical lens for answering my research questions.

The parent company’s influencing activities has been identified as a dynamic capability with minor impact on firm performance compared to the decision-making process of the local top management team (presented in Table 6). Assessing the influence of the German parent company when the decision-making process of the local top management team shows superior impact on the performance of the subsidiary leads to the research topic of autonomy. The subsidiary’s autonomy is defined as the “degree to which the foreign subsidiary of the [multinational company] has strategic and operational decision-making authority” (O’Donnel, 2000: 528). The degree of autonomy regulates the extent to which the local top management team is allowed to decide on its own, involve the parent company, or whether it has to leave every important topic of decision to the parent company. In this context I regard the degree of a subsidiary’s autonomy as a question of which topics the subsidiary and the parent organisation select.

Applying the logic structure of information, variation, selection, and retention to researching the influence of the German parent company on the subsidiary in China is not adequate for several reasons. First, some aspects in which the influence of the parent is relevant have already been touched on in the analysis of the top management decision-making process. Thus, an in-depth discussion will lead to repetition as certain findings from the analysis already conducted will be discussed again, but from another organisational perspective. Second, as the influencing processes of the German parent company are less strong compared to the decision-making process of the local top
management team, only the most relevant aspects are necessary for a comprehensive analysis.

As previously discussed, dynamic capabilities shape the resource configuration with which the firm competes. In this study, the resource configuration is reflected as the firm’s products and processes. However, all of the investigated companies remarked that only the local top management team decides upon the local processes. Therefore, it is valid to concentrate the following analysis on the influence of German parent companies on product modifications. The case study results suggest a differentiation between smaller product enhancements which are partly conducted on site and product innovations in which the parent companies have a rather high influence.

5.4.1 The Positive Impact of High Autonomy for the Chinese Subsidiary

The autonomy of the subsidiary in developing and deciding on new products on site defines the local research and development activities. The analysis of variation activities for the decision-making process of the local top management team provides some support for the idea that the pace of decisions on product modifications may depend on the local research and development activities. This idea is further elaborated in the following analysis of the impact of autonomy in the field of product enhancements.

<table>
<thead>
<tr>
<th>company</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>product enhancements decided by</td>
<td>subsidiary</td>
<td>German parent</td>
<td>German parent</td>
<td>subsidiary</td>
</tr>
<tr>
<td>product innovations decided by</td>
<td>German parent</td>
<td>German parent</td>
<td>German parent</td>
<td>German parent</td>
</tr>
<tr>
<td>decision speed for product modifications</td>
<td>⬆️</td>
<td>⬇️</td>
<td>⬆️</td>
<td>⬆️</td>
</tr>
</tbody>
</table>

Questions: “In general, does the subsidiary or the parent company have the final decision about product enhancements or innovations? How quickly does the local top management team decide upon product modifications in general?”

Values: Qualitative answers given by interviewees with regard to the autonomy of the subsidiary with regard to the implementation of product enhancements and innovations. Decision speed of product modification is measured by four-point Likert scale items, ranging from ①:“rather quickly” to ④:“rather slowly”.

Table 12: Decision autonomy for product modifications and decision pace.
For each of the investigated cases, Table 12 shows whether the local subsidiary or the German parent company has the autonomy to decide on the implementation of product innovations or product enhancements. Additionally, the table presents the decision pace for product modifications in general for each of the investigated subsidiaries. I asked the interviewees how quickly the local top management team decides upon product modifications. At this point, it is necessary to clarify that the local top management team is involved in the decision-making process, even if the parent company has the autonomy with respect to product enhancements or innovations. When the local top management team has little autonomy in these decisions, the team has to implement the parent’s decision in the local subsidiary. Thus, it is valid to ask the interviewees how long the top management team needs for a decision on product modifications, even if the team receives the core decision from the parent company.

As previously mentioned, Beta does not conduct any research and development activities on site. The German parent develops and decides upon product innovations or smaller enhancements. Table 12 shows that Beta’s decision pace for product modifications is therefore low. The qualitative interview data provides further insight: Beta’s manager remarked that “for the Chinese market we decide a bit too slowly and we react a bit too slowly. Well, there is certainly a need for action.” As already mentioned, Beta has a very competitive product which still has fundamental competitive advantages compared to its competitors in the Chinese market. This fact has ensured Beta’s high level performance until now. However, Beta’s manager noted that the advantage is shrinking and, in the future, quicker action and reaction will be needed to stay competitive. Thus, Beta’s manager recognised the necessity to adjust his products to the Chinese market in the near future. This prompted his comment that, in the long run, “a part of the research and development activities will move from Germany to China.” However, the case is interesting as the relationship between the decision autonomy and the pace of decisions in the field of product modifications is obvious.

Contrary to Beta, Gamma shows a remarkably quick process for product modifications despite the fact that the German parent decides on all product modifications. Table 8 showed that Gamma conducts research activities for product innovations and not simply enhancements. However, Gamma’s formal approval process requires the acceptance of product modifications by the German parent company. To avoid delays in their product development, Gamma’s manager reported that “if we involve Germany, then we are often so far [in the development] that we have already prepared everything here on site. [...] What we get then from Germany is
either a place-it or veto but usually we are well prepared. Sometimes it can be that we have built a prototype already [on site in China]. [...] The loop through Germany does not really cost time.” This approach indicates that Gamma has implemented a quick development of product modifications despite low decision autonomy for the introduction of product modifications.

Alpha and Delta conduct both local research and development activities for product enhancements, as shown in Table 8. Additionally, both companies have the autonomy to decide on product enhancements on their own. This results in quick decision-making processes for product modifications.

Assessing the different autonomy configurations by comparing the company performances, it becomes obvious that the sheer comparison of degree of autonomy, decision pace, and subsidiary performance results in contradictory findings. Beta shows a good subsidiary performance due to the extraordinary product with which Beta competes. The very slow decision pace for product enhancements has not yet affected the firm’s performance. Gamma, the company with only a medium performance level, has implemented an intelligent way to minimise latencies through the decision-making process for product modifications. Nevertheless, that Alpha is the best performing subsidiary and Gamma is a good performing subsidiary implies that local research and development as well as local decision making in the field of product enhancements is beneficial for the subsidiary performance. The qualitative data obtained during the interviews strongly suggest that a local autonomy enhances decision speed and, indirectly, also performance. Accordingly, the following proposition is stated.

**Proposition 8:** Autonomy in decisions about product enhancements on site increases the pace for the launch of enhanced products and therefore subsidiary performance.

This proposition complements proposition 3, which states that focusing local research and development activities on product adaptations and smaller enhancements is positively related to subsidiary performance. However, one argument in favour of proposition 3 is represented by the local knowledge that facilitates the development of product enhancements.
Figure 10 visualises the autonomy aspect as it highlights the actors who perform the selection activity, namely, either the parent company or the local top management team. Thus, the characteristics in this field concentrate on the distribution of autonomy with regard to decisions about product modifications. As stated in proposition 8, autonomy in the decision of product enhancements has a positive impact on firm performance.

A high degree of autonomy for the Chinese subsidiary is also problematic in certain cases. The following analysis reveals two aspects which show that local autonomy may also decrease subsidiary performance: The autonomy of the subsidiary in the field of product innovation and a security consideration with regard to intellectual property protection concerning high-technology as a key-element in the products. Both aspects will be discussed in the following two chapters.

### 5.4.2 Autonomy and Competence in the Field of Product Innovation

Table 8 shows that Gamma is the only company with product innovation activities. The other companies, Alpha and Delta, both of which have research and development activities on site, concentrate on product adjustments or process development. Beta conducts all research and development activities at its German competence centre. Despite the already identified advantage of research and development activities on site, only Gamma has chosen to conduct innovation research. Interviews reveal why Alpha and Delta do not conduct innovation research in China.
Alpha’s manager reported that “the basic construction of a machine comes from our German so-called competence centres. This is simply because of the fact that we build [x] fundamentally different machines types which specialists from [x] different companies of our [...] company group develop in Germany.” Alpha’s manager further explained that “during the initial phase of our subsidiary the management tried to develop machines on site. But this approach failed and – I think – it wouldn’t work today either. It is simply not realistic to think that we can build up and then independently develop the knowledge for research about different machine types under our roof. If you look at Germany, our headquarters has developed only one or two machine types – during the last fifty years.” As a result, Alpha failed in the attempt to establish its own innovation capacities on site due to the complexity of products and problems in building up the competences which the German centres have developed over fifty years. Delta’s manager provided support for Alpha’s manager’s opinion, saying that “we are a manufacturing subsidiary, so we do manufacturing according to the product specification designed and released from the headquarters”. Gamma, the only company with innovation research on site, is not able to conduct product innovation research completely on its own. Gamma’s manager admitted that “we get product know-how from Germany”.

On the one hand, the analysis supports the idea that innovation research on site shortens the time for decisions on fundamental product adjustments. On the other hand, innovation research on site is costly and complex. Additionally, innovation research in China cannot compete with the German competence centres in terms of knowledge gained and therefore final outcome. Thus, it is valid to state the following proposition:

**Proposition 9:** A low level of autonomy of the Chinese subsidiary with regard to fundamental product innovations is positively related to the performance of the subsidiary.

This proposition broadens the insight already provided by proposition 3 and proposition 8.
Figure 11: Autonomy in decisions on product innovations.

As presented in Figure 10, autonomy focuses on the distribution of decision competence between the German parent company and the local subsidiary. Proposition 9 suggests that a high level of decision competence regarding fundamental product innovations for the German parent company has a positive impact on firm performance. Figure 11 visualises this suggested relationship.

5.4.3 Limiting Autonomy for Intellectual Property Protection Purposes

Intellectual property rights protection in China is a complicated (e.g. Bosworth and Yang, 2000). The case studies indicate that there exists a strong aversion to producing or developing product parts with high knowledge content in the Chinese subsidiaries on site. German companies are not willing to shift key knowledge to China, a move which would increase the threat of exposing such knowledge to potential competitors.

Alpha’s manager noted that “Germany provides us with parts, yes, it has to be like that. But those parts are only know-how parts of high-value.” He further explained that “product know-how comes from Germany. [...] Our strategy is that we want to develop this product know-how only to a certain degree on site. Well, there are some components about which we say that they must not be produced in China – well – for those parts, even I would be not allowed to build them and for sure no employee here on site. In this case, we are quite strict about avoiding any loss of know-how.” Similarly, Gamma’s manager reported that “we get parts from Germany that we do not
want to produce here [in China]. Let’s say that there are some things that you should protect to some degree – for example, our software and [other core parts].”

Alpha, Gamma, and Delta necessarily import key parts from Germany and their managers agreed upon the fact that intellectual property protection requires serious consideration in China. The resulting decrease in the subsidiaries’ autonomy is therefore necessary for avoiding knowledge loss. However, for the cases, I could not identify any pattern among the investigated companies that might allow a relationship between intellectual property protection practices and subsidiary performance. Hence, even if the interviews provide some support for the relation between lower autonomy to protect the firm’s intellectual property and the competitiveness of the subsidiaries, I could not determine a proper and valid relationship between both aspects.

5.5 Aspects of Employee Involvement in the Firm’s Resource Configuration

Employee involvement in the Chinese subsidiary was identified as the dynamic capability having least impact, as presented in Table 6. Due to that minor impact, the case study analysis focuses only on certain relevant elements. A comprehensive investigation following the information, variation, selection, and retention process steps would lead to an analysis of irrelevant aspects. The following brief literature review sets the focus of the case study research and analysis.

In their literature reviews of human resource management practices, Becker and Gerhart (1996) as well as Guest (1997) recognise growing evidence for a relationship between human resource management and organisational performance. Empirical researchers in this field focus on so-called high-performance human resource management practices to investigate the impact of this approach on organisational performance (e.g. Björkman, Fey, and Park, 2007). Despite the fact that research does not provide an established set of high-performance human resource practices (Becker and Gerhart, 1996; Björkman et al., 2007; Guest, 1997), several practices frequently appear in publications. Björkman lists, for example, “rigorous recruitment and selection processes, performance-contingent compensation systems, extensive development and training activities and commitment to employee involvement” (Björkman et al., 2007: 433). Dynamic capabilities in which employees are involved as actors and which have a direct or indirect influence on the firm’s resource configuration are a form of employee involvement. Employee involvement has been identified as one high-performance human resource practice among others. However,
as human resource management practices and their effects significantly differ among host countries (Björkman et al., 2007), transferring knowledge from one context into another is often a difficult endeavour. This fact requires additional research focusing on the research context of this thesis. During the analysis of the investigated cases, two distinct forms of employee involvement are identified: First, employees regularly provide suggestions to enhance the information and variation activities of the decision-making process of the local top management team. Second, the implementation of Kaizen-like approaches.

5.5.1 Employees’ Indirect Influence via Suggestion Systems

Investigating employees’ indirect influence, I focus my research on the application of employee suggestion systems as this method was identified during the interviews. An employee suggestion system is a critical mechanism by which individual knowledge is transferred into organisational knowledge (Arthur and Aiman-Smith, 2001). The mechanism enables employees to suggest product or process enhancements to the local management. Suggestions are therefore variations of the existing firm’s processes or products. Through the transfer of employees’ suggestions to higher organisational levels, employees indirectly influence the firm’s configuration as the final decision or selection is conducted on higher organisational levels. Employees’ suggestions function as potential triggers for the firm’s resource reconfiguration, which is ultimately decided by the superior management.

<table>
<thead>
<tr>
<th>company</th>
<th>Alpha</th>
<th>Beta</th>
<th>Gamma</th>
<th>Delta</th>
</tr>
</thead>
<tbody>
<tr>
<td>type of employee suggestion system</td>
<td>formal employee suggestion system</td>
<td>none</td>
<td>informal suggestion system</td>
<td>formal employee suggestion system</td>
</tr>
<tr>
<td>target area for suggestions</td>
<td>products and processes</td>
<td>processes only</td>
<td>products and processes</td>
<td>products and processes</td>
</tr>
<tr>
<td>applied incentive schemes</td>
<td>share of improvement as monetary incentive</td>
<td>none</td>
<td>none</td>
<td>• share of improvement as monetary incentive</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• paid vacations</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>• tribute through awards/medals</td>
</tr>
</tbody>
</table>

Questions: “Do you have formal employee suggestion systems in your subsidiary? If you receive suggestions from employees, what areas do they focus on? Do you have any incentive schemes for employees’ suggestions in your subsidiary?”

Table 13: Type, characteristics, incentive schemes, acceptance, and perceived value of employee suggestion systems for each investigated company.
Table 13 presents the type, characteristics, and incentive schemes of employee suggestion systems for each of the investigated companies. Alpha and Delta conduct formal employee suggestion systems with monetary incentive schemes. Gamma receives employees’ suggestions in an informal way but without any incentive schemes. Beta has not implemented a suggestion system and rarely receives suggestions about process improvements from their employees. The performance levels of Alpha, Gamma, and Delta (see Table 4) provide support for the idea that employee involvement positively influences subsidiary performance. However, in the case of Beta, the specific situation requires a separate assessment. Beta does not conduct any product modifications on site and benefits from its advantageous products without real competition in the Chinese market.

The qualitative interview data offer further insights into the advantages of employee suggestion systems. Alpha’s manager explained that “it functions very well, it is accepted very well, and we achieve very good cost savings, compared to the costs. Well, the bonuses we pay are minimal compared to what we, well, the company, can save or actually save in money.” He further described the success of some employees’ suggestions for the products and processes. Thus, employees are able to identify enhancements that “you would never find with a formal process that comes from the top. If you cannot motivate your employees to point out small problems, well, from the top, from the bird’s eye view, you will never find those issues. But in sum and over a longer period, these things can create plenty of costs and problems.”

Delta’s manager supported Alpha’s position and noted that “if you get them involved, they are very helpful and willing to make some suggestions. But you have to encourage them to make suggestions and [you must] accept their suggestions”. Gamma’s manager also agreed with the others: “I regard [the employee suggestion system] basically as a very good tool. We have regular meetings on different levels and there, proposals are made and those proposals get, well, let’s say, in the context of the Chinese search for consensus, they will get forwarded to the top and there, we come very quickly to a decision”.

To sum up, the analysis of the qualitative and quantitative data supports the following proposition:

Proposition 10: The degree of involvement of employee suggestions enhances the firm’s products and processes and therefore the firm’s performance.
With this finding, I am fundamentally in line with the academic point of view (e.g. Björkman et al., 2007). However, while academic scientists regard a series of different human resource management tools such as “rigorous recruitment and selection processes, performance-contingent compensation systems, extensive development and training activities and commitment to employee involvement” (Björkman et al., 2007: 433), I only concentrate on employee involvement.

Figure 12: Employee involvement as an additional source of variation for the top management team.

With regard to the development of the research framework, employees’ suggestions for new products or processes that are basically variations of the resource configuration represent the flow from the employees’ operational level to the local top management team. This flow is visualised on the left-hand side of Figure 12. Additionally, the right-hand side of Figure 12 summarises the findings from proposition 10. To sum up, I conclude that employees’ suggestion systems further enhance the decision-making process of the local top management team. They broaden the set of potential options during the variation phase of the decision-making process of the local top management team. As employee suggestion systems only provide suggestions and employees do not make decisions on the operational level, employees do not have any direct influence on the firm’s resource configuration.
5.5.2 Employees’ Direct Influence on the Firm's Resource Configuration

Focusing on employee activities entailing not only information and variation activities but also selection and retention activities on the employees' level I have identified Alpha as the only company with such processes.

Delta’s manager explained why processes in which employees are encouraged to decide and implement modifications on their own are rather rare in China: “If you let Chinese people go their own way, they will choose a very simple way”. Alpha agreed with this comment, explaining that “the beginning was quite hard. Because the [local] employees tend to keep established procedures more than Europeans and therefore don’t like to change anything. Well, in the beginning, setting up this process was difficult but critical because you have to convince the employees that you don’t want them to work more quickly or harder but more intelligently and that they will achieve more with the same or even less effort”. He further explained that for this method the incentive scheme was quite important: “As soon as money is used as an incentive, it works wonderfully – well – then it can happen that discussions come up: Shouldn’t I get a little bit more as a percentile share. [...] But, generally, as soon as money appears, they think immediately about where they could improve something”.

As Alpha is the most successful among the investigated companies, I consider their way of empowering employees as a contributing factor to performance. However, there is no support from the other cases or any other data source that can be used complementarily for the case studies.

Reviewing the literature, Powell (1995) discusses a positive relationship between employee empowerment and firm performance. However, Björkman et al. (2007) note significant differences among successful human resource practices in different geographical and cultural contexts. Thus, I hesitate to formulate a proposition regarding this topic.
6 Toward a Preliminary Model

Focusing on the second research question, the analysis of the four case studies indicates that the decision-making process of the local top management team has the most important impact on the configuration of products and processes and, ultimately, on the subsidiary’s performance. Thus, I regard this process as the most important dynamic capability. I identify any process that refers to activities of the parent company to influence the products or processes of the subsidiary as a process with minor impact on firm performance. For this dynamic capability, the case study analysis supports concentrating on the investigation of the autonomy to develop and decide on the introduction of product enhancements and innovations. The case study analysis suggests that the third group of dynamic capabilities, any processes in which the employees conduct modifications on the operational level, is a mere contributor of variations. Kaizen-like practices are not strong in the investigated companies. Accordingly, this process is not identified as an important dynamic capability. However, it complements the decision-making process of the local top management team by enhancing the variation phase as an additional source for potential product or process enhancements.

With respect to the first research question, I summarise my findings: The logic structure of a firm’s process that reflects the firm’s dynamic capability has been mapped to real activities in the cases investigated. Figure 13 shows the respective information, variation, selection, and retention activities. Additionally, Figure 13 visualises the flows of information impulses, proposed variations, and retention orders in the investigated subsidiaries. Every activity can be characterised by aspects that I identify either as beneficial or adverse for the subsidiary’s performance.

I use subsidiary performance as a proxy for the quality of dynamic capabilities in the subsidiaries. Thus, the characteristics which are addressed in proposition 2 to 10 are beneficial for the subsidiary’s ability to compete with its products and processes in the Chinese environment. I conclude that these characteristics enhance the “fitness for use” and therefore the quality of the identified and investigated firm processes. My research provides support for the idea that the quality of the identified dynamic capabilities has an impact on the subsidiary performance.
All investigated subsidiaries constantly adjust their processes and products and therefore their configuration of resources. However, the quality of the preceding modification processes impacts the success of the investigated companies.

Figure 13: Initial investigation construct for dynamic capabilities and their relation to subsidiary performance.
Part C

Deductive Testing Research Phase
based on Survey Research
7 Development of Testable Hypotheses

The propositions derived from the preceding explorative phase are used to develop appropriate hypotheses for the deductive testing research phase. The results from the previous research phase suggest focusing on the decision-making process as this process embeds the dynamic capability with the highest impact on firm performance (proposition 1). The research framework makes clear the need to investigate how local top managers obtain information (proposition 2), how the firm develops alternatives (propositions 3 and 10), the composition of the local top management team (proposition 4), process characteristics such as political behaviour (proposition 5), and the pace and the number of resource modifications (propositions 6 and 7). All characteristics are relevant for firm performance and therefore for the quality level of the corresponding dynamic capability. Additionally, the explorative research phase suggests focusing on the autonomy of the local Chinese subsidiary given by the respective German parent company (propositions 8 and 9).

The derived propositions determine the research focus for the deductive testing research phase. This research focus is important for the theoretical foundation of this research phase as it enables a detailed review of the existing literature. This focused literature review has three major implications.

First, the literature review clarifies for each proposition whether the aspects included require further research or whether they have already been intensively research. For the assessment of the existing literature, I specifically consider the context of reviewed empirical work. As the national context of China is not comparable to other research contexts such as the United States or the United Kingdom (Makino, Isobe, and Chan, 2004), findings from other research contexts are not easily transferable. Second, the literature review enhances every proposition through the consideration of complementary research perspectives. Third, the literature review provides theoretical constructs to operationalise and test the hypotheses.

7.1 Dynamic Capabilities with Major Impact on Firm Performance

Dynamic capabilities are assumed to ensure the firm’s competitiveness and performance, especially in volatile market environments (Teece et al., 1997; Teece, 2007). This thesis assumes that the quality of the dynamic capabilities and not their mere existence impact firm performance. Dynamic capabilities of low quality are not as beneficial to firm performance as dynamic capabilities of high quality. To research
whether the quality of dynamic capabilities has an effect on firm performance, I only focus on dynamic capabilities with the highest impact on firm performance. This selection ensures a clear identification of quality aspects of dynamic capabilities and their implications for firm performance. As dynamic capabilities are defined as embedded processes which shape the configuration of firm resources, a wide variety of processes may match this definition (Eisenhardt and Martin, 2000).

Proposition 1 of the explorative phase of this study suggests that the decision-making process of the local top management team has the highest impact on firm performance. The processes through which the German parent company influences the Chinese subsidiary represent the second most important dynamic capability, as stated in proposition 1. Due to the lack of research on the identification of dynamic capabilities with the greatest impact, the literature review of dynamic capabilities-related contributions does not provide any usable findings. Accordingly, the formulation of the following hypothesis is necessary.

Hypothesis 1.1: The decision-making process of the local top management team is the dynamic capability with the highest impact on subsidiary performance.

Additionally, to test the influence of the German parent company, the following hypothesis is appropriate.

Hypothesis 1.2: The interfering processes of the parent company are the dynamic capabilities with the second highest impact on subsidiary performance.

A positive test of hypotheses 1.1 and 1.2 provides support for the model that was developed already during the explorative phase. As the decision-making process of the top management team is highly important, the following development of hypotheses concentrates on this dynamic capability. Due to its minor importance, the second most important dynamic capability is given less attention in this study. The case study research phase suggests that other potential dynamic capabilities such as processes on the operational level (Kaizen-like approaches) are not significant. Thus, these dynamic capabilities are not considered in the deductive testing research phase.
7.2 Information Retrieval and the Quality of the Top Management Team's Decision-Making Process

Proposition 2 of the explorative research phase suggests that the frequency and emphasis of the information retrieval process with a focus on the customer has a positive impact on firm performance. A further review of the existing academic literature will show whether this proposition is sufficient for a comprehensive understanding of this subject or whether other relevant aspects should be considered additionally.

7.2.1 The Relevance of Information Retrieval for Firms

The activity of information retrieval is referred to as *scanning* in the academic literature. The term was defined by Aguilar (1967: 1) as the “activity of acquiring information,” which basically “involves simply an exposure to and perception of information” (Aguilar, 1967: 18). Hambrick (1981: 299) notes that “an organisation’s executives can only act on those phenomena to which their attention is drawn”. Environmental scanning is a necessity for the adaptation of the firm to its context (Garg, Walters, and Priem, 2003).

However, scanning itself does not necessarily bring about action (Hough and White, 2004) as it precedes variation and selection activities (Bourgeois and Eisenhardt, 1988; Dean and Sharfman, 1993b; Fredrickson, 1984; Hough and White, 2004). Nevertheless, scanning is “a necessary but not sufficient condition for strategic decision making and the development of the firm strategy” (Hough and White, 2004: 782). As a result, decision makers are seen as information seekers (Boyd and Fulk, 1996; Garg, Walters, and Priem, 2003).

Hough and White (2004) remark that the intensity of information retrieving activities depends on the context in which the organisation is embedded. Dynamic environments force decision makers to increase information retrieval activities to overcome uncertainty. In contrast, decision makers in stable environments tend to rely on their own experience and developed knowledge. Dynamic environments, such as the Chinese market, require extensive information retrieval activities according to their view.

Scanning activities cost time and efforts (Hough and White, 2004). However, human beings cannot process an unlimited amount of information due to their cognitive limits, which results in bounded rationality (Garg, Walters, and Priem, 2003).
Decision makers have to focus on certain information retrieval activities and neglect others (Garg, Walters, and Priem, 2003). Effective scanning is therefore a question of the decision maker’s choice based on individual judgement (Child, 1997; Garg, Walters, and Priem, 2003). Scientists have recognised that the selection of a proper scanning approach has an impact on firm performance (Boyd and Fulk, 1996; Daft et al., 1988).

To sum up, the general literature review supports the idea that certain characteristics of the scanning activity are positively related to firm performance. Successful practices in this area are equivalent to a high quality of the information process-step of the local top management team’s decision-making process. Proposition 2 of the explorative phase of this thesis reveals the relevance of information retrieval activities which focus on the customers. However, the academic literature notes that decision makers have to match external environmental conditions with internal firm resources and capabilities (Bourgeois, 1985). In the same vein, Garg et al. (2003) remark that scanning in internal as well as external domains of the firm is necessary for an effective adaptation of the firm to its environment. Accordingly, considering the internal and external domains for scanning activities separately is necessary. The hypotheses are derived in the following sub-chapters.

7.2.2 Scanning Activities with Focus on the External Environment

The external environment needs to be differentiated into distinct sectors, as they differ in importance and uncertainty (Daft et al., 1988). Choosing the right emphasis for every sector is the key to successful scanning activities for the firm (Garg, Walters, and Priem, 2003).

The academic management literature classifies environmental sectors into sectors of the task environment and the general environment (Bourgeois, 1980; Daft et al., 1988; Dill, 1958; Garg, Walters, and Priem, 2003). According to Daft et al. (1988), the task environment includes sectors which are external to the organisation but with which the organisation transacts directly. The task environment includes, for example, the sectors customers, competitors, and suppliers (Daft et al., 1988) as well as the technological sector (Garg et al., 2003). In contrast, the general environment includes organisation-external sectors with indirect influence on the firm. The general environment includes, for example, the social sector, economic sectors (Garg et al., 2003) or the regulatory sectors (Garg et al., 2003).
Reviewing the academic literature, Garg, Walters, and Priem (2003) remark that research on scanning activities or information retrieval methods is underrepresented compared to other aspects of the decision-making process. Nevertheless, important theoretical work has already been done. Daft et al. (1988) as well as Sawyerr (1993) note that task-related sectors are more critical for company performance and are also characterized by higher uncertainty. In addition, Daft et al. (1988), Garg et al. (2003) as well as Priem, Rasheed, and Kotulic (1995) find a positive relationship between the emphasis on scanning activities and firm performance.

Nevertheless, previously conducted research focuses on countries other than China. Sawyerr (1993) notes that, to date, the entire literature on scanning activities has focused on the US-American context. Since his initial paper, researchers have also focused on other countries, e.g., Nigeria (Sawyerr, 1993), Hong Kong (Ebrahimi, 2000), Russia (May, Stewart, and Sweo, 2000), Bulgaria (Elenkov, 1997), Canada (Auster and Choo, 1993) or Korea (Ghoshal, 1988). The findings of such empirical studies suggest that the geographical context matters. I find support for my own analysis from Elenkov’s (1997) remarks with regard to this topic. Therefore, a simple adaptation of the findings provided by the current academic literature to the Chinese context is problematic. To my knowledge, the academic literature does not provide any information about scanning behaviours of German manufacturing companies in the Chinese market. The preliminary findings from the case study research of this thesis are not complemented in a reliable manner by any empirical work. Thus, on the basis of the literature review as well as the findings from the explorative phase, the following hypothesis can be stated:

Hypothesis 2.1: An increase in the emphasis of scanning activities on the external task sector is accompanied by an increase in the quality of dynamic capabilities.

