"Every generation needs a new revolution."

Thomas Jefferson (1788)

Leading organizational change in ambidextrous environments

Insight in the use of contextual ambidexterity in SMEs to increase commitment to change

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Master Thesis

Tilburg School of Economics and Management
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i. Preface

This thesis is the final assessment within the MSc Strategic Management at Tilburg University. Looking back, it is odd to notice that my academic career at Tilburg University is about to end. Almost six years, I have spend my time maneuvering through Tilburg and this University and I had so much fun doing it. They say that this time is the best time of your life? Well, I enjoyed every minute of studying in Tilburg which developed myself, both as an individual and professional. Now, it is time to move on and I am looking forward to the next step in my life.

However, looking back on the process quickly leads towards the initial choice of the subject for my thesis several months ago, which was mainly based on the inspiring lectures of prof. dr. Jonathan Pratt at the University of Technology in Sydney. It was a pleasure to be inspired by him and I want to thank him for being so interested during the process of writing and for the provision of critical feedback. Furthermore, I want to thank Ursula Ströh (Communication Executive IBM) for the amazing discussions about ambidexterity within IBM Australia that we had, but also Roy Green (Dean Business Faculty UTS) and Ross Milbourne (CEO UTS) for providing me with the trust and opportunity to advice them about change management and ambidexterity before UTS Board Meetings.

Then, I need to thank Pieter Siebers (liaison officer) and Paul Schuylenburg (team manager), both from the Tilburg municipality, but also Frank Boss (program director) from 'De Ideale Connectie' for financially supporting my thesis and believing in the results that this thesis would have on offer. Furthermore, I need to thank mr. Peter Noordanus for being prepared to sign my survey as mayor of Tilburg, which definitely improved the response rate. Without all their support, the current quality of data collection would never have been possible.

Lastly, I want to express my utmost gratitude to my supervisor in writing this thesis, drs. Stijn van den Hoogen. Several meetings provided me with useful comments to restructure and improve my thesis. Besides, I also want to thank second reader, prof. dr. Geert Duysters for being so kind to provide feedback on several accounts and both prof. dr. Michael Tushman, Guy Alleleijn and Thomas van Steenis for giving me some critical notes right before graduation. Their feedback greatly contributed to the success of this thesis.

I want to conclude with one of my favorite quotes by Ralph Waldo Emerson (1803-1882):

"Do not go where the path may lead; go instead where there is no path and leave a trail".

Not only does this perfectly introduce the purpose of my research to motivate organizations to go one step beyond their competitors by turning their employees and business ambidextrous and prepare for future change ahead, but it also refers to the path ahead in the career I am about to start. It is time to leave my trail and show my acquired skills to the world.

Kind regards,

Sander Mickers
Tilburg, May 2011

ii. Abstract

Introduction

Although the growing need for change in organizations is widely acknowledged, it is asserted that up to 70 percent of global change initiatives ultimately fail to fulfil their promise. The current era of change therefore inevitably requires all companies to use new approaches within the management of their companies, without overlooking the crucial commitment to this change from employees. One of these new approaches argues that successful organizations in dynamic environments are *ambidextrous* organizations. Even though ambidexterity is typically viewed in structural terms, it was suggested that structural ambidexterity only works adequately if the organization also employs ambidextrous senior teams, managers and employees. Until now, the understanding regarding this contextual (individual) ambidexterity and its implication to the commitment of employees to change initiatives remained however underdeveloped. Even less was known about the effect of contextual ambidexterity within SMEs. This study therefore focuses on contextual (individual) ambidexterity and suggests that this concept not only positively stimulates the commitment toward change initiatives of individual employees within SMEs, but potentially even nurtures structural ambidexterity.

Set-up

The study addresses this gap in the literature by investigating an employee's contextual ambidexterity and its influence to commitment to change, delivering three contributions to theory and empirical research: first, by investigating the nature of contextual ambidexterity and building the link of this concept with commitment to change of employees; second, by developing a model and associated hypotheses on the interaction effects of an employee's individual ambidexterity on the three forms of commitment to change; and third, by testing the hypotheses based on a survey amongst 373 employees of organizations in the Mid-Brabant region.

The survey, based on three clearly operationalized variables and 28 questions, showed high reliability, convergent and discriminant validity. Specifically, it was analyzed whether there could be distinguished a relationship between contextual ambidexterity and the commitment to change of employees. Based on the literature, it was suggested that a high degree of contextual ambidexterity in the employee's behavior leads to a higher affective and normative commitment to change of employees within the implementation of change initiatives. Further, it was expected that continuance commitment to change showed a negative relationship.

Outcomes

Findings indicate that contextual ambidexterity indeed shows a positive relationship to both affective and normative commitment to change and no relationship to continuance commitment in SMEs. Further, this study is one of the first to suggest that mainly exploration explains the affective and normative commitment to change of employees. Therefore, employees should be stimulated with exploration-based activities, rather than exploitation-based activities within their daily work routines to make them go 'the extra mile' with respect to the contribution and commitment to change. Further, the results of this study indicate that there is no significant difference between the exploration and exploitation behavior of employees in SMEs and large-scale organizations, but that SMEs can potentially benefit even more than large-scale organizations when situated in the right organizational context. Further, this study found a negligible interaction effect of size between contextual ambidexterity and commitment to change, suggesting that the concept of contextual ambidexterity explains commitment to change as good in SMEs as in large-scale organizations.

Leading organizational change in ambidextrous environments

Insight in the use of contextual ambidexterity in SMEs to increase commitment to change

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Chapter 1

Introduction

"As Heraclitus noted 2,500 years ago: All is flux, nothing stays still"
Beer and Nohria, 2000, p. 467

1.1. Problem Indication

Over the last twenty years, executives always mentioned *change* as one of the most constraining and important challenges within the business environment (Palmer, Dunford and Akin, 2009) Although the growing need for change in organizations is widely acknowledged, it is asserted that up to up to 70 percent of global change initiatives ultimately fail (Higgs & Rowland, 2005, p. 121; Beer & Nohria, 2000, p. 4). Especially in fast-moving business environments, change is constant and in order to move forward, executives are told to either constantly keep changing their organizations or face the risk of bankruptcy. On the other hand, change is also seen as having a negative impact to the organization. The paradox a manager is operating in these days could not be greater. A paradox that changes the future of involved organizations and could even drastically change the life of its employees. In 2009, Paris-based France Telecom experienced a 'suicide epidemic' after jobs were continuously changed during major restructuring events. One woman jumped to her death from the fifth floor office window after being told that her job was changing yet again and that she was being assigned to another new boss. *'I'd rather die'*, she wrote (CBS, 2009, p. 1). O'Reilly and Tushman (2004) state that the failure to implement incremental change in situations of inertia is an enduring and prevalent problem that is even common for the most successful organisations.

Even though increasingly interconnected economies, organisations, societies and governments have given rise to vast new opportunities, this new situation causes high levels of structural difference, uncertainty and volatility. An Industrial Products CEO from the Netherlands described the feeling as *"looking into the dark with no light at the end of the tunnel"* (IBM, 2010, p. 14).The current era of change inevitably requires all companies to use new approaches within the management of their companies. Flexibility and efficiency are being emphasised and cost-cutting is considered crucial in order to stay competitive. Many strategies are used to achieve these objectives, including the introduction of new technology, consolidation of operation (Meyer & Allen, 1997) or business outsourcing. Some scholars have even suggested theories (e.g. dynamic capabilities, punctuated equilibrium) that do not argue in favor of adaption, but suggest that change can only occur through the process of replacing incumbent organizations with organizational forms that better fit to the changing context (Barnett & Freeman, 2001; Pettigrew, Woodman and Cameron, 2001; Barnett & Carroll, 1995). Consequently, many of these new approaches inevitably also require heavy adaption from employees, whose tasks and responsibilities are altered and whom are eventually subject to lay-offs.

The underlying question is if, and how, organizations can optimally adapt in the face of this uncertainty without overlooking the crucial commitment to change of their employees. A recurring theme in organisational theory discussing this issue is the reasoning that successful organizations in dynamic environments are *ambidextrous* organizations. These organizations are aligned and efficient towards today's business demands, but also adaptive enough to changes in the environment (Gibson & Birkinshaw, 2004). Some scholars even argue that ambidextrous behaviour is crucial to firm survival (Jansen, van den Bosch and Volberda, 2005; Gibson & Birkinshaw, 2004; He & Wong, 2004; Tushman & O'Reilly, 1996) by creating and sustaining revolutionary change

(Tushman & O'Reilly, 1996), competitive advantage (Grant, 1996), and exploratory and exploitative innovations (Benner & Tushman, 2003; Levinthal & March, 1993; March, 1991).

1.2 Problem statement

Almost all previous research regarding ambidexterity however focused on the structural separation of these alignment-oriented and adaptability-oriented activities. Even though there is evidence that this approach is highly effective, it is however also argued that this approach could create more problems than it solves (Raisch, Birkinshaw, Probst, Tushman, 2009; Gibson & Birkinshaw, 2004). These problems mainly occur when employees within the organization are not adequately adept with this structural separation of their business. Campbell, Birkinshaw, Morrison and van Basten (2003) state that structural separation, by creating separate venturing units to nurture new business ideas, can lead to problems where units lack connective tissue and become isolated of the organization's core strategy. O'Reilly and Tushman (2004, p. 81) conclude that *"one of the most important lessons is that ambidextrous organizations also need ambidextrous senior teams and managers."* In response, Gibson and Birkinshaw (2004) created the complementary contextual (individual) ambidexterity which calls for individual employees to make choices between adaption-oriented and alignment-oriented activities. Rather than creating dual structures, contextual ambidexterity expects organizational leaders to create the context in which all individual employees are encouraged to divide their time between the two conflicting demands of adaption and alignment.

The concept of ambidextrous organizations is stated to be important in creating commitment to complex organisational goals, fostering cross-team collaboration and motivation (Jansen, Tempelaar, van den Bosch and Volberda, 2008). Unfortunately, most change efforts these days still fail to fulfill their promise and are thus not adopted by the employees of the organization. Employee commitment is therefore arguably one of the most important factors involved in employees' support for change initiatives (Herscovitch & Meyer, 2002; Armenakis, Harris and Mossholder, 1999; Coetsee, 1999; Conner, 1992; Klein & Sorra, 1996; Conner & Patterson, 1982) and is therefore important for employees and their experiences in the working place, but also for managers trying to achieve desirable organizational outcomes and overcome employee resistance (Oreg, 2003; Bennis, 2000; Klein & Sorra, 1996; Connor, 1992). Contextual ambidexterity might be an important concept that not only mitigates the tensions of structural ambidexterity, but also nurtures the openness of employees towards change and the willingness to support this change, even if this change requires high adaptation from the subjected employees. Until now however, scholars never found conclusive proof of the relationship between contextual ambidexterity and the commitment to change in either small- and medium scaled organizations (SMEs) or large-scale organizations.

Notwithstanding, the majority of research is still focusing on large-scaled firms that compete with multiple businesses in a diversity of markets. This still leaves a gap in the understanding regarding smaller businesses. Historically, SMEs have proven to play a crucial role in economic development (Audretsch, Keilbach and Lehman, 2006; Landes, 1998; Schumpeter, 1934). Yet, despite their common existence, SMEs tend to be overlooked by scholars, mainly because of the fact that data is not readily available (Lubatkin, Simsek, Ling and Veiga, 2006). Therefore, little is currently known about the consequences of contextual ambidexterity on the commitment to change initiatives within the context of SMEs. According to Lubatkin et al. (2006) however, SMEs face the same kind of competitive pressures to jointly pursue adaptation and alignment, both in a structural as in a contextual perspective. It was even suggested by Gibson and Birkinshaw (2004) that a contextual approach to ambidexterity might be easier to achieve for smaller firms than it is for larger firms.

