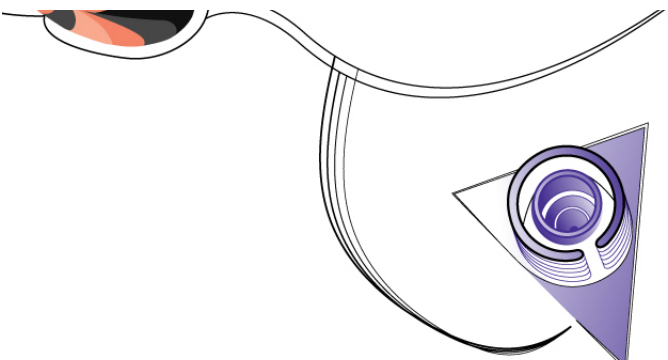
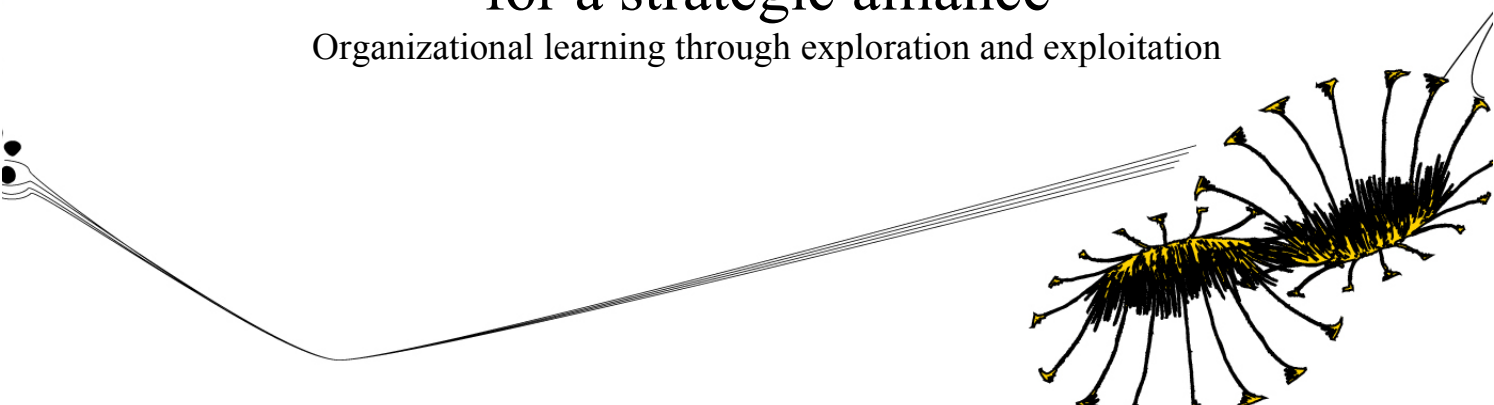


Master Thesis



Exploring the influence of absorptive capacity on German SMEs and their choice for a strategic alliance

Organizational learning through exploration and exploitation



Author: Tabea Sippel
Student number:

Faculty: Behavioural, Management and Social Sciences
Study program: M.Sc. Business Administration
Track: Marketing & Strategy

1st Supervisor: Dr. R.P.A. Loohuis
2nd Supervisor: Dr. N.J. Pulles

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UNIVERSITY OF TWENTE.

Management Summary

Since the last decades, the formation of strategic alliances increases and were recognized as helpful strategy to create competitive advantage. Furthermore, it represents an effective way to develop new skills, to penetrate new markets or to explore new technologies. Strategic alliances are partnerships of at least two organizations that want to achieve strategically objectives. In strategic alliances learning takes place, which relates to the absorptive capacity of the participating organizations and represents one of various reasons to form a strategic alliance. The individual level of absorptive capacity might influence the organizational learning process and finally cause the choice for which type of alliance.

The aim of this thesis is to observe the level of absorptive capacity in SMEs and afterwards to determine whether it influences those companies in the formation of alliances. Also a possible moderating effect of environmental turbulence is tested. To achieve these aims the research questions are: *'To what extent does the level of absorptive capacity of SMEs influence the decision to enter either an exploratory or exploitative alliance?'* and *'How is this influence moderated by the level of environmental turbulence?'*

In this study, a quantitative research method was used in German SMEs. An online survey was prepared and sent out to 910 German SMEs who fulfill the criteria of a small- or medium sized company according to the definition of the European Commission from 2003. The questions were formulated in German and adopted from different research to test for the level of absorptive capacity and environmental turbulence, and whether more explorative or exploitative relationships takes place. Using a 5-point Likert scale tested all questions. During a time period of 40 days a total of 184 respondents participated in the survey, while 63 respondents finalized the survey. Finally, 53 completed surveys were useable for the data analysis with smartPLS to conduct a structural equation modeling.

The analysis of the dataset with smartPLS revealed that a high level of absorptive capacity cause the choice both an explorative and exploitative relationship. The hypothesis that a low degree of absorptive capacity causes the choice for an exploitative relationship was rejected. Additionally, for SMEs no significant moderating effect of environmental turbulence could be proven with this study.

This thesis was inspired by the growing amount of strategic alliances across all industries and types of companies. Furthermore, the current literature lacks on actual studies that focus on strategic alliances as learning opportunity for SMEs. From the findings it can be concluded that a high level of absorptive capacity does not only lead to explorative relationships and that environmental turbulence has no influence on the formation.

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1. Introduction

1.1 Strategic Alliances in General

Since the late 1980s companies recognize that strategic alliances are helpful to create sustainable competitive advantage and therefore it became more and more prominent in today's global economy to establish partnerships with other firms (Gulati, 1998; Elmuti & Kathawala, 2001). The number of strategic alliances rapidly grows since the 1980s (Narula and Hagedoorn, 1999). Moreover, since the 1990s, the number of strategic alliances worldwide doubled (Harbison & Pekar, 1997).

A strategic alliance is defined as: "an agreement between firms to do business together in ways that go beyond normal company-to-company dealings, but fall short of a merger or a full partnership" (Wheelen & Hungar, 2000, p.125). Furthermore, it is "a partnership of two or more corporations or business units to achieve strategically objectives that are mutually beneficial" (Hungar & Wheelen, 2003, p. 11). Judge and Dooley (2006) elaborated that the popularity of strategic alliances increases due to the fact that it represents an effective way to leverage core competencies, to penetrate new markets, or to learn and acquire new skills and strategic capabilities. These points are related to organizational learning and the absorptive capacity of firms. Within current academic literature, strategic alliances are described as opportunity for knowledge acquisition and knowledge access, and further it offers the opportunity of learning for both companies (Van Gils & Zwart, 2004). Earlier scholars such as Koza and Lewin (1998) and Lavie (2006) argued that organizational learning influences companies to enter an exploration or exploitation alliances. However, both types of alliances are essential for organizational learning (Lavie & Rosenkopf, 2006; Lavie et al., 2010).

In 1991, March published the popular exploration-exploitation framework, which represents the basis for many studies related to that topic (Park, Chen & Gallagher, 2002; Lavie & Rosenkopf, 2006; Hoang & Rothaermel, 2010). An interesting study is the one of Koza and Lewin (1998) who distinguished between alliances that are formed by the need to explore new opportunities and those that are formed to exploit already known opportunities. Furthermore, Koza and Lewin (1998) mentioned that there is an extensive list of reasons in academic literature for entering an alliance and that learning alliances (organizational learning) definitely should be included. Srivastava and Frankwick (2011) highlighted that the acquiring and creation of new knowledge represents an essential part of companies to be successful and further that these kind of organizational learning creates competitive advantage. Nowadays, a lot of well-known and successful strategic alliances between multinational corporations (MNCs) are known. For example, the partnership from Starbucks Corporation and Barnes &

Noble, Inc. or the alliance of Apple Inc. with Sony, Motorola and Philips (Elmuti & Kathawala, 2001). Through such alliances between widely known multinationals, less attention is paid to different forms of alliances and relationships between SMEs and their possible advantages.