Proposition 2 of the explorative research phase suggests a special impact of the scanning emphasis on the customer sector. Accordingly, it is appropriate to break up the construct of the task sector, in which the customer sector is only one part, and to focus on the specific customer sector separately.

Hypothesis 2.2: An increase in the emphasis of scanning activities on the customer sector is accompanied by an increase in the quality of dynamic capabilities.
The last hypothesis also includes aspects of hypothesis 2.1. Thus, the hypotheses are not unrelated with regard to the topic under investigation. Nevertheless, the results of the explorative phase give some support for the idea that a further separation of task-related scanning efforts is necessary. Accordingly, hypothesis 2.2 is a further refinement of hypothesis 2.1.

7.2.3 Scanning Activities with Focus on the Firm’s Internal Information Sectors

Scanning the external environment is not sufficient for the identification of external opportunities or risks in the markets or a firm’s internal strengths or weaknesses (Hough and White, 2004). Thus, Garg, Walters, and Priem (2003) conclude that the scanning of the external environment also requires an appropriate scanning of the firm’s internal domains. This twofold scanning approach ensures the retrieval of a comprehensive amount of information for effective decisions. The internal domain consists of, for example, the firm’s product research and development, financial management (Garg, Walters, and Priem, 2003) or production processes.

While literature on scanning activities is scarce (Garg, Walters, and Priem, 2003), contributions on the scanning of internal sectors of organisations are even rarer (Bluedorn, Johnson, Cartwright, and Barringer, 1994; Hough and White, 2004). Garg et al. (2003) is the only academic contribution in a high-ranked journal with a focus on the relationship between scanning activities in the internal sector and firm performance. Their study posits a positive relationship between a firm’s sales growth and scanning emphasis in the internal sectors such as R&D, basic engineering, and market research.

As the geographical context influences the effect of the scanning emphasis in the external sectors on firm performance, it is valid to assume that the same influence can be found with respect to the effect of internal scanning emphasis. Garg et al.’s (2003) study was conducted in the US-American context. Their findings are therefore not easily transferable to the Chinese market context. Although they provide some support for a positive relationship between scanning emphasis of the internal sectors and firm performance, a separate test of the following hypothesis is necessary for reliable assumptions in the research context of this thesis:

Hypothesis 2.3: An increase in the emphasis of scanning activities on the internal sectors is accompanied by an increase in the quality of dynamic capabilities.
The last hypothesis focuses on information retrieval within the subsidiary, the internal sectors. This complements hypotheses 2.1 and 2.2 as they focus only on the environment that is external to the subsidiary.

### 7.3 Variation Activities and the Quality of the Top Management Team's Decision-Making Process

The explorative research phase identifies two major sources for the development of potential variations. First, proposition 3 suggests that the local research and development activities with a focus on product adaptation for the Chinese market represent a relevant source of variations. Second, proposition 10 suggests that the degree of involvement of employee suggestions enhances the development of variations. Thus, both approaches are discussed further. A review of the existing academic literature will complement the preliminary findings of the explorative research phase and yield testable hypotheses.

#### 7.3.1 The Implication of the Focus of Research and Development Activities on Variations

Research and development activities on site are a precious source of potential options for the decision-making process of the local top management team. Teece considers research and development activities as “a form of ‘search’ for new products and processes” (Teece, 2007: 1324). Proposition 3 implies a positive relationship between local research and development efforts in the field of product enhancements or adaptations and firm performance.

Resource dependency theory provides further support for this proposition. This theory regards the configuration of the knowledge of subsidiaries as a result of their environmental context (Andersson and Forsgren, 1996). The subsidiaries gain relevant knowledge as a valuable resource through the exploitation of environmental resource areas. Resource areas are, for example, the knowledge and experience of local suppliers, competitors or customers (Andersson and Forsgren, 1996; Tichy, Tushman, and Fombrun, 1979). In the long run, environmental exposure causes the development of a unique configuration of capabilities (Birkinshaw, Hood, and Jonsson, 1998; Ghoshal and Nohria, 1989; O’Donnel, 2000) or knowledge and, generally, resources (Frost, Birkinshaw, and Ensign, 2002; Kogut and Zander, 1992, 1993). This
knowledge can be used to compete successfully in the local market (Bartlett and Ghoshal, 1993; Frost, 2001; Hedlund, 1986; O’Donnel, 2000).

However, Birkinshaw et al. (1998) point out that subsidiaries also rely on technological knowledge from the parent company. Frost, Birkinshaw, and Ensign (2002) note that the headquarters functions as a centre for excellence. As a result, the subsidiaries benefit from two essential knowledge domains: First, the headquarters provides the technological knowledge for fundamental product innovations. Second, the subsidiary can extract the knowledge from the local environment to conduct smaller product enhancements and adaptations to match the local market conditions (Patel and Vega, 1999).

This twofold approach finds support in the empirical findings of the case study research phase. Proposition 9 suggests that innovation research is too complex and costly in China. Proposition 3 suggests a positive impact of local activities to enhance or adapt products. The empirical findings and the literature review thus indicate that a focus on product enhancements through adaptation on site promises to be a successful practice for the subsidiary in the Chinese context. As there is no empirical research about this topic in the given research context, an additional empirical investigation is necessary. Accordingly, the following two hypotheses, which differentiate between product enhancements and adjustments, are stated:

Hypothesis 3.1: An increase in the focus of local research and development activities on product adaptations is accompanied by an increase in the quality of dynamic capabilities.

Hypothesis 3.2: An increase in the focus of local research and development activities on product enhancements is accompanied by an increase in the quality of dynamic capabilities.

This hypothesis focuses on a research aspect that is close to propositions 8 and 9, which focus on the autonomy of the subsidiary in the field of product innovation and enhancements. However, this hypothesis deals with effectively conducted research activities on site, while propositions 8 and 9 focus on the restrictions on conducting research and development activities on site.
7.3.2 Impact of Employee Involvement as a Source for Variations

Proposition 10 of the explorative research phase provides support for the positive impact of employee involvement on firm performance. From a theoretical perspective, human resource-related research introduces high-performance human resource management (e.g., Björkman, Fey, and Park, 2007), which is based on human capital theory (Becker, 1964). Human capital theory is a specific complement to the resource-based view (Barney, 1991, Björkman, Fey, and Park, 2007). Human resources, which are the central elements of human capital theory, are defined as the pool of employees, understood as human capital, under the firm’s direct control (Björkman, Fey, and Park, 2007; Wright and McMahan, 1992). Wright, McMahan, and McWilliams (1994) find support for a positive impact of level of skills and capabilities of employees on accomplishment of operational tasks, ability to adjust according to external influences, and, finally, firm performance.

Empirical studies suggest a positive relationship of human resource management practices, which foster the development and involvement of employees, and firm performance (Arthur, 1994; Buck, Filatotchev, Demina, and Wright, 2003; Delaney and Huselid, 1996; Fey and Björkman, 2001; Huselid, 1995; MacDuffie, 1995; Youndt, Snell, Dean, and Lepak, 1999). However, critical researchers emphasise the dependency of the effect of human resource management practices on the firm’s context (Delery and Doty, 1996). Björkman, Fey, and Park (2007) find empirical support for the idea that the national context significantly impacts the relationship between human resource management practices and organisational outcome.

To sum up, the literature suggests a relationship between certain human resource practices and firm performance but the effect depends on the firm’s context. Extensive reviews indicate that there is to date no academic knowledge about the impact of employee involvement in the specific context of this thesis. Academic work in the
field of high-performance human resource management investigates more comprehensive mechanisms such as the motivation of employees, the acquisition of potentials or the development of employees (Björkman, Fey, and Park, 2007). Employee suggestion systems as a mechanism to enhance the generation of alternative options for decisions are subsumed under the construct of employee involvement. Thus, the impact of the application of employee suggestion systems is not explicitly measured.

As a result, the already existing knowledge provided by the academic literature is not sufficient for generalising the findings from proposition 10 of the explorative phase. Additional research is necessary, which leads to the formulation of the following hypothesis.

Hypothesis 3.3: An increase in the involvement of employee suggestions in the decision-making process of the local top management team is accompanied by an increase in the quality of dynamic capabilities.

The explorative research phase does not suggest any other factors for the generation of options with impact on the firm performance. Accordingly, the thesis proceeds with the next logical process step in the local top management team’s decision-making process, the most important dynamic capability.

7.4 Team Composition and the Quality of the Top Management Team's Decision-Making Process

Proposition 4 of the case study research suggests a positive impact of certain team characteristics on firm performance. In particular, the diversity of the team members in terms of national origin, functional responsibility, and educational background is assumed to be positively related to firm performance. The following sub-chapters complement the empirical findings of the explorative research phase with existing knowledge from the academic literature to develop testable hypotheses.

7.4.1 The Implication of Team Diversity on Firm Performance

The upper echelon theory provides theoretical insight into the relevance of top management team characteristics and their implication for firm performance. Upper echelon theory is based on the idea that top managers shape the organisation through
their decisions (Knight et al., 1999; Smith et al., 1994). As those decisions are influenced by the characteristics of the actors involved, the outcome of the organisation is “viewed as reflections of the values and cognitive bases of powerful actors in the organisation” (Hambrick and Mason, 1984: 193). Hambrick and Mason (1984) recommend observable demographic characteristics that function as proxies for values and cognitive bases of the actors involved. Alternatively to the investigation of demographic variables, other scientists research cognitive values and their impact directly (Kilduff et al., 2000). Hambrick and Mason (1984) as well as Kilduff et al. (2000) compare and discuss the two different approaches in this research field. They conclude that demographic characteristics are easier to retrieve, they result in plausible explanations for organisational phenomena, and they are more objective. Following this argumentation, the analysis of the diversity of the local top management team in the explorative case study research phase is also based on demographic factors. Thus, the investigation of this topic in the testing phase of this thesis is also based on the investigation of demographic characteristics rather than cognitive values.

Proposition 4 of the explorative research phase suggests that the diversity of characteristics of the members of the local top management team positively influences firm performance. Reviewing the academic literature on this topic reveals three distinct streams with conflicting perspectives.

One stream of academic research assumes that the heterogeneity of the top management team has a positive impact on decision quality due to the fact that the team benefits from the various capabilities (Amason, 1996; Wanous and Youtz, 1986) and various perspectives that are considered (Amason and Sapienza, 1997; Hoffman, 1959). Diversity is assumed to impact creativity, innovation, as well as the variety of ideas in the group (Jackson, May, and Whitney, 1995; Knight et al., 1999; Richard, Murthi, and Ismail, 2007). The diversity of groups is believed to lead to a more critical analysis of issues, which positively impacts the outcome (Jackson, 1992; Richard, 2000). Thus, this stream of research regards diversity as a facilitating factor for superior problem-solving capabilities and also for higher outcome (Bantel and Jackson, 1989; Cox, 1991; Pelled, Eisenhardt, and Xin, 1999; Richard, Murthi, and Ismail, 2007).

Theoretical support for this perspective is provided by the knowledge-based view as a specific part of the resource-based view of the firm (Barney, 1991; Penrose, 1958). The knowledge-based view of the firm (Miller and Shamsie, 1996) suggests that superior knowledge-based resources are relevant for firm performance and survival (Barney and Wright, 1998; Pennings, Lee, and Witteloostuijn, 1998; Richard, Murthi,
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and Ismail, 2007). Following this logic, the diversity of demographic characteristics also implies a diversity of knowledge and perspectives (Hambrick and Mason, 1984) and is therefore positively related to outcome or firm performance (Barney, 1991).

An opposing research stream concludes that diversity leads to affective conflict, which causes a decrease in team performance (Amason and Sapienza, 1997; Mintzberg, Raisinghani, and Théorét, 1976). Theoretically based on social similarity perspectives and identity theory, researchers assume a negative relationship between demographic diversity and outcomes (Jehn, Northcraft, and Neale, 1999; Neale, Northcraft, and Jehn, 1999; Pelled, 1996; Tsui, Egan, and O’Reilly, 1992). Barnard (1938: 224) introduced the approach of social cohesion and emphasised the necessity of compatibility between managers. Cohesion facilitates cooperation among managers in terms of collaboration and communication (Michel and Hambrick, 1992; Roberts, O’Reilly, 1979; Wagner, Pfeffer, and O’Reilly, 1984). Since cohesion increases firm performance but diversity decreases cohesion among managers (Michel and Hambrick, 1992), diversity of the top management team decreases firm performance.

Blau’s theory (Blau, 1977) provides a third perspective. Blau (1977) implies that there does not exist a simple relationship between diversity of demographic factors in the top management team and firm performance. According to his view, a low level of diversity among group members results in low group barriers and, hence, in high social association (Blau, 1977: 79). Blau assumes that group members prefer homogeneous associations among members of the same group rather than heterogeneous associations among members of different groups. Accordingly, increasing group diversity negatively influences the group association, which leads to lower group collaboration and performance. Paradoxically, from a certain level of heterogeneity, this effect declines with increasing heterogeneity. Blau (1977: 79) explains this effect with the human trait that “social associations depend on opportunities for social contacts”. Increasing diversity in a group enhances the likelihood of intergroup relations (Blau, 1977: 80). Reflecting this insight, academic research that is based on Blau’s theory assumes a U-shaped relationship between group diversity and performance (e.g. Richard, Murthi, and Ismail, 2007).

To sum up, the academic literature does not provide any unified explanation of the impact of team diversity on firm performance.

Additionally, scientists provide support for the impact of the firm’s context on the effects of team heterogeneity on organisational outcome, such as the dynamism (Keck, 1997; Priem, 1990) or the turbulence of the environment (Haleblian and Finkelstein, 1993). Olson, Bao, and Parayitam (2007) explicitly mention differences between
decision-making processes in the collectivistic Chinese context and the individualistic US context. Thus, the relationship between demographic factors of the top management team and organisational performance is also related to the context of the organisation.

Considering various theoretical explanation approaches as well as the influence of the firm’s environmental context, the empirical academic research comes to oppositional results (Jehn, Northcraft, and Neale, 1999). William and O’Reilly (1998) conducted a comprehensive literature review and concluded that there exists no generalisable relationship between group diversity and outcome. They emphasise the importance of contextual factors as those mentioned above. Richard (2000), referring to Cox (1994), underlines this finding by suggesting that organisations should adapt to demographic factors of their major customers in order to gain competitive benefits.

Reviewing the empirical research for knowledge that may be transferable to the given research context of this thesis, I determined that the overwhelming majority of the empirical studies on team demographic factors focus on US firms (Olson, Bao, and Parayitam, 2007). To my knowledge, there is no empirical study that has the same research focus as this study. Thus, the existing academic knowledge is not transferable to the context of German companies in China.

The explorative phase of this thesis supports the idea that the diversity of top management teams in volatile market environments enhances firm performance, as stated in proposition 4. Therefore, it is necessary to also investigate these factors in the deductive testing research phase of this thesis.

A review of the academic literature about the demographic characteristics that are investigated here reveals a considerable number of factors. With respect to the relevant factors for the further investigation, the explorative research phase of this thesis indicated national origin, functional responsibility, and educational background. For the selection of other demographic factors, the specific research context of this thesis has to be considered. The academic literature indicates that age diversity (e.g. Richard and Shelor, 2002; Kilduff et al., 2000; Norburn and Birley, 1988) and work experience (e.g. Smith et al., 1994) are factors that are promising. Many scientists also focus on gender diversity (e.g. Richard et al., 2004; Frink, Robinson, Reithel, Arthur, Ammeter, Ferris, Kaplan, and Morrisette, 2003). However, pre-studies of companies in China conducted for the explorative research phase suggest a low level of diversity with regard to this factor; therefore, the factor of gender diversity is not investigated further.

Additionally to the demographic factors, it may be interesting to focus on influencing factors on the relationship between diversity and outcome. Carpenter
(2002) remarks that the team tenure of the members impacts the effects of diversity. Thus, team tenure is another factor under investigation. However, the size of the team limits the potential diversity among the team members. Accordingly, team size is one more team factor that this thesis focuses on. Other team characteristics are not considered for this thesis in order to limit the complexity of the empirical data retrieval.

All of the selected factors are theoretically introduced and empirical studies are discussed in the following subchapters. When the discussion concludes with the insight that a particular aspect is not investigated in this research context, the findings from empirical studies are not transferable, or the results are equivocal, a hypothesis is stated.

### 7.4.2 The Effect of Cultural and National Diversity in Top Management Teams

While most of the reviewed literature focuses on cultural diversity, the explorative research of the thesis at hand investigates the impact of national diversity as a demographic factor. Before the discussion, a brief clarification of the two terms is necessary. In their investigation on the impact of the national and cultural origin of team members on firm performance, Earley and Mosakowski (2000) emphasise that nationality is likely to be most salient. Nationality defines communication patterns and implies meta-effects on individuals’ trait hierarchies. Therefore, I prefer nationality for the investigation. However, regarding the following literature review, I regard the findings on cultural diversity as related to the research topic of national diversity.

The academic literature provides only a small number of studies focusing on cultural diversity and its implication for firm performance (e.g. Hoffman, 1985; Richard, 2000; Richard, Barnett, Dwyer, and Chadwick, 2004; Richard, Murthi, and Ismail, 2007). Theoretical perspectives, as previously introduced, provide various explanation approaches for a positive (Richard, 2000; Richard, Murthi, and Ismail, 2007), negative (Pelled, 1996) or U-shaped (Richard, Barnett, Dwyer, and Chadwick, 2004) relationship between cultural diversity and firm performance.

In line with the diverse theoretical perspectives, empirical finding on the impact of cultural diversity on outcome are also unclear. Using racial diversity as an observable characteristic of cultural diversity, Richard, Murthi, and Ismail (2007) investigate 168 manufacturing firms in the United States. They find support for a negative relation between racial diversity and productivity but also a positive relationship between racial diversity and performance, measured via Tobin’s q. Investigating 153 US banks, Richard et al. (2004), determine a U-shape relationship between racial diversity and

The lack of research on a cultural context other than the US as well as the conflicting results from the empirical research in particular does not allow any transfer of existing knowledge about the topic under investigation. Proposition 4 of the explorative research phase suggests that diversity is positively related to firm performance. Accordingly, the following hypothesis is stated to test the preliminary findings in a more general setting.

Hypothesis 4.1: An increase in the diversity of the local top management team in terms of national origin is accompanied by an increase in the quality of dynamic capabilities.

This hypothesis is based on the implications of the knowledge-based perspective, which suggests a positive relationship between cultural diversity and firm performance (Richard, Murthi, and Ismail, 2007). Richard (2000; referring to Cox, 1994) mentions that a match between the demographic characteristics of a firm and its relevant customers is necessary for competitive advantages in the firm’s market environment. Thus, it is valid to assume that a diverse top management team better reflects the various markets to which the subsidiary may sell its products.

### 7.4.3 The Effect of Functional Diversity in Top Management Teams

Proposition 4 of the explorative case study research suggests that heterogeneity of the top management team members in terms of functional responsibility is positively related to firm performance. Reviewing the academic literature with regard to the impact of the responsibility of the top management team members on firm performance reveals two different research approaches. The first research approach relates the existence of certain functional responsibilities and areas of expertise in the top management team to firm performance without reference to heterogeneity (Gupta and Govindarajan, 1984; Norburn and Birley, 1988; Michel and Hambrick, 1992). The second research approach focuses on the heterogeneity of the functional background of team members. For this approach, the heterogeneity of functional responsibility in the top management team is assumed to impact firm performance. Hambrick and D’Aveni (1992) provide support for the insight that the functional expertise of the top
management team members directly reflects their capabilities. Following the resource-based view (Barney, 1991), heterogeneity of functional expertise that is in line with the functional responsibility increases the variety of knowledge resources in the top management team. Thus, heterogeneity in functional responsibility also increases the effectiveness of the team output and therefore team performance. As the explorative research phase provides support for a positive impact of the heterogeneity of functional backgrounds of the top management team members on firm performance, I adhere to the second approach.

However, the empirical research results are quite diverse. Investigating 53 high-tech or technology-intensive firms, Smith et al. (1994) do not find any significant relationship between functional background heterogeneity and firm performance. In contrast to this insight, Keck (1997) finds a positive relationship between functional heterogeneity of the top management team and firm performance in a study of 56 cement firms in turbulent market environments. Other authors also provide empirical support for a positive relationship between functional diversity of the top management team and firm performance or outcome (Keller, 2001; Bantel and Jackson, 1989).

Once again, the empirical findings are not easily transferable to the research context of this thesis as the context does matter (Keck, 1997). Most literature with empirical research in this field is based on investigations of organisations in the United States (Bantel and Jackson, 1989; Gupta and Govindarajan, 1984; Keck, 1997). To my knowledge, there is no academic literature in top-ranked journals on the impact of the heterogeneity of the functional responsibility of the top management team members.

In sum, there is no empirical research in the context of this thesis, and the empirical studies have yielded ambiguous findings. Thus, it is necessary to perform further research in this field. Following proposition 4, the following hypothesis is stated.

Hypothesis 4.2: An increase in the diversity of the local top management team in terms of functional background is accompanied by an increase in the quality of dynamic capabilities.

This hypothesis is based on the general assumptions suggested by the knowledge-based view of the firm, as this was done for hypothesis 4.1.
7.4.4 The Effect of Educational Diversity in Top Management Teams

Jehn, Northcraft, and Neale (1999) regard the educational backgrounds of team members as an important factor determining the informational background of the team members directly. Consequently, the education of team members has a direct impact on the available knowledge resource of the team. As mentioned earlier, the knowledge-based view of the firm suggests a positive impact of diversity on firm performance. This assumed relationship may also apply especially for the aspect of educational background of top management teams.

Empirical findings support a positive relationship between diversity of the top management team in terms of the educational background of its members and firm performance (Carpenter, 2000). Smith et al. (1994) also determine a positive relationship between educational heterogeneity and firm performance in a turbulent environment. Additionally, Bantel and Jackson (1989) find a significant positive impact of the education heterogeneity of the top management team members on innovation as a company outcome. However, Carpenter (2000) also identifies certain contextual factors (such as the internationalisation degree of the company) as significant moderating variables on the relationship between the educational heterogeneity among the top management team members and firm performance. Therefore, it is valid to assume that the general context of the firm impacts the effect of the heterogeneity of the top management team members in terms of their educational background.

To sum up, there is strong support from the academic literature for a positive impact of the educational diversity of the team members on firm performance. However, there is no empirical work in the Chinese context that allows the transfer of the existing knowledge to the research context of this thesis. Accordingly, it is necessary to conduct further research in this field.

The preliminary explorative research suggests a positive relationship between educational heterogeneity of the top management team and firm performance. Thus, the following hypothesis is stated:

Hypothesis 4.3: An increase in the diversity of the local top management team in terms of educational background is accompanied by an increase in the quality of dynamic capabilities.
This hypothesis reflects the findings of the explorative research phase as well as the results from the academic literature review. This hypothesis agrees with the knowledge-based view of the firm, which suggests a generally positive relationship between heterogeneity and firm performance.

### 7.4.5 The Effect of Career Experience Diversity in Top Management Teams

Hambrick and Mason (1984) provide support for the positive impact of executives’ career experience on a better understanding of how to deal with strategic opportunities and problems. This effect is comparable to the findings regarding the impact of the educational diversity of the members of the local top management team, as both factors directly shape the top management members’ knowledge base.

However, empirical research focusing on the impact of the diversity of career experience in the top management team on firm performance is rather scarce and also ambiguous. Based on an investigation of 53 high-technology firms in a turbulent environment, Smith et al. (1994) find a negative relationship between heterogeneous experience in industry and firms in the top management team and firm performance. Eisenhardt and Schoonhoven (1990) find support for a positive impact of the diversity in the industry experience of the top management team on firm growth.

In sum, to date there exists no empirical work on the impact of the diversity of the top management team in terms of career experience in the Chinese context. The context factors are assumed to impact the significance of career experience heterogeneity on performance, as this has been shown in empirical work about other factors as well (e.g. Carpenter, 2002). Therefore, it is necessary to conduct additional research with regard to this topic.

Following the resource-based and particularly the knowledge-based view of the firm, the diversity of the career experiences of the members of the local top management team enhances the variety of resources which the top management team can call upon. As the variety of knowledge resources is positively related to firm performance, the following hypothesis is stated.

**Hypothesis 4.4:** An increase in the diversity of the local top management team in terms of career experience is accompanied by an increase in the quality of dynamic capabilities.
With this hypothesis, I neglect other theoretical approaches that may suggest a negative relationship between the diversity of career experiences on firm performance (e.g. Jehn, Northcraft, and Neale, 1999) or a U-shape relationship (e.g. Blau, 1977: 79-80). This decision is based on the assumed similar effect of diverse career experience and a diverse educational background. As proposition 4 of the explorative research phase suggests a positive impact of educational background on firm performance, this view is adopted for the effect of diverse career experience of the top managers.

7.4.6 The Effect of Age Diversity in Top Management Teams

A significant number of academic studies focus on the effect of age diversity in a team on performance. Kilduff, Angelmar, and Mehra (2000) explain aspects of the knowledge-based view of the firm with an explicit focus on the effect of age diversity in teams. They claim that people of the same age show similar perspectives due to the fact that they are shaped through a comparable socialisation process, which results in equivalent experiences (Tsui, Egan, and O’Reilly, 1992; Wagner, Pfeffer, and O’Reilly, 1984). Teams which are characterised by high diversity in the age of their members also exhibit heterogeneity of experiences and perspectives (Dannfelder, 1987).

With regard to empirical research in this field, the findings and conclusions indicate diverse and contradicting effects of age heterogeneity in groups on performance.


Finally, Richard and Shelor (2002) regard the context of the research setting as having a significant impact on the relationship between age diversity of the top
management team and firm performance. In sum, research findings on the impact of age heterogeneity of the top management team on firm performance are contradictory. While context has a significant impact on the relationship, empirical work has concentrated on the American context. No research has been done on the Chinese context. Therefore, it is necessary to perform further research on this topic.

As age heterogeneity implies the heterogeneity of various other group factors (Dannfelder, 1987), it is valid here to draw upon the assumed effects of other demographic factors in the top management team. All of the hypotheses have been developed according to the suggestions of the resource-based view or, in particular, the knowledge-based view of the firm. Following this path, it is valid to assume a positive relationship between the diversity of the age of top managers and firm performance. The following hypothesis represents the assumed effect of age diversity in the top management team:

Hypothesis 4.5: An increase in diversity of the local top management team in terms of age is accompanied by an increase in the quality of dynamic capabilities.

With this hypothesis, I do not follow the suggestions from alternative theoretical approaches which suggest, for example, a U-shape relationship (e.g. Blau, 1977: 79-80) or a negative relationship (e.g. Jehn, Northcraft, and Neale, 1999). Following Dannfelder (1987), who states that age shapes experiences and perspectives, I assume that age heterogeneity may have a similar effect to, e.g., a diverse educational background, as the explorative research phase suggests a positive relationship between educational background and firm performance. Thus, it is valid to adopt this view and to assume the same relationship for age heterogeneity and firm performance.

7.4.7 The Effect of Team Tenure of Members in the Top Management Team

Demographic factors function as proxies for the measurement of diversity of underlying cognitive aspects (Hambrick and Mason, 1984; Kilduff, Angelmar, and Mehra, 2000). The academic literature indicates that those cognitive aspects are not static but dynamic in their characteristics according to the context of the group.

Michel and Hambrick (1992) provide support for the idea that the average tenure of a member in the top management team increases cohesion with the other group members. Katz (1982) remarks that long tenures in the same firm imply an
accumulation of same experiences. Same experiences among management team members result in the development of dominant logics in the top management team (Prahalad and Bettis, 1986) or comparable cognitive structures (Michel and Hambrick, 1992) among firm members. Accordingly, I presume that increasing team tenure aligns underlying cognitive aspects. The previous hypotheses rely on the resource-based view or, in particular, the knowledge-based view of the firm, which assumes a positive impact of diversity in terms of various factors on firm performance. From this perspective, increasing team tenure decreases the positive effects of diversity with regard to various team characteristics on firm performance.

Reviewing research which investigates the influence of team tenure on firm performance, I find that the impact of team tenure on the relationship between team diversity and firm performance has been generally neglected. Only Carpenter (2002) concentrates on this topic and concludes that top management team tenure negatively influences the relationship between diversity and firm performance, investigating 247 US-American large and medium-sized firms. Based on this insight, team tenure functions as a moderator for the relationship between team diversity and firm performance.