Within the aftermath of the financial crisis, successful change and the commitment to change of employees have never been so important. Change has become an ongoing problem and organizations face high levels of uncertainty, volatility and an increasing complex environment. Especially SMEs are hit hard by the current economic crisis and successful change nowadays plays an important role in the future existence of an organization (Overweel & Pleijster, 2009). The managerial challenges are substantial, but contextual ambidexterity might have the potential to change the mindset of employees in SMEs in order to get them to be more committed to potential, future changes, which could, ultimately, result in a higher survival rate for SMEs.

Out of this follows the following problem statement:

"How does contextual ambidexterity affect the commitment to change of employees in small- and medium-sized organizations?"

In order to answer this problem statement, several research questions were identified. The first two questions are answered based on the current academic literature. Research question three and four will be both based on current academic literature and the collected empirical data.

1.3 Research Questions

It is crucial to first refer to the antecedents of contextual ambidexterity, but also important to examine what is the nature and context of contextual ambidexterity in comparison with the, more researched, structural ambidexterity. In this way, the unique nature and role that contextual ambidexterity can play in the realization of ambidextrous organizations will be identified. This leads to the first research sub-question:

1. What can be seen as the antecedents of contextual ambidexterity?

Literature is consistent about the fact that ambidextrous organizations are an important factor in creating employee commitment, collaboration and motivation (Jansen et al., 2008). The fact that most change efforts still fail might be contributed to the fact that ambidextrous organizations do not function adequately without having employed ambidextrous employees (O'Reilly & Tushman, 2004). As commitment to change is one of the most important factors that build an employee's support towards change initiatives (Herscovitch & Meyer, 2002), it is important to explore which characteristics and context drive an employee's commitment to change. This issue will be addressed in the following research question:

2. What drives an employee's commitment to change?

Within contextual ambidexterity, individual employees can divide their own time between alignment- and adaption-oriented activities. This is proposed to create employees that are more adept to the possible, structural separation within their organizations. Further, ambidextrous employees are considered to be more committed, take initiative and act within the broader interest of the organization (Annique, 2007; Gibson & Birkinshaw, 2004). To find out whether contextual ambidexterity shows a clear relationship to the commitment to change of employees, the next research question is posed:

3. What is the relationship between contextual ambidexterity and an employee's commitment to change?

Until this time, the majority of research within both fields is however still focused on large-scale organizations. Little is, for example, known about the consequences of contextual ambidexterity within a smaller context. According to Lubatkin et al. (2006), SMEs however face the same kind of competitive pressures to jointly pursue adaptation and alignment, both in a structural as in a contextual perspective. It was even suggested by Gibson and Birkinshaw (2004) that a contextual approach to ambidexterity might be more appropriate for smaller firms or business units than larger firms. This gives rise to the last research sub-question, which eventually leads towards an answer on the problem statement:

4. What is the role of contextual ambidexterity within SMEs?

1.4. Structure of the thesis

This first chapter guided the reader through the introduction, problem statement and research questions. In the next chapter, the theoretical framework will explain the concept of contextual ambidexterity by using an extensive amount of academic literature. As the antecedents of contextual ambidexterity are perceived to be crucial in the development of the concept, this part will also be elaborated upon in this chapter. The remainder of the chapter will discuss the currently dominant frameworks within the field of commitment to change and briefly discusses the characteristics of SMEs. Then, all theoretical parts are integrated by modeling and hypothesizing the effect of contextual ambidexterity on organizational commitment to change within SMEs. Chapter three will eventually develop the conceptualization of variables and research methodology in order to create a stable base for data collection. Chapter four will provide an analysis of all the collected data and the final chapter will provide conclusions, limitations and grounds for future research.

Chapter 2

Theoretical Framework

"A business does not have to escape its past to renew itself for the future"
- O'Reilly and Tushman (2004)

This theoretical framework is started by briefly paying attention to the evolution of organizational ambidexterity, as different literature streams such as strategic management, organizational learning, organizational adaption and technological innovation greatly contributed to the current understanding and definition of organizational ambidexterity (Raisch & Birkinshaw, 2008, p. 376). After this, the concepts of contextual ambidexterity and commitment to change are explored and defined. Thereafter, the theoretical possibilities for company size to enact as a moderator in the enhancement of commitment to change is discussed. Finally, we summarize the current thinking on this topic in order to compare this with our collected data.

2.1. Organizational ambidexterity

2.1.1. Antecedents of ambidexterity

Historically, the word '*ambidexter*' origins from Latin, in which it was used to indicate the ability to, for example, use both left and right hand with equal ease. Literally, '*ambi'* would translate to 'both' and 'dexter' translates to 'right' (Oxford English Dictionary, 2010). Later, organization theorists adopted this term as a metaphor to describe the behavior of organizations. Most scholars agree that Duncan (1976) was the first to coin the term organizational ambidexterity, thereby building on earlier studies (e.g. Thompson, 1967; Burns & Stalker, 1961), stating that in order to achieve long-term success, organizations needed to consider different structures for either implementing or introducing new innovations (Venkatraman, Lee and Iyer, 2007; Lovas & Ghoshal, 2000; Eisenhardt & Brown, 1997).

Even though interest in the origin of organizational ambidexterity has increased over the last years, the theoretical nature of the concept is still relatively ambiguous and gives rise to disagreement. In 1999, Adler, Goldoftas and Levine observed that no studies to that date generated an overarching theory explaining the exact definition of ambidexterity. This contributed to a great lack of consistency in theory and meaning of the concept across studies (Simsek, Heavey, Veiga and Souder, 2009). Recently however, there was a resurgence of interest in the concept of ambidexterity, which may be largely attributed to the work of March (1991). Research from various literature streams, such as strategic management and organizational learning, have further contributed to the discussion and evolution of organizational ambidexterity, mainly focusing on the contradiction between alignment and adaption.

One of the main contributors to the antecedents of ambidexterity was Burgelman (1991), whom stated in his internal ecology model of strategy that shared values and meanings separately, is not sufficient for organisational survival and suggested that organizations should make use of both variation-reducing (induced) and variation-increasing (autonomous) strategic processes. Whereas induced processes relate to initiatives within the current scope of the organizations strategy, autonomous processes concern the initiatives that emerge outside the core of the organizations strategy, mainly involving the creation of new competencies. According to Burgelman (1991, p. 256), both strategic processes need to be kept in play at all times in order to *"give organizations the chance to outsmart or outrun selective pressures associated with environmental variations".* This was confirmed by studies

stating that failing firms hold the inability to maintain different concerns at the same time, tending to operate in either inactive or hyper-active mode to variations in the environment (Hambrick & D'Aveni, 1992). On the other side, Burgelman (1991) contradicted an older study by Tushman and Romanelli (1985) that argued sequential approaches of alternating periods of reorientation and convergence to be optimal. In 1993, Hamel and Prahalad emphasized the tension between leveraging and stretching as a key strategic challenge for organizations, stating that there is indeed a need to exploit existing capabilities and search for new capabilities in order to create competitive advantage. These statements came together in the logic of the punctuated equilibrium (figure 1), also called temporal cycling, in which short periods of autonomous behavior disrupt long periods of induced behavior (Gupta, Smith and Shalley, 2006; Benner & Tushman, 2003; Christensen, 1998; Levinthal, 1997; Burgelman, 1991; Weick, 1976). Subsequent studies mainly described the tendency for organizations to only focus on one strategic process at the same time, while clearly stating that successful firms maintain a mix of competence-leveraging and competence-building activities (Annique, 2007; Sanchez, Heene and Thomas, 1996; Ghemawat & Ricart i Costa, 1993) Burgelman (2002) eventually created the connection to organizational ambidexterity when stating that induced strategic processes relate to exploitation and autonomous strategy processes relate to exploration.

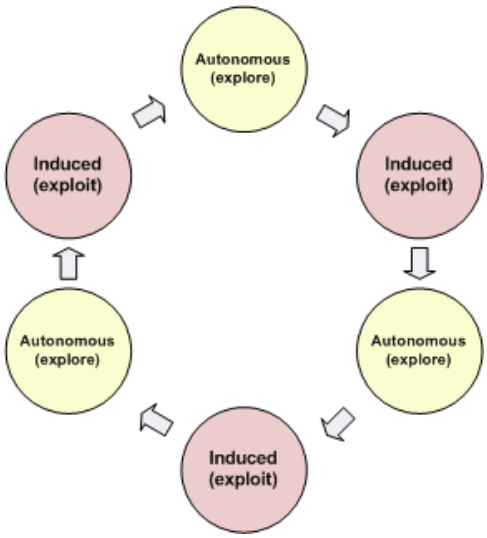


Figure 1: Punctuated equilibrium (based on Schudy, 2009)

Also in the field of organizational learning, March's (1991) article created discussion among scholars, discussing about whether and where both exploitation and exploration could be classified within the field of organizational learning. One group of researchers mainly defined exploitation as reusing existing knowledge (Rosenkopf & Nerkar, 2001) and therefore assigned all learning to exploration (Raisch & Birkinshaw, 2008; Vassolo, Anand and Folta, 2004). Yelle (1979) however already disputed this by arguing that, even when attempting to execute nothing more than replicating past action, organizations will accumulate experience and, although slowly and incrementally, proceed down the learning curve. Other scholars confirmed this statement and described more similarities with the viewpoints of March (1991), who differentiated the strategic processes (exploitation and exploration) by focusing on the type of learning, rather than the presence or absence of organizational learning (Raisch & Birkinshaw, 2008). March (1991, p. 71) stated that explorative activities, such as "variation, risk-taking, experimentation, play, flexibility, discovery and innovation" could be distinguished from exploitative activities, among which are "refinement, choice, production, efficiency and selection". Baum, Li and Usher (2000, p. 768) extended this by arguing that exploitation also refers to activities learned by "searching and reusing routines".

As described, the theory is abundant and scholars used the notion of exploration and exploitation in numerous articles to describe a diversity of organizational phenomena. Often, however, scholars did not refer to prior literature or clearly focused on different elements of the ambidexterity construct (Gibson & Birkinshaw, 2004). Therefore, the organizational ambidexterity concept is, until this moment, still seen as an emerging concept in academic literature and organizational theory (Simsek et al., 2009). Scholars traditionally studied the competitive benefits of ambidexterity, but especially the way to achieve ambidexterity within organizations is still relatively underdeveloped. The conclusion of the widely dispersed literature could however be summarized by the notion that was first stated by Duncan (1976) and later confirmed by many scholars:

> *"successful organizations are ambidextrous, generating and sustaining competitive advantage through revolutionary and evolutionary change in the process and growing innovations by exploration and exploitation*" (Jansen et al., 2008, p. 1).

2.1.2 Definition of ambidexterity

According to Brunner, Staats, Tushman and Upton (2008), ambidexterity however only works for highly disciplined organizations as the pursuit of efficiency in the short-term tends to undermine capabilities that are needed to survive in the long-term. This directly identifies the challenge of ambidexterity, which is reconciliation of two opposite orientations of exploration and exploitation. At its core, the concept of organizational ambidexterity illustrates the terms *exploitation* and *exploration*, two fundamentally different learning activities, between which firms have to divide their resources and attention (Ancona, Goodman, Lawrence and Tushman, 2001). Holmqvist (2004) indicates that both exploitation and exploration are interdependent learning processes, where exploration is a prerequisite for exploitation, but benefits of exploration also depend on accumulated knowledge, routines, rules and procedures through exploitation.