Within this paper, explorative and exploitative forms of organizational learning will be applied on SMEs due to the fact that empirical findings of Van Gils and Zwart (2004) showed that only a limited number of SMEs is involved in strategic “knowledge-sharing” alliances because they fear the transfer of know-how. At the same time, alliances provide different development and learning options to compensate internal knowledge and resource deficiencies.

1.2 Research Gap

The number of strategic alliances is still growing in all industries but recent studies have shown that small and medium-sized enterprises do not use the high potential of alliances (Narula and Hagedoorn, 1999; Hoffmann & Schlosser, 2001). Furthermore, only a few studies focus on the formation of strategic alliances by SMEs and the importance for such companies (Narula, 2004; Cegarra-navarro, 2005; Muscio, 2007; Zeng, Xie & Tam, 2010). But already during the 1990s Ghobadian and Gellier (1996, p. 83) described SMEs as “the life blood of modern economies”. In Germany, for example, SMEs represent 99,7% of all enterprises according to a data collection from 2003 (Günterberg & Kayser, 2004).

Most of the studies that take SMEs into account, only focus on one theoretical approach or specific circumstances that influence the existing alliance or the alliance formation process. For instance, the research from Hoffmann and Schlosser (2001) about the success factors of already existing alliances in SMEs or the study from Chen and Chen (2003) who takes both the transaction cost and resource-based view (RBV) into account.

Different scholars (Van Gils & Zwart, 2004; Grant & Baden-Fuller, 2004) already highlighted that strategic alliances could play an important role for knowledge acquisition, accessing and learning processes in SMEs. Through the concept of absorptive capacity it is already known that companies differ in their ability to explore or exploit valuable information and to make use of these information (Cohen & Levinthal, 1990). In 2007, Muscio also showed that the absorptive capacity of a SME impact its ability to establish strategic alliances with other companies. Other scholars such as Park et al. (2002) applied the exploration-exploitation framework from March (1991) on the formation of strategic alliances but Cegarra-navarro (2005) mentioned the need for complementary studies in this field, also with a focus on exploration and exploitation of knowledge. Especially for exploration alliances, the level of

absorptive capacity influences the success of the partnership (literature). Through the focus on MNCs within current literature, it is little known about the choices and capabilities of SMEs to engage in either explorative or exploitative alliances and how this decisions might be influenced by different environmental circumstances.

In order to extent and complement the actual studies about strategic alliance formation, this paper focus on the organizational level of absorptive capacity in SMEs and that influence on the formation of exploratory or exploitative alliances for organizational learning.

The following research questions emerged:

“To what extent does the level of absorptive capacity of SMEs influences the decision to enter either an exploratory or exploitative alliance?”

“How is the influence moderated by the level of environmental turbulence?”

1.3 Research Goal

The goal of this study is to observe different levels of absorptive capacity (low and high) and to determine if it influences SMEs in the formation of strategic alliance. Within the literature review, different theoretical explanations for the formation of alliances are introduced in more detail. Furthermore, the concepts of absorptive capacity and exploration and exploitation are introduced on the basis of organizational learning literature in section 2. Through the analysis of 53 completed surveys it was elaborated how absorptive capacity as source for organizational learning affect the formation of strategic alliances in German SMEs. Finally, conclusions are drawn on the level of absorptive capacity and the chosen type of relationship.

1.4 Academic Relevance

Until now; there exist several studies that focus solely on organizational learning through strategic alliances between SMEs (Cegarra-navarro, 2005) or on knowledge management in different SMEs networks, in general (Valkokari & Helander, 2007). Muscio (2007) stated in his paper about the impact of absorptive capacity on SMEs' collaboration that little evidence has been provided about knowledge acquisition in the context of SMEs until today. Furthermore, in many well-known studies about strategic alliance formation, multinational corporations represent the research objects (Gulati, 1995, 1999). This study especially focuses on small and medium-sized enterprises and their individual absorptive capacity, which might influence their decision for either an exploratory or exploitative alliance. Additionally, Gulati

(1995, 1998) already noted that there is a general deficit in research on strategic alliance formation.

1.5 Practical Relevance

The practical relevance of this research is to assess whether SMEs consciously choose between explorative and exploitative relationship concerning their absorptive capacity. This might encourage SMEs to have a look at their absorptive capacity and whether they entered the right type of alliance due to their expected organizational learning. In addition, the findings of the research might highlight a preferred type of strategic alliance with respect to SMEs in Germany.

1.6 Outline of the Thesis

This master thesis is organized into five different chapters. First of all, the overall topic “strategic alliance” is introduced in general. At the same time the actual research gap, the aim of this study and the research question with sub-questions are named. The second part consist of a literature review that covers the different forms of organizational learning and other approaches that represents reasons for strategic alliance formation due to current academic literature.

In the third chapter, the applied methodology will be explained more in detail. This includes the research design and the data collection and analysis process. After the methodology part, the results will be presented. Furthermore, this chapter answers the developed hypotheses from chapter 2. With those answers known, the conclusion part gives the answer to the main research question. That further includes the key findings with regard to the result part.

Finally, the findings will be discussed, interpreted, and compared to other findings in existing research in chapter 5. The last chapter contains a small paragraph about theoretical contributions and practical implication. Chapter 5 ends with limitations of the study and addresses future research topics in this area.

2. Literature Review

2.1 Motivation for Alliances

According to current academic literature, there exist different explanations and theories why companies form strategic alliances. Within this thesis, the focus lies on organizational learning through the formation of strategic alliances (Koza & Lewin, 1998; Van Gils and Zwart, 2004). More precisely, it will be focused on *exploration* and *exploitation* as forms of organizational learning and the moderating role of *environmental turbulence*.

2.1.1 Organizational Learning

During the 1990s Eisenhardt and Schoonhoven (1996) argued that strategic alliances represent an important tactic for enhancing organizational learning to create competitive advantage on the long-term. Later on, Inkpen (1998) noted that all forms of alliances create specific learning opportunities for both partner firms.

Cegarra-navarro (2005) described organizational learning as the “mechanism by which the organization transforms the individual and social knowledge of the competitor into strategic knowledge” (p. 7). Nowadays, organizational learning is also describes as a “function of access to new knowledge and the capabilities for using and building on such knowledge” (Srivastava & Frankwick, 2011, p. 158). This study focus on the different approaches related to organizational learning and the formation of strategic alliances in small and medium-sized enterprises.

Absorptive capacity

Cohen and Levinthal (1990) introduced the concept of absorptive capacity as an organizational capability and defined it as the “ability of a firm to recognize the value of new, external information, assimilate it, and apply it to commercial ends [...]” (p. 128). A firm’s actual absorptive capacity is influenced by its early participation in specific product markets or R&D collaborations (Mowery et al., 1996). When a company successfully absorbs a specific capability from its alliance partner and is further able to imitate it, and finally achieves a better competitive positioning in the market compared to its competitors, the overall asset value of the company will increase (Kogut, 1988). This highlights the importance of absorptive capacity as a source of competitive advantage (Escribano, Fosfuri & Tribó, 2009; Lowik, Kraaijenbrink & Groen 2016), especially for SMEs. Particularly in dynamic technology industries, external knowledge becomes more important to develop specific capabilities that are needed to introduce a new product (George et al., 2001).

According to Flatten, Greve and Brettel (2011, p. 138) absorptive capacity consists of four dimensions: (i) acquisition; (ii) assimilation; (iii) transformation; and (iv) exploitation. Additionally, absorptive capacity is built through ongoing participation in basic research over time (Cohen & Levinthal, 1990) and further, through repeated participation in exploratory activities (e.g. R&D) (Hoang & Rothaermel, 2010). A highly relevant study of Muscio (2007) also demonstrated that the absorptive capacity of SMEs impacts their ability to establish alliances with external organizations. This paper investigates the importance of learning as absorptive capacity and the creation of absorptive capacity through R&D efforts for SMEs. For this study, Muscio (2007) tested the arguments with a sample of innovative SMEs located

in the Lombardy region of Italy. The conclusion that absorptive capacity impacts the ability of SMEs to establish alliances with external organizations is based on tested collaborations with other firms, universities and with technology transfer institutions.