Reviewing literature about the direct effect of team tenure on firm performance may provide additional insights about the moderating effect, presuming that team diversity is beneficial for firm performance. However, the review reveals diverse findings. Several research contributions focusing on the influence of team tenure on firm performance determine a negative relationship in various industry and market contexts (Keck, 1997; Norburn and Birley, 1988; Zenger and Lawrence, 1989; Iaquinto and Fredrickson, 1997). Inconsistent with these findings, other studies provide support for a positive influence of team tenure on performance (Eisenhardt and Schoonhoven, 1990; Hambrick and D’Aveni, 1992; Michel and Hambrick, 1992; Pfeffer, 1983; Smith et al., 1994).

To date, the academic literature does not include any research in this field in the specific Chinese context. As Keck (1997) emphasises that context matters in the relationship of team tenure on firm performance, the existing findings are not transferable to the given research context. Additionally, the academic research does not provide any reliable and clear insights about the effect of team tenure. To sum up, it is necessary to conduct further research on this topic. The following hypotheses consider the theoretical perspective that team tenure leads to a decrease in cognitive diversity, which thus decreases the effects of diversity. Hence, all team characteristics
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upon which the hypotheses 4.1 to 4.5 focus on are addressed in the following five separate hypotheses:

Hypothesis 4.6: An increase in average tenure of members of the local top management team decreases the correlation between team diversity in terms of nationality and the quality of dynamic capabilities.

Hypothesis 4.7: An increase in average tenure of members of the local top management team decreases the correlation between team diversity in terms of functional background and the quality of dynamic capabilities.

Hypothesis 4.8: An increase in average tenure of members of the local top management team decreases the correlation between team diversity in terms of educational background and the quality of dynamic capabilities.

Hypothesis 4.9: An increase in average tenure of members of the local top management team decreases the correlation between team diversity in terms of career experience and the quality of dynamic capabilities.

Hypothesis 4.10: An increase in average tenure of members of the local top management team decreases the correlation between team diversity in terms of age and the quality of dynamic capabilities.

Based on the assumption that team tenure implies team cohesion as well as the alignment of cognitive values, I also assume that the diversity of the top management team in terms of team tenure has an effect. However, a comprehensive literature review reveals rather sparse knowledge about the effect of team tenure heterogeneity on firm performance. In his study, Carpenter (2002) maintains that team diversity in terms of team tenure has a negative effect on the return on assets in general but a positive one for teams with low average team tenure.

As previously discussed, the resource-based view and, in particular, the knowledge-based view suggest a positive effect of team diversity on firm performance.
and therefore also of team diversity in terms of team tenure. Members with a long tenure are assumed to show aligned cognitive values and a high level of experience with relevant processes of the top management team and the firm (Smith et al., 1994; Feldman, 1981). Team members with a short tenure demonstrate unaligned and thus diverse cognitive values and enhance the team through unbiased, fresh perspectives (Iaquinto and Fredrickson, 1997).

Hypothesis 4.11: An increase in the diversity of the local top management team in terms of team tenure is accompanied by an increase in the quality of dynamic capabilities.

With this hypothesis, I follow the implications from the theoretical consideration. The results from Carpenter (2002) stem from investigations of US-American companies, which are not easily transferable to the Chinese context (Keck, 1997).

7.4.8 The Effect of Team Size of the Top Management Team
Team size is recognised as a relevant factor for team demography (Amason and Sapienza, 1997; Blau, 1977: 19; Smith et al., 1994). Team size defines the potential for available resources (Hambrick and D’Aveni, 1992). The size of the group positively influences the cognitive capabilities (Amason and Sapienza, 1997; Haleblian and Finkelstein, 1993) or cognitive resources (Bantel and Jackson, 1989) as diversity among group members requires a certain team size (Amason, Sapienza, 1997; Bantel, Jackson, 1989; Smith et al, 1994; Wiersema, Bantel, 1992). Haleblian and Finkelstein (1993) argue that larger groups have higher problem-solving capabilities due to an increased ability to handle various information sources, enhanced critical judgement via various perspectives, and the ability to generate more strategic options. Along these lines, a considerable number of empirical research studies conclude a positive influence of team size on performance (Eisenhardt and Schoonhoven, 1990; Haleblian and Finkelstein, 1993; Hambrick, D’Aveni, 1992; Richard and Shelor, 2002).

However, a large team size may also be accompanied by negative effects such as coordination and communication problems (Haleblian and Finkelstein, 1993). Smith et al. (1994) point out that larger teams cause goal and information asymmetries among their members. As a result, formal bureaucratic control becomes necessary, especially in the case of short-tenured and diverse teams. The resulting coordination and control activities finally lead to lower performance (Smith et al., 1994). Daughen and Binzen
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(1971) support this view and also conclude a negative impact of team size on performance.

Goodman, Ravlin, and Argote (1986) provide another perspective as they find an inverted U-shape relationship of group size on effectiveness. They argue that small and large groups suffer from disadvantages.

In sum, the empirical findings are ambiguous. Additionally, the empirical studies are not conducted in the specific context of this thesis, namely, German manufacturing companies in China. As previously discussed, the knowledge-based view suggests a positive effect for diversity in team characteristics. Due to the fact that team size enables diversity, the following hypothesis is stated.

Hypothesis 4.12: As the number of members of the local top management team increases, the quality of dynamic capabilities also rises.

The hypothesis neglects negative impacts of big group sizes. However, the academic literature provides no concrete team size indicating the best trade-off between advantages and disadvantages.

7.5 Selection Characteristics and the Quality of the TMT Decision-Making Process

Proposition 5 of the explorative research phase suggests that the political behaviour of the actors involved in the decision-making process decreases subsidiary performance. This finding refers to the research regarding decision-making processes. A comprehensive review of the literature concerning decision-making processes indicates that various aspects of decision-making processes have been identified and researched. The academic literature in this field also provides numerous approaches to explain the effect of various process characteristics on performance. Characteristics of the decision-making process that have been investigated include, for example, the degree of comprehensiveness or rationality (e.g. Bourgeois and Eisenhardt, 1988; Dean and Sharfman, 1996; Elbanna and Child, 2007; Fredrickson and Mitchell, 1984; Goll and Rasheed, 1997; Jones, Jacobs, and Spijker, 1992; Papadakis, Lioukas, and Chambers, 1998), intuition (e.g. Eisenhardt, 1989b; Elbanna and Child, 2007; Khatri and Ng, 2000; Wally and Baum, 1994), formalisation (e.g. Baum and Wally, 2003; Papadakis et al., 1998) and political behaviour (e.g. Dean and Sharfman, 1996; Eisenhardt and Bourgeois, 1988; Elbanna and Child, 2007; Gandz and Murray, 1980;
Hickson, Miller, and Wilson, 2003; Papadakis, Lioukas, and Chambers, 1998; Pfeffer and Salancik, 1974).

The environmental and firm-internal contexts of the investigated organisations impact the effect of characteristics of the strategic decision-making processes in such a way that derived findings are not transferable to any context (Elbanna and Child, 2007; Goll and Rasheed, 1997; Papadakis, Lioukas, and Chambers, 1988). Regarding the Chinese context, Olson, Bao, and Paraytiam (2007) identify cultural differences between Chinese and US managers and conclude that decision-making processes differ significantly. However, their study focuses especially on the UK and US-national context, which indicates need for verification of findings in the Chinese context. To sum up, reliable empirical studies in the context of this study do not exist. Additional research is therefore indispensable to the generalisation and enhancement of the findings from the explorative research phase.

Elbanna (2006) identifies two basic models among the various research approaches in this field: The synoptic formalism model and the political incremental model (referring Goll and Rasheed, 1997; Johnson, 1988). Synoptic formalism is based on rational, formal analysis (Elbanna, 2006) and comprehensive planning (Camillus, 1982) as basic mechanisms. Political incrementalism represents an alternative model based on non-logical or intuitive elements. Some scientists regard this approach as an attempt to describe and operationalise practices they call *muddling through* (Elbanna, 2006; Lindblom, 1959). Some contributions note that this approach reflects how decisions are made in reality (Elbanna, 2006). Addressing both models would cover the entire spectrum of explanation models for decision-making processes, from an intuitive, political approach, on the one hand, to an analytically driven, planned approach, on the other hand. Accordingly, Elbanna (2006) suggests procedural rationality as a process dimension to address the synoptic formalism approach and intuition synthesis as well as political behaviour to reflect the political incremental approach. Elbanna and Child (2007) base their empirical work on this twofold approach and assert that their research on decision-making processes is thus comprehensive.

Proposition 5 of the explorative research phase suggests a negative impact of political behaviour on firm performance. The literature review complements the perspective of the explorative research phase by adding intuition to map the political incremental approach as suggested by Elbanna (2006). Following Elbanna (2006), rationality is introduced to account for the synoptic formalism model as an opposing explanation approach for the effects of the decision-making process.
The three process characteristics are theoretically introduced and discussed in the following sub-chapters. Hypotheses are developed when the literature review indicates that existing knowledge about the characteristics is equivocal or not transferable to the research context of this thesis.

7.5.1 The Effect of Political Behaviour on the Local Decision-Making Process

Proposition 5 of the explorative phase of this study suggests a negative impact of political behaviour on the decision-making process of the local top management team and thus also on firm performance. The following brief review of the existing theoretical and empirical literature enhances the understanding of this proposition.

The top management team is basically a coalition of people with competing interests due to, e.g., differing ideas about future goals and developments (Eisenhardt and Zbaracki, 1992) or satisfaction of personal needs (Mintzberg, Raisinghani, and Théorêt, 1976). Members of the top management team are assumed to react individually rationally but not collectively rationally (Eisenhardt and Zbaracki, 1992). Political behaviour entails the use of various political tactics by team members to assert their respective individual objectives in decision-making processes (Elbanna, 2006). These tactics are varied and include, for example, bargaining (Mintzberg, Raisinghani, and Théorêt, 1976; Cray, Mallory, Butler, Hickson, and Wilson, 1988), coalition or alliance formation (Child and Tsai, 2005; Elbanna, 2006), agenda control (Eisenhardt and Zbaracki, 1992), use of sheer power (Krishnan and Park, 2003) or manipulation of important information, use of external consultants, and timing (Elbanna, 2006). Decision-making processes with dominant political behaviour have the effect that the preference of the most powerful member prevails (Elbanna, 2006) at the expense of others (Amason, 1996; Eisenhardt and Bourgeois, 1988; Finkelstein, 1992). As a result, political behaviour in the decision-making process prevents the acceptance of different members and therefore also the utilisation of their various perspectives, perceptions, and opinions. However, the use of various knowledge resources is the key argument for superior performance according to the knowledge-based view of the firm (Barney and Wright, 1998; Pennings, Lee, and Witteloostuijn, 1998; Richard, Murthi, and Ismail, 2007).

The academic literature in the strategic decision-making process field offers further reasons for a negative impact of political behaviour on firm performance. Political tactics result in the distortion of information and restricts the flow of information. This effect leads to decisions which are based on incomplete information (Dean and
Sharfman, 1996; Elbanna, 2006). As a comprehensive information basis is relevant for good decisions and political behaviour decreases the comprehensiveness of information, political behaviour is assumed to negatively influence the outcome (Dean and Sharfman, 1996). Political tactics are time consuming due to their divisive effect which leads, especially in volatile markets, to a decrease of performance (Eisenhardt, 1989b).

Reviewing empirical studies about the impact of political behaviour on organisational outcome, I find that most contributions assume a negative relationship (Dean and Sharfman, 1996; Eisenhardt, Kahwajy, and Bourgeois, 1997; Elbanna and Child, 2007; Nutt, 1993).

In line with Elbanna and Child (2007), most of the empirical studies focus on the US-American context. To my knowledge, there is no research study focusing on German manufacturing companies in China. Hence, even if a strong assumption is warranted by the theoretical implications as well as empirical findings in other contexts, further research is still necessary. The following hypothesis reflects the findings from the explorative research phase as well as the results from the literature review:

Hypothesis 5.1: An increase in the level of political behaviour in the local top management team’s decision-making process is accompanied by a decrease in the quality of dynamic capabilities.

Elbanna and Child (2007) regard political behaviour as only one aspect of the political incremental approach. The complementary aspect, i.e., intuition, will be discussed in the following sub-chapter.

7.5.2 The Effect of Intuition on the Local Decision-Making Process

Besides political behaviour, the political incremental model also includes intuition as an important element (Elbanna, 2006). Intuition refers to incremental adaptations based on deep, intimate knowledge (Eisenhardt and Zbaracki, 1992) gained through experience and learning (Harung, 1993; Khatri and Ng, 2000). Vaughan (1989) defines intuition as a psychological function that allows comprehending a given situation in a comprehensive way. This effect is often accompanied by a strong subjective opinion about what is going to occur without any underlying rational explanation (Elbanna, 2006). Khatri and Ng (2000) characterise intuition as subconscious, complex, quick,
not emotional, and not biased. Based on their studies, they introduce the following three indicators of intuition synthesis: reliance on judgement, reliance on past experience, and use of so-called gut feelings.

Reliance on judgement refers to quick decision-making in the absence of adequate information and without experience with former comparable situations (Khatri and Ng, 2000). Daft and Lengel (1986) underline the importance of this approach under certain circumstances. They state that judgement is superior to computational routines when comprehensive analyses are not feasible. The second indicator, reliance on past experience, refers to the ability to utilise the knowledge which managers have gained over a long period of time through the frequently handling of problems in a certain context (Khatri and Ng, 2000). The third indicator, use of gut feelings, is often understood as a manifestation of intuition (Harung, 1993; Khatri and Ng, 2000; Vaughan, 1989). Elbanna (2006) states that managers have a strong attitude toward their own gut feelings. Gut feelings may be interpreted as emotions (Burke and Miller, 1999). Reasons for decisions based on gut feelings are not graspable (Schoemaker and Russo, 1993).

Elbanna and Child (2007) note that empirical work about the impact of intuition in decision-making processes on organisational outcome is very sparse. In fact, most academic contributions on intuition stem from psychological research studies (Khatri and Ng, 2000). In their study of 117 strategic decision-making processes in the Egyptian business context, Elbanna and Child (2007) do find no support for a significant relationship between intuition and decision effectiveness. Khatri and Ng (2000) investigate the impact of intuition on firm performance in the US-American banking, computer, and utility industries. In contrast to Elbanna and Child (2007), they find support for a positive impact of intuition on financial firm performance in unstable environments. However, in stable environments the relationship between intuition and firm performance is significantly negative.

The sparse empirical studies yield equivocal findings. To date, no research has been conducted in the specific context of this thesis. Therefore, it is necessary to conduct further research on the influence of intuition in the decision-making process of the local top management team on firm performance.

For the formulation of the following hypothesis, I basically follow Khatri and Ng’s (2000) perspective on the impact of intuition on decision-making processes in volatile market environments:
Hypothesis 5.2: An increase in the level of intuition in the local top management team’s decision-making process is accompanied by an increase in the quality of dynamic capabilities.

This hypothesis contrasts with Elbanna and Child’s (2007) conclusion as they focus on the impact of intuition on decision-making processes in rather stable market environments.

7.5.3 The Effect of Rationality on the Local Decision-Making Process

The synoptic formalism model, which assumes a rational decision making approach, is the logical opposite of the political incremental model, which explains decision making through political behaviour and intuition. The academic literature provides a significant number of theoretical as well as empirical contributions with a focus on the impact of rationality in the decision-making process.

Various research disciplines such as economics, business administration or psychology provide studies about rationality. Accordingly, the definitions of the term differ significantly (Dean and Sharfman, 1993a). Butler, for example, asserts that rationality is “the reason for doing something and to judge a behaviour as reasonable is to be able to say that the behaviour is understandable within a given frame of reference” (Butler, 2002: 226). Dean and Sharfman (1993a) research procedural rationality, which does not refer to individual human beings but to the whole process of decision-making. According to their view, rationality refers to the implementation of an intended logical chain of information retrieval, analysis, and a final choice to ensure the best possible process for decision-making (Dean and Sharfman, 1993a; Simon, 1978). With this approach, they solve the problem of truly objective rationality not being achievable in the real world due to the bounded rationality of the actors involved (Dean and Sharfman, 1993a; Elbanna, 2006). For this thesis, I follow Dean and Sharfman’s (1993a) argumentation. Accordingly, assessing decision-making processes in the field of strategic decision-making research, I regard rationality as procedural rationality.

A review of the empirical studies provides equivocal results about the impact of procedural rationality on firm performance. Some scientists find support for a positive relationship between rationality and organisational outcome or decision effectiveness (Dean and Sharfman, 1996; Elbanna and Child, 2007; Jones, Jacobs, and Spijker, 1992; Papadakis, Lioukas, and Chambers, 1998), especially in stable market
environments (e.g. Fredrickson, 1984; Fredrickson and Mitchell, 1984). For unstable market environments, the findings are contradictory. Some researchers conclude a positive influence of procedural rationality on performance (Bourgeois and Eisenhardt, 1988; Goll and Rasheed, 1997; Eisenhardt, 1989b), while others suggest a negative impact of rationality on outcome (Fredrickson and Iaquinto, 1989; Fredrickson and Mitchell, 1984).

Elbanna (2006) discusses the various and contradictory empirical findings. He concludes that the differing operationalisation of decision-making process variables as well as environmental variables, the varied cultural contexts of the research settings, the use of too simple models, methodological differences, various measurements of rationality, and the variations in the levels of analysis result in conflicting findings. In the same vein, Hough and White (2003) recognise that the context in which the decision-making process is embedded moderates the impact of rationality on decision quality. Papadakis, Lioukas, and Chambers (1998) provide further support for the influence of the organisational context on the decision-making process.

Most studies have been conducted in the US-American context (Elbanna and Child, 2007), and there is no significant empirical work in the Chinese context. The findings provided by the academic literature are not easily transferable to the research context of this thesis. Therefore, it is necessary to conduct additional research.

For the formulation of the corresponding hypothesis, I follow Eisenhardt (1989b) as well as Elbanna and Child (2007). Thus, I assume a positive influence of rationality on firm performance and thus also on the quality of the decision-making process of the local top management team:

Hypothesis 5.3: An increase in the level of rationality in the local top management team’s decision-making process is accompanied by an increase in the quality of dynamic capabilities.

This hypothesis opposes hypothesis 5.2, as hypothesis 5.3 emphasises the superiority of logical decision-making processes compared to rather intuitive approaches, where decision makers do not draw conclusions logically but according to gut feelings (Elbanna, 2006; Khatri and Ng, 2000).
7.6 Retention and the Quality of the Top Management Team's Decision-Making Process

Propositions 6 and 7 of the explorative research phase suggest a positive relationship between the pace as well as the frequency of product and process modifications on firm performance. The following literature review complements the findings of the explorative phase, using different theoretical lenses. Accordingly, hypotheses are developed to address unexplored topics or equivocal findings from previously conducted studies.

7.6.1 The Effect of Pace in the field of Resource Modifications

As noted by Hickson, Miller, and Wilson (2003), the academic literature focusing on decision-making processes provides few insights into the impact of decision speed on firm performance. The majority of the studies also focus only on the time needed for the decision itself without consideration of the time needed for the implementation of the decisions.

Jones, Lanctot, and Teegen (2001) as well as Baum and Wally (2003) find support for the idea that a high pace of decision making leads to an early adoption of products or practices. Early adoption, in a second step, can ensure competitive advantages. However, a high pace of decision making may also lead to a less comprehensive retrieval and processing of information sources (Baum and Wally, 2003, referring to Kahnemann, Slovic, and Tversky, 1982). In contrast to this insight, Eisenhardt (1989b) finds a positive relationship between the pace of decision making and the use of various information sources in volatile market environments. Priem, Rasheed, and Kotulic (1995) provide further support for this positive relationship.

A review research studies focusing on the influence of decision pace on firm performance reveals diverse findings: Some studies conclude a positive relationship between decision pace and firm performance in highly volatile environments (Baum and Wally, 2003; Eisenhardt, 1989b; Judge and Miller, 1991). Controversial findings are provided by Forbes (2001), who does not find a significant relationship between decision pace and performance for firms in dynamic markets.

An explanation for the equivocal findings is provided by Judge and Miller (1991). They find support for the influence of the environmental context on the relationship between decision speed and firm performance. The research studies reviewed predominantly focus on the US-American context. Chinese studies focusing on this
particular aspect do not exist. Additionally, research studies tend to focus on the time needed to formulate the decision without considering the time needed for its implementation. Research studies have yielded equivocal findings and the academic world has not reached consensus about the influence of the pace of decision making on firm performance. Thus, it is necessary to address these issues through further empirical research.

Proposition 6 provides support for a positive relationship between the speed of product and process modifications measured from the initial impulse triggering the decision-making process to the final implementation of decisions. In line with proposition 6, the following hypotheses are stated which focus on the impact of speed of either product or process modifications on the quality of the dynamic capability:

**Hypothesis 6.1:** The more quickly product innovations and enhancements are triggered, decided upon, and implemented, the higher the quality of dynamic capabilities becomes.

**Hypothesis 6.2:** The more quickly process modifications are triggered, decided upon, and implemented, the higher the quality of dynamic capabilities becomes.

These hypotheses are based on the preliminary findings of the explorative phase of this thesis. Preparatory interviews for this study and for the case study research also strengthen the idea that quick reaction is necessary for success and survival in the Chinese market. This implies that the ability to react to market adjustments quickly through fast modifications of products and processes is positively related to firm performance.

### 7.6.2 The Effect of Frequency of Resource Modifications

Garg, Walters, and Priem (2003), Duncan (1972) as well as Miller (1988) emphasise the importance of innovation activities for products and processes for firms in dynamic environments. If firms show disadvantages in this field, they “fall behind the frequent changes in products and practices common in such environments, and are likely to lose sales” (Garg, Walters, and Priem, 2003: 728). However, a high frequency of modifications does not automatically result in high performance. Zahra et al. (2006) remark that modifications of products and processes imply switching costs as well as
potential costs due to wrong adjustments. Nevertheless, with every modification conducted, the organisation learns to repeat innovative processes which ultimately leads to improved processes for perpetual modifications. Finally, it depends on the context of the firm in which managers have to balance switching costs through modifications against the costs of following market trends late or even not at all.

In sum, the academic literature provides some support for a positive relationship between the frequency of modifications and firm performance. However, the studies focus on the US-American context; thus, the findings are not easily transferable to the research context of this study. It is necessary to conduct further empirical research about this topic.

Proposition 7 provides support for the need for a high frequency of product and process modifications to compete in a dynamic environment. Accordingly, the following hypothesis is stated.

Hypothesis 6.3: The more frequently product innovations and enhancements are triggered, decided upon, and implemented, the higher the quality of dynamic capabilities becomes.

Hypothesis 6.4: The more frequently process modifications are triggered, decided upon, and implemented, the higher the quality of dynamic capabilities becomes.

With hypotheses 6.3 and 6.4, I address Duncan’s (1972) and Miller’s (1988) ideas that the number of innovations ensures sales in dynamic markets. However, in the context of this research, I regard the frequency of modifications as a necessary but not a sufficient characteristic for firm performance. Zahra et al. (2006) address the research topic of this study as they remark that it is not change per se that leads to firm performance but the way the change is conducted.

7.6.3 The Effect of the Firm’s Reactivity

Reflecting on hypotheses 6.1 to 6.4, which are developed from propositions 6 and 7 from the explorative research phase of this thesis, it becomes obvious that all four hypotheses aim at the ability to react to market changes relatively quickly compared to the firm’s competitors. Decision pace, addressed in hypotheses 6.1 and 6.2, as well as
decision frequency, addressed in hypotheses 6.3 and 6.4, aim at the reactivity of the subsidiary according to external impulses.

The academic literature provides few hints about the impact of reactivity. Studies focus, for example, on the impact of decision pace on firm performance (Baum and Wally, 2003; Eisenhardt, 1989b; Judge and Miller, 1991). However, there exist no studies focusing on the firm’s reactivity in volatile markets. It is necessary to address this topic through further empirical research.

Propositions 6 and 7 provide support for a positive impact of modification pace and frequency on firm performance. Accordingly, I assume a positive relationship between reactivity and firm performance and therefore the quality of the corresponding dynamic capability:

Hypothesis 6.5: The more quickly a firm reacts to market developments, the higher the quality of dynamic capabilities becomes.

With this hypothesis, the literature review and generation of hypotheses with reference to the decision-making process of the local top management team is complete. The following section addresses interfering processes of the parent company for the Chinese subsidiary, as expressed by level of autonomy.

7.7 Autonomy and the Quality of Influencing Processes of the Parent Company

As introduced in the explorative phase of this study, autonomy is seen as the “degree to which the foreign subsidiary of the [multinational company] has strategic and operational decision-making authority” (O’Donnel, 2000: 528). Focusing on the relationship between headquarters and subsidiaries or subsidiary networks, the academic literature provides a considerable number of contributions on various aspects of this field (e.g. Ambos and Schlegelmilch, 2007; Chang and Taylor, 1999; Garnier, 1982; Gates and Egelhoff, 1986; Hewlett, Roth, and Roth, 2003; O’Donnel, 2000; Roth and Nigh, 1992; Roth and O’Donnel, 1996). To enrich the preliminary findings of the explorative research phase with further theoretical insights, it is necessary to filter the vast number of theoretical perspectives and approaches provided by previous contributions.

The explorative research phase provides support for the idea that a certain configuration of autonomy in the field of product modification impacts subsidiary
performance. Product modification implies either smaller modifications such as enhancements or adaptations or fundamental modifications such as innovations of products. Ambos and Schlegelmilch (2007) refer to these two types of modifications in their discussion of the mandate and therefore the autonomy of research and development units. Thus, research and development units with the mandate to concentrate only on product enhancements or adaptations have lower autonomy than units which also take fundamental product innovations into account (Ambos and Schlegelmilch, 2007; Nobel and Birkinshaw, 1998).

In the context of this study, the discussion of autonomy in the field of product modifications basically refers to the question of the impact of conducting certain research activities and deciding on new products or processes either in the Chinese subsidiary or in the German competence centre and headquarters.

The explorative phase of this thesis reveals that the speed of decisions and their implementation is performance-relevant, especially in volatile environments (e.g. Baum and Wally, 2003; Eisenhardt, 1989b; Judge and Miller, 1991). The case study results suggest that the increase in autonomy for activities on site shortens the time needed from the initial start of the decision-making process until the retention of resulting decisions. Any involvement of the headquarters induces communication and coordination efforts at the expense of decision speed.

However, an alternative theoretical perspective is provided by resource dependency theory (Andersson and Forsgren, 1996). Resource dependency theory suggests that the entities of a multinational corporation depend on specific resources. Those are not easily transferable (Simonin, 1999; Miller, 2003; Szulanski and Jensen, 2006), especially when it comes to knowledge-related resources, which cannot be easily transferred due to their tacit nature (Fang, Wade, Delios, and Beamish, 2007). Entities of the multinational corporation are able to develop certain resources which other entities cannot (Andersson and Forsgren, 1996). Frost, Birkinshaw, and Ensign (2002) call those entities a centre of excellence, which “represent a superior set of capabilities within the firm such as equipment, licenses, and patents, and intangible resources such as knowledge and experience” (Frost, Birkinshaw, and Ensign, 2002: 1000). A centre of excellence is also a source of value creation, Thus, it influences the performance of the whole organisation (Frost, Birkinshaw, and Ensign, 2002).

The explorative research provides support for the idea that subsidiaries possess country-specific knowledge resources which enhance successful smaller modifications of products to match the requirements of the local market. The headquarters provides
the basic technology because it has knowledge resources which have been developed over a long period of time.

With reference to the preliminary findings of this study, it is worthwhile to further discuss activities in the field of product innovation and enhancement from the perspective of the resource dependency theory.

7.7.1 The Effect of Autonomy for Decisions about Product Adaptations

Proposition 8 suggests that the subsidiary’s autonomy in conducting product developments is positively related to subsidiary performance. This preliminary result finds further support from decision-making theory. Autonomy in product development activities implies short decision-making processes, which positively impact firm performance (e.g. Baum and Wally, 2003; Eisenhardt, 1989b; Judge and Miller, 1991).

Resource dependency theory, already introduced in earlier chapters, provides further support for this proposition. The specific exposure to the market environment enables the development of a unique configuration of knowledge as a valuable resource for firm success (Frost, Birkinshaw, and Ensign, 2002; Kogut and Zander, 1992, 1993; Tsai, 2001). This specific, locally adapted knowledge resource enables the firm to compete in the local market (Bartlett and Ghoshal, 1993; Frost, 2001; Hedlund, 1986; O’Donnel, 2000), for example, via adapted products which meet local market requirements.

However, the empirical research in this field uses the term autonomy rather as a comprehensive construct entailing various other elements such as pricing, communication policy, quality control, corporate finance or marketing (O’Donnel, 2000). A separate investigation of the impact of product enhancements has not been conducted. Thus, further empirical research is required for this topic.