Thus, organizations need to exploit their existing resources on the one hand by leveraging existing competencies and processes, but also adapt to changes in the environment and explore new competencies, processes and ideas for emerging markets on the other hand (Jansen et al., 2008). Earlier research and the antecedents of ambidexterity showed that reconciling these two opposites, exploration and exploitation, would be very difficult and the strategic moves that are most effective for companies are the ones that could be used as a supplement, rather than as a complement to the organizations' business model (McGill, Slocum and Lei, 1992; Miller & Friesen, 1986; Hannan & Freeman, 1977). Moore (2005) also mentioned that organizations always have a strong disposition for one dominant side and therefore always choose between either volume operations or complex systems. Furthermore, Ghemawat and Costa (1993) stated that simultaneous exploitation and exploration only causes organizations to become 'stuck in the middle' and become mediocre at both aspects, losing possible competitive advantage in the process. Ebben and Johnson (2005) confirmed this statement when they found that organizations attempting to pursue ambidexterity performed less well than those with a single, focused strategy. According to other theorists, companies that pursue the focused strategy until they ultimately fail, instead of attempting to adapt this strategy over-time, might be more efficient in their day-to-day operations (Dew, Goldfarb and Sarasvathy, 2006; Knott & Posen, 2005).

In spite of this, it is now widely assumed that the rapid pace in which technologies and markets are currently changing does not permit organizations to choose organizational alignments sequentially anymore (Raisch and Birkinshaw, 2008; Gupta et al., 2006). In the context of organizational theory, ambidexterity refers to companies that both pursuit efficiency in the management of their current business demands, while also being adaptive enough to changes in the environment so that they will still be around tomorrow (Gibson & Birkinshaw, 2004). More recent literature shows that firms that focus on both organizational phenomena as a one-sided approach may enhance short-time performance, but causes the firm not to be adequately aligned and therefore not being able to adapt to future environmental changes (Ahuja & Lampert, 2001; Leonard-Barton, 1992; March, 1991). Levinthal and March (1993) conclude that the key of long-term survival can be found in engaging in enough effective exploitation to ensure the current organizational viability and on the other side engagement in enough exploration to ensure the future viability. Studies have even suggested that organizations pursuing both exploration and exploitation at the same time obtain superior financial performance (Jansen et al., 2008). This can be explained by mentioning that the combination, on one hand, helps organizations to overcome structural inertia, but on the other hand also avoids excessive focus on exploration without keeping an eye on gaining

benefits (Levinthal & March, 1993). Therefore, simultaneously engaging in exploitation and exploration, initially argued by Tushman and O'Reilly (1997), rapidly gained ground in academic literature.

In this conceptualization, ambidexterity not only denotes *"separate structural subunits for exploration and exploitation, but also different competencies, systems, incentives, processes and cultures – each internally aligned"* (O'Reilly & Tushman, 2007, p. 22). These separate aspects of the organization are held together by a decisive set of values and shared meanings, most often referred to as strategic intent, and crucially targeted linking mechanisms to diminish the chances of conflict and disagreement, but also to leverage common assets (Westerman, Iansiti and McFarlan, 2006; O'Reilly & Tushman, 2004).

2.1.3. Contextual ambidexterity

By means of viewing ambidexterity in structural terms, certain business units focus on alignment of the above mentioned organizational aspects and other business units solely focus on adaption. In this model, innovative efforts are organized in independent units with their own, distinctive structure, process and culture and are only related to the existing business by means of the coordinating senior management (O'Reilly & Tushman, 2004). Several authors confirmed a positive relationship of this structural ambidexterity with strategic performance (Prieto, Revilla and Rodriguez, 2007; Hill & Birkinshaw, 2006; Rothaermal & Deeds, 2004; He & Wong, 2004) and innovation performance (Cao, Gedajlovic and Zhang, 2009; Han, 2007). Other authors however found no relationship (Venkatraman, Lee and Iyer, 2007; Bierly & Daly, 2007; Yang & Atuahene-Gima, 2007) or a negative relationship with firm performance (Lin, Yang and Demirkan, 2007). This contradiction could be explained by O'Reilly and Tushman's (2004) notion that organizations can only reap the benefits from structural ambidexterity when they have also employed ambidextrous individuals: executives, managers, senior teams and workers that have the ability to understand the needs of two much differentiated kinds of business.

As suggested, studies have recognized the importance of balancing the contradicting concepts of exploration and exploitation and have begun to shift thinking from trade-off (either/or) to paradoxical thinking (both/and; Gibson & Birkinshaw, 2004, p. 209). Furthermore, there is a greater understanding of the role of processes and systems that are present in achieving a desired balance between exploration and exploitation. These are important because they provide an alternative way of developing the capabilities that *"architectures are intended to create"* (Gibson & Birksinshaw, 2004, p. 209). Therefore, Gibson and Birkinshaw (2004) developed a second type of ambidexterity: contextual ambidexterity. Contextual (individual) ambidexterity can be defined as the behavioral capacity to use alignment and adaptability on the level of the business unit or individual, instead of organizational level. In this definition, alignment refers to the congruity of activities in the business units, which can be explained as having a shared goal. Adaptability refers to the capacity to quickly react to changes in demand by the reconfiguration of current activities. The distinction between contextual and structural ambidexterity (appendix A) can be mainly found in the creation of dual structures, which is not necessary within contextual ambidexterity (figure 2). Consequently, the concept of ambidexterity solves organizational tensions that could be present within structural ambidexterity by going 'one level down'. For example, plants become

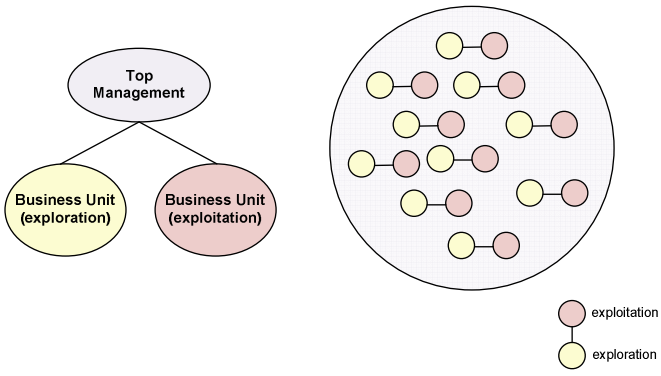


Figure 2: Structural vs. Contextual ambidexterity (based on Schudy, 2009)

ambidextrous by creating different teams in charge of exploration and exploitation, or single teams can become ambidextrous by allocating different roles to individuals. Contextual ambidexterity goes even one step further by stating that individuals need to divide themselves by focusing on both alignment and adaptability-focused activities (Jansen et al., 2008). However, scholars do also not underestimate the extreme challenge of individuals to become ambidextrous in organizations: ambidextrous individuals should manage contradicting goals (Smith & Tushman, 2005) and have to function in multiple organizational roles (Gibson & Birkinshaw, 2004). According to Amabile (1996), individuals with an explorative attitude even have different personalities than individuals that emphasize implementation activities.

In the last couple of years, scholars do tend to accept the existence of contextual ambidexterity, without forgetting the extreme challenges involved. According to Lubatkin et al. (2006), the process of dividing time between alignment and adaptability can be stimulated by the management team acting as one group in a unity of effort. Jansen et al. (2008) argue that contingency rewards and informal integration may act as stimuli to make senior teams able to treat the contradictory forces of alignment and adaptability. All studies until this date also provide a strong notion that contextual ambidexterity is likely to be a function of the environmental context of the organization and the personality of the individual. The system is based on the individual cognitive judgment of individuals to divide time between the two conflicting tasks of alignment and adaptability. When contextual ambidexterity has been achieved, individuals within units of an organization can deliver optimal value to their current customers, but are at the same time constantly looking for changes in the environment. According to Gibson and Birkinshaw (2004), when acted on these changes accordingly, contextual ambidexterity could potentially even be more sustainable then structural ambidexterity. The reason for this is that contextual ambidexterity facilitates feelings of cohesion within the whole organization and not just the new business development unit. According to Raisch et al. (2009), even though only a small percentage of skilled individuals will be able to clearly divide their time between both exploitation and exploration, the concept of contextual ambidexterity is plausible and offers an important ground for future research.

2.1.4. Ambidexterity building

One of the most crucial aspects, therefore, is the way how organizations foster contextual ambidexterity. In the literature, it is already stated that individuals or organizations are considered ambidextrous when they have a above-average emphasis on both exploration and epxloitation (He & Wong, 2004; Tushman & O'Reilly, 1996). Furthermore, a vision that is clear and repeatedly communicated by the senior management team is crucial in order to build ambidexterity into an organization. Building ambidexterity in an organization needs this aggressive communication as this change is seen as revolutionary and company-changing (O'Reilly & Tushman, 2004). Senior teams need to underscore the strategic necessity of ambidexterity and stipulate the beneficial effect to all employees. Only in this way, an organization can truly become ambidextrous and therefore, realize maximum benefits from the concept. In order to foster ambidexterity on an individual level, great attention needs to be paid to the human aspect of the organization (Gibson & Birkinshaw, 2004) and several conditions need to be fulfilled:

1. Individual employees should take initiative and be alert for opportunities beyond the boundaries of their own task description;
2. Individual employees should be cooperative and seek out opportunities to combine their efforts with the effort of others;
3. Individual employees should act as intermediary, constantly looking for opportunities to build internal links;
4. Individuals should act as multi-taskers, who are able to wear more than one hat

(Gibson & Birkinshaw, 2004, p. 220)

Using these conditions, employees are able to think outside the perspective of the individual and take action to the broader interest of the organization (Annique, 2007). Therefore, the conditions satisfy the implications of contextual ambidexterity to individually encourage actions that involve exploring new knowledge and opportunities, but are also clearly aligned with the strategy of the organization. Organizations that want to facilitate ambidexterity within their organization are required to use a combination of both hard (discipline and stretch) and soft (support and trust) elements to build the right context (Gibson & Birkinshaw, 2004; Ghoshal & Bartlett, 1997; Ghoshal & Bartlett, 1994). In this reasoning, discipline and stretch are mainly needed for the employee to take initiative and go beyond boundaries in their task description, whereas support and trust fosters employees to act as intermediaries, support and rely on each other (Guttel & Konlechner, 2009). Ghoshal and Barlett (1997) found that organizations ideally need to find a balance between performance management (stretch and discipline) and the social context (trust and support). Too much emphasis on performance will create disillusion and burnout among employees, but too much emphasis on the social context creates a lacking working mentality (figure 3). Gibson and Birkinshaw (2004, p. 213) summarized these elements by mentioning that a good supportive context however stimulates employees to *"do whatever it takes to deliver results"* and therefore enable employees to engage in both exploitation and exploration at the same time. Only by building in these four elements in the organization, an organization can create a high-performance organizational environment that facilitates contextual ambidexterity.

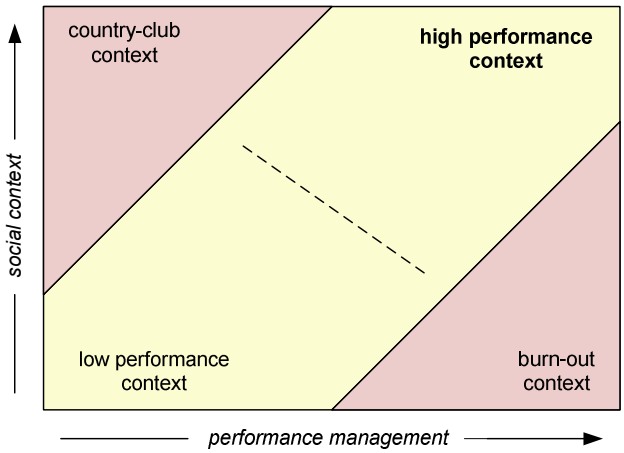


Figure 3: The high performance context (based on Ghoshal & Bartlett, 1997)

2.1.4. Summary ambidexterity

Interest in the origin of ambidexterity has increased over the last years, even though the nature of the concept is still ambiguous and gives rise to disagreement. The antecedents of the concept have arisen from different literature streams and therefore, there is a great lack of consistency in theory and meaning of the concept. The origins however seem to be traceable to the work of Duncan (1976), whom stated that successful companies are aligned and efficient in today's market place, but also adaptive enough to changes in the environment (Simsek et al, 2009; Gibson & Birkinshaw, 2004). Ambidextrous organizations are discussed to be able to create employee commitment, collaboration and motivation (Jansen et al, 2009). Some scholars even argue that ambidextrous behaviour is crucial to firm survival (Jansen et al, 2005; Gibson & Birkinshaw, 2004; He & Wong, 2004; Tushman & O'Reilly, 1996; Grant, 1996; Benner & Tushman, 2003; Levinthal & March, 1993; March, 1991).