The possibility of a company to absorb and later imitate a specific capability is related to its learning process during the existence of the alliance. A strategic alliance does not only enable knowledge acquisition and knowledge access, it also gives both companies the opportunity of learning (Inkpen, 1998; Van Gils & Zwart, 2004). Furthermore, it enables participating companies to operate proactively and explore new market opportunities and emerging technologies (Lavie, Stettner & Tushman, 2010).

However, several empirical studies highlighted that only a small number of SMEs are involved in strategic “knowledge-sharing” alliances because managers often fear to lose their competitive advantage through knowledge sharing with (possible) competitors (Van Gils & Zwart, 2004). Nevertheless, it is also important for smaller companies to concentrate on learning activities and partnerships with other companies, which are influenced by the level of absorptive capacity.

Exploration & Exploitation

Like already mentioned in the previous paragraph, both exploration and exploitation are related to a firm’s absorptive capacity, which could result in organizational learning. It can be said that some alliances are formed to explore new competencies while other alliances are formed to exploit existing competencies in order to leverage known opportunities (Hoang & Rothaermel, 2010). Within academic literature about exploration and exploitation, research is based on March’s (1991) exploration-exploitation framework (Hoang & Rothaermel, 2010; Lavie, Stettner & Tushman, 2010; Lavie, Kang & Rosenkopf, 2011). According to March (1991), exploration leads to an engagement of individuals and organizations in search, experimentation, and variation whereas exploitation enhances productivity and efficiency through choice and variance reduction.

Another important paper in this field is the work of Koza and Lewin (1998) “who distinguished between alliance activity that is motivated by the need to explore for new opportunities and alliances that are formed to exploit known opportunities” (Hoang & Rothaermel, 2010, p. 736). Scholars such as Lavie and Rosenkopf (2006) and Park et al. (2002) applied the exploration-exploitation framework to strategic alliances.

In their study, Koza and Lewin (1998) summarizes that the choice between exploration and exploitation in alliances is dependent on the firms’ strategic intent, the organizational learning which implies its absorptive capacity, and the expected return. It is expected that firms enter

an exploratory alliance to discover new opportunities through the acquisition of knowledge, skills, and opportunities (Levinthal & March, 1993; Yamakawa, Yang & Lin, 2011). In such alliances both partners are highly motivated to discover something new and to advance the boundaries through a high degree of absorptive capacity (Hoang & Rothaermel, 2010). Earlier, Levinthal and March (1993) also noted that exploration involves “a pursuit of new knowledge” (p. 105). Lavie and Rosenkopf (2006) noted that absorptive capacity in general motivates companies to search for new technologies and it increases the likelihood of identifying new opportunities, which can lead to exploration and alliance formation. Therefore, it might possibly be the case that a high degree of absorptive capacity always leads to exploration alliances due to the fact that it enables firms to apply and internalize the knowledge learned and that it extends the range of partnering opportunities. Within their paper, Lavie and Rosenkopf (2006) name many reasons for companies to focus on exploration and alliance formation due to their absorptive capacity.

Hypothesis 1: A high degree of absorptive capacity, at the level of SME will cause the choice for an explorative relationship.

On the other hand, exploitative alliances are formed to leverage already existing resources and capabilities within the firm (Yamakawa et al, 2011) that typically focus on incremental improvements (Hoang & Rothaermel, 2010). According to Levinthal and March (1993) exploitation involves “the use and development of things already known” (p. 105). Additionally, within exploitative alliances, the learning task is more simplified because each firm focuses mostly on its own area of specialization (Hoang & Rothaermel, 2010). This implies that SMEs possibly tend to engage in exploitative relationship if their own absorptive capacity is low. That also represents the opposite of the argumentation for an exploration alliance based on Lavie and Rosenkopf (2006). Furthermore, Park, Chen and Gallagher (2002) noted in their research that only resource-poor firms, which include low absorptive capacity, form exploitation alliances.

Hypothesis 2: A low degree of absorptive capacity, at the level of SME will cause the choice for an exploitative relationship.

Another kind of research focuses on the type of alliance that results from the choice between exploration and exploitation (Lavie et al., 2010). On the one hand, scholars associated R&D

alliances with the tendency to acquire and generate new skills and knowledge with an exploration alliance. On the other hand, marketing and production alliances are chosen for exploitation alliances to leverage, integrate and implement existing knowledge (Lavie & Rosenkopf, 2006; Park et al., 2002).

2.1.2 Environmental turbulence

Several researchers argued that among others environmental turbulences might affect strategic alliances and the way organizational learning takes place (Florice & Ibanescu, 2008; Srivastava & Frankwick, 2011). Already during the mid 1990s, Day (1995) mentioned that an alliance is an economical and flexible opportunity to deal with increasing market turbulences and other uncertainties. Srivastava and Frankwick (2011) made use of a definition by Milliken (1987) who described environmental turbulence or uncertainty as “the perceived inability of an organization’s key managers to accurately assess the external environment of the organization or the future changes that might occur in that environment” (p. 161).

Environmental turbulence can be divided into market turbulence and technological turbulence. The first is related to the composition of customers and their preferences and technological turbulence means the technological changes within a market (Kohli & Jaworski, 1990). In general, environmental changes like the scarcity of resources can lead to environmental turbulences and the formation of exploration and exploitation alliances to raise organizational learning and handle a specific uncertainty. On the long-term, successful companies have to acquire and create new knowledge, which indicates to make use of their absorptive capacity to be able to handle market and technological turbulences (Srivastava & Frankwick, 2011). As already mentioned within the paragraph about absorptive capacity, George et al. (2001) recognized that external knowledge and learning is especially important for technology companies that mostly operates in a dynamic and fast changing environment.

Hypothesis 3a: High environmental turbulences influence the choice of SMEs for an explorative relationship.

Hypothesis 3b: Low environmental turbulences influence the choice of SMEs for an exploitative relationship.

In relation to the literature review and the six developed hypotheses, the model presented in figure 1 can be prepared. It shows the linear relationship between the two different levels of absorptive capacity and the choice for either an explorative alliance or exploitative alliance.

Furthermore, it includes a low and high degree of environmental turbulences as possible moderating effect.

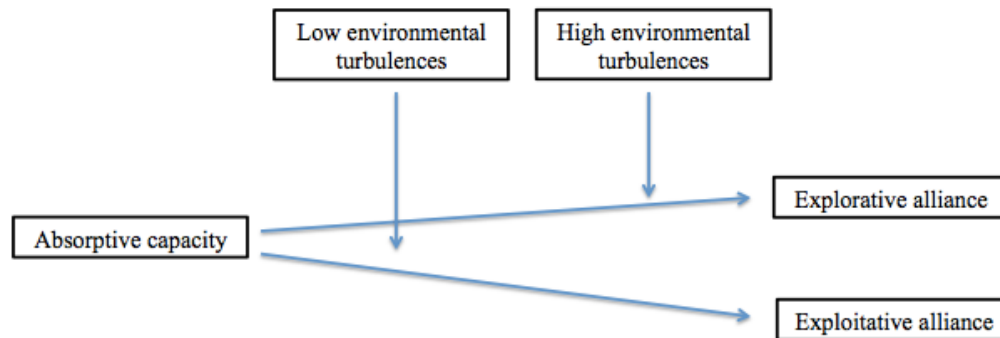


Figure 1 Research Model: Relationship between independent, dependent and moderator variable

3. Methodology

After reviewing the existing literature that led to the two hypotheses, the following paragraphs describes the research methodology, including research design, a description of the data selection and sampling process, the chosen measurement method and the data collection and analysis methods. In addition, two reliability and validity parts exist, one for each statistical method.

3.1 Research Design and Conceptual Model

Within that study two hypotheses were developed, both are aimed at the degree of absorptive capacity within SMEs that cause the decision to either enter an exploitative or explorative alliance. Furthermore, possible factors that might influence this decision-making process were constructed and explained more in detail within the theoretical framework. Regarding the moderating effect of environmental turbulences, two more hypotheses were constructed. In addition, several control variables will be introduced in this part. The research purpose decides whether it is more useful to choose a qualitative or quantitative research approach. On the one hand, the purpose of qualitative research is to describe a phenomenon or generate a theory, and on the other hand, quantitative research aims at exploring causes and making predictions for further research (Thompson & Walker, 1998). In general, a qualitative research results more in an interpretative analysis in comparison to the quantitative approach, which is only a statistical analysis (Thompson & Walker, 1998). For this study, a quantitative research approach was chosen. The gathered data was analyzed by using a Multiple Linear Regression Analysis.