The preliminary findings of the explorative research complemented through theoretical academic contributions support the idea that high autonomy for product enhancements or adaptations in the Chinese subsidiary implies two relevant effects. First, high autonomy enhances quick responses to market changes. Second, high autonomy facilitates the adaptations of products through the exploitation of unique knowledge of the local market in the Chinese subsidiary. Accordingly, the following hypothesis reflects the assumption developed.
Hypothesis 7.1: An increase in the level of autonomy to develop and decide upon product enhancements in the Chinese subsidiary is accompanied by an increase in the quality of dynamic capabilities.

This aspect impacts the sphere of influence of the decision-making processes of the parent company. High autonomy in the field of product development for the subsidiary means, in turn, low direct influence from the parent company.

### 7.7.2 The Effect of Autonomy for Decisions about Product Innovations

The advantages of local product enhancement may also apply to local product innovation. However, proposition 9 of the explorative empirical phase of this thesis suggests the opposite. The case study research reveals that autonomy in the field of fundamental product innovation is negatively related to subsidiary performance.

In contrast to this proposition, the academic literature mentions various motivations for the internationalisation of research and development centres (e.g. Hakanson and Nobel, 1993; Pearson, Brockhoff, and Boehmer, 1993). Organisations tend to increasingly spread research and development activities internationally. Unfortunately, there is little knowledge about the implication of research and development internationalisation and firm performance in the field of fundamental product innovation.

Thus, a closer look at the explorative phase is necessary. The case studies reveal that the set-up of research and development divisions to conduct innovation research is too complex. Managers claimed that Chinese competence centres cannot compete with the existing organisational competence centres, which are traditionally located in the country of the headquarters (Ambos and Schlegelmilch, 2007). Knowledge, as a resource that is not easily transferable, (Fang, Wade, Delios, and Beamish, 2007) brings about high transaction costs in the case of a full transfer of research and development centres to China.

Resource dependency theory suggests that the environment has a significant impact on the resource configuration of the organisational unit itself (Andersson and Forsgren, 1996). In the case of research and development activities, the labour market is a critical resource (Frost, 2001).

Interviews for the case study research show that the labour market in China is quite tense. Accordingly, it is costly to identify and train potential local researchers. The
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transfer of researchers from other locations results in transfer costs, even if better educated people tend to be more mobile (Ahn, de la Rica, and Ugidos, 1999).

Another aspect was mentioned during interviews of the case study research phase, namely, the attitude of German companies to protect the technology knowledge necessary for innovation. Chang and Xu (2008) identify significant spill-over effects, especially in terms of knowledge dispersion among Chinese companies through foreign direct investments in China. Accordingly, the establishment of increased control mechanisms to protect unintended knowledge transfers are additionally quite costly.

To date, there does not exist any empirical research on the impact of innovation research in the Chinese market. Accordingly, further research is necessary to gain insight into this topic.

In sum, the preliminary findings from the case study research phase complemented through the literature review suggest some support for a negative relationship between subsidiary autonomy and innovation research on site. The following hypothesis summarises the assumed relationship between the autonomy of innovation activities in the Chinese subsidiary and performance.

Hypothesis 7.2: An increase in the level of autonomy to develop and decide upon product innovation in the Chinese subsidiary is accompanied by a decrease in the quality of dynamic capabilities.

Hypotheses 7.1 and 7.2 refer to the autonomy as a characteristic aspect of the decision-making process of the parent company. Ultimately, the level of autonomy defines whether the local subsidiary or the German headquarters develops and decides about product modifications. Product modifications developed and decided upon in the German headquarters also impact the resource configuration of the local Chinese subsidiary, as they manufacture according to the product concepts.

7.7.3 The Effect of Autonomy on the Decision-Making Process of the Local Top Management Team

As the autonomy represents the “degree to which the foreign subsidiary of the [multinational company] has strategic and operational decision-making authority” (O’Donnel, 2000: 528), autonomy influences by definition the decision-making process of the local top management team. The local decision-making process is the
firm process which embeds the dynamic capability assumed to have the highest influence on firm performance. Accordingly, the level of autonomy influences the outcome of the decision-making process of the local top management team. I presume that the level of autonomy has therefore a moderating effect of the quality aspects of the local top management team and their influence on firm performance.

Focusing on empirical research in the field of decision making, the analyses concentrate only on domestic firms and not on subsidiaries owned by foreign parent companies (e.g. Elbanna and Child, 2007; Papadakis et al., 1998). Thus, there exist no investigations considering the influence of autonomy in their research on the decision-making processes. Thus, further empirical research is necessary. The following hypothesis reflects the assumed moderating influence:

**Hypothesis 7.3:** The level of autonomy of the Chinese subsidiary has a positive influence on the correlations between characteristics of the local decision-making process and the quality of dynamic capabilities.

The hypotheses with a focus on autonomy underline the complex interrelation of firm processes. On the one hand, the decision-making processes of the parent company influence the subsidiary’s configuration of resources and processes in a direct way, as assumed in hypotheses 7.1 and 7.2. On the other hand, autonomy has an indirect influence on the subsidiary through its influence on the decision-making process of the local top management team, as assumed in hypothesis 7.3.
8 Methodological Approach for the Empirical Survey

As introduced in part A of this thesis, the overall research design consists of two successive research phases. The first research phase comprises an inductive, explorative case study research in order to derive propositions which address the two research questions. Additionally, the propositions are used to develop a preliminary model combining and summarising the results from the case study research. In the second research phase, the deductive testing research phase, the propositions are complemented through an extensive literature review and further developed into hypotheses. The statistical testing of the hypotheses in a large sample generalises the findings and enhances the external validity (Scandura and Williams, 2000). The deductive testing research phase advances and tests the preliminary model through the development of a final comprehensive model.

To ensure the reliability of the findings from the empirical survey research, I briefly introduce the applied procedure as well as relevant details. The overall process, basically adopted from Black (1999: 27), is presented in Figure 14.

Figure 14: Research process for the empirical survey method (adapted from Black, 1999: 27).

The process starts with the development of hypotheses, described in the preceding chapter. The following sub-chapters address the remaining steps of the research process.

8.1 Sample Population

The sample population consists of the total number of companies that conduct manufacturing on site in China and which have a German parent organisation. For the identification of German manufacturing companies in China, I use the list of the German Chamber of Commerce in Shanghai. The German chamber claims to provide the most comprehensive publicly available database of German companies in China.
The database provides general contact information as well as contact persons and general information about the companies themselves. As of February 2008, the database included 3,282 German organisations with operations in China. From this total number, 1,158 entities which are representative offices, branches or project vehicles are deleted. Companies active in non-manufacturing industry sectors, such as trading (133), sales (16), civil engineering (52), food and beverages (31), raw materials (23), various services like consulting (143), IT services (49), logistics (79), education (32), architecture (18), banking and finance (36), marketing (18) as well as organisations in the tourism industry (25) or other service companies (32), are excluded. Furthermore, 107 companies which have less than 50 employees or more than 1,500 were excluded to address only medium-sized companies, as conducted for the case study research. An initial electronic mail contact led to the exclusion of 575 further companies for which no contact person with a valid electronic mail address exists. As a result, the total number of potential participants for the survey includes 755 companies that comply with the restrictions.

Distributed over four months, I sent seven invitations via electronic mail to 755 contact persons. The majority of the contact persons are members of the top management teams. The remaining people approached function as official contact persons who forward according inquiries to the top management. Each electronic mail included a brief description of the project as well as an invitation to participate in the survey. Six electronic mails were written in English language and one electronic mail in German or Chinese, depending on the name of the recipient. The high number of e-mails resulted from the weak responsive rate. Direct inquiries revealed that most managers receive several inquiries to participate in studies every week. Additionally, the overwhelming majority of the contact persons were Chinese managers who refuse to spend the necessary time and effort on a research project conducted by a researcher they have no personal relationship to and from a university they are not familiar with. Thus, I randomly selected 208 companies from the initial 755 in order to personally invite potential participants via telephone. An analysis of variances in the responses received shows no significant difference in relation to the approach of the participants: Neither the language nor the method used to invite potential participants influenced the responses received.

After completing the data collection, the total number of respondents was 74 of 755 potential companies, which represents a response rate of 9.8%. A revision of these responses finally resulted in the identification of 61 valid responses, which represents a total response rate of 8.1%. The thirteen responses that did not provide any
performance data or answered less than 70% of the questions were excluded. Appendix D presents the distribution of participants in terms of their primary industry sector, their ownership type, their regional location in China as well as their average turnover and number of employees in 2007. Analyses of variances show no significant difference between early and late responses. Armstrong and Overton’s (1977) discuss the identification and effect of non-response bias in surveys. Based on Pace (1939), they suggest that non-significant differences among early and late responses do not preclude the responses received from representing the entire accessed population. Accordingly, it is valid to assume that the responses received represent the overall population.

The questionnaire consists of various questions which were not answered by every respondent due to concerns of confidentiality. As a result, the number of valid responses differs for each statistical analysis conducted for this thesis. To ensure the explanatory power of the analyses, I follow Cohen’s (1992) suggestion and calculate the statistical power for each conducted analysis using a tool introduced by Faul, Erdfelder, Lang, and Buchner (2007). This procedure confirms that every analysis shows an acceptable statistical power of at least 90% (1-\(\beta\) value) when testing for large effect sizes. Thus, despite the relatively small response rate, the explanatory power is ensured. In sum, even if the number of responses is small, large effects are identified with an acceptable statistical power.

Following Kumar, Stern, and Anderson’s (1993) as well as Seidler’s (1974) key informant approach, the empirical study relies on questionnaires completed by one member of the local top management team for each participating company. This procedure is also suggested by Dean and Sharfman (1993a) as well as Huber and Power (1985), who favour the approach of the people with the highest knowledge with regard to the topic under study. Members of the top management team are most involved in the local decision-making process and are therefore key informants for this study. Retrieving survey data from only one individual as a representative of a company is a procedure that is used frequently in academic research (e.g. Brouthers, Brouthers, and Werner, 2000; Elbanna and Child, 2007; Goll and Rasheed, 1997; Hart and Banbury, 1994; Jones, Jacobs, and Spijker, 1992; Olson, Bao, and Paraytiam, 2007; Wally and Baum, 1994). The analysis of single respondent data has to be treated carefully as it may include systematic response bias (Elbanna and Child, 2007). However, Sabherwal and King (1995) show that even multiple-response data for each unit of investigation often rely on single respondents. Research in this field provides further support for the idea that single respondents highly correlate with multiple
respondents for every unit of analysis (Datta, Guthrie, and Wright, 2005; Elbanna and Child, 2007; Olson, Bao, and Paraytiam, 2007). Dess and Robinson (1984) as well as Daft, Sormunen, and Parks (1988) find that data from managers are reliable if objective data are not available. As a result, the procedure applied for this study is valid under the given circumstances.

8.2 Operationalisation of Variables and Questionnaire Design

The following sub-chapters operationalise the variables which are used for the testing of the assumed relationships and interdependences in the hypotheses.

8.2.1 Variables to Identify the Dynamic Capabilities with the Highest Impact on Performance

Hypotheses 1.1 and 1.2 refer to the relevance of certain dynamic capabilities with regard to their impact on subsidiary performance. Therefore, it is necessary to classify dynamic capabilities. For a proper assignment of dynamic capabilities to distinct classes, I utilise the various organisational groups or units that perform selection activities as the most important part of dynamic capabilities.

This approach, which was introduced in the explorative research phase, results in five types of processes embedding dynamic capabilities. First, dynamic capabilities are decision-making processes of the local top management team. Second, interfering and regulating processes of the German parent company also embed dynamic capabilities. Third, decision-making processes of the lower local management team embed dynamic capabilities. Fourth, processes on the operational level such as Kaizen-like approaches influence the firm’s resource configuration, which qualifies them also as processes embedding dynamic capabilities. Finally, I regard any other influencing process through other entities inside or outside the subsidiary as dynamic capabilities. The fifth class of processes subsumes all processes which are not explicitly mentioned.

Accordingly, the independent nominal variable group of dynamic capability consists of the nominal values local TMT decision-making processes for the decision-making process of the local top management team, German parent influencing processes for the influencing processes from the parent company, lower management decision-making processes for decision-making processes on the lower local management level, employees decision-making processes for decision-making processes on the employee level, and other influencing processes. The value other
influencing processes is introduced to include all other processes with impact on the resource and process configuration of the subsidiary.

To measure the influence of each group of dynamic capabilities, each survey participant was asked to estimate in percentage terms the relative impact of each class of dynamic capabilities on the firm’s performance. The dependent variable impact of dynamic capability is therefore a metric variable with values between zero and one hundred, representing the relative impact in percent. The values of all classes of dynamic capabilities add up to one hundred percent for each individual participant. The variable mean impact of dynamic capability represents the impact of the corresponding class of dynamic capabilities on firm performance as a relative value in percent.

8.2.2 Operationalisation of the Quality of Dynamic Capabilities

Dynamic capabilities are, according to the definition of this thesis, processes that reconfigure a firm’s resources and routines to cope with the environment. Adapted from Juran and Gryna, the quality aspect of dynamic capabilities refers to the “fitness for use” (Juran and Gryna, 1988: 2.8) of the dynamic capabilities in order to adjust the subsidiary’s resources and processes according to the environment. To measure the quality of dynamic capabilities, their fitness for use, subsidiary performance is an appropriate proxy. This operationalisation was introduced in the explorative research phase of this thesis.

According to Newbert (2008), three classes of performance measures are regularly used in the academic literature, namely, objective financial performance measures (e.g. Combs and Ketchen, 1999; Makadok, 1999; Robins and Wiersema, 1995; Russo and Fouts, 1997), subjective financial performance measures (Powell, 1992, 1995; Powell and Dent-Micallef, 1997), and subjective non-financial performance measures (e.g. Combs and Ketchen, 1999; Henderson and Cockburn, 1994; Yeoh and Roth, 1999).

As the firms in the dataset are private companies, the retrieval of objective financial data was difficult. However, in their investigation of the relationship between subjective and objective performance measures, Dess and Robinson (1984) conclude that subjective performance perceptions of top management team members highly correlate with objective firm performance measures. The same insight is also supported by Wall, Michie, Patterson, Wood, Sheehan, Clegg, and West (2004). Accordingly, it is valid to use subjective performance measures to conclude objective performance measures. In this vein, performance is measured via different measures.
based on subjective perceptions of top management team members. As the dynamic capabilities of a firm may follow the accomplishment of various performance goals, it is necessary to establish several performance measures. Using only one measure leads to a narrow perspective and neglects the firm’s complex strategic goals, which involve both financial and non-financial goals.

Delaney and Huselid (1996) operationalise firm performance via financial and non-financial performance perceptions. Financial performance subsumes the firm’s sales growth and profitability, while non-financial performance subsumes the firm’s market share and marketing. The constructs are highly reliable (Newbert, 2008) and are utilised by other researchers as well (e.g. Newbert, 2008; Perry-Smith and Blum, 2000; Richard, 2000). All four variables are measured via personal perceptions of the individual firm’s position in sales and profitability or marketing and market share in comparison to the major competitors in the years 2006 and 2007. The variables are positively coded through a five-point Likert scale, ranging from 1, much worse, to 5, much better.

A comprehensive, fifth performance measure is based on Dess and Robinson (1984) and focuses on overall performance, which also ranges from 1, much worse, to 5, much better.

Using five different measures for firm performance provides further insights into the distinct effects of dynamic capabilities. The five performance measures also represent the corresponding dependent variables for the hypotheses 2 to 7.

### 8.2.3 Measuring the Firm’s Scanning Emphasis

Hypotheses 2.1, 2.2, and 2.3 focus on the firm’s scanning emphasis in the external task sector, the customer sector, in particular, and the firm’s internal sector. According to Garg, Walters, and Priem (2003), Ebrahimi (2000), and May, Stewart, and Sweo (2000), the external task sector consists of the competitor sector, the customer sector as well as the supplier sector. Scanning emphasis on each sector is measured via the frequency with which the firm receives relevant information, as operationalised by Daft, Sormunen, and Parks (1988). This operationalisation measures the amount of information that flows from the external task environment into the firm (Hambrick, 1982). The frequency of information flows therefore functions as a proper proxy for the firm’s emphasis on receiving information.

The ordinal variables representing the scanning emphasis for each separate external task sector are positively coded with 1 “less than yearly or never”, 2 “yearly”, 3 “1/2
yearly”, 4 “1/4 yearly”, 5 “monthly”, 6 “weekly”, and 7 “daily”. The independent variable *scanning emphasis external task sector* is constructed as the sum of the scanning frequency for the competitor sector, the customer sector as well as the supplier sector for each case. The variable *scanning emphasis customer sector* directly results from the responses of the customer sector.

Internal scanning activities focus on the internal research and development activities, the firm’s financial management, and the local production. The classification of internal scanning sectors is adapted from Garg, Walters, and Priem (2003) and enhanced by results from the explorative phase of this thesis. For all internal sectors, the frequency of scanning activities is operationalised in the same way as for the external scanning sectors. The variable *scanning emphasis internal sectors* is the sum of the responses for the scanning frequency for the respective internal sectors.

### 8.2.4 Measuring the Generation of Alternatives

Hypotheses 3.1, 3.2, and 3.3 focus on local research and development activities as well as employees as sources for proposed alternative firm resource- and process-configurations. The corresponding variables and constructs result from the explorative research phase.

Concerning hypotheses 3.1 and 3.2, the two independent ordinal variables *local product adaptation R&D-efforts* and *local product enhancement R&D-efforts* represent the local research and development efforts for product adaptation and product enhancement. Both variables are positively codified via a five-point Likert scale from 1 “no efforts at all” to 5 “extensive efforts”.

With regard to hypothesis 3.3, the involvement of the firm’s employees is represented by the independent and ordinal variable *employee involvement*. The respondents were asked how often the local top management receives important input from the employees of the subsidiary. The variable is measured via five-point Likert scale items ranging from 1 “very seldom” to 5 “very often”.

### 8.2.5 Measuring Top Management Team Characteristics and their Diversity

Hypotheses 4.1, 4.2, 4.3, 4.4, 4.5, and 4.11 focus on the impact of the diversity of certain team characteristics on firm performance. For the measurement of team diversity, Blau’s measure of heterogeneity (Blau, 1977: 9) is widely accepted in management research (e.g. Bantel and Jackson, 1989; Carpenter, 2002; Keck, 1997;
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Kilduff, Angelmar, and Mehra, 2000; Richard, 2000; Richard, Barnett, Dwyer, and Chadwick, 2004; Richard, Murti, and Ismail, 2007; West and Schwenk, 1996). Blau’s measure for heterogeneity was introduced in the explorative research phase of this thesis (see Figure 7).

The following variables are constructed based on the measures of heterogeneity. For hypothesis 4.1, the diversity of the nationality in the local top management team is represented through the variable diversity of TMT nationality. The respondents were asked to state the nationality of each team member, which resulted in thirteen different nationalities. The values of this variable result from a categorisation of these responses. Accordingly, the value of the variable ranges from 0, for groups with members who come from the same nation, to 0.99, indicating a completely heterogeneous composition of team members in terms of nationality.

Concerning hypothesis 4.2, the variable diversity of TMT functional background measures the diversity of the functional background in the local top management team. The respondents were asked to state the responsibility of every top management team member, which resulted in 36 functional backgrounds. Accordingly, the value of the variable ranges from 0, for top management teams with members responsible for the same functional background, to 0.999, for highly diverse teams.

With regard to hypothesis 4.3, the variable diversity of TMT educational background represents the diversity of the educational background in the local top management team. For each team member the respondents were asked to select the educational background from a predefined list of potential educational backgrounds. The list includes fourteen different educational backgrounds, ranging from “none”, “apprenticeship”, “bachelor” and “master” degrees in “business”, “economics”, “engineering”, “law”, and “others”, to “MBA” or “Ph.D. degree”. The classification is adapted from Smith et al. (1994) as well as Wiersema and Bantel (1992). The value of the variable ranges from 0 to 0.99, with 0.99 representing the theoretical maximum of group heterogeneity for this characteristic.

Concerning hypothesis 4.4, the diversity of career experience is represented by the variable diversity of TMT career experience. For each member of the local top management team, the respondents were asked to specify where the member worked before he joined the local top management team of the respective subsidiary. The respondents chose from among four different options: “this plant”, “other plant” in the current company, “other company” or “others” for any other activity. This classification is based on Smith et al.’s (1994) approach. The value of the variable
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ranges from 0, for perfect homogeneity, to 0.94, for the maximum diversity in this characteristic.

The diversity of age in the local top management team, as stated in hypothesis 4.5, is represented by the variable *diversity of TMT age*. The respondents were asked to specify the age category for each top management team member. The questionnaire provided 11 options in 5-year increments, ranging from “younger than 20 years” up to “older than 65 years”. The value of this variable ranges from 0, for teams with members who are all in the same age category, to 0.99, which represents the maximum heterogeneity.

Regarding hypothesis 4.11, the variable *diversity of TMT team tenure* represents the diversity of team tenure in the local top management team. The respondents were asked to specify the tenure category for every member of the local top management team. The available options ranged from “less than 6 months”, “6-12 months”, “1 year”, “2 years”, up to “10 years” and to “more than 10 years”. The operationalisation of this variable was inspired by Mooney, Holahan, and Amason (2007). The value of the variable ranges from 0, if all members have the same tenure, to 0.99, if every team member is different in terms of team tenure to every other team member.

Besides hypotheses focusing on the diversity of certain characteristics in the top management team, there are hypotheses that focus on other characteristics. Concerning hypotheses 4.6 to 4.10, the moderating variable *TMT average team tenure* represents the average tenure of members of the local top management team. The variable is calculated as the sum for all team tenures for each individual team member divided by the total number of team members. This operationalisation is based on Carpenter (2000).

Regarding hypothesis 4.12, the total size of the top management team is operationalised through the variable *TMT team size*. Following Mooney, Holahan, and Amason (2007) as well as Smith et al. (1994), this variable is measured by the total number of members of the top management team.

### 8.2.6 Operationalisation of Decision-Making Process Characteristics

Hypotheses 5.1, 5.2, and 5.3 focus on characteristics of the decision-making process of the local top management team. The characteristics under investigation are political behaviour, intuition, and rationality.

According to Dean and Sharfman (1996), political behaviour is a construct of impact of individual goals versus organisational goals, openness to others with respect
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to interests and preferences, the use of power to influence decisions, and, finally, the effect of negotiation in decision-making processes. Each sub-item is covered by a separate question which the respondents had to answer on a five-point Likert scale. The questions and the Likert scale items were taken from Dean and Sharfman (1996). The values of the responses for the four questions are summed to obtain the value for the constructed variable *political behaviour*, which represents political behaviour in the local top management team. The validity of the construct is positively tested by Dean and Sharfman (1996).

To measure the influence of intuition on the decision-making process, Khatri and Ng (2000) construct the variable *intuition* from three sub-items, namely, reliance on personal judgement, dependence on “gut feelings”, and emphasis on past experience. The three sub-items were measured by questions with five-point Likert scales. The questions and scales were taken from Khatri and Ng (2000). The variable intuition results from summing the values for the three sub-items. The validity of this construct is tested by Elbanna and Child (2007).

Concerning the measurement of the variable *rationality*, which is the last characteristic of the local decision-making processes, a construct of six sub-items was operationalised according to Dean and Sharfman (1996). Accordingly, rationality is defined by the extent of information search, the extensiveness of the analysis of retrieved information, the importance of analytical techniques for decision support, the analytical level of the overall decision-making process, the ability to effectively focus attention on crucial information, and, finally, the ability to effectively ignore irrelevant information. The design of the questions as well as the range of answers was adopted from Dean and Sharfman (1996). For every sub-item, a five-point Likert scale is used. The value for the variable rationality results as the sum of its sub-items. The validity of this construct is, again, tested by Elbanna and Child (2007).

8.2.7 Assessing Retention Characteristics

Hypotheses 6.1, 6.2, 6.3, 6.4, and 6.5 focus on the speed and frequency of product and process modifications. Concerning hypotheses 6.1 and 6.2, the respondents were asked to estimate the numbers of weeks for the decision on and implementation of product innovations, product enhancements, and process modifications. The responses represent the value for the variables *speed of product innovations*, *speed of product enhancements*, and *speed of process modification*. The measure is based on Baum and Wally (2003). To ensure a positive coding of the variables, the number of weeks was
multiplied by -1. This modification ensures that a higher value of the variables also means a higher pace.

Concerning the hypotheses 6.3 and 6.4, decision and implementation frequencies were operationalised in a comparable way. The respondents were asked to estimate the total number of product enhancements, the number of product innovations as well as the number of process modifications for the year 2007. The responses yielded the values for the corresponding variables number product enhancements, number product innovations, and number process modifications.

With regard to hypothesis 6.5, the reaction pace of the subsidiary is relatively measured. Respondents were asked to assess the reaction pace of their own subsidiary on relevant market developments in comparison to their major competitors in the Chinese market. Therefore, the respondents selected from a five-point Likert scale, ranging from 1, “rather slow”, to 5, “rather quick”. The response represents the value of the according variable reaction pace.

8.2.8 The Operationalisation of Subsidiary Autonomy

Hypotheses 7.1, 7.2, and 7.3 focus on the autonomy of the Chinese subsidiary. While hypotheses 7.1 and 7.2 assume an impact of specific decision autonomies in the field of product enhancement and innovation, hypothesis 7.3 relates to the impact of overall autonomy on the local decision-making process.

Based on studies by Egelhoff (1988), Inkson, Pugh, and Hickson (1970) as well as Pugh, Hickson, Hinings, and Turner (1968), O’Donnel (2000) develops a list of sixteen items that represent the autonomy of a subsidiary. Processing the findings of the explorative research phase modifies the proposed list of fields in which the measure of autonomy is necessary to determine the overall subsidiary autonomy. The final list includes eleven items: the autonomy to decide on the introduction of product innovations, the introduction of product enhancements, changes in product price, adjustments of production processes, the selection of material suppliers, the change in communication policy, adjustments of production schedules, quality control decisions, the selection of target group or markets, changes in organisational structures of the subsidiary, and changes in corporate finance. In line with O’Donnel (2000) and based on Ghoshal, Korine, and Szulanski (1994) as well as Ghoshal and Nohria (1989), the respondents were asked to assess autonomy in each separate field on a five-point Likert scale, ranging from 1, “parent company decides alone”, to 5, “Chinese
subsidiary decides alone”. The variable *autonomy* results from the sums of the eleven items for every respondent.

In contrast to other constructs, the conducted modification may impact the internal validity of the autonomy construct. Cronbach’s alpha (Black, 1999; Cronbach, 1951) measures the internal validity of constructed variables. With a Cronbach alpha value of 0.8512 for the constructed variable autonomy, this construct is beyond 0.7, which is usually identified as sufficient minimum value. Thus, the modified construct is internally valid, despite the modifications and adjustments of the construct.

The variables for hypotheses 7.1 and 7.2, namely, *product enhancement autonomy* and *product innovation autonomy*, are sub-items of the variable *autonomy* and range from 1, “parent company decides alone”, to 5, “Chinese subsidiary decides alone”.

### 8.2.9 Operationalisation of Necessary Control Variables

Regardless of what context a given study focuses on, context itself has been identified by the literature as having an impact on the organization and its processes (Aldrich and Pfeffer, 1976; Francis, 1992; Henderson, 1994; Hirsch, 1975). Thus, many authors emphasise the need for an integrative research approach that considers context in an explicit way (e.g. Bateman and Zeithaml, 1989; Bryson and Bromiley, 1993; Rajagopalan, Rasheed, and Datta, 1993; Schneider and De Meyer, 1991; Schwenk, 1995). Elbanna and Child (2007) structure influencing factors on the relationships of models under investigation into external environmental characteristics and internal firm characteristics. Based on this insight, the most important influencing factors in the internal and external context are identified and operationalised.

With regard to external context characteristics, the academic literature identifies a number of impacting influencing factors such as hostility (Elbanna and Child, 2007), uncertainty (Goll and Rasheed, 1997) or market dynamism (Priem, Rasheed, and Kotulic, 1995). However, the findings regarding their relevance and impact are contradictory (Papadakis, Lioukas, and Chambers, 1998). McGahan and Porter (1997), Schmalensee (1985), as well as Rumelt (1991) maintain that the industry in which a given company is active is the most relevant among all external contextual moderators. Baum and Wally (2003) use industries to cluster environmental dynamism. Additionally, Dess and Beard (1984) note a certain relationship between industry and dynamism. Other authors also use industry as a proxy for a considerable number of external context factors, e.g., Fredrickson and Mitchell (1984), Keck (1997), Lenz (1981), Murray (1989) as well as Papadakis, Lioukas, and Chambers (1998).
Accordingly, industry is the most important control variable with a focus on the external environment in performance research (Murphy, Trailer, and Hill, 1996).