Two different activities can be clearly distinguished within the concept of organizational ambidexterity: exploration and exploitation. These activities appear to be contradicting and refer to an organizations' pursuit of efficiency in the short-term, while at the same time, developing the capabilities needed to survive in the long-term. In spite of this, it is now widely assumed that the rapid pace in which technologies and markets are currently changing does not permit organizations to solely create dual structures for exploration and exploitation anymore. During the last years, the focus has been partially switched towards the concept of contextual (individual) ambidexterity. This concept is defined as the ability of individual employees to divide themselves between focusing both on alignment- and adaptability-focused activities in order to solve organizational tensions that are caused by creating

structural separation of business units. This concept is seen as extremely complex and greatly dependent on environmental context and personality of the individual, However it is argued to be an ideal concept for employees to be able to deliver optimal value to current customers, while at the same time looking and adapting to changes in the environment. When the extreme challenges involved could be overcome, the contextual ambidexterity concept could provide benefits for both the business unit and the company in which the individual is participating by overcoming the tensions that are created within structural ambidexterity.

This also leads to the first step in the theoretical model (figure 4). In this model, it is assumed that the degree of an individual's contextual ambidexterity is deduced from the degree of exploration and exploitation of the same individual:

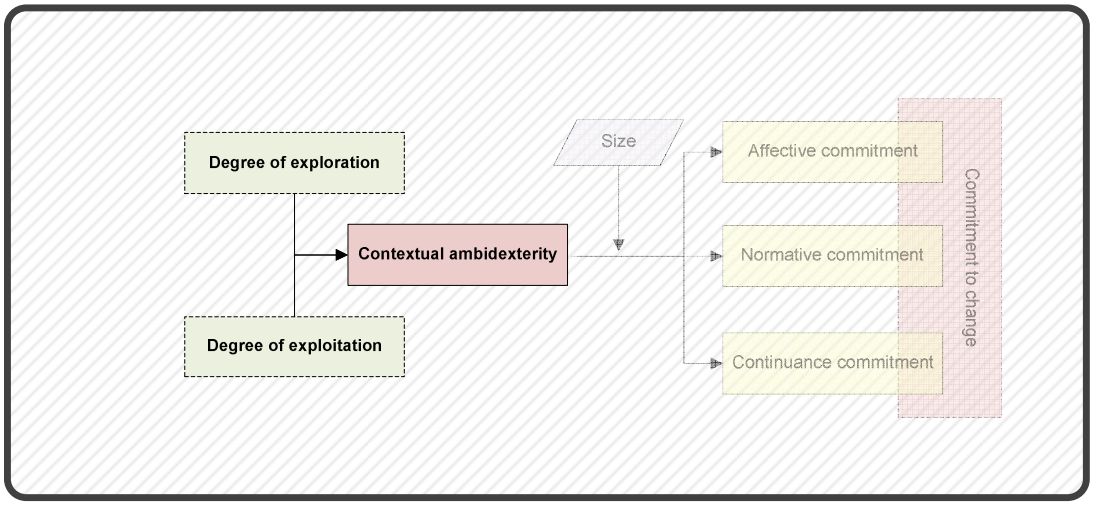


Figure 4: Building the theoretical model (1/3) – Contextual ambidexterity

2.2. Commitment to change

'Change can be managed' is a claim that is not a new position. In the early parts of the 20th century, engineer Fredrick Taylor (1911) was searching for ways to increase productivity, believing that reaching the maximum efficiency point in an organization would also result in maximum prosperity for the employees. Since, it has been recognized that change is an important factor in the success and survival or organizations. This has led to the development of ways to manage organizational change (Mills, Dye and Mills, 2009), which also serves as an important antecedent to commitment to change (Coleman, Irving and Cooper, 1999). However, the high failure rate of change still leaves room for possible solutions to increase the commitment of employees towards change. One of these solutions might be contextual ambidexterity, which could be an important factor in increasing the commitment of employees towards change initiatives in the future.

2.2.1. Antecedents of commitment to change

Initially, research in change management focused on discrete areas of behavioral change, such as leadership style, sensitivity training or participatory management, but emerging research interblended this academic field into a mainly systematic approach, aimed at the long-term change of organizational structures, values and beliefs, denominated as organizational development (Mills et al., 2009). According to Beer and Nohria (2000), it took however until the 1980's until companies were so intensively challenged to globalize, increase shareholder value and increase their quality standards that programmatic organizational change was to become an established part of the thinking process. With this rise of globalization, change was not seen as an ongoing problem but more often seen as something that managers jeopardized in the past, even though it played an important role in the life and death of an organization. As of that moment, managing change became an important part in the education of professionals around the world. Nonetheless, where economists often advice to tie incentives to shareholder value as the most important force for change, academics in the field of organizational behavior recommend high employee involvement and commitment (Beer & Nohria, 2000).

It is important to note that organizational change is not just every change that catches one's attention. Organizational change refers to the sort of change that makes a substantial impact on the way that top management or other stakeholders think about the organization. Organizational change, for example, affects employees and changes the way they carry out their jobs. Change is therefore defined as *'an alteration of a core aspect of the organization's operation'* (Mills et al, 2009, p. 4). These core aspects can, amongst others, include the restructuration of company goals, culture, structure, technology or drastic changes in staffing. According to Palmer et al. (2009), it is not so much the scale (singe department vs. entire company) of the change that is crucial, but the extent to which the impact of this change is being felt within the organization.

2.2.2. Definition of commitment to change

Noteworthy is however the fact that until recently, much of the research focusing on issues relevant to organizational change has focused on organizational-level concerns rather than individual-level concerns (Vakola, Tsaousis and Nikolaou, 2003; Wanberg & Banas, 2000; Judge, Thoresen, Pucik and Welbourne, 1999). Despite the great importance of managing change, the most prevalent factor contributing to failed change initiatives, however, is the lack of commitment by the people" (Connor & Patterson, 1982). In 1996, Kotter already argued that managers who are competent enough to make their subordinates commit to new goals, programs, policies and procedures stand a better chance to see critical change efforts be successfully implemented.

Surprisingly enough, there is still a scarcity of research on the reaction of employees to change, whilst this support is crucial in the successful implementation and sustainability of change efforts. Until the late nineties, most research in this field takes a macro-, or systems-oriented approach, while the person-focused approach to organizational change was lacking. As of that moment, studies towards commitment reached a critical mass and Connor (1992, p. 147) described commitment to change as *"the glue that provides the vital bond between people and change goals".*

Commitment to change usually reflects the attachment of an employee towards the implementation of dynamic processes such as new programs, budgets, policies, work rules or technologies (Neubert & Wu, 2009). Connor (1992) was the first to propose commitment to change as a dynamic process, reflecting internalization of a change program; the end-result of the three-stage process of awareness, acceptance and the need for a certain change initiative. Coatsee (1999) extended the model by adding involvement and shared goals/values, defining the concept of commitment to change as the reflection of a state in which employees are aware of change, have the necessary skills and feel empowered to implement it, are motivated to do so by adequate rewards and share the vision and goals, exemplified by the change. While most conceptualizations are one-dimensional and thus reflecting the employee's willingness to support the change, Herscovitch and Meyer (2002) abandoned the single, psychologically undifferentiated method and argued that commitment could take different forms and has different implications for the nature and level of employees' behavioral support for change efforts (Meyer, 2007). Therefore, Herscovitch and Meyer (2002) proposed a multi-dimensional model, reflecting on affective (feelings-based), continuance (cost-based) and normative (obligation-based) attachments to change initiatives. The model was based on an empirically supported model by Meyer and Allen (1991) in which affective commitment measures the feelings of an employee of emotionally 'wanting' to stay at the company, normative commitment measures the obligated 'ought' to stay at the company and continuance commitment measures the financial 'need' to stay at the company (Parish, Cadwallader and Busch, 2008; Meyer & Allen, 1997).

Herscovitch and Meyer (2002) proved that all three forms of commitment related positively to compliance with the requirements of organizational change. They argue that any form of commitment to change binds an individual to the specific 'terms' of that commitment (Meyer & Herscovitch, 2002). Based on previous research, Herscovitch and Meyer (2002) argued that the nature of commitment is important in explaining the willingness of employees to go beyond these terms or requirements. Employees with strong feelings to contribute to the success (affective commitment) or feelings of obligation (normative commitment) towards the change, believe in the success and are willing to do more than required, even if this requires personal sacrifice in the process. Furthermore, they show lower percentages of absenteeism and job stress (Somers, 2009). Interestingly, this shows high similarity with the concept of contextual ambidexterity which states that ambidextrous employees are willing to go beyond their job confines and are willing to *"do whatever it takes to deliver results*" (Gibson & Birkinshaw, 2004, p. 213). In contrast, employees with commitment that is primarily based on the perceived cost of failing to support the change (continuance commitment) will do little more than is required to make this change a success. As ambidextrous individuals not only pursue a different mindset, but are also stated to be looking for internal and external linkages and social relationship to benefit the organization (Birkinshaw & Gibson, 2004), it is argued that these employees are prone to employment opportunities elsewhere and are less bound to the organization primarily to avoid financial problems or costs, suggesting low ambidexterity.

2.2.3. Summary commitment to change

In early days, change management mainly focused on behavioral change (Taylor, 1911), but soon after, organizational development took over the focus of scholars, due to the increasing challenge to globalize and focus on shareholder value. With the rise of globalization, change was no longer seen as an ongoing problem, but an important aspect in the life and death of an organization. It affects organizations and employees in all ways they could carry out their jobs, across the globe, which makes change an important concept. This research uses the change definition stated by Mills et al. (2009, p. 4), which refers to change as: *"an alteration of a core aspect of the organization's operation",* with core aspects including drastic changes such as restructuration of company goals, culture, structure or technology.

Until 1992 however, little attention was paid to the most prevalent factor contributing to failure in change projects, which is the lack of commitment of the people (Connor & Patterson, 1982, p. 18). Connor (1992, p. 147) described commitment to change as *"the glue that provides the vital bond between people and change goals".* This concept is seen as the vital bond between people and change goals and is therefore an important aspect in measuring the success of a certain change approach (Bennis, 2000; Klein & Sorra, 1996; Connor, 1992). Commitment to change is defined as the reflection of a state in which employees are aware of change, have the necessary skills and feel empowered to implement it, are motivated to do so by adequate rewards and share the vision and goals, exemplified by the change. Herscovitch and Meyer (2002) state that commitment to change can be measured using a multi-dimensional construct with three dimensions: affective, normative and continuance commitment. Even though the link between contextual ambidexterity and commitment to change was never empirically tested, contextual ambidexterity is discussed to create commitment to complex organizational goals, foster motivation (Jansen et al., 2008) and encourage employees to take action in the broader interest of the organization (Annique, 2007). It is argued that affective and normative commitment to change show high similarity and continuance commitment a low similarity with the concept of contextual ambidexterity.