Additionally, an online survey has been applied instead of a face-to-face interview to enable the researcher to gather the necessary information more quickly and efficiently.

Dependent Variables

The hypothesis consists of two dependent variables, namely: (i) exploratory alliance; and (ii) exploitative alliance. These variables represent two possible forms of strategic alliances that can emerge through different levels of absorptive capacity within SMEs. The dependent variables result out of the literature review. At the questionnaire, all questions regarding explorative or exploitative alliances are adapted from Koza and Lewin (1998). In total, five questions are related to each dependent variable.

Independent Variable

For this research, one independent (predictor) variable (absorptive capacity) that possibly influence both dependent variables were evaluated and introduced more in detail within the literature review ahead. Within this research it is assumed that the independent variable influences SMEs in their choice either to enter an exploratory or exploitative alliance. For the measurement of absorptive capacity, a scale developed by Flatten et al. (2010) will be used. Within their study, they developed and validated a multidimensional measure of absorptive capacity that builds on relevant prior literature, pre-tests and two large survey-based studies. Furthermore, the researcher categorizes the results (level of absorptive capacity) into two different types, namely: low and high. The categorization is prepared related to the 5-point Likert scale. This means, results between 1.0 and 2.5 are named “low”, and results that range between 2.6 and 5.0 are categorized as “high”.

Moderator Variable

As a possible moderating variable, *environmental dynamics* were tested with the questionnaire. A moderator variable can be qualitative or quantitative and affects the direction or relationship between the independent (predictor) variable and dependent (criterion) variable (Baron & Kenny, 1986).

Through the literature review it could be assumed that the choice of SMEs to enter an explorative or exploitative alliance is moderated by different environmental circumstances or even called evolutionary and revolutionary changes (Tushman & O'Reilly, 1996). Within the questionnaire, the last 11 questions are aimed at *environmental dynamics*. These questions were adopted from Floricel and Ibanescu (2008).

Control Variables

As control variables, a number of variables were included, known or expected to affect the willingness of companies to form a strategic alliance. Those variables are namely: age and size. Among others, organizational age was chosen as a control variable because Yamakawa et al. (2011) stated that younger firms sometimes face liability of newness, smallness and limited internal resources and capabilities. Furthermore, Yamakawa et al. (2011) argued that an exploitative alliance is more suitable for younger firms to efficiently use their existing resources and capabilities. Finally, the size of the company is important to control for possible effects on the dependent variables.

The mentioned control variables were also used by George et al. (2001) within their study about the effects of alliance portfolio characteristics and absorptive capacity on firm performance. In general, control variables are included to ensure that the results are not biased by not including them.

3.2 Data Selection and Sampling

For this study, SMEs were chosen as respondents because on the one hand SMEs are highly relevant business units for every industrial economy (Ghobadian & Gellera 1996; Eikebrokk & Olsen, 2007) and on the other hand, for example in Germany, represent SMEs 99,7% of all enterprises according to a data collection from 2003 (Günterberg & Kayser, 2004). According to a classification scheme of the European Commission from 2003, two main criteria are relevant to define a SME as suitable sample: size and value of sales turnover (Dangayach & Deshmukh, 2005; Rothkegel et al., 2006; Eikebrokk & Olsen, 2007).

The selected companies can be considered as small or medium sized enterprises if they have less than 250 employees and an annual turnover less than €50 million or an annual balance sheet total not exceeding €43 million (European Commission, 2003). From different studies (Rothkegel et al., 2006; Eikebrokk & Olsen, 2007) it is known that the definition of SMEs can differ between countries and indeed between industries. For this study only the two criteria needs to be fulfilled for a successful data selection and the operating industry as well as the country of origin are not relevant. Since strategic alliances can occur in all industries, sectors and operating countries.

For a quantitative research approach, a large and representative sample is expected, which further needs to be randomly selected (Thompson & Walker, 1998). The sample in a research is the result of the data selection process ahead. At first a database with e-mail addresses of SMEs who fulfill the criteria was created because there existed no directory for

this purpose. The creation of the database was very time consuming but simple and in the end it consisted of 910 German SMEs across all industries.

3.3 Measurement

In chapter 2 the main constructs of the conceptual model were introduced and explained. In general, it can be assumed that the dependent variable is positively or negatively influenced by one or more independent variables (Blumberg, Cooper & Schindler, 2008). Within this study two dependent variables (*explorative alliance* and *exploitative alliance*) and one independent variable (*absorptive capacity*) were developed. Using an online survey tests these different constructs and their indicators are measured by using a 5-point Likert scale. When using a Likert scale there are typically 5 categories of response (Jamieson, 2004). In this case, the Likert scale ranged from *strongly disagree* (1) to *strongly agree* (5). This response categories form a rank order, which made the Likert scales an ordinal measurement level with intervals that cannot be equal (Jamieson, 2004).

The questionnaire tested the variables through multiple questions – asked in an indirect manner. Furthermore, the operationalization of the main constructs can be found in Table 1.

Construct	Code	Items
Absorptive capacity	ACQ_1	Search for relevant information
	ACQ_2	Use information sources
	ACQ_3	Deal with external information
	ASM_4	Cross-departmental communic.
	ASM_5	Cross-departmental support
	ASM_6	Quick information flow
	ASM_7	Cross-departmental meetings
	TRF_8	Ability to use collected knowledge
	TRF_9	Absorb new knowledge
	TRF_10	Linking existing & new knowledge
	TRF_11	Applying new knowledge
	EXP_12	Development of prototypes
	EXP_13	Reconsideration of technologies
	EXP_14	Effectiveness by adopting
Exploitative alliance	EPR_15	Focus maintaining current business
	EPR_16	Increasing productivity
	ERP_17	Improving/refining capabilities
	ERP_18	Focus on standardization
	ERP_19	Reducing production cost
Explorative alliance	EPI_20	Innovative activities

	EPI_21	Focus on basic research
	EPI_22	Inventions
	EPI_23	Building new capabilities
	EPI_24	Entering new lines of business
Environmental dynamics	EVD_25	Total sales growth
	EVD_26	Sales growth in opened niches
	EVD_27	Fast pace of change
	EVD_28	Often new competitors
	EVD_29	Techn. frontier advances fast
	EVD_30	Ext. factors forces transformation
	EVD_31	Redefinition of sector boundaries
	EVD_32	Significant sector developments
	EVD_33	Competitors challenge position
	EVD_34	Rivals erode advantages
	EVD_35	Attack from low-cost substitutes
Control Variables	CVA_1	Company age
	CVA_2	Number of employees

Table 1 Operationalization of Constructs

For this questionnaire, the questions regarding absorptive capacity were adopted from Flatten et al. (2011). Additionally, the questions that tested exploration and exploitation were adopted from the Koza and Lewin (1998) paper. Last but not least the questions that focused on the current environmental dynamics were adopted from Floricel and Ibanescu (2008). For the control variables, the participants were asked to enter the company age and their actual number of employees.

3.3.1 Reliability and Validity

According to Henseler, Hubona and Ray (2016) “PLS path modeling results can be assessed globally [...] and locally [...]” (p. 9). The global assessment refers to the goodness of model fit and for PLS path modeling it can only be tested with the standardized root mean square residual (SRMR), which represents a measure of approximate fit. The recommended threshold for the SRMR is 0.08 and it answers the question “how substantial the discrepancy between the model-implied and the empirical correlation matrix is” (Henseler et al., 2016, p. 9). In this model, the goodness of model fit for the bootstrapped model is above the recommended threshold of 0.08 (Table 2). It can be argued that there is an adequate fit and that the specified model reproduces the observed covariance matrix among all indicators.