Following these findings, it becomes necessary to introduce a control variable which represents the industrial context. Based on Chen and Hu (2002), the industries are classified according to their technology level. Accordingly, the variable *industry type* is 0 for low-tech industries such as construction, textiles, apparels, wood products, furniture products, paper products, rubber and plastic, leather products, primary metal products, and other metal products. For high-technology markets, such as precision mechanics, chemical products, plant engineering, machinery, equipment, electronics, electrical goods, automotive and suppliers, optics, and telecommunication products, the variable *industry type* is 1. The classification of single industries is taken from the American Standard Industrial Classification, as used by Chen and Hu (2002) or McGahan and Porter (1997).

With regard to the internal characteristics of the firm, Baum and Wally (2003) remark that a considerable number of academic contributions suggest a relationship between firm size and organisational practices. Accordingly, firm size is a surrogate for firm complexity. Murphy, Trailer, and Hill (1996) provide further support for the relevance of this influencing factor as they identify this variable as the most recognised control in firm performance research. Hence, it is necessary to introduce the control variable *firm size*. In line with Baum and Wally (2003), firm size is calculated as the log transform of full-time employees of the year 2007.

Other academic contributions suggest further moderating variables that may impact the relationships of the tested models, such as entry mode (Chen and Hu, 2002; Agarwal and Ramaswami, 1992), location (Pantzalis, 2001), corporate control (Papadakis, Lioukas, and Chambers, 1998) or subsidiary age (Durand and Coeurderoy, 2001). However, extensive model tests and regression analyses with these variables lead to the insight that none of these factors increases the significance level of the investigated models. Therefore, these factors are not further considered.

### 8.2.10 Questionnaire Design

The data retrieval was conducted via an internet questionnaire which was available on a specific web page. This method ensured easy access to the questionnaire form as well as a quick response time after completion. In addition, the responses were directly available for analysis. The distribution of the questionnaire among a large number of potential participants was relatively cheap (Couper, 2000) and matched the financial
restrictions of this research project. Alternatively to the questionnaire on the web site, respondents were able to request the questionnaire in an electronic file format (pdf) which I sent via electronic mail.

The questionnaire design follows the suggested guidelines from Babbie (1990: 127-132) as well as Couper, Traugott, and Lamias (2001). All constructs used in the survey are taken either from tested surveys or from the findings of the case study research phase. Accordingly, the questionnaire is reliable and valid (as suggested by Babbie, 1990: 132-135).

To avoid any distraction, the internet questionnaire was displayed without any additional visual elements, graphics, or interactive features which might have biased responses (Couper et al., 2001). The internet form was designed in such a way that the whole document was accessible on one web page; thus, the respondent had a direct overview of the type and the number of questions. The design of the form resembled a normal paper questionnaire to enhance the acceptance of the form itself.

Before starting the survey, the questionnaire was extensively pre-tested in a two-step approach. In a first step, the design and content of the questionnaire was tested by university faculty members and doctoral students. In a second step, based on a preliminary version of the questionnaire, there was an additional review by seven experts who either belong to the group of potential respondents or who have direct business contact with potential respondents and know their attitudes and perceptions. This procedure of pre-testing ensured the feasibility and integrity of the questionnaire to guarantee, on the one hand, valid data and, on the other hand, an acceptable response rate.

The questionnaire was published in English and Chinese. Both questionnaires are presented in Appendix E and Appendix F. Analyses of variances revealed that there is no significant difference between datasets retrieved from the English or Chinese questionnaires. This ensured that the language itself does not have any effect on the responses. With regard to the translation from English to Chinese, the initial translation was independently checked by two other people. All people involved in the translation process are native Chinese speakers and speak English fluently.

8.3 Selection of Statistical Analysis Techniques and Analysis Process

All variables used for this research phase are quantitative. Two different statistical analysis techniques are applied due to the nature of the according various hypotheses.
Focusing on the hypotheses 1.1 and 1.2, the independent variables are nominal while the respective dependent variables are metric. To test the significance and impact of the various dynamic capabilities on firm performance, one-way analyses of variance (e.g. Gelman and Hill, 2007: 487; Backhaus, Erichson, Plinke, and Weiber, 2003: 10) are applied. The analysis of variance indicates whether the mean values of different groups are significantly different. Accordingly, the analysis of variance method ensures a proper and valid classification of various dynamic capabilities according to their impact on firm performance. Shook, Ketchen, Cycyota, and Crockett (2003) as well as Scandura and Williams (2000) note that the analysis of variance technique is quite common in the field of academic management research.

All other variables used to map relationships of the remaining hypotheses are operationalised as metric variables. Multilevel linear regression analyses are a valid approach to test the remaining hypotheses, either using simple or multiple linear regression models (e.g. Gelman and Hill, 2007: 31-33). Linear regression models describe the linear relationship between the average values of one dependent variable and the average value of at least one or more independent variables (Gelman and Hill, 2007: 31). Regression analyses are widely used and accepted (Scandura and Williams, 2000; Shook, Ketchen, Cycyota, and Crockett, 2003).

However, the applicability of regression models for the respective case requires the fulfilment of relevant preconditions. Backhaus, Erichson, Plinke, and Weiber (2003: 78) specify seven methodological factors to ensure the explanatory power of the regression analysis. First, the regression models must be properly specified, which is ensured through visual plot analyses. Second, the mean value of the residuals of the regression models must be zero, which is checked through the calculation of the mean values for each regression. Third, there must be no correlation between any independent variable and the residuals of the regression models, which is ensured through an analysis of the correlation matrix for every regression. Fourth, the residuals of the regression models must have a constant variance. This characteristic is called homoscedasticity and is ensured through the application of the Breusch-Pagan test for every regression model. Fifth, the independent variables must be without any autocorrelation, which is tested through the application of the Durbin-Watson test for every regression. Sixth, an independent variable must not be the product of any other independent variable. This characteristic is called non-multicolinearity and is ensured through the analysis of the correlation matrices as well as through mutual regression analyses among the independent variables for every regression. Finally, the residuals
have to be normally distributed, which is ensured through the application of the Shapiro-Wilk test for every regression.

The compliance of every regression model with the additional tests of the seven characteristics ensures unbiased and efficient independent variables (Backhaus, Erichson, Plinke, and Weiber, 2003: 79) and therefore also reliable results for the analyses. However, the linear regression model is quite robust so that even small violations of the conditions mentioned lead to valid results. Any violation is discussed in the corresponding presentation of the regression results.

Moderating effects of variables, such as those theorised in hypotheses 4.6 to 4.10 and 7.3, are tested through hierarchical moderated regression analyses, which follow procedures from Darrow and Kahl (1982) as well as Frazier, Tix, and Barron (2004). For the hierarchical regression analysis, only those linear regression models are chosen for which a significant relationship between independent and dependent variables has been tested beforehand. For the analysis, each selected regression model is expanded by another variable construct which operationalises the moderating effect. The variable construct is the product of the potentially moderating variable with the independent variable whose relationship may be moderated (Baron and Kenny, 1986). In the case of a significant improvement of the fit of the model, a subsample analysis provides further insight into the effect of moderation (e.g. Amason and Sapienza, 1997; Broughers, Broughers, and Werner, 2000; Elbanna and Child, 2007; Goll and Rasheed, 1997). The two subgroups are separated through the median value of the moderating variable (as suggested by Elbanna and Child, 2007). Based on this, a further regression analysis of the two separated groups allows a comparison of the factors of the independent and moderated variable, which specifies the moderating effect.
9 Empirical Findings from the Deductive Testing Research Phase

This chapter presents the findings from the statistical analysis of the data retrieved from the survey. The following analysis is structured according to the stated hypotheses.

9.1 Identification of Dynamic Capabilities with Major Impact on Firm Performance

Hypothesis 1.1 assumes that the decision-making process of the local top management team is the dynamic capability with the highest influence on subsidiary performance. Hypothesis 1.2 specifies that interfering and regulating processes from the German parent company have the second greatest impact on the subsidiary performance. Table 14 presents the mean impact of each group of dynamic capabilities on firm performance. Accordingly, the decision-making process of the local top management team influences 44.32% of the firm’s performance through decisions on the firm’s configuration of resources and processes. The second most important dynamic capability, interfering and regulating processes from the German parent company, explain 30.02% of the subsidiary’s performance. Other potential classes of dynamic capabilities are much lower with regard to their impact on the firm’s performance. The processes on the lower management level explain 13.83% of the firm’s performance, while processes on the employee level impact 8.25%, and all other processes impact 3.58% of the firm’s performance.

<table>
<thead>
<tr>
<th>group of dynamic capability</th>
<th>mean impact of dynamic capability</th>
<th>variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>local TMT decision-making processes</td>
<td>44.32%</td>
<td>570.47</td>
</tr>
<tr>
<td>German parent influencing processes</td>
<td>30.02%</td>
<td>522.95</td>
</tr>
<tr>
<td>lower management decision-making processes</td>
<td>13.83%</td>
<td>100.62</td>
</tr>
<tr>
<td>employee decision-making processes</td>
<td>8.25%</td>
<td>250.96</td>
</tr>
<tr>
<td>all other influencing processes</td>
<td>3.58%</td>
<td>150.92</td>
</tr>
</tbody>
</table>

Table 14: Mean impact and variance of various dynamic capability groups.
The analysis of variance of the relationship between the groups of dynamic capabilities and their impact on firm performance reveals a very high significance level of below 0.001, as shown in Table 15. Consequently, the classification of dynamic capabilities into the five groups is valid and results in a highly significant explanatory power for the impact of the groups on firm performance. It is valid to assume that the mean impact of the decision-making process of the local top management team on firm performance is the highest. The analysis also indicates that the mean impact of the German parent company is the second highest among all groups of dynamic capabilities.

<table>
<thead>
<tr>
<th></th>
<th>Df</th>
<th>Sum Sq</th>
<th>Mean Sq</th>
<th>F Value</th>
<th>Significance Pr (&gt;F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>group of dynamic</td>
<td>4</td>
<td>68230</td>
<td>17058</td>
<td>570.47</td>
<td>&lt; .001</td>
</tr>
<tr>
<td>capabilities residuals</td>
<td>295</td>
<td>94160</td>
<td>319</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 15: Testing the significance of the dynamic capability groups for hypotheses 1.1 and 1.2.

To sum up, the comparison of mean values of the impact of the groups of dynamic capabilities and the analysis of variance support hypotheses 1.1 and 1.2.

### 9.2 Identification of Quality Aspects of Information Retrieval Activities

Hypotheses 2.1, 2.2, and 2.3 assume a positive relationship between the emphasis of scanning activities in the external task sector (hypothesis 2.1), the customer sector in particular (hypothesis 2.2), and the internal sectors (hypothesis 2.3) on the quality of dynamic capabilities. As previously discussed, the quality of dynamic capabilities is measured by the five performance factors of overall performance, profitability, sales growth, market share, and marketing.

Table 16 presents the results of the ordinary least squares linear regression analysis of model 2.1, which relates scanning emphasis on the external task sector with the five performance measures. The analysis supports a significantly positive relationship (unstandardised β-value of 0.1079, p ≤ 0.05) between scanning emphasis (scanning emphasis external task sector), measured by the frequency of information flows, and profitability (profitability). The value for the adjusted R² shows that the model
explains 11.4% of variance. Other performance factors are not influenced by the scanning emphasis on the external sector. Nevertheless, the analysis provides support for hypothesis 2.1.

Table 16: Testing hypothesis 2.1, the impact of scanning emphasis on the external task sector on firm performance measures.

Table 17 presents the results of the ordinary least squares linear regression model 2.2, which tests hypothesis 2.2. The result provides support for the findings from the case study research as well as the theoretically derived conclusions: Scanning emphasis on the customer sector (scanning emphasis customer sector) is positively and significantly related to profitability (profitability) (unstandardised $\beta$-value of 0.2475, $p \leq 0.05$). The model fit is acceptable, with a value of 11.95% for the adjusted $R^2$ value. In sum, the findings provide support for hypothesis 2.2.
Table 17: Testing hypothesis 2.2, the impact of scanning emphasis on the customer sector on firm performance measures.

Table 18 shows the results from the regression analysis of model 2.3 to test hypothesis 2.3. The findings suggest a positive and significant relationship between scanning emphasis for the internal firm sectors (scanning emphasis internal sector) and overall performance (overall performance) (unstandardised $\beta$ value of 0.0684) as well as profitability (profitability) (unstandardised $\beta$ value of 0.0841) of the subsidiary on a 10% significance level. The adjusted $R^2$ value for the impact of scanning emphasis on the internal sector on overall performance suggests an acceptable model fit with 26.48%. The model fit for the impact on profitability is rather low, with 5.29%. The results of the analysis provide support for hypothesis 2.3.
The Quality Aspect of Dynamic Capabilities

To sum up, the analyses support the assumed positive relationship for scanning emphasis on the external sector (hypothesis 2.1), the customer sector in particular (hypothesis 2.2), and the internal sector (hypothesis 2.3) on firm performance.

### 9.3 Identification of Quality Aspects of Variation Activities

Hypothesis 3.1 assumes that the focus of local research and development activities for product adaptations is positively related to the quality of dynamic capabilities. In the same vein, hypothesis 3.2 assumes a positive correlation between the focus of local research and development activities for product enhancements and the quality of dynamic capabilities. Table 19 shows the results for the analysis of the corresponding linear regression models testing hypothesis 3.1 and 3.2. For this analysis, only subsidiaries with local research and development activities are selected. As a result, a rather low number of 36 responses represent the dataset for this analysis.

The analysis provides support for a significantly positive impact of the efforts to enhance products through local research and development activities (local product enhancement R&D-efforts) on the overall performance (overall performance) (unstandardised β value of 0.2439, p ≤ 0.1). Additionally, the analysis also identifies a significantly positive impact of local product enhancement R&D-efforts on profitability (profitability), with very high significance (unstandardised β value of
0.6516, p ≤ 0.001). The analysis also provides support for a significant and positive relationship of local product enhancement R&D-efforts on marketing performance (marketing) as a non-financial performance measure with high significance (unstandardised β value of 0.4962, p ≤ 0.01). The model fit is quite high for the analysis of overall performance (adjusted R² value of 41.87%), profitability (adjusted R² value of 39.03%), and marketing (adjusted R² value of 27.19%).

With respect to the impact of efforts in the field of product adaptation (local product adaptation R&D-efforts), the analysis does not support any significant relationship on any performance measure. As a result, the findings provide support for hypothesis 3.2 as the results suggest a positive and significant relationship between local research and development activities on enhancement efforts but not on adaptation activities. Regarding hypothesis 3.1, no significant relationship has been identified, which results in rejection of the hypothesis.

However, the analysis yields highly significant findings and very good model fits. Accordingly, the identified effects are quite strong.

<table>
<thead>
<tr>
<th>model 3.1/2</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
</tr>
</thead>
<tbody>
<tr>
<td>overall performance</td>
<td>0.0244</td>
<td>-0.0741</td>
<td>-0.1905</td>
<td>-0.0963</td>
<td>-0.0713</td>
</tr>
<tr>
<td>profitability</td>
<td>0.2439  *</td>
<td>0.6516 ***</td>
<td>0.2828</td>
<td>0.2178</td>
<td>0.4962 **</td>
</tr>
<tr>
<td>sales growth</td>
<td>0.0169</td>
<td>-0.0082</td>
<td>-0.0040</td>
<td>-0.0109</td>
<td>-0.0321</td>
</tr>
<tr>
<td>market share</td>
<td>-0.4831 *</td>
<td>0.4527</td>
<td>-0.4695</td>
<td>-0.5642</td>
<td>-0.3706</td>
</tr>
<tr>
<td>marketing</td>
<td>0.3459  *</td>
<td>0.0808</td>
<td>0.1489</td>
<td>0.4413</td>
<td>0.3892</td>
</tr>
<tr>
<td>multiple R²</td>
<td>0.5018</td>
<td>0.4774</td>
<td>0.2082</td>
<td>0.1869</td>
<td>0.3759</td>
</tr>
<tr>
<td>adjusted R²</td>
<td>0.4187</td>
<td>0.3903</td>
<td>0.0762</td>
<td>0.0545</td>
<td>0.2719</td>
</tr>
<tr>
<td>F</td>
<td>6.042</td>
<td>5.481</td>
<td>1.578</td>
<td>1.403</td>
<td>3.614</td>
</tr>
<tr>
<td>n</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
<td>36</td>
</tr>
</tbody>
</table>

Table shows unstandardized regression coefficients from OLS regression analysis.
Significance: ‘****’ p ≤ 0.001, ‘***’ p ≤ 0.01, ‘**’ p ≤ 0.05, ‘*’ p ≤ 0.1

Table 19: Testing hypotheses 3.1 and 3.2, the impact of research and development efforts in the field of product adaptation and enhancement on firm performance measures.
Besides local research and development activities, the explorative phase also suggests that the employee involvement in terms of suggestions represents a valuable source of variations in the local decision-making process. Hypothesis 3.3 assumes a positive relationship between the degree of involvement of employee suggestions on the quality of dynamic capabilities. Table 20 presents the results for the corresponding analysis. The regression analysis indicates that there is no significant relationship between the involvement of employees (employee involvement) on any performance measure under consideration of the control variables. The findings do not support hypothesis 3.3.

<table>
<thead>
<tr>
<th>model 3.3</th>
<th>(1) overall performance</th>
<th>(2) profitability</th>
<th>(3) sales growth</th>
<th>(4) market share</th>
<th>(5) marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>employee involvement</td>
<td>-0.0254</td>
<td>-0.1123</td>
<td>-0.0847</td>
<td>-0.1569</td>
<td>0.0017</td>
</tr>
<tr>
<td>autonomy</td>
<td>0.0193</td>
<td>0.0118</td>
<td>-0.0044</td>
<td>-0.0122</td>
<td>-0.0076</td>
</tr>
<tr>
<td>industry type</td>
<td>-0.4314 °</td>
<td>-0.0417</td>
<td>-0.5943</td>
<td>-0.7566</td>
<td>-0.5007</td>
</tr>
<tr>
<td>firm size</td>
<td>0.4602 **</td>
<td>0.3702 °</td>
<td>0.3876</td>
<td>0.6179</td>
<td>0.6003 **</td>
</tr>
</tbody>
</table>

| multiple R² | 0.2974 | 0.1044 | 0.1196 | 0.2052 | 0.1685 |
| adjusted R² | 0.2400 | 0.0313 | 0.0477 | 0.1389 | 0.0992 |
| F | 5.185 | 1.428 | 1.664 | 3.097 | 2.431 |
| n | 54 | 54 | 54 | 53 | 53 |

Table shows unstandardized regression coefficients from OLS regression analysis. Significance: '***' p ≤ 0.001, '**' p ≤ 0.01, '*' p ≤ 0.05, '°' p ≤ 0.1

Table 20: Testing hypothesis 3.3, the impact of employee involvement on firm performance measures.

To sum up, only local research and development efforts with a focus on product enhancements are positively related to various firm performance measures, as assumed in hypothesis 3.2. The findings do not support hypotheses 3.1 and 3.3.

### 9.4 Identification of Quality Aspects Related to Top Management Team Characteristics

Hypotheses 4.1, 4.2, 4.3, 4.4, 4.5, 4.11, and 4.12 assume a positive relationship between the diversity of nationality (hypothesis 4.1), functional background
(hypothesis 4.2), educational background (hypothesis 4.3), career experience (hypothesis 4.4), age (hypothesis 4.5), and team tenure (hypothesis 4.11) of the members of the local top management team on the quality of dynamic capabilities. For the analysis, all listed team characteristics are tested in one common linear regression model (model 4). On the one hand, this approach analyses the relationship of an independent variable to its dependent variable under simultaneous consideration of other independent variables. This procedure may lead to mutual influence of independent variables which, in an extreme case, may lead to inverse results due to so-called suppressor variables (Conger, 1974). On the other hand, this procedure ensures a holistic insight into the optimal structure of a team in terms of its influence on the quality of dynamic capabilities. With the decision to test all variables in one common model, I follow the established practice in management research (e.g. Richard et al., 2007; Richard et al., 2004; Carpenter, 2002; Kilduff et al., 2000).

The results are summarised in Table 21. Preparatory interviews revealed that the respondents of the survey perceived the specification of team characteristics as quite sensitive. Accordingly, only 47 subsidiaries provided valid responses for this analysis. However, while the results are valid, it is necessary to emphasise that they only indicate very strong effects among the tested variables (Cohen, 1992). In total, the characteristics of 195 top managers are considered for this analysis.

The regression analysis show that the diversity of the local top management team in terms of nationality (diversity of TMT nationality) is not positively related to performance, as assumed in hypothesis 4.1, but negatively. Regarding overall performance of the subsidiary (overall performance) and marketing performance (marketing), the relationship is on a significance level of 10% (unstandardised β value of -1.0188 for overall performance, -1.2858 for marketing). The analysis shows a high significance level of 5% for a negative impact of national diversity on sales growth of the subsidiary (sales growth) (unstandardised β value of -2.0118) and a highly significant impact on the profitability of the subsidiary (profitability) (significance of 0.1%, unstandardised β value of -2.5175). As a result, the analysis does not support hypothesis 4.1, which assumes a positive relationship between team diversity in terms of national origin and performance. However, the results do provide support for a negative relation.
In the same vein, the diversity of educational background (\textit{diversity of TMT educational background}) is not positively but negatively related to firm performance in terms of growth of sales (\textit{sales growth}) on a significance level of 1\% (unstandardised β value of -2.0533). The diversity of the educational background of the local top management team (\textit{diversity of TMT educational background}) is also negatively and significantly related to marketing performance (\textit{marketing}) on a 1\% significance level (unstandardised β value of -1.7907). The analysis supports the opposite of hypothesis 4.3, which suggests a positive relationship between the diversity of educational background of the members of the top management team on firm performance as a measure for the quality of dynamic capabilities.

Focusing on the impact of diversity in terms of team tenure (\textit{diversity of TMT team tenure}), the analysis indicates a positive impact (unstandardised β value of 2.6588) on
profitability of the subsidiary \((\text{profitability})\) on a very high significance level of 0.1%. The diversity of team tenure does not impact any other performance measures. Nevertheless, the analysis provides strong support for hypothesis 4.11.

Regarding the remaining assumed relationships, the analysis suggests no impact of the diversity of the members of the local top management teams in terms of functional background \((\text{diversity of TMT functional background})\), career experience \((\text{diversity of TMT career experience})\) or age \((\text{diversity of TMT age})\). The analysis also does not provide support for any significant impact of the size of the local top management team \((\text{TMT team size})\). Therefore, hypotheses 4.2 (assuming a positive relationship between diversity of functional background and the quality of dynamic capabilities), 4.4 (assuming a positive relationship between diversity of career experience and the quality of dynamic capabilities), 4.5 (assuming a positive relationship between diversity of age and the quality of dynamic capabilities), and 4.12 (assuming a positive relationship between team size and the quality of dynamic capabilities) have to be rejected.

The regression models identifying the impact of team characteristics on overall performance, profitability, sales growth, and marketing show remarkably high model fits (ranging from 30.59% for the explanation of sales growth to 42.4% for the explanation of overall performance). This high model fit further strengthens the relevance of the significant variables of the models.

\[
\begin{array}{|c|c|c|c|c|}
\hline
\text{moderator:} & \text{(1)} & \text{(2)} & \text{(3)} & \text{(4)} & \text{(5)} \\
\text{TMT average} & \text{overall} & \text{profitability} & \text{sales} & \text{market} & \text{marketing} \\
\text{team tenure} & \text{performance} & & \text{growth} & \text{share} & \\
\hline
\Delta R^2 & 0.004 & 0.023 & \textbf{0.072} ^* & — & 0.028 \\
\Delta F & 0.322 & 0.888 & 2.600 & — & 0.945 \\
\hline
\end{array}
\]

Table shows \(\Delta\)-values for \(R^2\) and \(F\) for the hierarchical regression from regression model 4 (regression step 1) to regression model 4 with additional moderator constructs for every significant independent variable (regression step 2).

Significance: "****" \(p \leq 0.001\), "***" \(p \leq 0.01\), "**" \(p \leq 0.05\), "*" \(p \leq 0.1\)

Table 22: Testing the moderating impact of variable \(\text{TMT average tenure}\) on significant relationships between team characteristics and firm performance measures.

Hypotheses 4.6 to 4.10 assume a negative moderating influence of the average team tenure of the local top management team on the relationship between various team diversity factors and firm performance. Concerning team diversity, all previously
investigated relationships are included such as the diversity of nationality, functional and educational background, career experience, and age. As the previous analysis suggests no significant impact of any diversity characteristic on market share, this model is excluded from the test of hypotheses 4.6 to 4.10. Additionally, hypotheses 4.7, 4.9, and 4.10 are not tested as they assume a significant relationship between diversity in terms of functional background, career experience or age and firm performance. However, the tests for hypotheses 4.2, 4.4, and 4.5 do not support the assumed correlation. The remaining models are tested for a significant improvement in the model fit by adding the moderating variable. Table 22 shows the results of the hierarchical regression analysis. Accordingly, only sub-model 3, relating team heterogeneity to sales growth, shows a significant model improvement (+7.2%) on a significance level of 10%. With regard to the other sub-models, adding the moderating variable construct does not imply any significant improvement in the model fit.

<table>
<thead>
<tr>
<th></th>
<th>low average team tenure</th>
<th>high average team tenure</th>
<th></th>
<th>low average team tenure</th>
<th>high average team tenure</th>
</tr>
</thead>
<tbody>
<tr>
<td>sales growth</td>
<td>-0.8399</td>
<td>-5.7121***</td>
<td>sales growth</td>
<td>-2.3382</td>
<td>-0.8651</td>
</tr>
<tr>
<td>multiple R²</td>
<td>0.5961</td>
<td>0.8767</td>
<td>multiple R²</td>
<td>0.5961</td>
<td>0.8767</td>
</tr>
<tr>
<td>adjusted R²</td>
<td>0.0128</td>
<td>0.7165</td>
<td>adjusted R²</td>
<td>0.0128</td>
<td>0.7165</td>
</tr>
<tr>
<td>F</td>
<td>1.022</td>
<td>5.472</td>
<td>F</td>
<td>1.022</td>
<td>5.472</td>
</tr>
<tr>
<td>n</td>
<td>23</td>
<td>24</td>
<td>n</td>
<td>23</td>
<td>24</td>
</tr>
</tbody>
</table>

Table shows unstandardized regression coefficients from OLS regression analysis. Significance: ‘****’ *p ≤ 0.001, ‘***’ *p ≤ 0.01, ‘**’ *p ≤ 0.05, ‘*’ *p ≤ 0.1

Table 23: Comparative analysis of the impact of the moderating variable average team tenure on the impact of national as well as educational heterogeneity of the local top management team for hypotheses 4.6 and 4.8.

The further analysis concentrates on the model relating team heterogeneity to sales growth. According to Table 21, the diversity of the team in terms of national origin (diversity of TMT nationality) and educational background (diversity of TMT educational background) has a significant and negative impact on sales growth. Splitting the dataset at the median of the team tenure and testing the impact of the
independent variables on sales growth reveals differences in the $\beta$ value and therefore in the effect of the moderation construct.

Table 23 shows the results of the analysis. Contradicting hypothesis 4.6, team tenure increases the impact of diversity of team member national background on sales growth. The analysis shows that the $\beta$ factor decreases from -0.8399 for teams with a low average tenure to -5.7121 for teams with a high average tenure. With increasing average team tenure, the negative impact of national heterogeneity on sales growth increases as well.

The second analysis in Table 23 focuses on the influence of average team tenure on the relationship between team heterogeneity in terms of educational background and sales growth. The average team tenure decreases the negative effects of this team characteristic on sales growth and provides support for hypothesis 4.8. The $\beta$ factor decreases from -2.3382 for groups with a relatively low average team tenure to -0.8651 for groups with a relatively high average team tenure.

As a result, the hierarchical regression analysis provides support for hypothesis 4.8, while it suggests the opposite of the assumed relationship in hypothesis 4.6. While team tenure weakens the negative effect of educational heterogeneity on sales growth, it strengthens the negative effect of national heterogeneity.

### 9.5 Identification of Quality Aspects of Selection Activities

Hypotheses 5.1, 5.2, and 5.3 focus on the impact of political behaviour, intuition, and rationality in the decision-making process on the quality of dynamic capabilities.

Table 24 shows the results of the corresponding regression analysis. The analysis reveals a positive impact ($\beta$ value 0.0895) of process rationality ($\text{rationality}$) on the overall firm performance ($\text{overall performance}$) on a very high significance level of 0.1%. The fit of the regression model (38.38% for the adjusted $R^2$) emphasises the relevance of process rationality to explain the overall subsidiary performance. Process rationality is also positively related ($\beta$ value 0.0204) to the firm’s growth in sales ($\text{sales growth}$) on a significance level of 5%. However, the explanatory power of the regression model is very low (4.86% for the adjusted $R^2$). The analysis provides support for hypothesis 5.3, which assumes a positive relationship between rationality and the quality of dynamic capabilities.
9.6 Identification of Quality Aspects of Retention Activities

Hypotheses 6.1 to 6.4 assume a positive impact of the speed and frequency of product and process modifications on the quality of dynamic capabilities. Hypothesis 6.5 suggests a positive relationship between reaction pace on market developments and the quality of dynamic capabilities. All of these hypotheses focus on the time needed to conduct a complete decision-making process, the frequency of outcomes of this process, and the resulting reactivity of the firm to environmental changes.