This leads to the second addition to the theoretical model (figure 4), suggesting that the degree of contextual ambidexterity of an individual influences the commitment of change of the individual by means of the variables affective, normative and continuance commitment to change:

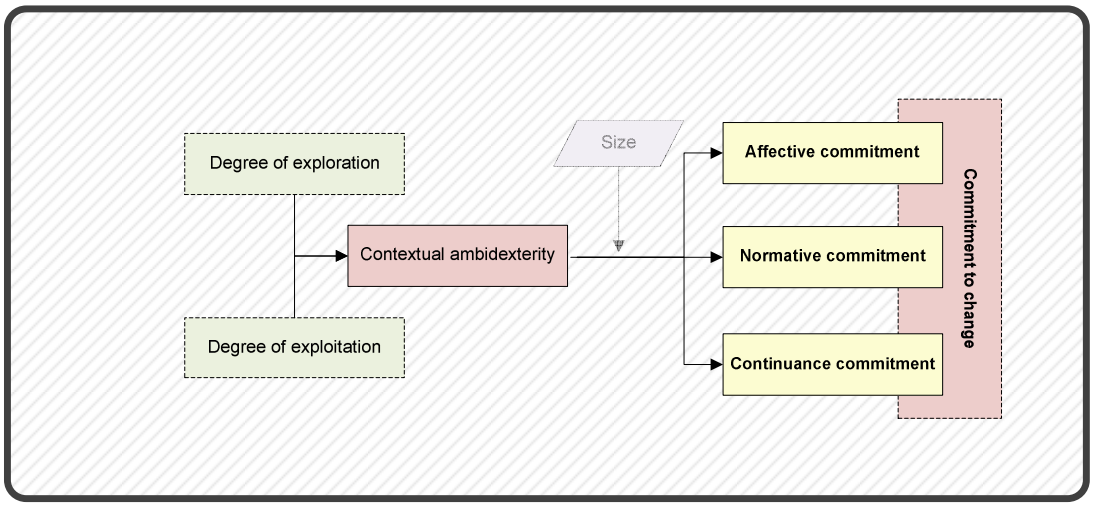


Figure 5: Building the theoretical model (2/3) – Commitment to change

2.3. Influence of size

Even though the definition of the small- and medium-sized organizations is static and defined by the Chamber of Commerce (2007), it is important to clearly state the valuable economical contribution of this specific type of organization. European SMEs make up 99 per cent of all enterprises, providing around 75 million jobs, and are therefore vital to economic growth of the European Union (European Competitiveness Report EC, 2008; North & Smallbone, 2000; Acs & Audretsch, 1990). Further, small firms are considered as the engine of technological change and innovative activity, at least in certain industries. Benefiting from home-country regulation and specialization, the majority of SME's have simple systems and procedures which make flexibility, decision-making and response to customer needs easier than is the case with large-scale organizations (Raisch et al, 2009; Floyd & McManus, 2005). This would make SMEs a perfect target for achieving commitment to change by pursuing contextual ambidexterity.

2.3.1. Contextual ambidexterity

Despite their common existence, SMEs however tend to be overlooked by scholars, mainly because of the fact that data is not readily available (Lubatkin et al., 2006). Little is currently known about either antecedents or consequences of ambidexterity in small- and medium-sized enterprises. The majority of research focuses on larger firms that compete with multiple businesses in a diversity of markets. This however leaves a gap in the understanding regarding smaller businesses. According to Lubatkin et al. (2006), SME nevertheless face the same kind of competitive pressures to jointly pursue exploitation and exploration, but generally lack the amount of resources that can help the organization in managing the complexity of knowledge processes. For example, while larger firms can easily separate processes by creating separate business units for both exploitation and exploration, this is often technically and financially not feasible for SMEs (Raisch & Birkinshaw, 2008). These types of organizations have to rely more on top management, playing a larger strategic and operational role, given the lower degree of hierarchy in the organization. As the extent of ambidexterity in these organizations is largely facilitated by the internal processes of senior management team, it could be reasoned that the level of managerial integration in SMEs is pivotal in coping and integrating the disparate demands of exploitation and exploration (Tushman & O'Reilly, 1997). Levinthal and March (1993) also noted that organizations exclusively engaging in exploration will typically suffer from the fact that they never gain a return of their knowledge. SMEs that focus heavily on exploration incur significant costs in terms of research, but also risk the potential loss of not being able to sustain the benefits from earlier innovations, making them vulnerable to more efficient and larger competitors (Schudy, 2010).

On the other side, Gibson and Birkinshaw (2004) proposed that the contextual approach to ambidexterity might be more appropriate for smaller firms or business units of larger firms. Further, Lubatkin et al. (2006) argue that exploration is more carefully applied in SMEs due to the above-mentioned possible risk on obsolescence. Arguing from an operational perspective, this study therefore states that SMEs might potentially benefit more from the contextual ambidexterity solution than large-scale organizations. One of the main examples to reinforce this statement regards the communication of exploration initiatives in large-scale organizations, which mainly flows from the operating managers towards the middle managers, who may feel threatened when these exploration initiatives change the status quo in respect of their capabilities, routines and behavior (Floyd & Lane, 2000). Therefore, middle managers may choose to filter this communication towards top management to *"suit their own interpretation or run their own agenda*" (Lubatkin et al., 2006, p. 649; Dutton & Jackson, 1987), deliberately countering arguments from their operating managers. It is argued that this behavior is minimized in

SMEs as the top management team (TMT) will typically function closer to the operating core, but also because senior management in SMEs participates more directly within the implementation of new strategic initiatives.

2.3.2. Commitment to change

The same argument that was used with the ambidexterity argument holds for the commitment to change literature. Even though there is extensive literature within the topic of organizational change and commitment to change, the majority of the publications focused on change in large-scale organizations. As SMEs are characterized by a set of unique features, the implications for large-scale enterprises might not necessarily apply to SMEs. By nature, SMEs have limited human, material and financial resources (McAdam, 2002; Huang, Soutar & Brown, 2002), but also less market power than large organizations and are therefore more subject to market changes and focused on the maximization of short-term advantage (Todtling & Kaufman, 2001; Raymond, Julien, Carriere & Lachance, 1998). This forces these organizations to be responsive to external influences instead of taking a proactive approach. On the other side, SMEs often have a degree of flexibility that is envied by larger enterprises. Closer relationships with markets, higher loyalty and geographic proximity might therefore also function as benefits in order to read the signs of change early (Weisner, Banham and Poole, 2004). According to De Geus (1999), this early recognition and response to environmental change is considered crucial to long-term survival. Other aspects, such as lower hierarchy, flatter structures and leadership commitment rationalizes the distinct behavior that SMEs have, in comparison to large-scale enterprises, with respect to organizational change. This suggests that contextual ambidexterity and its influence on commitment to change might be different in SMEs than in large-scaled organizations.

This leads to the following step in the theoretical model by inserting the moderating variable size, or company size, into the model:

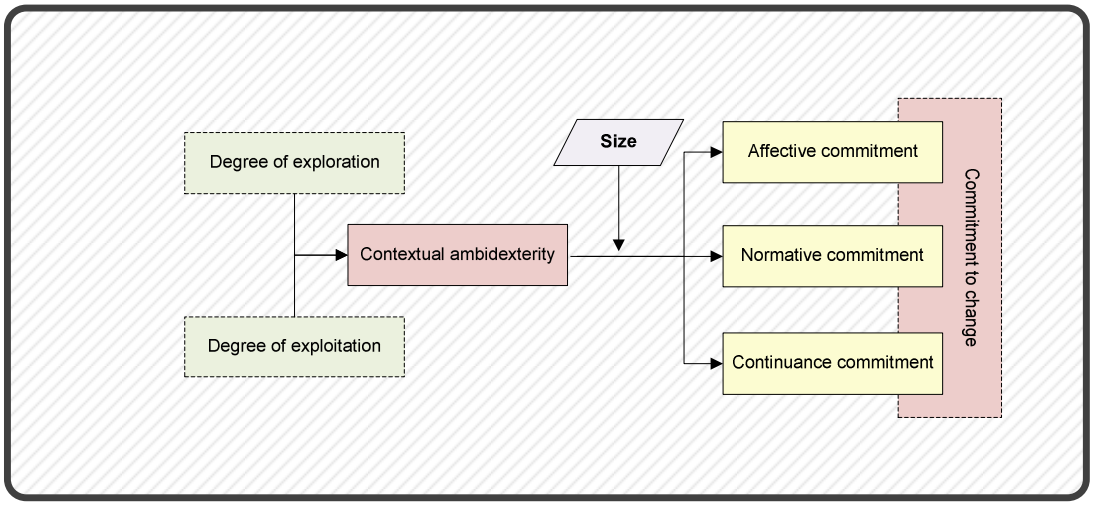


Figure 6: Building the theoretical model (3/3) – Size

2.4. Theoretical model

As discussed in the theoretical framework, there are two main concepts within the subject of this research: contextual ambidexterity and commitment to change. These concepts will shape the basis of the theoretical model, where the degree of contextual ambidexterity within the individual employee's behavior is assumed to have an influence on the several types of commitment to change. Contextual ambidexterity can be defined by testing the two well-known aspects that are proven to play an important role in the measurement of this important concept: the degree of exploration and the degree of exploitation (Tushman & O'Reilly, 2004). On the other side, the commitment to change variable is subdivided in affective, continuance and normative commitment (Herscovitch & Meyer, 2002). Based on relevant academic literature, it is suggested that a high degree of contextual ambidexterity in the employee's behavior will lead to higher affective and normative commitment to change of employees within the implementation of change initiatives. Further, it is expected that continuance commitment to change shows a negative relationship.

The relationship between the two variables, contextual ambidexterity and commitment to change, is moderated by the third important variable in the study, size (amount of employees) of the organization. This research focuses specifically on SMEs and will compare its data with the abundance of research that is contributed to large-scale organizations. Therefore, it is assumed that the influence that contextual ambidexterity will have on commitment to change will differ, depending on the size of the organization.

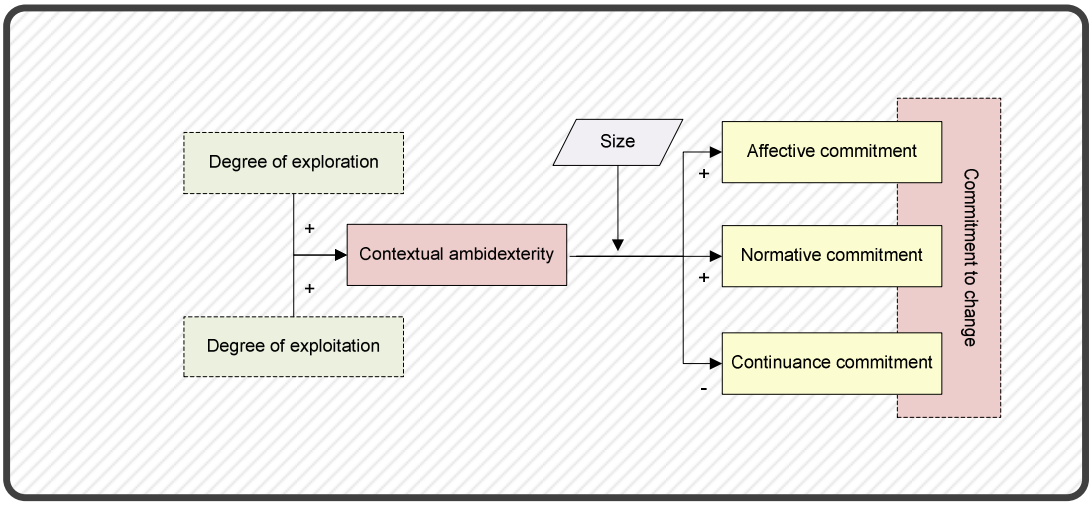


Figure 7: Theoretical model (Mickers, 2011, p. 22)

2.4.1. Hypotheses

As discussed in chapter 1.3, four research questions were identified, which assist in answering the problem statement of this study. As discussed earlier, two of these research questions are partially answered by means of empirical data. Out of eight hypotheses, six were used to provide empirical assumptions that will lead to the conclusions of the two research questions and two additional hypotheses were generated in order to answer general reliability and validity assumptions of the model.