	Original Stichprobe (O)
Saturiertes Modell	0.098
Geschätztes Mo...	0.099

Table 2 Goodness of model fit (SRMR)

As a next step the reflective measurement models needs to be assessed. In table 3, three different measures are indicated. The values in the first two columns for Cronbach's α and ρ_A relates to the construct reliability of the model. One of the two values for Cronbach's α are above the threshold of .8 and only one value with .7 can be regarded as acceptable. The so-called Dijkstra-Henseler's rho (ρ_A) represents the most important reliability measure for PLS (Henseler et al., 2016). The threshold and interpretation is equal to Cronbach's α and the values in table 3 shows that the indicators are internally consistent. Through the treatment as formative measurement model, the Dijkstra-Henseler's rho is equal 1.0. The last test for reliability is shown with the values for the composite reliability in the last column. Again, all values are above .7 and .8, and therefore acceptable to confirm a construct reliability for the measurement models.

	Cronbach's Alpha	rho_A	Composite-Reliabilität
ACAP		1.000	
Exploitative	0.694	0.797	0.785
Explorative	0.857	0.868	0.897

Table 3 Assessment values of the reflective measurement model

Last but not least, it is also important to have a look at the validity of the measurement models. One common method is to test for discriminant validity by using the Heterotrait-monotrait Ratio of Correlation (HTMT) (Henseler et al., 2016). In this case, the threshold for small samples is $HTMT < 0.85$. The HTMT is an estimate of the construct correlation and with values significantly smaller than 0.85, the concepts of the current model are unrelated (Table 4). In other words, the included factors are clearly discriminant.

	ACAP	Exploitative	Explorative
ACAP			
Exploitative	0.791	0.662	
Explorative	0.810	0.604	0.799

Table 4 Discriminant validity (HTMT)

After assessing the measurement models it is also necessary to evaluate the structural model. This kind of assessment is less developed because the major focus should lie on the tests of

model fit (Henseler et al., 2016). But it is possible to look at R^2 and the adjusted R^2 (Table 5). Both coefficients of determination (R^2) show a strong effect based on Cohen (1988). R^2 is always between 0 and 100%. In general, the higher the R^2 , the better the model fits the data. The adjusted R^2 (.649) in Table 5 indicates that 64,9% of the variability in the dependent variable (explorative) can be explained by the independent variable. The adjusted R^2 for the second dependent variable (exploitative alliance) shows that 61,9% of the variability in the dependent variable can be explained by the independent variable.

	R Quadrat	R-Quadrat angepasst
Exploitative	0.626	0.619
Explorative	0.656	0.649

Table 5 R^2 and Adjusted R^2

3.4 Data Collection

Due to the fact that all SMEs who fulfill the two definition criteria's are suitable to participate in this study, an online survey was chosen as data collection method to possibly reach a high number of participants in a cost-saving manner. Furthermore, data in quantitative research is usually generated from responses to (online) questionnaires (Thompson & Walker, 1998). During the 20th century the field of survey research became more popular in scientific research and the revolution in technology also revolutionized the way in which scholars administered surveys. E-mail surveys and web-based surveys were firstly possible in the 1980s and 1990s (Evans & Mathur, 2005). At the beginning of the 21st century, scholars expected that the majority of surveys would be conducted online in the near future (Schonlau, Ronald & Elliott, 2002). Furthermore, online surveys are seen as more interesting, important and enjoyable than classic surveys (Edmonson, 1997).

Nevertheless, online surveys possess advantages and disadvantages for scholars and their research (see appendix B).

Through the ongoing globalization and the development of the Internet, the potential for online surveys is generally greater but there are still differences between more industrialized countries and less-developed countries (Evan & Mathur, 2005). The Internet enables researchers to obtain data and information from respondents around the globe. That is possible with a high amount of flexibility and speed, less time-consuming than face-to-face interviews, and at low cost (Evan & Mathur, 2005; Wright, 2005).

Another relevant advantage of online surveys is the great diversity for questions. With online survey scholar are capable to choose between dichotomous question, scales (e.g. Likert scale), or multiple-choice questions, for example (Evan & Mathur, 2005).

However, even online surveys present some disadvantages, also in comparison to other techniques. A major problem for researchers is to prevent the identification as junk mail or spam (Evan & Mathur, 2005). Another challenge is to create a representative sample through the use of online surveys. The creation of a large sample through the Internet and the globalization is relatively easy in comparison to reach a representative sample. At the early days of the Internet, “users of email were not truly representative of the general population in countries around the world” (Evan & Mathur, 2005, p. 201). But already in 2002 Fricker and Schonlau mentioned that the differences between the online and offline population would be insignificant in the near future.

Furthermore, face-to-face interviews are in comparison more personal than online surveys. The missing human contact can limit the ability to get in-depth answers. Therefore, it is really important to give clear answering instructions for the respondents that they are able to finish the entire questionnaire (Evan & Mathur, 2005).

Another possible disadvantage are privacy and comparison issues of respondents. Because the level of security in standard email surveys is not on a high level and further respondents often “wonder if their answers will be treated confidentially, and whether their contact information will be sold to other firms (Evan & Mathur, 2005, p. 202).

For this study, the collected data was only used once and participants were ensured that the data were collected anonymously. First, the online survey was designed by using the web-based tool Questback, which is one of the market leaders for feedback management software's and online surveys. Afterwards the link to reach the survey was put online and executives from SMEs were invited to participate by email and on social media platforms like LinkedIn and XING. During a time period of 40 days (01.12.2016 – 10.01.2017) a total of 184 respondents participated in the online survey, while 63 of those finalized the questionnaire, which means a response rate of 34,24% (Figure 2). Additionally, 10 out of the 63 complete responses have to be deleted for the adjusted dataset. Among others, companies with more than 250 employees were deleted.

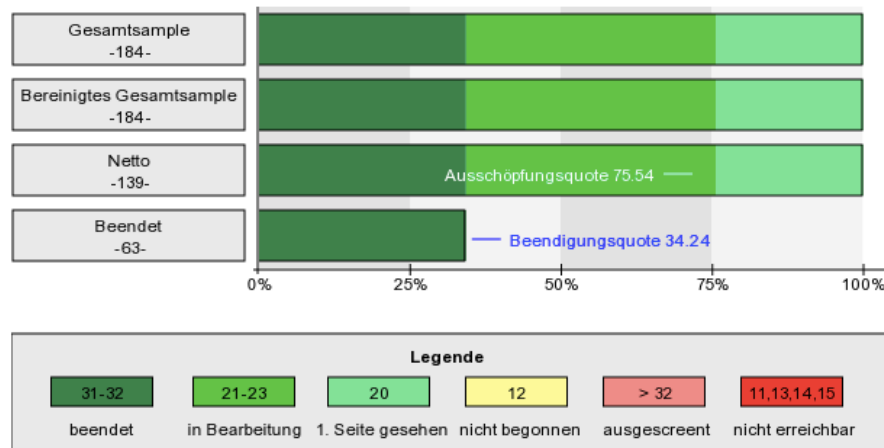


Figure 2 Repsonse rate (Beendigungsquote)

3.5 Data Analysis

3.5.1 Descriptive Statistics

The outcome of the first control variable (age of the participating company) is shown in Table 6. It shows that the participating companies (n=53) exist for around 48 years on average. Table 7 shows the outcome of the second control variable, which was about the number of employees. In this case the average amount of employees in all participating SMEs is 110. Only companies that fulfill the criteria of a small and medium-sized company with no more than 250 employees were included for the analysis.

Descriptive Statistics		
	N	Mean
Age of company	53	48,42
Valid N (listwise)	53	

Table 6 Descriptive statistics (CVA_1)

Descriptive Statistics		
	N	Mean
No. of employees	53	109,94
Valid N (listwise)	53	

Table 7 Descriptive statistics (CVA_2)

3.5.2 Structural Equation Modeling

Since this thesis is based on a quantitative research, a structural equation modeling (SEM) is used to test for linear relationships between the different variables and the stated hypotheses (Lassen, Madsen & Vatrapu, 2014). The analysis is supported through the use of the computer software smartPLS. The data is directly downloaded in the correct data format from

Questback to open it with smartPLS and IBM SPSS Statistics (Version 22) to compute different variables.