Table 25 presents the results of the linear regression models for the analysis of hypotheses 6.1 and 6.2. Pre-tests of the survey uncovered a certain level of reservation in estimating the pace of various modifications from the initial identification...
(information) to the final implementation (retention). As a result, the response rate of 41 is not very high.

Table 25: Testing hypotheses 6.1 and 6.2, the impact of speed of product enhancements and innovations as well as process modifications on firm performance measures.

The analysis provides support for a positive impact (β value 0.0754) of the speed of product enhancements (speed of product enhancements) on marketing performance (marketing) on a 10%-level of significance. The explanatory power of the model is acceptable, with 12.54% (value of the adjusted R²). With regard to the speed of product innovations (speed of product innovation) and process modifications (speed of process modifications), the analysis provides no support for a significant impact on any performance measure. In sum, the analysis provides partial support for hypothesis 6.1, as only the speed of product enhancements is positively related to marketing as a performance measure.
Table 26: Testing hypotheses 6.3 and 6.4, the impact of the number of product enhancements and innovations as well as process modifications on firm performance measures.

Table 26 shows the results of the linear regression models for the analysis of hypotheses 6.3 and 6.4. Similarly to the test of hypotheses 6.1 and 6.2 (Table 25), the response rate is remarkably low, with only 39 valid responses. This is, again, a result of the high level of reservation among the survey respondents, as identified in pre-tests of the questionnaire.

The number of product innovations that are ultimately implemented (number of product innovations) is positively and significantly related (β value 0.0705) to the overall performance of the subsidiary (overall performance) on a significance level of 10%. The explanatory power of the model is high, with an adjusted R² value of 33.34%. Additionally, the number of product enhancements (number of product enhancements) has a positive and significant impact (β value 0.0134) on firm performance in terms of marketing (marketing). The relationship is on a significance level of 10%, but the explanatory power of the model is rather low, with 13.06% (value of the adjusted R²).
Regarding the impact of the number of process modifications (number of process modifications), the analysis does not provide support for a significant impact on any performance measure. As a result, the analysis only supports hypothesis 6.3.

Table 27: Testing hypothesis 6.5, the impact of reaction pace on firm performance measures.

Table 27 shows the results for the linear regression analysis to test hypothesis 6.5. The analysis reveals remarkably strong support for the hypothesis. The positive impact of reaction pace of the subsidiary (reaction pace) on the overall performance (overall performance, β value 0.2874), profitability (profitability, β value 0.3521) as well as the marketing performance of the subsidiary (marketing, β value 0.35) is highly significant on a 0.1% level. Additionally, the reaction pace of the subsidiary (reaction pace) is also positively and significantly related to the market share of the subsidiary (market share, β value 0.2615) on a significance level of 1%. The explanatory power of each sub-model in model 5 with a significant impact of reaction pace ranges from 20.57% to a remarkable 47.54% (value of the adjusted R²). To sum up, the analysis provides strong support for a positive relationship between reaction pace and firm performance measures and therefore also for hypothesis 6.5.
9.7 Identification of Quality Aspects of Influencing Processes of the Parent Company

Hypotheses 7.1 and 7.2 focus on the influence of the German parent company on the Chinese subsidiary. The degree of autonomy is a characteristic which is assumed to impact the quality of the related dynamic capability. Hypothesis 7.1 assumes a positive impact of subsidiary autonomy in the field of product adaptations and enhancements on the quality of dynamic capabilities. Hypothesis 7.2 suggests a negative influence of autonomy in the field of product innovation.

Table 28 shows the results of the linear regression model to test hypotheses 7.1 and 7.2. The analysis shows a negative influence of autonomy in terms of product enhancements \( (product\ enhancement\ autonomy) \) on the growth of sales \( (sales\ growth, \beta\ value\ -0.315) \) and the market share of the subsidiary \( (market\ share, \beta\ value\ -0.3849) \) on a significance level of 5\%. The analysis also reveals a negative impact \( (\beta\ value\ -0.2831) \) of autonomy in the field of product enhancements \( (product\ enhancement\ autonomy) \) on the marketing performance of the subsidiary \( (marketing\ performance) \) on a significance level of 10\%. With regard to the explanatory power of the sub-models, the value of the adjusted \( R^2 \) ranges from 9.08\% to 15.5\%. The results do not support hypothesis 7.1.

The analysis of the autonomy in the field of product innovation \( (product\ innovation\ autonomy) \) does not reveal a significant relationship to any firm performance measure. The analysis does not provide support for hypothesis 7.2.
Table 28: Testing hypotheses 7.1 and 7.2, the impact of autonomy in product enhancement and innovation on firm performance measures.

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Overall Performance</th>
<th>Profitability</th>
<th>Sales Growth</th>
<th>Market Share</th>
<th>Marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product enhancement autonomy</td>
<td>-0.0485</td>
<td>0.0553</td>
<td>-0.3150 *</td>
<td>-0.3849 *</td>
<td>-0.2831 *</td>
</tr>
<tr>
<td>Product innovation autonomy</td>
<td>0.1089</td>
<td>-0.0134</td>
<td>0.1350</td>
<td>0.2268</td>
<td>0.1752</td>
</tr>
<tr>
<td>Industry type</td>
<td>-0.4340 *</td>
<td>-0.0963</td>
<td>-0.5770</td>
<td>0.7022 *</td>
<td>-0.4894</td>
</tr>
<tr>
<td>Firm size</td>
<td>0.4010 *</td>
<td>0.3674</td>
<td>0.4041</td>
<td>0.5264 *</td>
<td>0.5250 *</td>
</tr>
<tr>
<td>Multiple R²</td>
<td>0.1877</td>
<td>0.0735</td>
<td>0.1581</td>
<td>0.2176</td>
<td>0.1873</td>
</tr>
<tr>
<td>Adjusted R²</td>
<td>0.1240</td>
<td>-0.0006</td>
<td>0.0908</td>
<td>0.1550</td>
<td>0.1222</td>
</tr>
<tr>
<td>F</td>
<td>2.946</td>
<td>0.992</td>
<td>2.348</td>
<td>3.476</td>
<td>2.880</td>
</tr>
<tr>
<td>n</td>
<td>56</td>
<td>55</td>
<td>55</td>
<td>55</td>
<td>55</td>
</tr>
</tbody>
</table>

Table shows unstandardized regression coefficients from OLS regression analysis. Significance: '***' p ≤ 0.001, '**' p ≤ 0.01, '*' p ≤ 0.05, '°' p ≤ 0.1

Hypothesis 7.3 assumes a positive moderating effect of autonomy on the relationship between any significant characteristic of the decision-making process of the local top management and the quality of dynamic capabilities. Significant characteristics of the decision-making process of the local top management team are those that are tested for the hypotheses 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.11, 4.12, 5.1, 5.2, 5.3, 6.1, 6.2, 6.3, 6.4, and 6.5.

The hierarchical regression analysis starts with an analysis of the impact of the moderating construct on the regression models under investigation. Therefore, in the first step, only models with a significant relationship between any characteristic of the decision-making process of the local top management team and firm performance are selected. In a second step, the selected models are extended by adding another variable construct. The added construct operationalises the moderation effect of autonomy on the significant relationship of any independent variable to performance measures. The hierarchical regression analysis shows those models which are significantly improved by the additional variable construct.

Table 29 shows the results of the hierarchical regression analysis. The models reference the corresponding models in previous regression analyses to test the above-mentioned hypotheses. The results indicate a significant improvement in the impact of
scanning emphasis on the internal sector on overall performance (model 2.3) on a 1% significance level, with an improvement of 0.12 of the $R^2$ value. Additionally, the analysis identifies a significant impact of autonomy on the relationship of reaction pace to marketing (model 6.5) on a 10% significance level, with an improvement of 0.038 of $R^2$. With regard to the other models, the additional moderating variable construct does not lead to significant improvement.

Table 29: Identification of models with a significant improvement through adding the moderating autonomy variable construct.

<table>
<thead>
<tr>
<th>moderator; autonomy</th>
<th>(1) overall performance</th>
<th>(2) profitability</th>
<th>(3) sales growth</th>
<th>(4) market share</th>
<th>(5) marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>model 2.1</td>
<td>$\Delta R^2$</td>
<td>0.016</td>
<td>0.947</td>
<td>0.031</td>
<td>9.909</td>
</tr>
<tr>
<td>model 2.2</td>
<td>$\Delta R^2$</td>
<td>0.026</td>
<td>1.584</td>
<td>0.031</td>
<td>1.835</td>
</tr>
<tr>
<td>model 2.3</td>
<td>$\Delta R^2$</td>
<td>0.120 **</td>
<td>0.031</td>
<td></td>
<td></td>
</tr>
<tr>
<td>model 3.1/2</td>
<td>$\Delta R^2$</td>
<td>0.030</td>
<td>0.005</td>
<td>1.835</td>
<td>1.031</td>
</tr>
<tr>
<td>model 3.3</td>
<td>$\Delta R^2$</td>
<td>0.003</td>
<td>0.018</td>
<td>0.227</td>
<td>1.380</td>
</tr>
<tr>
<td>model 4</td>
<td>$\Delta R^2$</td>
<td>0.005</td>
<td>0.042</td>
<td>2.395</td>
<td>0.108</td>
</tr>
<tr>
<td>model 5</td>
<td>$\Delta R^2$</td>
<td>0.005</td>
<td>0.042</td>
<td>2.395</td>
<td>0.108</td>
</tr>
<tr>
<td>model 6.1/2</td>
<td>$\Delta R^2$</td>
<td>0.002</td>
<td>0.042</td>
<td></td>
<td>0.009</td>
</tr>
<tr>
<td>model 6.3/4</td>
<td>$\Delta R^2$</td>
<td>0.002</td>
<td>0.042</td>
<td></td>
<td>0.009</td>
</tr>
<tr>
<td>model 6.5</td>
<td>$\Delta R^2$</td>
<td>0.004</td>
<td>0.028</td>
<td>2.460</td>
<td>0.038 °</td>
</tr>
</tbody>
</table>

Table shows $\Delta$-values for $R^2$ and $F$ for the hierarchical regression from corresponding regression model (regression step 1) to regression model with additional moderator construct for every significant independent variable (regression step 2).

Significance: ‘***’ $p \leq 0.001$, ‘**’ $p \leq 0.01$, ‘*’ $p \leq 0.05$, ‘°’ $p \leq 0.1$
To analyse the effect of the moderation for model 2.3 and model 6.5, the dataset is divided into high- and low-autonomy groups. Table 30 presents the results from the linear regression analysis of the two separated sets. The results provide support for the idea that with increasing autonomy, the positive impact of scanning emphasis on the internal sector (scanning emphasis internal sector) on the overall performance (overall performance) decreases as the β factor decreases from 0.136 to 0.0294. In the same vein, increasing autonomy weakens the impact of the firm’s reaction pace (reaction pace) on the firm’s marketing performance (marketing performance) as the β factors decrease from 0.3789 to 0.3640.

Table 30: Testing hypothesis 7.3, the impact of the moderating variable autonomy on model 2.3 for overall performance and model 6.5 for marketing performance.

<table>
<thead>
<tr>
<th></th>
<th>model 2.3: (scanning emphasis internal sector)</th>
<th>model 6.5: (reaction pace)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>low autonomy</td>
<td>high autonomy</td>
</tr>
<tr>
<td>overall performance</td>
<td>0.1360 *</td>
<td>0.0294</td>
</tr>
<tr>
<td>marketing performance</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>multiple R²</td>
<td>0.5390</td>
<td>0.3426</td>
</tr>
<tr>
<td>adjusted R²</td>
<td>0.4237</td>
<td>0.1782</td>
</tr>
<tr>
<td>F</td>
<td>4.676</td>
<td>2.084</td>
</tr>
<tr>
<td>n</td>
<td>26</td>
<td>26</td>
</tr>
</tbody>
</table>

Table shows unstandardized regression coefficients from OLS regression analysis.
Significance: ‘***’ p ≤ 0.001, ‘**’ p ≤ 0.01, ‘*’ p ≤ 0.05, ‘°’ p ≤ 0.1

This results indicate that the analysis does not support hypothesis 7.3, which assumes a positive impact of autonomy on the relationship. Only two models among 20 show a significant change by adding autonomy as a moderating factor. However, the analysis shows a negative moderating effect of autonomy on the impact of the independent variables of the tested models on performance measures. Therefore, it is necessary to reject hypothesis 7.3.
10 Discussion

For the following discussion, Table 31 summarises the results of the analyses of all of the tested hypotheses. To enhance the overview, the table also includes the assumed relationship of variables of the hypotheses. Thos hypotheses whose analyses result in a significant but inverse relationship, contradicting the assumed relationship, are classified as opposite supported. Hypotheses 4.6 to 4.10 and 7.3 assume moderating effects. Accordingly, the table shows the effect that is assumed to influence other relationships.

<table>
<thead>
<tr>
<th>hypothesis</th>
<th>assumed variable relationship</th>
<th>analysis result</th>
</tr>
</thead>
<tbody>
<tr>
<td>H 1.1</td>
<td>local TMT decision-making process</td>
<td>+</td>
</tr>
<tr>
<td>H 1.2</td>
<td>German parent influencing processes</td>
<td>+</td>
</tr>
<tr>
<td>H 2.1</td>
<td>scanning emphasis external task sector</td>
<td>opposite</td>
</tr>
<tr>
<td>H 2.2</td>
<td>scanning emphasis customer sector</td>
<td>opposite</td>
</tr>
<tr>
<td>H 2.3</td>
<td>scanning emphasis internal sectors</td>
<td>opposite</td>
</tr>
<tr>
<td>H 3.1</td>
<td>local adaptation R&amp;D-efforts</td>
<td>+</td>
</tr>
<tr>
<td>H 3.2</td>
<td>local enhancement R&amp;D-efforts</td>
<td>+</td>
</tr>
<tr>
<td>H 3.3</td>
<td>employee involvement</td>
<td>+</td>
</tr>
<tr>
<td>H 4.1</td>
<td>diversity of TMT nationality</td>
<td>opposite</td>
</tr>
<tr>
<td>H 4.2</td>
<td>diversity of TMT functional background</td>
<td>opposite</td>
</tr>
<tr>
<td>H 4.3</td>
<td>diversity of TMT educational background</td>
<td>opposite</td>
</tr>
<tr>
<td>H 4.4</td>
<td>diversity of TMT career experience</td>
<td>opposite</td>
</tr>
<tr>
<td>H 4.5</td>
<td>diversity of TMT age</td>
<td>opposite</td>
</tr>
<tr>
<td>H 4.6</td>
<td>TMT average team tenure</td>
<td>opposite</td>
</tr>
<tr>
<td>H 4.7</td>
<td>TMT average team tenure</td>
<td>opposite</td>
</tr>
<tr>
<td>H 4.8</td>
<td>TMT average team tenure</td>
<td>opposite</td>
</tr>
<tr>
<td>H 4.9</td>
<td>TMT average team tenure</td>
<td>opposite</td>
</tr>
<tr>
<td>H 4.10</td>
<td>TMT average team tenure</td>
<td>opposite</td>
</tr>
<tr>
<td>H 4.11</td>
<td>diversity of TMT tenure</td>
<td>opposite</td>
</tr>
<tr>
<td>H 4.12</td>
<td>TMT team size</td>
<td>opposite</td>
</tr>
<tr>
<td>H 5.1</td>
<td>political behaviour</td>
<td>opposite</td>
</tr>
<tr>
<td>H 5.2</td>
<td>intuition</td>
<td>opposite</td>
</tr>
<tr>
<td>H 5.3</td>
<td>rationality</td>
<td>opposite</td>
</tr>
<tr>
<td>H 6.1</td>
<td>speed of product enhancements</td>
<td>opposite</td>
</tr>
<tr>
<td>H 6.2</td>
<td>number of process modifications</td>
<td>opposite</td>
</tr>
<tr>
<td>H 6.3</td>
<td>number of product enhancements</td>
<td>opposite</td>
</tr>
<tr>
<td>H 6.4</td>
<td>number of process modifications</td>
<td>opposite</td>
</tr>
<tr>
<td>H 6.5</td>
<td>reaction pace</td>
<td>opposite</td>
</tr>
<tr>
<td>H 7.1</td>
<td>product enhancement autonomy</td>
<td>opposite</td>
</tr>
<tr>
<td>H 7.2</td>
<td>product innovation autonomy</td>
<td>opposite</td>
</tr>
<tr>
<td>H 7.3</td>
<td>autonomy</td>
<td>opposite</td>
</tr>
</tbody>
</table>

Legend: “✓” hypothesis supported, “x”: hypothesis not supported and no significant relationship among variables, “opposite”: relationship between variables significant but opposite of assumption

Table 31: Overview of hypotheses, their assumed variable relationships, and analyses results.
The following paragraphs focus on particular hypotheses and discuss the analyses’ results in a broader theoretical context.

10.1 Various Dynamic Capabilities and their Impact on Firm Performance

In hypothesis 1.1, I assume that the decision-making process of the local top management team is the dynamic capability with highest impact on firm performance. This is followed by impacting processes of the German parent company on the Chinese subsidiary, which are dealt with in hypothesis 1.2. The analysis of variances provides support for both hypotheses. Thus, it is valid to assume that the decision-making process of the local top management team is the dynamic capability with the highest impact on firm performance. This process gives rise to 44.32% of decisions with high impact on firm performance, as presented in Table 14. It is also valid to assume that interfering processes from the German parent company are dynamic capabilities with the second highest impact on firm performance. These processes result in 30.02% of the decisions with high impact on the firm’s performance. The results of this analysis have two important implications.

First, the results generalise proposition 1 from the explorative research approach of this thesis, in which I assume the relevance of the two investigated processes on firm performance. The results of the analysis strengthen the importance of decision-making processes as dynamic capabilities in contrast to other processes such as, for example, pure research and development processes, as assumed by Cepeda and Vera (2007) and Mosey (2005), or learning processes, as proposed by George (2005).

Second, this insight sets the focus of the research on the quality aspect of dynamic capabilities. The entire research set-up for the deductive research phase was designed in accordance with the preliminary findings from the explorative research phase. The decision-making process was researched in detail with a focus on every single process step of the logic structure of a firm’s process, which reflects a firm’s dynamic capability (as presented in Figure 1). Regarding the influence of the German parent company, only the most important aspects identified in the explorative research phase were examined in the deductive testing research phase. The findings emphasise now the correctness of this research focus as they provide further support for the preliminary findings from the four case study analyses.
The results for hypotheses 1.1 and 1.2 answer research question 2, which seeks the dynamic capabilities that have a high and significant impact on firm performance. Table 14 indicates that the decision-making processes of the local top management team and interfering processes from the German parent company give rise to 74.34% of all decisions impacting subsidiary performance.

10.2 Scanning Efforts as a Quality Aspect

For the process step of information for the team, the analysis focuses on the scanning emphasis in the external task sector (hypothesis 2.1), in particular, in the customer sector (hypothesis 2.2), and the internal sector (hypothesis 2.3). The regression analyses provide support for all three hypotheses, which assume a positive relationship between the scanning emphasis in each sector and the corresponding dynamic capability, i.e., the decision-making process of the local top management team. As the quality of the dynamic capability is measured by the subsidiary performance, the findings are consistent with Daft et al. (1988), Garg et al. (2003) as well as Priem, Rasheed, and Kotulic (1995). As these studies were conducted in the United States, the findings transfer the applicability of this relationship to the Chinese context.

With regard to this study, the analysis of the scanning emphasis is based on proposition 2, which assumes that information retrieval activities focusing on customers have a positive influence on firm performance. Hypotheses 2.1 and 2.3 expand the perspective given by proposition 2. Hypothesis 2.1 considers not only the customer sector but also the competitor and supplier sectors as important information sources. Hypothesis 2.3 focuses on the internal sector, which consists of the subsidiary’s internal research and development activities, its financial management, and the local production. The results of the analyses indicate the need for a wider perspective, gained through the additional literature review to develop the hypotheses. The analyses support the assumption that the degree to which firms conduct information retrieval activities positively influences the quality of the decision-making process and therefore the respective dynamic capability. In other words, the emphasis of information retrieval with a focus on the external task sector, particularly the customer sector, and the internal sector is a relevant aspect shaping the quality of the respective dynamic capability.
Figure 15 visualises the relationships tested for the quality of the decision-making process of the local top management team which embeds the dynamic capability. The right-hand side shows the relationships between the independent variables of the hypotheses 2.1, 2.2, and 2.3 and the dependent variable, the quality of the dynamic capability. In contrast to Figure 5, the visualisation of results from the explorative phase, Figure 15 does not represent the sources from which the local top management team receives information to prepare decisions but rather the sectors which information activities focus on.

10.3 The Dominant Influence of Product Enhancement as a Quality Aspect

Concerning the process step of variation, proposition 3 of the explorative phase suggests that a concentration of local research and development activities on product adjustments is positively related to subsidiary performance. For the testing research phase, product adjustments were split into product adaptation and product enhancement. Product adaptation results in smaller adjustments of an existing product to meet Chinese customers’ requirements. However, product adaptation does not include any significant modification of the product. In hypothesis 3.1, I assume a positive relationship between the concentration of local research and development on product adaptation and the quality of the corresponding dynamic capability. Product
enhancement goes beyond adaptation as it also includes improvements of the product to better meet customer needs. Product enhancement may also include significant modifications of the product. In hypothesis 3.2, I assume a positive relationship between the concentration of local research and development on product enhancements and the quality of the corresponding dynamic capability.

Testing the impact of product adaptation as well as product enhancement through local research and development on site reveals that concentration on product enhancement activities is positively related to firm performance measures (as presented in Table 19). The concentration of local research and development activities on product adaptations is not significantly related to any performance measure. From the theoretical perspective, firm performance is enhanced through the utilisation of the unique knowledge gained through exposure to the particular market environment (Bartlett and Ghoshal, 1993; Frost, 2001; Hedlund, 1986; Kogut and Zander, 1992, 1993; O’Donnel, 2000). Utilising this knowledge for the enhancement of products not only includes certain adaptation efforts but further improvements in line with the local customer needs. Thus, the enhancement of products must be seen as a more important activity in comparison with the adaptation of products to the local market.

Preliminary findings from the explorative research phase regarding the positive influence of employees on decisions led to hypothesis 3.3, in which I assume a positive relationship between employee involvement and the quality of the corresponding dynamic capability. Although the influence of employees on the configuration of resources and processes may be beneficial, as concluded in proposition 10 of the explorative research phase, the impact is not significant on any firm performance measure, as presented in Table 20. In the theoretical introduction of this thesis, processes on the employee level are considered as potential dynamic capabilities. The results presented in Table 14 indicate that these processes are considered to have little impact on firm performance (only 8.25%). However, the literature stream dealing with high-performance human resource management (e.g. Björkman, Frey, and Park, 2007) suggests that employees have a significant impact. It has to be stated, however, that employee involvement is analysed as a component of a whole set of various human resource management practices (e.g. Becker and Gerhart, 1996; Björkman, Frey, and Park, 2007; Guest, 1997) that have a comprehensive influence on the firm. This may be one reason why the influence of employee involvement is on such a low level and therefore not specifically focused on in this study.
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For this thesis, I only concentrate on the participation or involvement of employees as a part of the comprehensive set of human resource management practices. This may explain the insignificance of employee involvement in this particular research setting.

To sum up, measures of firm performance function as proxies for the quality of the dynamic capabilities. Thus, it is valid to conclude that the concentration of research and development activities on product enhancement is positively related to the quality of the decision-making process of the local top management team and hence the corresponding dynamic capability. Other investigated aspects, such as the concentration of local research and development activities on product adaptation or the involvement of employees, do not significantly influence the quality of the corresponding dynamic capability.

Figure 16: Identified relevant quality aspects for the variation process step of the decision-making process of the local top management team.

Figure 16 summarises the findings for variation activities as a step in the decision-making process of the local top management team. On the left-hand side, the figure visualises the source of variations with a significant influence for the decision-making process of the local top management team. The local research and development division is on the operational level of the subsidiary. The right-hand side of Figure 16 summarises these aspects which shape the quality of the variation process step. Thus, they also affect the quality of the decision-making process embedding the corresponding dynamic capability. Only the concentration of local research and
development activities in product enhancement is positively related to the quality of the dynamic capability. Thus, the corresponding variable is shown.

10.4 Diversity and Homogeneity of the Top Management Team as a Quality Aspect

The findings of the testing phase result in the rejection of almost all hypotheses that relate group characteristics of the local top management team to the quality of the respective dynamic capability. Concerning the influence of the diversity of the functional background (as assumed in hypothesis 4.2), the diversity of career experience (as assumed in hypothesis 4.4), the diversity of age (as assumed in hypothesis 4.5), and team size (as assumed in hypothesis 4.12), the results show no significant relationship to the quality of dynamic capabilities. Following Cohen (1992), potential low effects of these variables are not identified due to the low number of valid responses (47), which represents the basis for the analyses of these hypotheses. With an increasing data set, it would be possible to also determine small effects which may result in significant effects for the aspects mentioned.

Only hypothesis 4.11, assuming a positive relationship between the diversity of team tenure in the local top management team and the quality of the dynamic capability, is tested and yields highly significant results.

The significant findings for hypotheses 4.1 and 4.3 contradict the assumed positive relationship between national heterogeneity or educational heterogeneity and the quality of the corresponding dynamic capability.

Focusing on the influence of national diversity of the local top management team, the findings contradict Richard (2000), who finds support for a linear and positive regression. Later studies (Richard, Barnett, Dwyer, and Chadwick, 2004; Richard, Murthi, and Ismail, 2007) also suggest a U-shape relationship between cultural diversity and performance. To exclude any structural problems with regard to the linear regression model, I conduct supplementary analyses. Assuming not a linear but a quadratic relationship between national diversity and the quality of the corresponding dynamic capability, the regression model, which uses firm profitability as a quality measure, decreases from 40% to 38.57% (adjusted R²-value). Additionally, neither the linear nor the quadratic term for national diversity is significantly related to profitability. Testing a cubic relationship between national diversity and firm profitability results in a further decrease in the model fit to 36.96%, with no significant relationship between national diversity and firm performance. As a result, the linear
regression model fits best. U-shape or more complex relationship types between national diversity and firm performance can be excluded.

Explaining a negative impact of group diversity on group outcome, Pelled (1996) assumes a positive relationship between obvious demographic characteristics and affective conflict, which results in lower performance. With regard to this perspective, she provides support for the findings and implications from a group of academic contributions that refer to the identity theory and support a negative relationship between group diversity and outcome or firm performance (Jehn, Northcraft, and Neale, 1999; Neale, Northcraft, and Jehn, 1999; Tsui, Egan, and O’Reilly, 1984).

However, another reason may be that the Chinese-specific business context (Makino, Isobe, and Chan, 2004) requires a deeper understanding than many foreign managers actually acquire. A supplementary regression analysis provides further insights with regard to this idea: I test whether the percentage of managers in the team who come from mainland China is significantly related to any firm performance measure. The supplementary regression analysis yields a positive significant relationship (10% level) between the percentage of Chinese managers in the top management team and sales-growth (unstandardised $\beta$ value is 0.842, adjusted $R^2$ model fit is 17.4%). For other performance measures, the analyses result in no significant relationships. Accordingly, this explanation approach is inferior in its explanatory power but may give a hint as to the function.

Focusing on the influence of team diversity in terms of educational background on the quality of the respective dynamic capability, the analysis leads to the suggestion of a significant and negative relationship, contradicting hypothesis 4.3. To exclude structural problems with the regression model, the most significant model explaining the impact on marketing performance serves as the basis for supplementary analyses. Appropriate modifications in and tests for the fitness of adjusted models reveal that, assuming a U-shape or inverted U-shape relationship, the value for the adjusted $R^2$ decreases from 32.2% to 30.21%, with no significant impact of educational heterogeneity on marketing performance. The test for polynomial relationships of the third level show that the adjusted $R^2$ value increases from 32.2% to 33.51%. However, there is no significant relationship between the constructs of educational heterogeneity and marketing performance. Accordingly, U-shape or cubic relationships do not outperform linear relationships for the explanation of the relationship between educational heterogeneity and the quality of the respective dynamic capability.

In seeking an explanation for the analysis results, I again find that Pelled (1996) provides insights. Pelled (1996), referring to Secord and Backman (1974), explicitly
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mentions the relationship of diverse educational background and affective conflict. Thus, the same arguments as for the negative impact of national diversity on firm performance are valid.