2.4.1.1. General assumptions

With the hypotheses based on general assumptions, the two different scales, contextual ambidexterity and commitment to change, are tested on the possession of distinguishable sub-constructs. Literature generally accepts the distinguishable nature of the ambidexterity construct within teams and organizations, but several authors also refer to their uncertainty of this nature within different levels of analysis, such as the individual context. As this study focuses on individual, contextual ambidexterity, it is hypothesized that:

Hypothesis 1: *Exploration and exploitation are measurable constructs that can be distinguished from one another*

The same empirical uncertainty holds for the commitment to change scale, as developed by Herscovitch and meyer (2002). Jaros (2010) stated that it is crucial that further research, before analysis, investigates whether the concept commitment to change is indeed a multidimensional construct. Therefore, the following is hypothesized:

Hypothesis 2: *Affective, continuance, and normative commitment to change are measurable constructs that can be distinguished from one another.*

2.4.1.2. Hypotheses research question 3

The following hypotheses refer to research question 3: "What is the relationship between contextual ambidexterity and an employee's commitment to change?" The concept of ambidextrous organizations was stated to be an important factor in creating employee commitment, collaboration and motivation (Jansen et al, 2009). Further, the theoretical framework showed that affective and normative commitment showed high similarities with respect to employee behaviour in contextual ambidexterity, suggesting a positive relationship between the two variables. Despite this observation, scholars never found conclusive proof of a measurable relationship between ambidexterity and commitment to change. We therefore hypothesize that ambidexterity is positively related with these two forms of commitment:

Hypothesis 3a: *Contextual ambidexterity is positively related to affective commitment to change*

Hypothesis 3b: *Contextual ambidexterity is positively related to normative commitment to change*

On the other side, ambidextrous employees are considered to be less bound to the organization primarily to avoid costs. It is stated that these employees are alert for opportunities and see out opportunities for employment elsewhere. Further, ambidextrous employees will not lend themselves for a mindset where individuals will do little more than is required to make a change succeed. Thus, we hypothesize that there is a negative relationship between the two variables:

Hypothesis 3c: *Contextual ambidexterity is negatively related to continuance commitment to change*

2.4.1.3. Hypotheses research question 4

The following hypotheses refer to research question 4: "What is the role of contextual ambidexterity in SMEs?"
As discussed, Gibson and Birkinshaw (2004) proposed that a contextual approach to ambidexterity might be more appropriate for smaller firms or business units than larger firms and Lubatkin et al. (2006) argued that

exploration is more carefully applied in SMEs. This study therefore proposes that the long hierarchical lines in large-scale organizations will hinder explorative behavior, which tends to be minimized in SMEs as the senior management team functions closer to the operating core and participates more directly in both initiation and implementation of new strategic initiatives (Lubatkin et al., 2006). Further, it is argued that there is no large difference between SMEs and large-scale organizations as they both face the same kind of competitive pressures to jointly pursue exploration and exploitation (Lubatkin et al., 2006). Consequently, it is hypothesized:

Hypothesis 4: *the mean for exploration within SMEs is significantly higher than the mean for exploration in large-scale organizations*

Hypothesis 5: *the mean for exploitation within SMEs is equal to the mean of exploitation in large-scale organizations*

It was proposed that SMEs are more responsive to external influences instead of taking a proactive approach (Todtling & Kaufman, 2001; Raymond, Julien, Carriere & Lachance, 1998). On the other side, SMEs often have a degree of flexibility that is envied by larger enterprises. Not only this distinct behavior of SMEs might function as a benefit in order to read the signs of change early (Weisner, Banham, Poole, 2004), but also the large opportunities to apply contextual ambidexterity could moderate this relationship with commitment to change. This last hypothesis introduces the distinction between SMEs and large-scale organizations on both contextual ambidexterity and commitment to change, which leads us to an answer to the problem statement:

Hypothesis 6: *The relationship between contextual ambidexterity and commitment to change is significantly moderated by company size*

Chapter 3

Methodology

"Method is much, technique is much, but inspiration is even more."
- Benjamin Cardozo (1921) -

The methodology is often seen as one of the most important aspects of academic research. In order to solve the hypotheses from chapter 2.4.1 and ultimately answer the research questions and problem statement, this methodology chapter pays attention to the research design, data collection and method of analysis that was used during the research period. The methodology therefore contributes to the correct answering of hypotheses, research questions and problem statement.

3.1 Research Design

The purpose of this research is of descriptive nature. The research is therefore built on both primary and secondary data, using a deductive approach. The primary data used will generate new insights to confirm or reject the secondary data in the theoretical framework. The sampling technique used was judgment sampling as respondents specifically needed to be employed in an organization that was clearly subject to the management of change within their organisations (>10 employees) and situated within the Mid-Brabant region. The collected data consists of quantitative data from surveys. The cross-sectional survey with minimal research interference in a non-contrived setting adds value to the study as this allows the collection of a large amount of data from a population in a highly economical manner. The research can thus be judged as mono-method, quantitative research (Sekaran & Bougie, 2009, p. 114).

The unit of analysis of the research refers to *'the level of aggregation of the data collected during the subsequent data analysis stage'* (Sekaran & Bougie, 2009, p. 117). In this research, the unit of analysis will be on the individual level in both the variable ambidexterity as the commitment to change variables, as we are interested in the behaviour of individual employees and their commitment towards change initiatives.

3.2 Sample and Data Collection

3.2.1. Primary data

Primary data was collected by means of a survey amongst employees of selected companies that are leading change within their organizations. Whereas existing quantitative studies on individual employees' activities typically draw upon a sample consisting of a large number of individuals in a small number of firms (Ghoshal et al., 1994; Walsh, 1988; Ireland et al., 1987), this research drew upon a sample comprising of a small number of individuals in a large number of firms. The reason for this is the fact that this research is not looking to validate data for one specific organization, but rather increases the generalizability in order to make this research more useful for future purposes. In order to test our hypotheses, data was obtained through sending the survey to the full population of 5.574 organizations in the Mid-Brabant province. The Tilburg Municipality (66%) and Midpoint Brabant (34%) agreed to financially support this research by providing the 5.574 addresses from the Tilburg municipality database, finance the postal correspondence with use of the print and copy department and provide access to the licensed survey software NetQ.

The survey was sent by means of a cover letter, signed by Mr. Peter Noordanus (Mayor of Tilburg) in order to increase the response rate. The letter was addressed to the board of directors of the organization and included a link to the digital survey on the URL "tilburg.nl/onderzoek" to reduce costs and pressure on the environment. Before sending the survey, three managers within different services of Tilburg University and three medium-sized entrepreneurs were asked to complete the survey and indicate the relevance or any ambiguity regarding the phrasing of the items. Based on this pre-test, the content and phrasing of the survey was further enhanced. To ensure confidentiality, it was agreed not to reveal the names of the respondents and to return the completed surveys to the author without interference of corporate management or the Tilburg municipality. An additional database within the Tilburg municipality was held as a back-up to increase the response rate. This database would however only be used when the response-rate after one week was insufficient, given the specific focus on professional service industries in this database that could compromise the external validity of the findings, due to industry specific effects. Eventually, the second database was not used.

After a one-week response time, the survey was closed with 531 finished and unfinished respondents, corresponding to a response rate of 9%. List-wise deletion of cases with missing values or outliers reduced the final sample size to 373 (margin of error = 5%; confidence level= 95%). 22 of the 373 respondents were collected during a symposium in Tilburg with the subject entrepreneurship. The sample includes 110 micro organizations, 154 small organizations, 63 medium-sized organizations and 43 large-scaled organizations. This provides us with a 215 (small + medium) respondents within the SME target group. Within the sample, 248 respondents functioned in a position as managing director/ owner of the organization, 95 respondents positioned a leadership role and 27 respondents functioned in a role without leadership responsibilities.

3.2.2. Secondary data

In order to give the reader a basic overview of former research in this field, the articles in the theoretical framework were chosen to describe the current literature from broad to specific. While searching for relevant secondary data, close attention was paid to the publishing date to prevent missing out recent insights in the field. Furthermore, the quality of the articles was closely assessed by presenting the impact factors and numbers of citations of the articles. Several interesting articles were omitted from the literature framework as they did not belong to the most supported literature (i.e. impact factor journal, citations), dealt with a different perspective (e.g. structural ambidexterity) or used a reciprocal causal direction. All the data in the theoretical framework were collected through three scientific databases at the Tilburg University Library, namely ABI/Inform, JSTOR and EconLit.

Most cited journals

Journal	Impact factor	#	Oldest	Youngest	ACC*	Min*	Max*
Strategic Management Journal	4.464	12	1993	2005	778	23	1495
Organisation Science	3.126	12	1999	2009	297	7	7106
Academy of Management Review	7.867	7	1996	2006	166	87	260
Academy of Management Journal	6.483	7	1993	2007	127	19	306
Harvard Business Review	1.655	7	1985	2005	266	4	442
Administrative Science Quarterly	3.842	6	1986	2002	417	103	659

Table 1: Most cited journals in this study; impact factors

** average citation count, minimum and maximum count per article of most-cited journals in this study (Web of Science, 2011)*

Keywords used were: exploration, exploitation, (contextual) ambidexterity, ambidextrous organizations, change initiatives, change agent, commitment to change, affective commitment, normative commitment, continuance commitment, SME, small- and medium (sized) organization. Moreover, the option 'only search title-words' was used to narrow down the results. All articles were found on the first four pages of the search results. Sixteen articles, marked by an asterix in the literature list, were discovered through the snowball method: the reference list of an earlier article was used to gain interesting additional background information. The secondary data were mainly used to establish a framework of relevant and recent academic knowledge within the field of contextual ambidexterity and the commitment to change. Attention was paid to the relevance and quality of the academic journals. In order to optimise the triangularity in this research, important insights or conclusions were always based on more than three highly scientific sources which minimised the risk on drawing the wrong conclusions.

3.3 Variable Operationalization

3.3.1. Contextual ambidexterity

Prior studies combined two distinct factors to assess ambidexterity: exploration and exploitation (Gibson & Birkinshaw, 2004; He & Wong, 2004; Lubatkin et al., 2006). As of 2004, ambidextrous behavior in the individual context was also taken into consideration (Gibson & Birkinshaw, 2004). In this research, the approach that was first coined by Gibson and Birkinshaw (2004) and later adopted by Mom, van den Bosch and Volberda (2004) will be used to conceptualize contextual ambidexterity. Mom et al.'s (2004) study to understand variation in manager's ambidexterity is one of the few efforts that clearly refers to the method to measure contextual ambidexterity. Their method, consisting of 14 questions (appendix B.1) and measured on a 7-point Likert scale, showed a high reliability (α = .90) and an explained variance of 60%. The items, based on March's (1991) research were individually pre-tested and evidence was provided for dimensionality, convergent and discriminant validity. Mom et al. (2004, p. 18) stated that:

> *"Eigenvalues for each factor were greater than 3.6, all items loaded on their appropriate factors at greater than .69, and no item cross-loading was greater than .18. Results of confirmatory factor analysis (CFA) indicate that the two-factor model fits the data well (NFI = .93, CFI = .95, RMSEA < .07). Moreover, a comparison of a one factor model with a two-factor model shows a significant improvement in fit ($\Delta\chi 2$ significant at p <.001), providing evidence of discriminant validity"*

Given the repeatedly proven track-record of this 2004 survey, the 14-item scale was used to measure contextual ambidexterity within this research. After a pretest of the survey, it was however discovered that several questions were perceived as very similar by most pre-test respondents and therefore, four items were deleted from the scale and thus, a truncated 10-question scale in Dutch was eventually used in this research (appendix B.2).