A structural equation model was chosen to test the influence of one independent variable on multiple dependent variables statistically. Within academic literature, scholars distinguish between covariance- and variance-based SEM (Henseler et al., 2016). For this evaluation the partial least square (PLS) path modeling technique was chosen, which is a variance-based SEM statistical method. Between the two different SEM techniques, PLS is known as the “most fully developed and general system” (McDonald, 1996, p. 240). Additionally, PLS path models contains reflective models or formative models (Henseler, 2005; Henseler et al., 2016). In the current paper, the construct measurement of the independent variable is formed of a formative measurement model and the two construct measurement models of the dependent variables are treated as reflective models.

Nevertheless, scholars such as Hair et al. (2010) advise against the structural equation modeling as analysis technique because of its complexity and inability to test for moderating relationships. In order to be able to test the effect of the moderator variable *environmental dynamics*, the t-test statistics has to be calculated by using the sample size, regression weights and standard error. All these data is displayed within smartPLS after bootstrapping all model parameters. Bootstrapping is a necessary step in PLS path modeling that draws a “large number of re-sample with replacement from the original sample, and then estimating the model parameters for each bootstrap re-sample” (Henseler et al., 2016, p. 5).

4. Results

This chapter focuses on the evaluation of the collected data by using smartPLS and the analysis of the hypotheses. The first paragraph represents the results of the SEM through the creation of a partial least square equation. In the second paragraph the moderating effect of environmental dynamics will be illustrated and analyzed. Finally, the last paragraph shows an overview of the testes hypotheses and summarizes whether the hypotheses can be accepted or rejected.

4.1 Structural Equation Model

With the computer software smartPLS, it is possible to perform the so-called variance-based SEM technique: partial least square (PLS) path modeling.

Figure 3 illustrates the outgoing measurement models and the structural model, which is not given by the data; instead the researcher always models it. In this case three reflective measurement models occurred with three latent variables that cause the affiliation of the

indicators. The first measurement model including the latent variable *absorptive capacity* represents an exogenous measurement model while in comparison the other two latent variables are part of an endogenous measurement model because both are dependent on another latent variable.

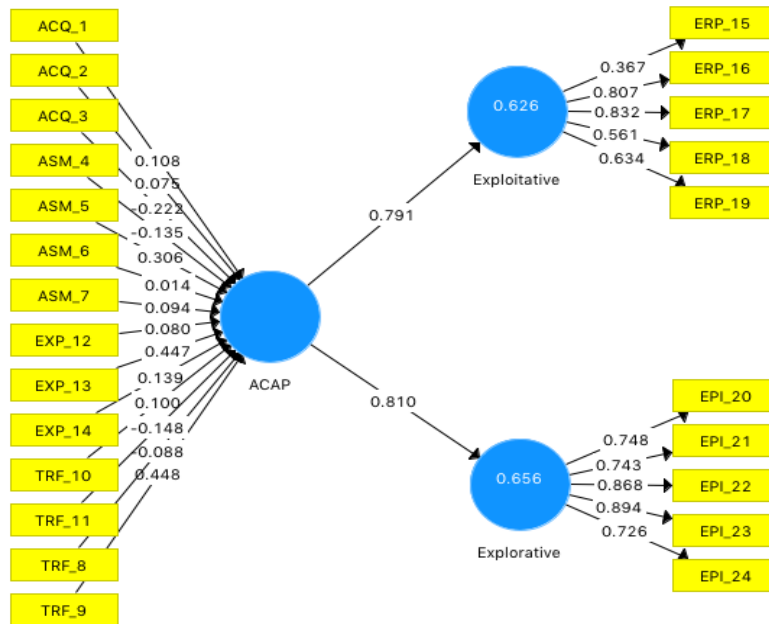


Figure 3 PLS model before Bootstrapping

Starting point for the evaluation of a PLS path model is R^2 of the two endogenous latent variables in the reflective measurement model that can be interpreted like a normal linear regression coefficient (Henseler, 2005). For the latent endogenous variable *exploitative alliance* R^2 accounts for 62.6%. That number indicates that 62.6% of the variation in exploitative alliance is explained by absorptive capacity. Furthermore, for *explorative alliance* R^2 accounts for 65.6%. That number indicates that 65.6% of the variation in explorative alliance is due to absorptive capacity.

Also the two path coefficients can be interpreted as standardized regression coefficients that resulted from an ordinary linear regression analysis. On the one hand, for one unit increase in the independent variable, the model predicts that exploitative alliance, as dependent variable will increase by .791 units. And on the other hand, for one unit increase in absorptive capacity, the model predicts that explorative alliance will increase by .810.

Afterwards, it is also necessary to interpret the results of the effect size f^2 (Table 8), which is calculated by using the adjusted R^2 . These values indicate the influence of the independent latent variable on the dependent latent variables (Henseler, 2005). The value $f^2 = 0.17$ for

exploitative alliance shows a moderate effect on that endogenous latent variable. The lower value for *explorative alliance* with $f^2 = 0.19$ shows a stronger moderate effect at the structural level. But it can be said that both values are close together and are similarly affected by the influence of the independent latent variable *absorptive capacity*.

	ACAP	Exploitative	Explorative
ACAP		1.676	1.906
Exploitative			
Explorative			

Table 8 Effect size f^2

Through the bootstrapping process, the sample size increases up to $n=500$. The model parameters were bootstrapped without any changes in the standard settings in smartPLS. The bootstrapping process enables the researcher to test the significance of the two path coefficients. The path coefficients or regression weights are highly significant for all relationships with $p\text{-value} < .01$. For the first dependent variable, the path coefficient shows that a high degree of absorptive capacity leads to exploitative relationships. Equally, the path coefficient of the second dependent variable indicates that a high degree of absorptive capacity leads to explorative relationships. The empirical results of the bootstrapped model are presented in table 9. Those results indicate that a generalizability of the sample is applicable.

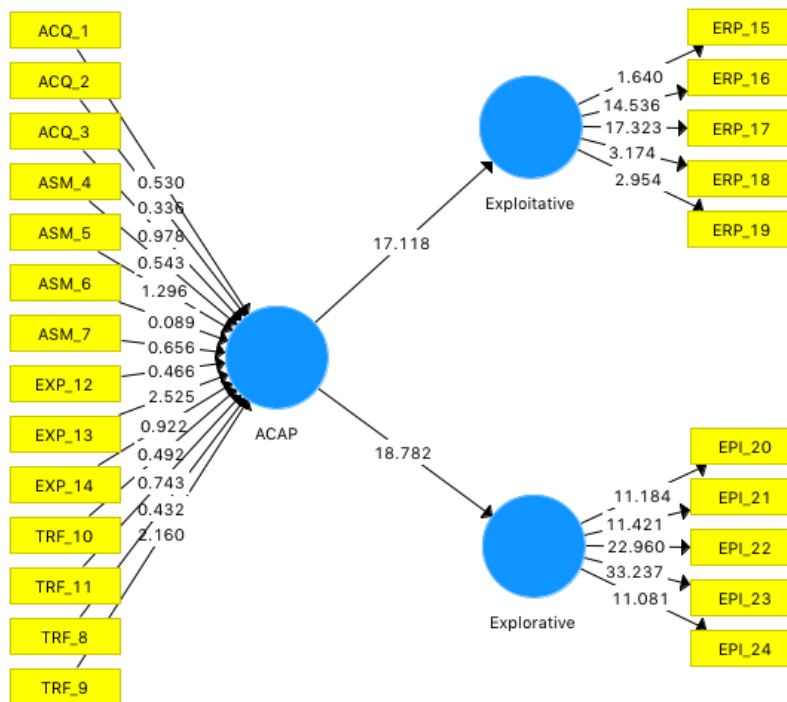


Figure 4 PLS model after Bootstrapping

	Original Stichprobe (O)	Stichprobenmittelwert (M)	Standardabweichung (STABW)	T-Statistik (O/STABW)	P-Werte
ACAP -> Exploitative	0.791	0.825	0.046	17.118	0.000
ACAP -> Explorative	0.810	0.835	0.043	18.782	0.000

Table 9 PLS values after Bootstrapping (Total effects)

4.2 Moderator Analysis

After successfully bootstrapping all model parameters up to a sample size 500, all relevant data is given to test the influence of *environmental dynamics* as moderator variable. In general, moderating effects are not taken into account within structural equation model but in the literature, the importance of moderators in order to understand complex relationships is repeatedly highlighted (Chin, Marcolin & Newsted, 2003). Such an analysis examines whether a third variable influences the relationship between the independent variable and the dependent variable.