Supplementary analyses to test whether the average education level of the top management team is significantly related to any firm performance measure result in non-significant findings. Accordingly, there is no dominant insight regarding which configuration of homogeneously educated managers is superior.

The test for the moderating influence of the average team tenure on the relationship between diversity in terms of national or educational background and the quality of dynamic capabilities yields conflicting results, which requires further discussion. The tests yield support for hypothesis 4.8, in which I assume that increasing team tenure weakens the relationship between the educational heterogeneity of the team and the quality of the dynamic capability. This finding is in line with Michel and Hambrick’s (1992) assumption that teams with long tenure experience a certain cohesion which results in similar cognitive constructs of their members. This, again, results in a rather homogeneous mind-set, which implies a decrease in the effects of diversity.

However, with regard to national heterogeneity, the average team tenure leads to an even stronger effect on firm performance. The longer top management teams work together, the higher the negative relationship is between national diversity and sales growth as a measure of the quality of the dynamic capability. This finding inverts the assumed influence as stated in hypothesis 4.6. The academic literature which provides support for a negative relationship between team tenure and firm performance, e.g., Keck (1997) focuses on general team dynamics such as a decrease in scanning activities, which results in insufficient information for a correct decision. However, as this study shows a negative moderating effect of team tenure, this explanation approach is not valid. Interviews conducted with three experts on this matter reveal that the effect is common. One expert explicitly mentioned that German managers often have problems adapting to the specific Chinese business context and try to force German business procedures on the subsidiary and the top management team. However, this becomes a source of permanent quarrelling and misunderstandings, which ultimately results in a decrease in top management team effectiveness. This insight may give a hint as to why increasing team tenure also leads to a higher negative relationship between team diversity in terms of nationality and firm performance.

In sum, the analysis reveals that diversity in terms of team tenure is positively related to the quality of the dynamic capability, while diversity in terms of nationality and educational background is negatively related. Team tenure weakens the effect of
diversity in terms of educational background on the quality of dynamic capabilities, whereas it strengthens the effect of diversity in terms of national origin.

Figure 17: Identified relevant quality aspects related to the characteristics of actors involved in the selection step of the decision-making process of the local top management team.

Figure 17 visualises the results of this research area of the thesis. The left-hand side of the figure shows that all characteristics related to the local top management team. The right-hand side of the figure shows the tested relationships between significant quality aspects and the quality of the decision-making process of the local top management team embedding the corresponding dynamic capability. The moderating effect of variable  *TMT team tenure* is shown with dashed lines.

### 10.5 The Importance of Rationality versus the Irrelevance of Political Behaviour and Intuition as Quality Aspects

Proposition 5 of the explorative research phase of this study supports the idea that political behaviour has a negative impact on the quality of the decision-making process. Broadening the theoretical perspective, two diametrically different models were identified to test two different extremes in characteristics of the decision-making process. The political incremental model, which is based on non-logic or intuitive elements that define the decision-making process such as political behaviour or intuition, is represented by hypotheses 5.1 and 5.2. In contrast with this model, the
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synoptic formalism model focuses on rational and formal analysis and comprehensive planning (Camillus, 1982; Elbanna, 2006) and is represented by hypothesis 5.3.

As hypothesis 5.3 is tested and yields highly significant results and since hypotheses 5.1 and 5.2 do not find support in this research context, the synoptic formalism model prevails. This result supports the findings of other researchers (e.g. Bourgeois and Eisenhardt, 1988; Elbanna and Child, 2007; Goll and Rasheed, 1997) and of the specific research context of this study. Contradictory findings which assume a negative effect of rationality on outcome (Fredrickson and Iaquinto, 1989; Fredrickson and Mitchell, 1984) have to be rejected.

Concerning the non-significant relationship between political behaviour and firm performance as a measure of the quality of the dynamic capability, this finding contradicts the insights provided by Dean and Sharfman (1996), Eisenhardt, Kahwajy, and Bourgeois (1997), Elbanna and Child (2007) or Nutt (1993). Aside from the previously mentioned dominance of the synoptic formalism model in the given research context of this study, another explanation approach may give some insights: Cohen (1992) may provide an alternative explanation for this finding, as the dataset size of 52 valid responses for the analysis only reveals strong effects. Following this idea, testing the hypotheses on a larger dataset may lead to the identification of a significant but small effect of political behaviour on firm performance.

Figure 18: Identified relevant quality aspects related to the process characteristics for the selection step of the decision-making process of the local top management team.

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Identification of Characteristics for Selection Activities for the Decision-Making Process of the local Top Management Team

<table>
<thead>
<tr>
<th>Agenda:</th>
<th>Tested relationships among variables for selection step.</th>
</tr>
</thead>
<tbody>
<tr>
<td>parent company</td>
<td>Tested relationships among variables for selection step.</td>
</tr>
<tr>
<td>top management team</td>
<td>Identified relevant quality aspects related to the process characteristics for the selection step of the decision-making process of the local top management team.</td>
</tr>
<tr>
<td>operational level: (resources &amp; capabilities)</td>
<td>Tested relationships among variables for selection step.</td>
</tr>
<tr>
<td>subsidiary</td>
<td>Tested relationships among variables for selection step.</td>
</tr>
<tr>
<td>(dynamic) environment</td>
<td>Tested relationships among variables for selection step.</td>
</tr>
</tbody>
</table>

Quality Aspects:
- rationality

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$rationality$

quality of dynamic capability/decision making process of local TMT
With respect to intuition, the same explanation approaches I used for the non-significant effect of political behaviour also apply for the explanation of the non-significance of intuition. However, Elbanna and Child (2007) also conclude no significant relationship between intuition and firm performance, contradicting Kathri and Ng (2000). This fact provides support for the idea that intuition is a rather weak factor for the decision-making process.

To sum up, rationality is the only aspect with reference to process characteristics which influences the quality of the selection step and therefore the embedded dynamic capability.

Figure 18 visualises the results for the analysis of process-related characteristics and their effect on the selection step of the decision-making process of the local top management team. The left-hand side of the figure shows that all characteristics related to actors of the decision-making process. The right-hand side of the figure shows the tested relationships between significant quality aspects and the quality of the decision-making process of the local top management team which embeds the dynamic capability.

10.6 Reaction Pace and Amount of Product Modifications as Quality Aspects

Proposition 6 suggests a positive impact of the speed of product and process modifications on subsidiary performance as a proxy for the quality of the dynamic capability. Based on this insight, I assume in hypothesis 6.1 a positive relationship between the speed of product innovation and enhancement on the quality of the respective dynamic capability. In hypothesis 6.2, I assume a positive relationship of the speed of process modifications on the quality of the respective dynamic capability.

The results indicate that only the speed of product enhancement is positively and significantly related to firm performance. This finding is in line with Baum and Wally (2003), Eisenhardt (1989b), Jones, Lanctot, and Teegen (2001) as well as Judge and Miller (1991).

However, the analysis also reveals that the pace of product innovation and process modification is not significantly related to any performance measure. This finding provides support for Forbes (2001), who does not find any relationship between decision pace and firm performance.

Obviously, the findings of this thesis reflect the equivocal findings of the academic literature with regard to the relationship of decision pace and firm performance. Judge
and Miller’s (1991) claim that the environmental context influences the effect of decision-making speed and firm performance is not valid for the explanation of my diverse findings. Accordingly, not only the context but also the topic of the decision-making process influences the relationship between decision pace and firm performance. While the pace of decisions and implementations of product enhancements is significantly related to firm performance, the pace of decisions about product innovations or process modifications does not matter.

The proposition 7 suggests a positive relationship among the number of implemented product innovations, product enhancements, and process modifications. Testing hypotheses 6.3 and 6.4 results in the identification of a positive and significant relationship between the number of product innovations and enhancements and the quality of the dynamic capability. This result is in line with Garg, Walters, and Priem (2003). However, the results of the analysis do not support any significant relationship between the number of process modifications and any performance measure.

The results suggest that neither the pace nor the number of process modifications influences firm performance. Obviously, firm processes are not more relevant for the firm performance than the products with which the companies compete in the market.

Tests of hypothesis 6.5, assuming a positive relationship between the reaction pace and the quality of the dynamic capability, yield highly significant and positive findings. For the given research context, the overall decision pace as a process for reacting to new developments in the market does matter. With this insight, I am in line with Baum and Wally (2003), Eisenhardt (1989b), Jones, Lanctot, and Teegen (2001) as well as Judge and Miller (1991).

Comparing the analysis of hypothesis 6.5 with the analyses for hypotheses 6.1 to 6.4, the tests for hypothesis 6.5 are based on individual assessments by the respondents with regard to reaction pace in comparison with the major competitors in the Chinese market. The analyses of hypotheses 6.1 to 6.4 are based on total figures, either the number of weeks for the implementation of a modification or the total number of modifications. While the tests for hypotheses 6.1 to 6.4 only result in comparisons among the companies in the dataset, the tests for hypothesis 6.5 allow a relative assessment of the environment.

Hypotheses 6.1 to 6.4 cover single aspects of the general and overall aim of reacting to impulses from the context of the firm. Hypothesis 6.5 focuses on the overall aim of the dynamic capability itself, the responsiveness of the subsidiary itself.

To sum up, reaction pace and, particularly, the speed and number of product enhancements as well as the number of product innovations are positively related to
the quality of the decision-making process of the local top management team and therefore also its embedded dynamic capability.

Figure 19: Identified relevant quality aspects related to the process characteristics for the retention step of the decision-making process of the local top management team.

Figure 19 visualises the results from the analysis of quality aspects and their effects on the retention step of the decision-making process of the local top management team. The left-hand side of the figure shows that the characteristics focus on the last step of the decision-making process, i.e., the implementation of decisions on the operational level of the subsidiary. The last step, the retention process step, allows for an overall assessment of the process in terms of the time needed for modifications of the resource configuration and number of modifications. The right-hand side of the figure shows the tested relationships between significant quality aspects and the quality of the decision-making process of the local top management team, which embeds the dynamic capability.

10.7 About the Effect of Autonomy

Hypotheses 7.1 and 7.2 focus on the effect of autonomy in deciding on product enhancements and product innovations, either on site or in the German headquarters. Based on the preliminary findings of the case study research as well as on the extensive literature review, it is assumed that autonomy in the field of product
enhancement is positively related to firm performance, as stated in hypothesis 7.1. Autonomy of product innovation is assumed to be negatively related to firm performance, as stated in hypothesis 7.2.

The findings from the analysis support a contrary relationship, as assumed in hypothesis 7.1, and no significant relationship to any performance measure for hypothesis 7.2. Focusing on hypothesis 7.1, supplementary analyses are necessary to gain a deeper understanding of the results.

Selecting only those companies with research and development activities on site concentrates the analysis on those subsidiaries that are effectively able to gain autonomy in the development of product enhancements. This supplementary analysis excludes 19 subsidiaries which have to interact with the parent company in order to introduce any product enhancement. However, analyses of the remaining 36 companies yield findings comparable to the test already conducted.

Another potential factor may be that the relation between the autonomy to introduce product enhancements and firm performance is not linear. Testing for U-shape relationships leads to poor results. The explanatory power of the models ranges from -1.472% to 13.8%. However, the performance measures are exclusively explained by controlling variables, while the autonomy constructs are not significant for any performance measure.

The results of the regression analysis strengthen the importance of the parent company with regard to decisions on the introduction of product enhancements. From a theoretical point of view, resource dependency theory favours a strong influence of the subsidiary on the development of product enhancements since the knowledge the subsidiary has gained through exposure to the particular context leads to better products (O’Donnel, 2000). However, Ambos and Schlegelmilch (2007) observe that organisational competence centres are traditionally located in the country of the company headquarters. For the selected research context of this study, the results of the case study research phase support this insight. With regard to the development and introduction of product enhancements, the subsidiary relies on the competence of the German parent company.

Testing hypothesis 7.3, an overwhelming majority (18) of the 20 models test do not show any significant influence by adding autonomy as a moderating variable, as shown in Table 29. Significant influence is shown only for the models which explain the effect of scanning emphasis for the internal sector on overall performance and the effect of reaction pace on marketing performance. However, contrary to the assumed
relationship in hypothesis 7.3, increasing autonomy results in a decrease of the effect for both models.

The influence of the German headquarters on the development of product enhancements is positively related to the quality of the respective dynamic capability, as indicated by test results for hypothesis 7.1. Additionally, the number of product enhancements is positively related to firm performance, as indicated by test results for hypothesis 6.3. Thus, the more the German headquarters is involved, the higher the effect on performance is for internal information retrieval and for reaction pace as a measure for the quality of the according dynamic capability.

Focusing on the impact of the internal scanning emphasis, some theoretical perspectives may provide further explanation. Principal agent theory provides one potential explanation for this finding. Agency theory focuses on aspects related to a relationship between a principal and his agent, who receives delegated work or orders (Eisenhardt, 1989c). In this research context, the German headquarters is the principal, while the Chinese subsidiary is the agent. The delegation of work raises the question of how the principal can control the agent’s work (O’Donnel, 2000). Control of the subsidiary through the German headquarters implies the necessity for a steady flow of information (O’Donnel, 2000), especially with a focus on subsidiary-internal information. With increasing autonomy of the subsidiary, the corresponding control mechanisms also decrease and therefore the flow of information from the subsidiary to the German headquarters as well.

Decision-making theory provides an alternative perspective. As information retrieval is an essential part of the decision-making process (Hough and White, 2004), it is logical that, with increasing decision authority of the German parent, the flow of information from the subsidiary increases. However, this is only the case for internal information sectors of subsidiaries. The case study research of this study shows that, for some subsidiaries, marketing intelligence is located at the headquarters. Thus, it is logical that only the flow of internal information increases with a decrease in the autonomy of the subsidiary. Market information is retrieved directly by the headquarters.
Figure 20: Identified relevant quality aspects related to the process characteristics for the retention step of the decision-making process of the local top management team.

Figure 20 summarises the findings of the analysis on autonomy in this study. The left-hand side of the figure shows that the characteristics focus on the question of which aspects the parent company and which aspects the subsidiary is allowed to decide on. The distribution of power shapes the quality of the influencing processes of the German headquarters, which embed the second most important dynamic capability, as identified in Table 14. The right-hand side of the figure shows the tested direct relationship of autonomy in the field of product enhancements to the quality aspect of the corresponding dynamic capability. Additionally, the figure shows the moderating effect of autonomy on the identified quality aspects of the decision-making process of the local top management team.

10.8 About the Quality of Dynamic Capabilities

The discussion of the empirical results in the preceding sections allows a final and summarising discussion of the quality aspect of dynamic capabilities in order to answer research question 1 more fully.

This thesis focuses on the two most performance-relevant processes of German manufacturing companies in China embedding dynamic capabilities: The decision-making process of the local top management team and interfering processes in which the German parent company is involved. The emphasis of the analysis lies on the
decision-making process due to its significantly higher influence on firm performance than the interfering processes of the parent company. The decision-making process is researched in detail following the logic structure of a dynamic capability, which consists of the successive steps information, variation, selection, and retention (as shown in Figure 1). Regarding interfering processes of the German parent company, I use a holistic research approach without any explicit analysis of separate process steps. As the two processes are intertwined, I put special emphasis on implications of autonomy for the local decision-making process.

Due to the focus on dynamic capabilities with high relevance for performance, I can operationalise firm performance as a measure of the quality of dynamic capabilities examined. Process configurations which either increase or decrease firm performance are therefore quality aspects of the according dynamic capability.

Summarising the results of the deductive testing research phase for the analysis of the decision-making process of the local top management team, I obtain the following findings. For information, the first process-step of the decision-making process of the local top management team, three characteristics have a positive and significant influence on the quality of dynamic capabilities: A high emphasis of information retrieval activities in the external task sector, as tested in hypothesis 2.1, in the customer sector in particular, as assumed in hypothesis 2.2, and in the internal sectors, as assumed in hypothesis 2.3.

With regard to the second process step, variation, the focus of local research and development activities on product enhancements increases the quality of the dynamic capability, as tested in hypothesis 3.2.

Focusing on selection, a local top management team composed of managers of homogenous nationality and with homogenous educational background, contradicting hypotheses 4.1 and 4.3, and with diverse team tenures, as assumed in hypothesis 4.11, are quality aspects of the corresponding dynamic capability. The average tenure of the local top management team partly functions as a mediator which either increases or decreases the effects of team characteristics on the quality of the dynamic capability. On the one hand, average tenure increases the positive influence of nationally homogeneous groups, which contradicts hypothesis 4.6. On the other hand, team tenure decreases the effect for the homogeneity of the team members in terms of their educational background, as assumed in hypothesis 4.8. With regard to the process itself, rationality is positively correlated to the quality of the respective dynamic capability, as assumed in hypothesis 5.3.
Finally, with regard to the last step of the decision-making process of the local top management team, retention, a high pace for the decision as well as the implementation of product enhancements increases the quality of the dynamic capability, as stated in hypothesis 6.1. Additionally, not only the pace but also a high frequency of product enhancements as well as product innovations positively influences the quality of dynamic capabilities, as assumed in hypothesis 6.3. Finally, the more quickly the firm is able to decide and adapt to changes in the market in comparison to major competitors, the better the quality of the dynamic capability is, as assumed in hypothesis 6.5.

Focusing on the influence of the German parent company for product enhancements, high involvement of the German parent positively influences the quality of the according dynamic capability, which contradicts hypothesis 7.1. Increasing autonomy of the subsidiary leads to a significant and high decrease in the effects of the scanning emphasis on the internal sector as well as a significant but only slight decrease in the impact of the overall reaction pace, which contradicts hypothesis 7.3.

The summarized findings result from the tested hypotheses, which originally stem from propositions 2 to 10 of the explorative research phase of this study. Answering research question 1, the aspects presented influence the quality of the respective dynamic capabilities. This study provides strong support for the idea that not the existence of the dynamic capabilities but their quality influences the firm performance. The support is given through the two research phase phases. Additionally, theoretical explanations of the effect of quality aspects complement the findings from the empirical research phases.

Figure 21: Investigation construct for dynamic capabilities and their relation to subsidiary performance.
The Quality Aspect of Dynamic Capabilities

Figure 21 shows all of the sources of information and variation activities, the actor groups who perform selection activities, and the retention procedure for the decision-making process of the local top management team. Additionally, Figure 21 visualises the trade-off between the parent company and the local top management team in terms of autonomy. Accordingly, Figure 21 identifies aspects in the firm’s organisational structure and in its environment. Concerning the various quality aspects and their effect on the quality of the various dynamic capabilities, Figure 22 shows the identified significant relationships.

![Diagram of quality aspects and their effects](image)

**Figure 22:** Quality aspects for the dynamic capabilities which are embedded in the decision-making process of the local top management team and in influencing processes of the parent company.

Figure 22 shows on the left-hand side all identified quality aspects and their positive or negative influence on the quality of the decision-making process of the local top management team, which embeds the dynamic capability with the highest impact on firm performance. All aspects are ordered according to the logic structure of a dynamic capability, as introduced in Figure 1. The right-hand side of Figure 22 shows the identified aspect with direct influence on the quality of influencing processes by the
parent company, namely, *product enhancement autonomy*. Additionally, the figure visualises the moderating influence of *autonomy*, which influences relationships among variables with influence on the decision-making process of the local top management team.

Figure 21 and Figure 22 represent the final model, which maps all of the logical steps of a dynamic capability on the firm structure and shows the identified significant quality aspects of the dynamic capabilities of German manufacturing companies in the Chinese market environment.

**10.9 Success-Factors for German Manufacturers in China**

The findings presented in this study also imply its practical application. Assuming a causal relationship between quality aspects and firm performance, which is supported by the theoretical discussions of the individual quality aspects, I offer the following recommendations as practical implications of this thesis.

The analysis of hypothesis 1.1 shows that the decision-making process of the local top management team is the process with the highest influence on subsidiary performance. Additionally, the analyses of hypothesis 1.2 identify interfering processes by the German parent company as the second most important for subsidiary performance. In consequence of the findings, I offer the following recommendation:

**Recommendation 1:** The decision-making process of the local top management team has the highest impact on subsidiary performance, followed by interfering processes through the German parent company. Assessing success factors, you should concentrate on these two processes.

Every analysis of subsidiary performance should therefore focus especially on the decision-making process of the local top management team. Assessing the overall decision-making process, the analyses for hypothesis 5.3 suggest that the overall process should follow a rational approach. A rational decision-making process is characterised by expansive information searching activities, extensive analyses of retrieved information, use of analytical techniques for decision support, the ability to focus attention on crucial information and ignore irrelevant information. The more rational the decision-making process is, the better the subsidiary’s performance is. Accordingly, I give the following recommendation:
Recommendation 2: The decision-making process of the local top management team should be as rational as possible to maximise subsidiary performance.

This includes frequent information retrieval from the direct environment of the subsidiary, as tested in hypothesis 2.1, with a special focus on suppliers, competitors, and also especially on customers, as tested in hypothesis 2.2. However, to utilise the information on opportunities and risks in the market, it is necessary to retrieve information about the subsidiary itself, its research and development activities, its financial management, and the local production. A high frequency of information retrieval in subsidiary-internal sectors is necessary for successful decisions, as tested in hypothesis 2.3. The following recommendation summarises the findings:

Recommendation 3: The local top management team should frequently scan for information about suppliers, competitors, customers, local research and development activities, local financial management, and the local production.

If subsidiaries perform their own research and development activities on site, an emphasis especially on product enhancement is beneficial for subsidiary performance, as tested in hypothesis 3.1. Other efforts, such as a specific emphasis on the adjustment of products or on process modification, are not significantly related to higher firm performance. Additionally, the involvement of employees in the decision-making process has a very low impact and is thus not significant.

Recommendation 4: If research and development is conducted on site, the activities should focus on enhancement of the products.

With regard to the composition of the local top management team, a good mix of members with long work experience and new members with new ideas is beneficial for firm performance. Experienced team members know the subsidiary as well as the organisational context and procedures. New members bring in new ideas and impulses. Diversity of the members of the local top management team in terms of nationality or educational background implies a negative effect on subsidiary performance, as tested for hypotheses 4.1 and 4.3. Discussions of these findings with experts indicate that
suggesting homogeneous top management teams in terms of national origin and educational background would be the wrong approach. To gain superior performance it is a question of how companies prepare diverse top management teams in terms of training and diversity management. This explanation provides support for the heterogeneous findings of the explorative research phase which concludes a positive effect of diversity in terms of nationality and educational background. The results are summarised in the following recommendation:

**Recommendation 5:** The local top management team should consist of members with varying tenure in the team. They should be properly prepared and trained to work together with team colleagues with various national and educational backgrounds.

The analyses provide strong support for the idea that the entire decision-making process must be implemented in a way which enables the subsidiary to quickly react to new impulses from the market or environment. The more quickly the subsidiary recognises such impulses, decides which options are the best, and finally implements the chosen option compared to other competitors, the better the performance of the subsidiary is. This was tested in hypothesis 6.5. A high number of product enhancements and innovations as well as a quick decision on and implementation of product enhancements is also beneficial for subsidiary performance, as tests of hypotheses 6.1 and 6.3 indicate.

**Recommendation 6:** The decision-making process of the local top management team as well as the procedure for the implementation of its decisions should be as quick as possible.

A focus on the influence of the German parent company identifies it as the second most important process for the performance of the subsidiary. In particular, the parent’s involvement in the development of product enhancements is important. Chinese subsidiaries provide important knowledge about the local market and customers. However, the product knowledge provided by the competence centres of the parent company still prevails for the successful placement of enhanced products in the Chinese market.
Recommendation 7: For product enhancement, the German parent company should be involved as much as possible.

In sum, the local decision-making process should be designed to work in a quick and rational way under consideration of a comprehensive source of information, guided by a management team with experienced and new members, but with low diversity in terms of nationality and educational background. The involvement of the German parent company leads to a high utilisation of the knowledge base at the cost of a certain degrees of autonomy for the subsidiary.
11 Conclusion

11.1 Concluding Remarks

Companies constantly modify their products and processes. Thus, companies constantly use dynamic capabilities embedded in firm processes which modify the firm’s resource configuration. The findings of this thesis provide strong support for the idea that it is not the sheer existence of dynamic capabilities that makes them relevant for the success of a firm in a volatile market environment but rather the characteristics of the those dynamic capabilities. In other words, change per se does not ensure success; rather, the way in which change is conducted shapes the competitiveness of a firm. Characteristics of a dynamic capability can be qualified according to its contribution to its intended use: The reconfiguration of the company to match environmental changes allows it to become or remain successful. Measuring this “fitness for use” (Juran and Gryna, 1988: 2.8) leads to the quality aspect of dynamic capabilities. The quality of dynamic capabilities describes whether the process which embeds the particular dynamic capability results in resource configurations with which the firm can compete successfully. The initial literature review in part A identified a clear lack of theoretical and empirical work regarding the quality aspect of dynamic capabilities. Eisenhardt and Martin (2000) as well as Zahra et al. (2006) mention best practices of dynamic capabilities, which I interpret as an indirect reference to the quality aspect of dynamic capabilities. However, the concept of the quality aspect of dynamic capabilities is new to the research field. From this idea, the first research question of this thesis evolved: Which elements influence the quality of a dynamic capability.

To ensure the significance of the research findings of this study, compliance with two preconditions was relevant. First, the market environment of the firms had to volatile in order to ensure the frequent use of dynamic capabilities (Teece et al., 1997). Frequent use implies a correspondingly high impact of the quality of the dynamic capabilities on firm performance. Therefore, I retrieved empirical data from German manufacturing companies in the Chinese market environment. Second, I investigated only those dynamic capabilities with the highest impact on firm performance to ensure the validity of firm performance as a proxy for the quality of dynamic capabilities. As no research has been conducted with regard to the question of which dynamic capabilities have the highest impact on firm performance, the second research question of this thesis evolved.
The methodology used to answer the research questions derived includes two separate and successive research phases: The inductive exploratory research phase, based on the study of four manufacturing German companies in China, and the deductive testing research phase, based on survey data sampling of 61 manufacturing German companies in China. The two successive empirical research phases represent the complete research cycle (Eisenhardt and Graebner, 2007), from explorative model development in the inductive research phase to testing and generalizing the model in the deductive research phase.

The two empirical research phases of this study revealed and confirmed that the decision-making process of the local top management team is the dynamic capability with the highest impact on firm performance, followed by interfering processes from the German parent company. In this thesis, interfering processes focus on the influence of the German headquarters on decisions regarding product innovation or enhancement. These findings answer the second research question and focus the research of this thesis. The decision-making process of the local top management team was researched in detail and, in a second step but with less detail, influencing processes of the German parent company. The first and inductive research phase provides some support for characteristics of the investigated processes which increase performance and therefore the quality of the respective dynamic capability. The second and deductive research phase tests and generalises the preliminarily identified characteristics.

Finally, I identified the following characteristics as beneficial for the quality of the decision-making process of the local top management team: Scanning emphasis on the internal sector, the external sector, and the customer sector in particular, focus of local research activities on product enhancement, diversity of the top management team in terms of team tenure and homogeneity in terms of nationality and educational background, rationality of decision-making, the pace and number of product enhancements, the number of product innovations, and overall reaction time. Concerning the homogeneity of the top management team in terms of nationality and educational background, experts point out that these are only symptoms of weak manager training and a firm’s diversity management. Concerning interfering processes of the German parent company, I identified only one aspect as beneficial for subsidiary performance: low autonomy for decisions on product enhancements for the subsidiary.

The identified characteristics are significantly related to firm performance and therefore relevant for the quality of the respective dynamic capabilities. This finding answers research question 1. To sum up, not only the sheer existence of dynamic capabilities but, more importantly, their quality matters.
Beyond the identification of characteristics, this thesis provides insights into why certain aspects have a positive influence on the quality of the dynamic capability and thus also on subsidiary performance. While the explanations for the explorative case study phase evolve from the analyses of the case studies, the explanations in the testing research phase are mainly based on theoretical reflections and on expert interviews. However, due to the focus of this thesis, the explanation of the concrete mechanisms obtains a lower relevance and is less detailed.

To sum up, the concept of the quality aspect of dynamic capabilities is quite simple, easily understandable, and intuitive, as the term *quality* has already been used in other fields of management research. In addition, the concept fundamentally enhances the understanding of dynamic capabilities, their function, and effects. The concept and findings regarding the quality aspect of dynamic capabilities have strong implications for the fundamental question of what dynamic capabilities are. Additionally, I identified those dynamic capabilities with the highest impact on firm performance. This is, again, a valuable contribution to academia as no work has been done on this aspect to date.

The identification of ordinary firm processes which embed dynamic capabilities and the assessment of their impact on firm performance additionally enhances our understanding of dynamic capabilities. The fact that the decision-making process of the local top management team is the dynamic capability with the highest impact on firm performance is new. The separation of *information*, *variation*, *selection* and *retention* activities as key elements of a dynamic capability shed more light on the basic question of what dynamic capabilities are.