3.3.2. Commitment to change

The dependent variable, commitment to change, will be measured using the multi-dimensional 6-item model (appendix B.3) by Herscovitch and Meyer's (2002), as this model was argued to be the most reliable and valid indicator of commitment to change (Jaros, 2010). Herscovitch and Meyer (2002, p. 477) state that:

> *"the factor analysis yielded three factors with eigenvalues greater than 1.0. With the exception of two items, all items loaded highest on the appropriate factor and had loadings that exceeded .5. In addition, there were two items that, despite loading highest on the appropriate factors, had high loadings on other factors. Reanalysis without these four items yielded three clear factors reflecting affective, continuance, and normative commitment. These factors accounted for 67.8% of the common variance"*

Alpha coefficients for the six-item affective, continuance, and normative commitment to change scales were .94, .94, and .86 respectively, showing high reliability of the model. Evidence also showed that the three dimensions could be clearly distinguished from each other and the construct commitment to change, suggesting high construct validity. Further, the model was repeatedly tested and proven to be a highly reliable and valid measure to a variety of authors (e.g. Neves, 2009; Parish et al, 2008; Herold et al, 2008; Conway & Monks, 2008; Chen & Wang, 2007; Meyer et al; 2007; Cunningham, 2006). The measure was also proven successful to measure commitment to a proposed change (Lau and Woodman, 1995), in the midst of a change effort (Cunningham, 2006), but Chen and Wang (2007) and Herold et al. (2008) also measured commitment to change efforts that had been recently completed. This mitigates potential analyzing problems when collecting data at different companies in different stages of the change process

In this research, Meyer's (2007) truncated 5-item version of the scale was used as Jaros (2010) states that this measure is proven to be even more reliable in measuring commitment to change than the full 6-item version by Herscovitch and Meyer (appendix B.4)

3.3.3. Company size

The last, moderating variable, company size, will be measured by using the adapted Chamber of Commerce (2007) definition that was based on the EU 'Directorate Generale for SMEs' definition in 1989. According to the Chamber of Commerce (2007), these adapted criteria would correctly reflect the nature of micro organizations (<10), small organizations (10-50), medium-sized organizations (50-250) and large-scale organizations (>250).

Within this research, the adapted criteria are used in order to explain the context of SMEs:

Company characteristics	**Small organisation (min.)**	**Medium organisation (max.)**
Amount of employees:	10 employees	250 employees
Annual turnover:	€ 8.8 million	€ 35.0 million
Net balance sheet worth:	€ 4.4 million	€ 17.5 million

Table 2: Definition SME (adapted from Chamber of Commerce (2007)

In our sample, SME will therefore be the sum of small- and medium-sized organizations (appendix B.5). Organisations will be classified as SME's if they met the employee criteria (50-250) and one of the financial criteria. Furthermore, no more than 25% of capital or voting rights held by one or more enterprises, which are not themselves SMEs.

3.4 Method of analysis

According to Lee and Lings (2009), it is extremely important to have a good picture of what analysis is needed before starting the data collection. Therefore, the main methods of quantitative data analysis within this research are discussed. After data preparation and -cleaning, descriptive statistics (frequencies, descriptive) were first used to describe the main characteristics of the data. This is seen as a vital part to understand how the data might behave in further data analysis, as well as deciding the quality of the data (Lee & Lings, 2009). Furthermore, this provides a broad picture of the means, standard deviations and other descriptive statistics of the variables within the data.

After noting the descriptive statistics, the internal consistency of the individual items in the scale were checked by means of the Cronbach's Alpha coefficient. Cronbach's Alpha is the most-widely accepted measure to check whether each individual item in a scale correlates with the sum of the remaining items (Streiner & Norman, 2003). Thereafter, exploratory factor analysis was used to measure the dimensions of the variables. Not only is this method the basis for other methods, such as regression analysis, but it is also a good way to test the relationships between the proposed items in a scale. In this research, principal component analysis (PCA) was used as method of factor analysis. Strictly speaking, PCA is not factor analysis as this method analyzes all variance present in the data set, while factor analysis only analyzes the common variances. According to Field (2005) however, different solutions with PCA and factor analysis are unlikely with a large sample (>30) and high communalities, as the error terms in the factor analysis model can be assumed to all have the same variance.

Further, several methods were used to test the hypotheses in this study: paired sample t-tests, independent sample t-test, ANOVA, MANOVA and simple linear regression. Both t-tests and ANOVA can be used to compare how a static group performs in varying test conditions. The difference is that the t-tests are used when the independent variable has two levels, such as is the case when analysing the difference between exploration and exploitation (hypotheses 4 and 5). Consequently, ANOVA is used when the independent variable has more than two levels, for example when analysing the difference in means between all three different company sizes: micro-, small- and medium and large-scale organizations. Further, simple linear regression is a widely used statistical procedure for predicting the (strength of a) relationship of an independent variable on a dependent variable when the relationship between the variables can be described with a linear model. With this method, the relationships between contextual ambidexterity and the commitment to change (hypothesis 3) is tested. Lastly, MANOVA is a generalized form of univariate analysis of variance and is mainly used to distinguish interaction (moderating) effects between variables. In this study, MANOVA is used to measure the interaction effect of company size on the relationship between contextual ambidexterity and the commitment to change (hypothesis 6).

3.5 Reliability & validity

Reliability refers to *"the extent to which the data collection techniques or analyses procedures will yield consistent findings"* (Saunders, Lewis and Thornhill, 2006, p.149). In this research, reliability threats are not only checked by carefully monitoring the Cronbach's alpha coefficient, but also by only using selected items, measuring contextual ambidexterity, commitment to change and company size. Further, the theoretical framework fulfills triangularity requirements, where all important statements are supported by more than two academic sources, originating from highly academic journals (table 1)

According to Saunders et al. (2006, p.150), validity is concerned with "*whether the findings are really about, what they appear to be about."* In this study, we examined differences between respondents and non-respondents by performing a robustness check, a test for non-response bias and mono-method bias. Mono-method bias occurs when one measure, for example digital survey, influences the answers of the respondents. This is mitigated by comparing the results of our digital respondents with the 22 respondents that were collected with the print survey. The results show (appendix C.1) that the average score on all answers in the ambidexterity-section of the survey for both groups only differ maximum 0.052 point on a 7-point Likert scale. Therefore, mono-method bias might not be an issue. Furthermore, early and late respondents were compared in terms of characteristics, as late respondents can be expected to be similar to non-respondents (Armstrong & Overton, 1977). This potential non-response bias was tested by checking the difference in survey answers between the first 50% respondents and the last 50% respondents on the ambidexterity-scale. The results (appendix C.2) show that there is a negligible

difference (0.062 per question on 7-point Likert scale) in contextual ambidexterity of the first 50% respondents in comparison to the second 50%. Therefore, there is a low risk on non-response bias within this study.

Last, a robustness check was executed by means of analyzing the difference in behavior of the different job positions (director/owner; manager; employee) within the sample. The results indeed show a slightly upward motion in commitment to change when the position within the organization holds more responsibilities (appendix C.3). This was already expected as there is a possibility that directors/owners and managers initiated the change within the organization that they are judging within the survey and are therefore more positive than regular employees. Even though the effect is only weak (0.101 point per question), a slight robustness bias within the data set must be taken into account.

3.6 Generalizability

According to Saunders et al. (2009, p.593), the generalizability of a study is described as its external validity, which is the extent to which the findings of a research study are applicable to other settings. First, the careful selection of exclusively reliable, valid and operationalized measures in this study greatly improves the generalizability. Further, the choice to study the complete target group in Brabant, without exclusion of industries, and the large sample size, increased the generalizability towards other settings or regions. On the other hand, the nature of the study, deliberately focusing on only one respondent per organization in Brabant, but also the cross-sectional design could limit the future generalizability.

Concluding, all decisions made were conscious and considered appropriate for the subsequent research as a first attempt to extend the academic theory by researching the relationship between contextual ambidexterity and commitment to change. In the light of the supporting evidence, attempts to replicate the findings by using different samples and strategies therefore seem warranted. However, due to the strong entrepreneurial origin of the Brabant province, with an above-average amount of industry leaders within the manufacturing, IT and services industries, generalizing the results of this study should always be done with caution.

Chapter 4

Analysis and Results

The art of simplicity is a puzzle of complexity.
- Douglas Horton (1964) -

4.1 General assumptions

First, all the proposed scales in the research were checked on their reliability coefficient (figure 3; appendix D). Alpha coefficients for the five-item scales exploration and exploitation were .72 and .65 and the coefficients for the five-item affective, normative and continuance commitment to change scales were .77, .66, and .85 respectively. The results indicate that the scale for exploitation and normative commitment are below the required .70 (Streiner & Norman, 2003). As there is no possibility to raise the exploitation scale by deleting items and no items are reverse scaled, the .65 coefficient was accepted due to the descriptive nature of the study (Moss et al., 1998). Within the normative commitment scale, question five ("feeling guilty when resisting change") was deleted due to the high similarity with question four ("feeling irresponsible when resisting change") in order to raise Cronbach's Alpha to .71 and therefore also accepting normative commitment as a reliable scale. Further, the Kaiser-Meyer-Olkin Measure of Sampling Adequacy of the full model shows a value of .803, which is perceived as "great", suggesting patterns of correlations that are produce distinct and reliable figures within the factor analysis (Hutcheson & Sofroniou, 1911, p 224). Bartlett's test of sphericity showed significant results with $p< 0.001$, assuming that factor analysis is appropriate (appendix D)

The proposed exploratory factor analysis (extraction method: principal component analysis; no rotation; appendix E) was conducted on the ambidexterity (exploration and exploitation) scale and the commitment to change (affective, normative and continuance commitment) scale to test the hypothesis whether all variables within the scales are distinguishable constructs. On the ambidexterity scale, the factor analysis yielded three components with eigenvalues more than 1.0, which is one more than expected. Nevertheless, factor three only showed a value of 1.087. All items had loadings that exceeded the required .40 and loaded on the appropriate factor (Lawler, Ebrahim, May and Smith, 2004). Only two items showed high (>.40) cross-loadings, but were rejected due to sufficient loadings on the appropriate factor. The factors accounted for 46% of the common variance. Furthermore, the correlation matrix shows that all exploration items correlate higher with the other exploration items than with the exploitation items and the other way around, showing high convergent and discriminant validity (Bagozzi, Yi and Phillips, 1991). Correlation coefficients also show that the variables exploration and exploration can be classified as uncorrelated, orthogonal variables with a correlation of only .014 (figure 3). Even though the ambidexterity scale, consisting of the multiplied exploration and exploitation variables, is also reliable (.79), the orthogonal nature of the variable indicates that conclusions regarding the contextual ambidexterity scale should always be made with reference to the individual results of exploration and exploitation. The findings however do provide additional support for *hypotheses 1* that exploration and exploitation are distinguishable and measurable constructs.

The commitment to change scale yielded three eigenvalues over 1.0 after exploratory factor analysis (extraction method: principal component matrix; varimax rotation with Kaiser Normalization; appendix D), which was as expected. Within the affective and normative scale, all items had loadings higher than .65 and loaded on the appropriate factor. The continuance scale showed that two items loaded higher on a different factor or showed

high cross-loadings. One of these items loaded .43 and one loaded lower than .40 with cross-loadings of respectively .59 and .63. Due to the distinctive nature of the questions, both questions were however proposed to remain in the continuance scale. The factors accounted for 62% of the common variance. Further, the correlation matrix showed that all items, except two items on the continuance scale, show high inter-item correlation and low cross-loadings, suggesting high convergent and discriminant validity. This does also provide support for *hypothesis 2* of this study that affective, continuance and normative commitment are measurable constructs that can be distinguished from each other.

To examine multicollinearity, the variance inflation factor (VIF) was also calculated for each of the proposed regression equations. VIFs are between 1.32 and 1.00, which is below the required cutoff of 10 (Neter et al. 1990); therefore, issues of multicollinearity do not seem to be a problem. Further, normality (Shapiro-Wilk test) and equality of variances (Levene's test) was tested and confirmed for every test statistic.