To test the influence of the moderator variable, the variable was computed into two dichotomous variables. The first includes all respondents who answered that they face a low degree of environmental dynamics (< 2.5). The second variable includes all respondents with high environmental dynamics (> 2.51). This step was necessary in order to calculate the effect with both dichotomous variables separately. To check whether the difference between the

groups is significant a t-test was calculated with a confidence interval of 95%. Within table 10 the results for the dependent variable *exploitative alliance* are shown. With a confidence interval of 95% and a p-value > 0.05 it can be said that the moderator variable has no moderating effect on the direct relationship between absorptive capacity and exploitative alliances.

Difference in slopes test		
	Low degree of ED*	High degree of ED
Sample Size	17	36
Regression Weight	0,772	0,839
Standard Error (S.E.)	0,438	0,058
t-statistic	0,223	
p-value (2-tailed)	0,825	
*ED = Environmental Dynamics		

Table 10 Test statistics for moderating effect (exploitative)

The other table (table 11) shows the results for the second dependent variable *explorative alliance*. The analysis indicates with a confidence interval of 95% and a p-value > 0.05 that environmental dynamics has no moderating effect on the relationship between absorptive capacity and explorative alliances.

<i>Difference in slopes test</i>		
	Low degree of ED*	High degree of ED
Sample Size	17	36
Regression Weight	0,836	0,826
Standard Error (S.E.)	0,062	0,066
t-statistic	0,097	
p-value (2-tailed)	0,923	
*ED = Environmental Dynamics		

Table 11 Test statistics for moderating effect (explorative)

4.3 Hypothesis Overview

The table below (table 12) represents an overview of the tested hypotheses and shows whether the hypotheses can be accepted or rejected.

Hypothesis	Description	Accepted/Rejected
H1	A high degree of absorptive capacity, at the level of SME will cause the choice for an explorative relationship.	Accepted
H2	A low degree of absorptive capacity, at the level of SME will cause the choice for an exploitative relationship.	Rejected
H3a	High environmental turbulences influence the choice of SMEs for an explorative relationship.	Rejected
H3b	Low environmental turbulences influence the choice of SMEs for an exploitative relationship.	Rejected

Table 12 Overview of Accepted and Rejected Hypotheses

5. Discussion and Conclusion

The aim of this thesis was to investigate the influence of absorptive capacity on the choice for an exploitative or explorative alliance in SMEs and to see how this choice is moderated by environmental dynamism. This chapter draws attention on the key findings and the interpretation of the empirical study from the previous chapter as well as the central research question. The results of the statistical analysis are already presented above in chapter 4. Within this chapter, the conclusion part outlines which consequences can be drawn with regard to SMEs and their choice of alliances. Furthermore, in the subsequent section we focus on theoretical contributions and managerial implications. Finally, the chapter concludes with limitations of the thesis and future research potential of this study.

Due to the evident role of alliances in all industries, the current academic literature and amount of empirical studies are extensive. However, a lot of niches in this wide field still need to be discovered. This could be the advantage for SMEs to form a strategic alliance with other SMEs or with MNCs and possible barriers of SMEs to participate in strategic alliances. This thesis contributes to this quest by focusing on organizational learning in SMEs and the choice for an exploitative or explorative alliance. The literature review narrows organizational learning down into exploration and exploitation as part of absorptive capacity. The results of the PLS analysis in figure 3 and figure 4 show a significant positive correlation of absorptive capacity on both exploitative and explorative types of strategic alliances. Therefore, it is possible to accept the first hypothesis. Due to the empirical findings it can argued (with a 95% CI and $p\text{-value} < .05$) that a high degree of absorptive capacity cause the choice for an explorative relationship. Current academic literature from Hoang and Rothaermel (2010) and Yang et al. (2011) support the hypothesis that a high degree of absorptive capacity is necessary to fulfill the expectations to discover something new and to acquire new knowledge and skills from the alliance partner.

Nevertheless, this study rejects the second hypothesis (H2). With a confidence interval of 95% and a $p\text{-value} < .05$ it can be said that a low degree of absorptive capacity not only cause the choice for an exploitative relationship in SMEs. This represents an unexpected finding according to literature from Yamakawa et al. (2011) who argued that firms in an exploitative alliance only focuses on incremental improvements where a low degree of absorptive capacity will satisfy both partner because they do not aim for exploring new capabilities. Therefore, it seems to be the case that SMEs with a high degree of absorptive capacity also seeks for exploitative relationships. An alternative explanation might be that companies who operate in

an innovative environment use alliances to scale up a new product or to reach new markets and segments. In addition, an exploitative relationship might be helpful for SMEs who wants to get in contact with other companies to learn more about a new industry for an invented product, independently from its absorptive capacity.

Furthermore, the results of *environmental dynamics* as moderating effect are also unexpected. Both t-statistics with p-values $> .05$ show that a turbulent environment does not affect the choice for either an explorative or exploitative alliance. But within current literature different scholars argue that environmental turbulences might affect strategic alliances (Florice & Ibanescu, 2008) and that alliances serve as opportunity to handle turbulent markets or a turbulent business environment (Day, 1995). Those are important results, which demonstrate that the actual situation of the external environment is not taken into account in SMEs during the decision-making process for a type of strategic alliance. In addition, it highlights the willingness to choose both types of alliances independently from the degree of absorptive capacity. For SMEs it seems to be more relevant to choose the ideal type of alliance regarding the expectations and capabilities than handling turbulent market conditions through partnerships. An explanation could be the case that alliances are often long-term oriented partnerships but an environmental situation mostly exists on the short-term. Perhaps this is an indication for more ambidextrous organizations among SMEs because as already mentioned in the literature review; both exploration and exploitation are essential parts of organizational learning (Lavie & Rosenkopf, 2006; Lavie et al., 2010).

According to the results of the PLS path modeling, H1 can be accepted but H2 has to be rejected. In relation to the main research question, it can be stated that a high level of absorptive capacity causes the choice for an explorative alliance. However, a low degree of absorptive capacity at the level of SME does not necessarily cause the choice for an exploitative relationship. Additionally, it can be assumed that a high degree of absorptive capacity also causes the choice for an exploitative relationship. Lastly, the given data of the structural equation modeling are clear and strongly disagree to a paper of Day (1995) and Florice and Ibanescu (2008) that environmental dynamics has a moderating effect on the decision for either an explorative or exploitative alliance.

5.1 Contribution & Implications

The thesis provides several contributions and implications for theory and practice. These findings contribute to the importance of absorptive capacity during the formation of strategic alliances, and especially to the theoretical effect of environmental turbulences.

The first theoretical or scientific contribution refers to the paper of Koza and Lewin (1998). The paper concluded that the choice between an explorative or exploitative alliance is dependent on firm's intent of organizational learning, which also implies a firm's absorptive capacity. Hoang and Rothaermel (2010) further used this argumentation who also divided the choice for an explorative or exploitative relationship due to a firm's expectation and related contingency to acquire knowledge and skills. But the results of this study highlighted that both types appear in practice, independently from a firm's absorptive capacity. Nevertheless, the empirical findings support the hypothesis (H1) that a high degree of absorptive capacity causes the choice for an explorative relationship, which is in line with several arguments of Hoang and Rothaermel (2010).

Another contribution of this thesis to the theory is that it can be stated that environmental turbulences/dynamism are not relevant for SMEs and their choice for one type of strategic alliance. This finding contradicts the argumentation of several researchers that the environment might affect alliances and the way organizational learning takes places (Florice & Ibanescu, 2008; Srivastava & Frankwick, 2011). An explanation might be that the environment is fast changing but the alliances are often long-term relationships, which means it makes no sense for SMEs to look at the actual environmental situation when it can be frequently changed during the relationship. Furthermore, a strategic alliance does not assume that both partners face the same environmental turbulences or that both struggle with highly dynamic environment.