During my quest for quality aspects of dynamic capabilities, I touched on various other research areas through my research, which focused on the identified firm processes. The literature review at the beginning of part C, which results in the testable hypotheses, demonstrates that empirical work does not provide sufficient insight into these processes in the Chinese context. As the context influences the decision-making process (Keck, 1997) as well as the headquarters_subsidiary relationship, existing knowledge is not easily transferable. This thesis transfers and tests various empirical findings of former studies related to the decision-making process or the headquarters_subsidiary relationship.

As the analysis of the dynamic capability implies a detailed examination of the decision-making process, I also contribute to the dynamic capabilities research area: Most work in this field concentrates on specific aspects such as team composition, process rationality or scanning emphasis. This thesis provides an investigation of the
overall process consisting of information, variation, selection, and retention activities. This thesis accomplishes an integration of various research findings into a complete and holistic perspective on the decision-making process.

In sum, besides the truly innovative aspects in the field of dynamic capabilities, this thesis contributes to the research of decision-making processes as it provides a comprehensive model and perspective. Various findings related to decision-making processes and headquarters-subsidiary relationships are transferred and tested in the specific Chinese context.

From a practical perspective, this thesis provides seven recommendations which were directly derived from the testing of the hypotheses. All recommendations discuss aspects that positively influence the performance of German manufacturing companies in China. The results of this thesis can be used to analyse and enhance the performance of German manufacturing subsidiaries in China.

11.2 Limitations and Future Research

Three major aspects have to be considered for a critical assessment of this thesis:

First, the research conducted to answer the initial two research questions, which are developed in part A, results in a complex and demanding research project. During the case study research I identified not only the decision-making process of the local top management team but also influencing processes of the parent company. Interfering processes especially focus on the influence of the German headquarters on the development of enhancements of and innovations in products with which the subsidiary competes. Reviewing the academic literature on the identified processes yielded a significant number of various other aspects which were not considered in the thesis due to the constraints of the research focus. Future consideration of other factors and perspectives might enhance the insights of this research topic.

Second, this thesis only provides insights from a number of expert interviews and from the theoretical review in order to determine why and how certain aspects impact the quality of a particular dynamic capability. This procedure is in line with research question 1, which only focuses the identification of those elements that influence the quality of a dynamic capability. However, further research on firms would enhance the insights into the mechanisms of selected quality aspects such as, for example, the negative effect of national diversity in top management teams.

Third, 61 responses for a questionnaire survey is a sufficient number for the identification of the significance of strong effects (Cohen, 1992). The fit for the
regression models, the adjusted $R^2$ value, support the expressiveness of the analyses conducted. However, a larger sample would enhance the insights with regard to two relevant aspects. First, statistical analyses could reveal further effects of process characteristics on firm performance with a weaker but significant effect. This would result in the identification of additional quality aspects. Second, the regression models could be further enhanced through more sophisticated or even additional controlling variables. A consideration of industry sectors would better represent specific industrial effects – in this study, I classified the firms according to their technology level as high- or low-tech firms, which implies a classification according to the complexity of their products (Chen and Hu, 2002).

Along with the aforementioned limitations of this study, further research could focus on the transfer of the findings of this thesis to other contexts. Other potential contexts might be those that are assumed to be comparable in terms of dynamism such as the internet industry (Kukovetz, 2002).

Core concepts of this study were presented and discussed at the Strategic Management Society Conference 2008 in Cologne (see Jekel and Chong, 2008). The acceptance of my paper on this topic required that it undergo a double blind review process. Additionally, this thesis provides a comprehensive framework and analytical instruments as well as an example of their application. This represents an exciting initial point for future research endeavours and publications.
Appendix A – References

A


B


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The Quality Aspect of Dynamic Capabilities

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<th>Abbreviation</th>
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<tr>
<td>CEO</td>
<td>Chief Executive Officer</td>
</tr>
<tr>
<td>EJV</td>
<td>Equity Joint Venture</td>
</tr>
<tr>
<td>MBA</td>
<td>Master of Business Administration</td>
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<tr>
<td>OLS</td>
<td>Ordinary Least Squares</td>
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<td>pdf</td>
<td>Portable Document Format</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>Doctor of Philosophy</td>
</tr>
<tr>
<td>TMT</td>
<td>Top Management Team</td>
</tr>
<tr>
<td>WFOE</td>
<td>Wholly Foreign-Owned Enterprise</td>
</tr>
</tbody>
</table>
Appendix C – Interviewees

Due to confidentiality reasons, this version does not include any names of persons or their organizations that contributed to this dissertation.
Appendix D – Descriptive Statistics of Survey Participants

► Industry sectors in which participating companies are primarily active (in total numbers)

- Automotive/Supplier: 10
- Equipment: 7
- Machinery: 6
- Electronics: 6
- Precision Mechanics: 2
- Other Metal: 2
- Chemical Products: 3
- Electrical Engineering: 3
- Rubber/Plastic: 3
- Construction: 2
- Others: 2
- Textiles: 3
- Plant Engineering: 3
- Total: 61

► Ownership types of participating companies (in total numbers)

- Contractual Joint Ventures: 2
- Other Ownership Types: 3
- Equity Joint Ventures: 6
- Wholly Foreign Owned Enterprises: 50
- Total: 61
Regional distribution of participating companies (in total numbers)

<table>
<thead>
<tr>
<th>Region</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liaoning</td>
<td>61</td>
</tr>
<tr>
<td>Shaanxi</td>
<td>6</td>
</tr>
<tr>
<td>Tianjin</td>
<td>2</td>
</tr>
<tr>
<td>Guangdong</td>
<td>2</td>
</tr>
<tr>
<td>Jilin</td>
<td>2</td>
</tr>
<tr>
<td>Shandong</td>
<td>2</td>
</tr>
<tr>
<td>Shaanxi</td>
<td>2</td>
</tr>
<tr>
<td>Shandong</td>
<td>2</td>
</tr>
<tr>
<td>Zhejiang</td>
<td>2</td>
</tr>
<tr>
<td>Shanghai</td>
<td>14</td>
</tr>
<tr>
<td>Jiangsu</td>
<td>26</td>
</tr>
<tr>
<td>Beijing</td>
<td>1</td>
</tr>
</tbody>
</table>

Turnover and employees of participating firms in 2007 (average values)

- Ø turnover in 2007: 368.18 million RMB
- Ø employees in 2007: 277.17 employees
Appendix E – English Questionnaire

A) General Information about the German Parent Company

A.1 : General Information about German Parent Company

- Location of German headquarter: ___________________________ (city)
  ___________________________ (province)

- Start-up date of German parent company: ___________________________ (year)

- German parent's worldwide turnover 2007: ___________________________ (million €)

- German parent's worldwide employees 2007: ___________________________ (employees, full time equivalent)

B) General Information about your specific Chinese Subsidiary

B.1 : General Information of Chinese Subsidiary

- Company type of Chinese subsidiary: 
  - Wholly Owned Enterprise (WOE)
  - Equity Joint Venture (EJV)
  - Contractual Joint Venture (CJV)
  - Other

- Location of Chinese subsidiary: ___________________________ (city)
  ___________________________ (province)

- Start-up date of Chinese subsidiary: ___________________________ (month)
  ___________________________ (year)

B.2 : Shareholders of Chinese Subsidiary

- How many shareholders do you have in total? ___________________________ (number of shareholders)

- Please insert the German parent's share as well as the share and nationality of maximum 2 further shareholders (if existent):

<table>
<thead>
<tr>
<th>Shareholder</th>
<th>German Parent</th>
<th>2. Shareholder</th>
<th>3. Shareholder</th>
</tr>
</thead>
<tbody>
<tr>
<td>Share (in %):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nationality:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B.3 : Company Size of Chinese Subsidiary

- Please quantify turnover, employees, and asset figures for your Chinese subsidiary in 2006 and 2007 (if possible). You can select the preferred currency under "Unit":

<table>
<thead>
<tr>
<th>Year</th>
<th>2006</th>
<th>2007</th>
<th>Unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turnover:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Employees (fulltime):</td>
<td></td>
<td></td>
<td>employees</td>
</tr>
<tr>
<td>Assets:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B.4 : Activities of the Chinese Subsidiary

- What do you perform on site (multi-selection is possible)?
  - □ Manufacturing  □ Service
  - □ Assembly  □ Other activities

B.5 : Target Markets of the Chinese Subsidiary

- In which industry sector(s) does your Chinese subsidiary operate? What is the type of product(s) in each industry sector? If you operate in more than one industry sector, please consider only the two most important ones:

<table>
<thead>
<tr>
<th>Importance</th>
<th>Industry Sector</th>
<th>Type of most important Product(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. sector:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. sector:</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Where do you sell your products?
  - □ only in China  □ only outside China

- What share of turnover do you earn via sale of products/spare parts or via services/others?
  - 100% via products/spare parts  100% via services/other incomes

- Do you sell your products in China by own staff or by agents/partners?
  - 100% sold by own staff  100% sold by agents/partners

B.6 : Research and Development in the Chinese Subsidiary

- What share of your turnover do you spend for research and development on site? (% of turnover for R&D)

- If you perform R&D on site, how extensively do you perform the following activities:
  - not at all  " " " " extensively
  - product adjustments for Chinese market
  - smaller product enhancements
  - larger product innovations
  - process modifications

B.7 : Influence for relevant Decisions concerning the Chinese Subsidiary

- To what share do the following influence groups contribute to decisions with high impact on performance in the Chinese subsidiary (e.g. important product / process modifications)?

  local top management in Chinese subsidiary %
  lower local management in Chinese subsidiary %
  local employees in Chinese subsidiary %
  German parent company %
  Non-German parent / parents (if existent) %
  others %  SUM = 100%
C. Information Retrieval of Chinese Subsidiary

C.1: Information Retrieval of local Top Management Team

- For important decisions (e.g. product / process modifications) the top management team requires information. How frequently do you scan the following information sectors, and how important is the information from each sector for important decisions?

<table>
<thead>
<tr>
<th>Information Sectors</th>
<th>Frequency</th>
<th>Importance</th>
</tr>
</thead>
<tbody>
<tr>
<td>socio-cultural environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>economic environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>political / legal environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>technological environment</td>
<td></td>
<td></td>
</tr>
<tr>
<td>capital market / banks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>customers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>competitors</td>
<td></td>
<td></td>
</tr>
<tr>
<td>suppliers</td>
<td></td>
<td></td>
</tr>
<tr>
<td>own product R&amp;D</td>
<td></td>
<td></td>
</tr>
<tr>
<td>financial management</td>
<td></td>
<td></td>
</tr>
<tr>
<td>production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>German parent</td>
<td></td>
<td></td>
</tr>
<tr>
<td>other parent / parents (if existent)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

D. Decision Making – Top Management Team Characteristics in Subsidiary

D.1: Top Management Team Composition of Chinese Subsidiary

- How many people belong to the local top management team of the Chinese subsidiary?
- Please insert the characteristics of the members of the top management team of your subsidiary (if there are more than 7 members, please concentrate only on the most important ones):

<table>
<thead>
<tr>
<th>No</th>
<th>Responsibility</th>
<th>Nationality</th>
<th>Age</th>
<th>Member of team since</th>
<th>Education</th>
<th>Worked before in</th>
<th>Team Influence</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>high low</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
The following statements address certain characteristics of the local top management team in the Chinese subsidiary during decision processes with high impact on products or processes. Please assess these statements according to your personal opinion:

**D.2 : Political Behaviour in the Decision Process of the local Top Management Team**
- Are team members primarily concerned with their own goals, or with the goals of the organization? own goals: strongly agree, strongly disagree
- To what extent are managers open with each other team member about their interests in the decision? not at all: completely
- To what extent are decisions affected by the use of power among team members? not at all: completely
- To what extent are decisions affected by negotiation among team members? not at all: completely

**D.3 : Rationality in the Decision Process of the local Top Management Team**
- How extensively does the team look for information in making decisions? not at all: extremely
- How extensively does the team analyze relevant information before making a decision? not at all: extremely
- How important are quantitative analytic techniques in making the decision? not at all: very important
- How would you describe the processes that have the most influence on the team’s decisions? mostly: mostly analytical
- How effective is the team at focusing its attention on crucial information? not at all: very effective
- How effective is the team at ignoring irrelevant information? not at all: very effective

**D.4 : Intuition in the Decision Process of the local Top Management Team**
- To what extent do top managers rely on personal judgement in making important decisions? very little: a great deal
- How much emphasis do top managers place on past experience in making important decisions? very little: a great deal
- On many occasions, top managers do not have enough information, and must make important decisions based on a ‘gut-feeling’? strongly agree: strongly disagree

**D.5 : Employee Involvement in Product and Process-relevant Decisions on Site**
- How often does the local top management team receive important input from employees of your subsidiary? very often: very seldom
- Do you use employee suggestion systems for product or process enhancements? not at all: extensively
- If so, how important is the input of the employee suggestion systems for the success of your subsidiary? very important: not at all important
Firm Network – Subsidiary Relation

E.1 : Autonomy of the Chinese Subsidiary

For the overall business activities of the subsidiary, please, indicate the extent of the parent company and / or subsidiary influence on the following decisions:

<table>
<thead>
<tr>
<th>Decision</th>
<th>Parent company decides alone</th>
<th>Chinese subsidiary decides alone</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction of product innovations</td>
<td>O O O O O</td>
<td></td>
</tr>
<tr>
<td>Introduction of product enhancements</td>
<td>O O O O O</td>
<td></td>
</tr>
<tr>
<td>Changes in product price</td>
<td>O O O O O</td>
<td></td>
</tr>
<tr>
<td>Adjustments of production processes</td>
<td>O O O O O</td>
<td></td>
</tr>
<tr>
<td>Selection of material suppliers</td>
<td>O O O O O</td>
<td></td>
</tr>
<tr>
<td>Changes in communication policy</td>
<td>O O O O O</td>
<td></td>
</tr>
<tr>
<td>Production schedules / plans</td>
<td>O O O O O</td>
<td></td>
</tr>
<tr>
<td>Quality control decisions</td>
<td>O O O O O</td>
<td></td>
</tr>
<tr>
<td>Target group / market selection</td>
<td>O O O O O</td>
<td></td>
</tr>
<tr>
<td>Changes in organizational structure</td>
<td>O O O O O</td>
<td></td>
</tr>
<tr>
<td>Changes in corporate finance</td>
<td>O O O O O</td>
<td></td>
</tr>
</tbody>
</table>

Implementation of Decisions and Reaction Pace in Chinese Subsidiary

F.1 : Decision Pace

- How much time do you need on average to decide and implement fundamental product innovations? __________ (weeks)
- How much time do you need on average to decide and implement smaller product enhancements? __________ (weeks)
- How much time do you need on average to decide and implement process modifications? __________ (weeks)
- How would you assess your reaction pace on relevant market developments in comparison to your major competitors in China? rather quick -O O O O O- rather slow
F.2 : Decision Frequency

- How often does the local top management team in the Chinese subsidiary meet to decide upon relevant decisions? (meetings per year)
  - in 2006
  - in 2007

- How many fundamental innovations did you implement in your most important product line? (product innovations)
- How many smaller enhancements did you implement in your most important product line? (product enhancements)
- How many modifications of production processes did you implement in your major product line? (modifications)

G. Performance of Chinese Subsidiary

G.1 : Subjective Performance Assessment

- Compared to your competitors in the Chinese market, how would you compare the subsidiary’s performance over the past 2 years (2006-2007) in terms of …

- much better
- much worse

<table>
<thead>
<tr>
<th></th>
<th>much better</th>
<th></th>
<th>much worse</th>
</tr>
</thead>
<tbody>
<tr>
<td>marketing</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>sales growth</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>profitability</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>market share</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>reputation</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
<tr>
<td>overall performance/success</td>
<td>○ ○ ○ ○ ○</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

! Thank you very much for your time and effort!!

بريدك الإلكتروني إذا كان لديك مهتمًا في النتائج من هذا البحث:

E-mail address: 

✔ To submit your data, please click on the "Send"-Button below.
### 德国母公司的概况

#### 1.1: 德国母公司的概况

- 德国总部的位置:  
- 德国母公司成立的时间:  
- 德国母公司2007年的全球营业额:  
- 德国母公司2007年的全球雇员:  

### 贵公司中国子公司的概况

#### 2.1: 中国子公司的概况

- 中国子公司的类型:  
  - ○- 独资  
  - ○- 股权式合资  
  - ○- 契约式合作企业  
  - ○- 其他  
- 中国子公司的地理位置:  
- 中国子公司成立的时间:  

#### 2.2: 中国子公司的股东

- 贵公司一共有多少股东?  
- 请给出德国母公司持有的股份和其它两个最大股东的股份及国籍(如果存在):  

<table>
<thead>
<tr>
<th>股东</th>
<th>第一大股东持有股份</th>
<th>第二大股东持有股份</th>
<th>第三大股东持有股份</th>
<th>国籍</th>
</tr>
</thead>
<tbody>
<tr>
<td>股份 (%):</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### 2.3: 中国子公司的规模

- 请您填写在2006年和2007年中国子公司的营业额，员工和资产（如果可能）。  
  您可以在“货币单位”处选择币种:  

<table>
<thead>
<tr>
<th>年份</th>
<th>2006</th>
<th>2007</th>
<th>货币单位</th>
</tr>
</thead>
<tbody>
<tr>
<td>营业额:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>员工 (全日制):</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>资产:</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2.4：中国子公司的行业

- 贵公司在中国从事何种行业（可以多项选择）？
  - □ 制造业 □ 服务
  - □ 装配 □ 其他

2.5：中国子公司的目标市场

- 贵公司的中国子公司在哪个具体领域运作？在这个领域生产什么类型的产品？如果贵公司在多个领域运作，请选择两个最重要的：

<table>
<thead>
<tr>
<th>重要性</th>
<th>行业领域</th>
<th>最重要的产品类型</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. 领域：</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. 领域：</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- 贵公司的产品在何地销售？
  - 只在中国 □ □ □ □ □
  - 只在除中国以外的地方 □ □ □ □ □

- 贵公司由销售产品/备件及由服务/其他获得的营业额的比例是多少？
  - 100% 通过产品/备件 □ □ □ □ □
  - 100% 通过服务/其他收入 □ □ □ □ □

- 您在中国销售您的产品通过自己的工作人员还是代理商/合作伙伴？
  - 100% 通过自己雇员销售 □ □ □ □ □
  - 100% 通过代理商/合作伙伴销售 □ □ □ □ □

2.6：在中国子公司的研究和开发

- 您花费营业额的多少在本地的研究和开发方面？（用于研发方面的投入占营业额的百分比）

- 如果贵公司从事当地研发，那么您从事下列活动的规模有多大：

  不 □ □ □ □ 大规模
  - 为中国市场做出产品调整 □ □ □ □ □
  - 较小的产品改进 □ □ □ □ □
  - 较大的产品创新 □ □ □ □ □
  - 修改工艺 □ □ □ □ □

2.7：关于中国子公司的相关决策的影响力

- 对于中国子公司业务上有重大影响的决策（例如重大产品／工艺修改）由下列群体决定的比例是？

<table>
<thead>
<tr>
<th>决策群体</th>
<th>比例</th>
</tr>
</thead>
<tbody>
<tr>
<td>在中国子公司的本地高层管理人员</td>
<td>%</td>
</tr>
<tr>
<td>在中国子公司的本地较低层的管理人员</td>
<td>%</td>
</tr>
<tr>
<td>中国子公司的当地雇员</td>
<td>%</td>
</tr>
<tr>
<td>德国母公司</td>
<td>%</td>
</tr>
<tr>
<td>非德国母公司(如果存在)</td>
<td>%</td>
</tr>
<tr>
<td>其他</td>
<td>%</td>
</tr>
</tbody>
</table>

总和=100%
3. 中国子公司的信息获取

3.1. 本地高层管理团队的信息获取

对于重要的决定（如产品/工序修改），高层管理团队需要决策信息。您会花多长时间详细调查下列的信息领域，还有来自于每个领域的信息对于重要决定的重要性是多少？

<table>
<thead>
<tr>
<th>信息领域</th>
<th>频繁程度</th>
<th>重要性</th>
</tr>
</thead>
<tbody>
<tr>
<td>社会文化环境</td>
<td></td>
<td></td>
</tr>
<tr>
<td>经济环境</td>
<td></td>
<td></td>
</tr>
<tr>
<td>政治/法律环境</td>
<td></td>
<td></td>
</tr>
<tr>
<td>技术环境</td>
<td></td>
<td></td>
</tr>
<tr>
<td>资本市场/银行</td>
<td></td>
<td></td>
</tr>
<tr>
<td>顾客</td>
<td></td>
<td></td>
</tr>
<tr>
<td>竞争者</td>
<td></td>
<td></td>
</tr>
<tr>
<td>供应商</td>
<td></td>
<td></td>
</tr>
<tr>
<td>自己的产品研发部门</td>
<td></td>
<td></td>
</tr>
<tr>
<td>财务管理</td>
<td></td>
<td></td>
</tr>
<tr>
<td>生产</td>
<td></td>
<td></td>
</tr>
<tr>
<td>德国母公司</td>
<td></td>
<td></td>
</tr>
<tr>
<td>其他母公司（如果存在）</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4. 决策—子公司高层管理团队的特点

4.1. 中国子公司高层管理团队的组成

在中国的子公司里，有多少人属于当地的高层管理团队？

请填写您们子公司高层管理团队中的成员特点（如果超过7名成员，请只填写最重要的成员）：

<table>
<thead>
<tr>
<th>序号</th>
<th>责任范围</th>
<th>国籍</th>
<th>年龄</th>
<th>自何时起成为团队成员</th>
<th>学历</th>
<th>之前工作经历</th>
<th>对团队的影响力</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
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<td>7</td>
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</tr>
</tbody>
</table>
下面报表列出了中国子公司的本地高层管理团队的一些特点，这些特点在决策过程中对产品或工序有着重要的影响。请根据您的个人意见评估这些说法:

### 4.2：本地的高层管理团队在决策过程中的政治行为

<p>| | | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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</tr>
</thead>
</table>
|  | 团队成员主要关注他们自己的目标还是组织的目标？ | 自己的目标 | 不公开 | 完全公开 | 公开程度？
|  | 管理者团队相互之间在决策中对于自身利益所在 | 不公开 | 完全公开 | 重视程度？
|  | 团队成员之间权力的使用对决策的影响程度？ | 不公开 | 完全公开 | 重视程度？
|  | 团队成员之间的协商对决策的影响程度？ | 不公开 | 完全公开 | 重视程度？

### 4.3：本地的高层管理团队在决策过程中的理性程度

<p>| | | | | | |</p>
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</thead>
</table>
|  | 团队在决策中如何寻找信息？ | 根本不 | 宽泛地 | 分析重要程度？
|  | 在决策前团队如何分析相关信息？ | 根本不 | 宽泛地 | 分析重要程度？
|  | 在决策过程中定量分析技术的重要程度？ | 根本不重要 | 非常重要 | 分析重要程度？
|  | 您如何描述对团队决策具有最重要影响的过程？ | 主要是分析 | 非常重要 | 分析重要程度？
|  | 团队将其注意力集中在关键的信息上的有效程度？ | 根本无效 | 非常有效 | 分析重要程度？
|  | 团队忽略无关信息的有效程度？ | 根本无效 | 非常有效 | 分析重要程度？

### 4.4：本地的高层管理团队在决策过程中的直觉程度

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<th></th>
</tr>
</thead>
</table>
|  | 高层管理人员在作出重要决策时依赖个人判断的程度？ | 不重视 | 很重视 | 直觉重要程度？
|  | 高层管理人员在作出重要决策时对以往经验的重视程度？ | 不重视 | 很重视 | 直觉重要程度？
|  | 在许多情况下，高层管理人员没有足够的信息，是否必须依据直觉作出重要的决定？ | 强烈同意 | 强烈反对 | 直觉重要程度？

### 4.5：当地员工在与产品和工艺有关的决策中的参与程度

<p>| | | | | | |</p>
<table>
<thead>
<tr>
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<th></th>
</tr>
</thead>
</table>
|  | 当地高层管理团队得到本公司员工重要建议的频率？ | 经常 | 很少 | 很少 | 参与程度？
|  | 贵公司的员工建议体系是否被使用来改进产品或工艺？ | 任何 | 常用 | 常用 | 参与程度？
|  | 如果运用员工建议体系对贵公司子公司的成功有多重要？ | 非常重要 | 根本不重要 | 参与程度？

---

注：使用“非常同意”、“非常反对”、“非常重视”、“非常不重视”、“非常有效”、“非常无效”等术语进行评估。
5 企业网络-子公司关系

5.1：中国子公司的自主性

请在下列选择中表明，在子公司总的商业活动中，母公司对于子公司的影响：

<table>
<thead>
<tr>
<th>母公司单独决定</th>
<th>中国子公司单独决定</th>
</tr>
</thead>
<tbody>
<tr>
<td>产品创新的采用</td>
<td>〇 〇 〇 〇</td>
</tr>
<tr>
<td>产品改进的采用</td>
<td>〇 〇 〇 〇</td>
</tr>
<tr>
<td>产品价格的改变</td>
<td>〇 〇 〇 〇</td>
</tr>
<tr>
<td>生产工艺的调整</td>
<td>〇 〇 〇 〇</td>
</tr>
<tr>
<td>材料供应商的选择</td>
<td>〇 〇 〇 〇</td>
</tr>
<tr>
<td>交流策略的改变</td>
<td>〇 〇 〇 〇</td>
</tr>
<tr>
<td>生产时间表/计划</td>
<td>〇 〇 〇 〇</td>
</tr>
<tr>
<td>质量检查的决定权</td>
<td>〇 〇 〇 〇</td>
</tr>
<tr>
<td>客户群/市场选择</td>
<td>〇 〇 〇 〇</td>
</tr>
<tr>
<td>公司组织结构的改变</td>
<td>〇 〇 〇 〇</td>
</tr>
<tr>
<td>企业融资的改变</td>
<td>〇 〇 〇 〇</td>
</tr>
</tbody>
</table>

6 中国子公司采纳和执行决策的速度

6.1：决定速度

- 您需要多长时间来决定和执行产品的根本性创新？ (星期)

- 贵公司一般需要多长时间来决定并进行小的产品改进？ (星期)

- 贵公司一般需要多长时间来决定并进行工艺的改进？ (星期)

- 相比您的主要中国竞争对手，您如何评价你们自己对市场发展的反应速度？
  - 相当迅速 〇 〇 〇 〇
  - 相当缓慢 〇 〇 〇 〇
6.2 决策频率

- 中国本地子公司高层多久开一次会决定上述决策？
  - 产品创新
  - 产品改进
  - 生产过程的修改

7 中国子公司的业绩

7.1 主观的业绩评估

与贵公司在中国市场的竞争对手相比，您如何评估子公司过去两年（2006-2007）在下列各方面的业绩...

<table>
<thead>
<tr>
<th>比较好</th>
<th>比较差</th>
</tr>
</thead>
<tbody>
<tr>
<td>市场</td>
<td></td>
</tr>
<tr>
<td>销售增长</td>
<td></td>
</tr>
<tr>
<td>盈利</td>
<td></td>
</tr>
<tr>
<td>市场份额</td>
<td></td>
</tr>
<tr>
<td>信誉</td>
<td></td>
</tr>
<tr>
<td>总体业绩/成功</td>
<td></td>
</tr>
</tbody>
</table>

非常感谢您时间和大力支持!!!

如果您对此项研究的结果感兴趣，请输入您的 e-mail 地址:

E-mail 地址:

若要提交您所填写的数据，请点击下面的"发送"按钮
Curriculum Vitae

► Personal Data

Name Robert Jekel
Date/Place of Birth 07 January 1978 in Bonn/Bad Godesberg, Germany
Contact Robert_Jekel@gmx.de

► Education

10/2005 – 09/2009 University of St. Gallen / Asia Research Centre
Doctoral program International Management East Asia.

02/2007 – 12/2007 Singapore Management University / Lee Kong Chian School
Visiting Research Scholar.

10/1998 – 05/2004 University of Technology Darmstadt
Diplom Wirtschaftsinformatik (Information Systems).

► Work Experience

Since 01/2006 Asia Research Centre St. Gallen / Singapore
Research Assistant: responsible for consulting projects, exchange programs, study trips, and the China Symposium ‘06.

Fellow: analyses of IT infrastructure, core processes, and logistics for retail business.

07/2004 – 12/2004 Droege & Comp Pte Ltd Singapore
Intern: procurement and match-making projects, analysis of the Chinese machinery industry.

Diplomate: development of marketing concept for software to optimize maintenance operation in power plants.

11/1999 – 09/2002 Fraunhofer Gesellschaft/ZGDV e.V. Darmstadt
Research assistant: development of middleware components for artificial intelligence- and agent systems.

08/1998 – 10/1999 Debis Systemhaus GEI mbH Darmstadt
Working student: quality assurance and project documentation in large software project for telecommunication industry.