The outcome of this study also makes a significant contribution to practice and those SMEs who are interested in forming new strategic alliances. First, it was observed that a low degree of absorptive capacity do not necessarily lead to an exploitative relationship, also explorative relationships are preferred. There are already SMEs in explorative alliances that want to be successful and acquire new knowledge and skills with a low level of absorptive capacity. If those SMEs are really successful with an exploration alliance needs to be observed in future research and maybe discussed for different industries.

However, it can be stated that SMEs do not struggle to form either an explorative or exploitative alliance regarding their environmental circumstances. Both types of relationships are not affected by environmental turbulences.

All in all, the outcome of this study provides several contributions to the existing literature concerning organizational learning in (or through) alliances with a focus on SMEs across all industries. Furthermore, it is intended that the findings inspire more SMEs to form new alliances to acquire and absorb necessary competencies for their long-term survival.

5.2 Limitations & Future Research

When interpreting research findings, several limitations appear and have to be kept in mind. This chapter reflects upon these restrictions and ends with a recommendation for future research within this area.

First of all, only German SMEs were contacted to participate in this study. Therefore, the findings have to be interpreted in that cultural context. In further research the sample strategy might be improved and a probability sampling could enhance the representativeness of the research. Furthermore, the given dataset was gathered in a cross-sectional online survey, which means that the results represent the situation of the participants at a specific point of time and therefore lack generalizability of the findings. A future study with longitudinal data could clarify a possible change of absorptive capacity in SMEs and the chosen type relationship.

Similarly, the amount of 53 participants represents a limitation of the research. In future research the sample size should be increased to improve the generalizability of findings. It was difficult to convince more SMEs to participate in the online survey within a time period of one month. Therefore, a longer enquiry period might automatically increase the number of completed surveys. For the present research only completed surveys were considered and a screening of the uncompleted surveys revealed that many participants lost interest at the same stage of the online survey. A reduction or restructuring of items might enhance the motivations to complete the survey.

Finally, certain improvements for further research topics in this area need to be addressed. A possible next step is the performance of a qualitative research (e.g. interviews) in order to gain deeper understanding of absorptive capacity in SMEs and their types of strategic alliances. An investigation, in form of a qualitative research can validate the outcome regarding the moderating effect of environmental dynamics as well as the positive linear relationship between the independent variables and both dependent variables.

In addition, future research could concentrate on possible differences between industries through the focus on one or two certain industries. Like already mentioned in the previous

chapter, only German SMEs participated in this study. Therefore, it is advisable for further research to gather data from different countries to increase the generalizability and reliability of findings.

Last but not least, future researchers could observe the role of the resource-based view and the transaction-cost approach in SMEs concerning their choice for explorative or exploitative alliance. Those researchers only have to implement two more independent variables into the current model.

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Appendix

Appendix A – Questionnaire (in German)

Fragebogen

Anzahl der Mitarbeiter: _____

Alter des Unternehmens (in Jahren): _____

Bitte geben Sie an, inwieweit Ihr Unternehmen externe Ressourcen nutzt um Informationen zu erhalten (z.B. Consultants, Seminare, Datenbanken, Marktforschung, wissenschaftliche Magazine).

1. Die Suche nach industrierelevanten Informationen gehört zum Tagesgeschäft.
2. Das Management motiviert unsere Mitarbeiter industriebezogene Information zu verwenden.
3. Das Management erwartet, dass die Mitarbeiter industrieübergreifende Informationen anwenden können.

Bitte geben Sie an inwieweit die folgenden Aussagen auf Ihre unternehmerische Kommunikationsstruktur zutreffen.

4. In unserem Unternehmen werden Ideen und neue Konzepte bereichsübergreifend kommuniziert.
5. Das Management fördert bereichsübergreifende Kommunikation, um Probleme zu lösen.
6. Im Unternehmen gibt es einen schnellen Informationsaustausch.
7. Das Management erwartet regelmäßige bereichsübergreifende Treffen zum Austausch neuer Entwicklungen und auftretender Probleme.

Bitte geben Sie an, inwieweit die folgenden Aussagen auf die Wissensverarbeitung in Ihrem Unternehmen zutreffen.

8. Unsere Mitarbeiter haben die Fähigkeit gesammeltes Wissen zu strukturieren und zu benutzen.
9. Unsere Mitarbeiter sind es gewohnt neues Wissen zu absorbieren, sowie dieses Wissen für den weiteren Gebrauch vorzubereiten und verfügbar zu machen.
10. Unsere Mitarbeiter verknüpfen erfolgreich bereits existierendes Wissen mit neuen Erkenntnissen.
11. Unsere Mitarbeiter können neues Wissen praktisch anwenden.

Bitte geben Sie an, inwieweit die folgenden Aussagen auf die kommerziellen Verwertung von neuem Wissen in Ihrem Unternehmen zutreffen. (Bitte ziehen Sie alle Abteilungen in Betracht, wie etwa Marketing, R&D, Controlling).

12. Unser Management unterstützt die Entwicklung von Prototypen.
13. Unser Unternehmen überprüft regelmäßig aktuelle Technologien und passt diese neuem Wissen und Erkenntnissen an.
14. Unser Unternehmen hat die Fähigkeit effektiver zu arbeiten, wenn neue Technologien angenommen werden.

Bitte geben Sie an, inwieweit die folgenden Aussagen auf Ihr Unternehmen zutreffen.

15. Die Mehrheit unserer (Geschäfts)-Beziehungen mit Kunden, Lieferanten und Dritten basieren auf der Aufrechterhaltung aktueller Angelegenheiten.
16. Unser Unternehmen hat in letzter Zeit die Produktivität des eingesetzten Kapitals und der Vermögenswerte erhöht.
17. Unser Unternehmen verbessert und verfeinert regelmäßig bestehende Fähigkeiten und Technologien.
18. Unser Unternehmen legt seinen Fokus auf die Standardisierung von Prozessen.
19. Unser Unternehmen versucht die Produktionskosten stetig zu reduzieren.
20. Die Mehrheit unsere (Geschäfts)-Beziehungen mit Kunden, Lieferanten und Dritten basieren auf innovativen Aktivitäten zur Erweiterung zukünftiger Geschäfte.
21. Unser Unternehmen fokussiert sich unter anderem auf Grundlagenforschung.
22. Unser Unternehmen bringt neue Erfindungen hervor.
23. Unser Unternehmen erschafft neue Möglichkeiten.
24. Unser Unternehmen hat in letzter Zeit neue Märkte betreten.

Bitte präzisieren Sie, inwieweit die folgenden Aussagen Ihre aktuellen Kontext beschreiben.

25. Der Gesamtumsatz in unserer Branche wächst sehr stark im Vergleich zu anderen Branchen.
26. Die Verkäufe in Marktnischen innerhalb unserer Branche wachsen besonders stark.
27. Das Tempo der Veränderung in unserer Branche ist sehr schnell im Vergleich zu anderen Branchen.
28. Sehr oft treten neue Wettbewerber mit innovativen Produkten in die Branche ein.
29. Die technologische Grenze geht in unserer Branche sehr schnell voran.
30. Externe Faktoren zwingen unsere Branche zu unvorhersehbaren Veränderungen.
31. Die Grenzen unserer Branche erleben zur Zeit eine bedeutende Neudefinition.
32. Unsere Branche erlebt aktuell bedeutende Entwicklungen, die niemand erwartet hat.
33. Die etablierten Wettbewerber fordern unsere Position ständig heraus.
34. Unzählige Aktionen unserer Rivalen erodieren ständig unseren Vorteil.
35. Unsere Produkte werden ständig von preiswerten Ersatzprodukten angegriffen.

Appendix B – Overview of Advantages and Disadvantages of Online Surveys

Advantages	Disadvantages
Global reach	Perception as junk mail
Flexibility	Skewed attributes of Internet population
Speed and timeliness	Unclear answering instructions
Ease of data entry and analysis	Impersonal
Question diversity	Privacy issues
Low administration cost	Low response rate
Large sample easy to obtain	

Source: Adopted from Evan and Mathur (2005)

Appendix C – Summary of relationships between all variables