4.2 Main effects

In table 3, it can already be visually identified that only a slight difference in mean of exploration, exploitation and ambidexterity can be identified between the sub-sets of SMEs and large-scale organizations. Further, it can be identified that the mean of exploitation is in general higher than the mean of exploration within both the complete sample as in all sub-sets:

	Complete	**Micro**	**SME**	**Large**							
Variable	*M (SD)*	*M (SD)*	*M (SD)*	*M (SD)*	*1*	*2*	*3*	*4*	5	6	7
1 Exploitation behaviour	4.63 (1.000)	4.56 (1.146)	4.65 (0.948)	4.69 (0.863)	(0,72)						
2 Exploration behaviour	4.01 (1.165)	3.71 (1.183)	4.14 (1.157)	4.16 (1.037)	0.014	(0,65)					
3 Contextual ambidexterity	18.60 (6.597)	17.05 (6.806)	19.23 (6.619)	19.39 (5.276)	0.565***	0.801***	(0,79)				
4 Affective commitment to change	5.62 (0.985)	5.29 (0.996)	5.72 (0.968)	5.99 (0.812)	0.103*	0.267***	0,267***	(0,77)			
5 Normative commitment to change	4.31 (1.283)	3.87 (1.444)	4.44 (1.183)	4.79 (1.013)	0,076	0.195***	0,194***	0.307***	(0,71)		
6 Continuance commitment to change	3.36 (1.597)	3.23 (1.721)	13.60 (2.516)	3.31 (1.623)	0,087†	0.052	0.079	0.103*	0,381***	(0,85)	
7 Commitment to change	13.29 (2.680)	12.39 (2.976)	13.60 (2.516)	14.08 (2.078)	0,126*	0.222***	0.241**	0,453***	0.819***	0,741***	(0,79)

Table 3**:** Mean and Standard Deviation of scales; Alpha coefficients are presented on the diagonal in parentheses.

Further analysis with a paired sample t-test (appendix F.1) confirms the belief that the means of explorative and exploitative behavior are statistically different from each other ($t=-7.757$, $p<0.001$). The results show that exploitation, within the complete sample, is on average 0.615 higher than exploration. Surprisingly, one way ANOVA (appendix F.2) concludes that the means of explorative behavior are significantly different from each other ($F=5.319$, $p<0.05$) within the three subsets (micro, SME, large). Further analysis with an independent sample t-test however shows that only micro-organizations contributed to this difference (see table 3) and that the mean of exploration behaviour between only the sub-sets SMEs and large-scale organisations can also be considered significantly equal:

Hypothesis 4

$t = -.134$; $p = 0.894$; $\alpha = 0.05$ ⇨ $p > \alpha$, thus H_0 should not be rejected

H_0: μ *exploration* behaviour SME = μ *exploration* behaviour large-scale organizations (equal means)

H_1: μ *exploration* behaviour SME ≠ μ *exploration* behaviour of large-scale organizations (unequal means)

Hypothesis 5

$t = -.230$; $p = 0.819$; $\alpha = 0.05$ ⇨ $p > \alpha$, thus H_0 should not be rejected

H_0: μ *exploitation* behaviour SME = μ *exploitation* behaviour large-scale organizations

H_1: μ *exploitation* behaviour SME ≠ μ *exploitation* behaviour of large-scale organizations

Figure 8: statistical analysis hypotheses 4 and 5

Therefore, *hypothesis 4* that the mean of exploration behaviour is higher within SMEs than in large-scale organisations should be rejected. Further analysis with an independent sample t-test (appendix F.3) also provides equal means for the variable exploitation, therefore accepting *hypothesis 5,* stating that the mean of exploitation behaviour is equal within SMEs and large-scale organizations:

	Complete sample		*SME*		*Large-scale*	
	Commitment to change		**Commitment to change**		**Commitment to change**	
	B (s.e)	*ß*	*B (s.e)*	*ß*	*B (s.e)*	*ß*
Exploitation behaviour	0.329 (0.135)	0.015*	0.389 (0.145)	0.179*	0.050 (0.383)	0.021
Exploration behaviour	0.508 (0.116)	0.221***	0.393 (0.177)	0.148**	0.142 (0.319)	0.071
Contextual ambidexterity	0.594 (0.125)	0.241***	0.081 (0.025)	0.214**	0.030 (0.061)	0.076

Complete sample	**Affective commitment**		**Normative commitment**		**Continuance commitment**	
	B (s.e)	*ß*	*B (s.e)*	*ß*	*B (s.e)*	*ß*
Exploitation behaviour	0.098 (0.049)	0.099*	0.094 (0.065)	0.073*	0.019 (0.013)	0,079
Exploration behaviour	0.225 (0.042)	0.266***	0.214 (0.056)	0.194***	0.138 (0.083)	0,086
Contextual ambidexterity	0.041 (0.07)	0.276***	0.038 (0.010)	0.194***	0.069 (0.071)	0,050

SME	**Affective commitment**		**Normative commitment**		**Continuance commitment**	
	B (s.e)	*ß*	*B (s.e)*	*ß*	*B (s.e)*	*ß*
Exploitation behaviour	0.117 (0.067)	0.115†	0.068 (0.084)	0,054†	0.022 (0.090)	0.805
Exploration behaviour	0.209 (0.055)	0.250***	0.158 (0.069)	0.023*	0.208 (0.109)	0.129*
Contextual ambidexterity	0.038 (0.010)	0.262***	0.027 (0.012)	0.152*	0.016 (0.016)	0,086

Large-scale	**Affective commitment**		**Normative commitment**		**Continuance commitment**	
	B (s.e)	*ß*	*B (s.e)*	*ß*	*B (s.e)*	*ß*
Exploitation behaviour	0.032 (0.124)	0.041	0.021 (0.187)	0.070	0.033 (0.300)	0.018
Exploration behaviour	0.104 (0.149)	0.111	0.068 (0.156)	0.070	0.042 (0.250)	0.027
Contextual ambidexterity	0.021 (0.024)	0,135	0.008 (0.030)	0,043	0.001 (0.048)	0.003

Table 4: Centered data; Unstandardized coefficients are reported, with standard errors in parentheses, as well as standardized coefficients; N = 373; † p<0.10; ∗ p<0.05; ∗∗ p<0.01; ∗∗∗ p<0.001.

Further, the interaction effects between the feelings-based affective and normative commitment to change and the cost-based continuance commitment to change and contextual ambidexterity are examined. Simple regression analysis (appendix F.4) shows that the interaction between the variable contextual ambidexterity and affective commitment is positive and significant, supporting the positive relationship in *hypothesis 3a*. Support is also found for *hypothesis 3b* as the interaction effect between contextual ambidexterity and normative commitment to change is found to be positive and significant:

Hypothesis 3a

$\beta = 0.276$; $p < 0.001$; $\alpha = 0.05$ ⇨ $p < \alpha$, thus H_0 should be rejected

H_0: β contextual ambidexterity = 0 when compared to *affective* commitment to change (no relationship)

H_1: β contextual ambidexterity ≠ 0 when compared to *affective* commitment to change (relationship)

Hypothesis 3b

$\beta = 0.194$; $p < 0.001$; $\alpha = 0.05$ ⇨ $p < \alpha$, thus H_0 should be rejected

H_0: β contextual ambidexterity = 0 when compared to *normative* commitment to change

H_1: β contextual ambidexterity ≠ 0 when compared to *normative* commitment to change

Figure 9: statistical analysis hypotheses 3a and 3b

Table 4 shows that especially the individual effect of exploration on both affective as normative commitment is positive and significant (respectively *β=0.266* and *β=0.194)*, which leads to the presumption that mostly exploration predicts commitment to change. This belief is supported by the fairly lower size of the interaction

effect of the exploitation variable (respectively *β=0.099* and *β=0.073)* on commitment to change. The final interaction effect, between contextual ambidexterity and continuance commitment to change, does not show a statistically significant relationship within the simple linear regression, which leads to rejecting *hypothesis 3c* that suggested a negative relationship between contextual ambidexterity and continuance commitment:

Hypothesis 3c
$\beta = 0.079$; $p = 0.129$; $\alpha = 0.05$ ⇨ $p > \alpha$, thus H_0 should not be rejected
H_0: β contextual ambidexterity = 0 when compared to *continuance* commitment to change
H_1: β contextual ambidexterity ≠ 0 when compared to *continuance* commitment to change

Figure 10: statistical analysis hypotheses 3c

The last, and most important variable, in this study is however the potential moderating effect of contextual ambidexterity on the variable commitment to change. At first, table 4 show that the interaction effect between contextual ambidexterity and commitment to change is significant and positive ($\beta = 0.241$, $p < 0.001$), showing support for the beneficial effect of contextual (individual) ambidexterity on the commitment towards change of employees. Table 4 shows that also the separate variables exploration and exploitation significantly affect the commitment to change variable, even though the beta of exploration ($\beta = 0.221$) is almost twice as strong as the beta of exploitation ($\beta = 0.123$). In order to answer the main question of the research, the statistical relationship between contextual ambidexterity and commitment to change within the SME sub-sample was tested. Simple regression analysis provides evidence that the interaction effect between the variable contextual ambidexterity and affective commitment within SMEs is positive and significant ($\beta = 0.262$, $p < 0.001$). The interaction between contextual ambidexterity and normative commitment is also positive and significant ($\beta = 0.152$, $p < 0.05$). Further analysis shows that the individual effect of exploration on both affective as normative commitment in SMEs is also significant and positive (respectively *β=0.250* and *β=0.154)*, while the interaction effect of the exploitation variable (respectively *β=0.*115 and *β=0.054*) is generally weaker. Similar to the situation in the complete sample, the data does not show a statistically significant relationship between ambidexterity and continuance commitment to change within the simple linear regression ($\beta = 0.017$, $p = 0.129$).

As expected after the first analyses, multiple linear regression analysis with the moderator variable size, shows that the variable size does only account for a negligible difference in strength or direction of the interaction between dependent and independent variable, which causes SPSS to exclude the variable. The same holds for the separate variables exploration and exploitation. Subsequent analysis with MANOVA shows that the moderating effect, 'contextual ambidexterity * company size', is not significant:

Hypothesis 6
$\beta = 0.631$; $p = 0.984$; $\alpha = 0.05$ ⇨ $p > \alpha$, thus H_0 should not be rejected
H_0: test of between subjects-effect contextual ambidexterity * company size = 0 (no interaction)
H_1: test of between subjects-effect contextual ambidexterity * company size ≠ 0 (interaction)

Figure 11: statistical analysis hypotheses 6

Analyses with the separate variables of commitment to change did show slight changes of beta within the sub-regressions, stating that the effect of contextual ambidexterity on affective and normative commitment to change is stronger in SMEs *(β=* 0.262 and *β=* 0.152) than in large-scale organizations (*β=* 0.135 and *β=*0.043). However, as the moderating variable size is excluded in the regression and MANOVA is insignificant (appendix F.6), it can be concluded that there is no statistical moderating effect between contextual ambidexterity and commitment to change and therefore, *hypothesis 6* should be rejected.

Chapter 5

Conclusion and discussion

Context is the key - from that comes the understanding of everything
- Kenneth Noland (1960) -

The final chapter will first discuss the conclusions that can be drawn from the analysis of data in this study. The proceeding discussion will mainly indicate the relevance of the study and the future use of its implications by posing several statements. While discussing the conclusions, the contributions of this study to the literature will also be pointed out. Subsequently, the last section will discuss the limitations, opportunities for future research and generalizability of the study.

5.1 Conclusions

Even though the understanding that exploration and exploitation are two strategic learning activities that can be pursued simultaneously is grounded in theory, the understanding regarding contextual (individual) ambidexterity and its implication to the commitment of employees towards change initiatives remained underdeveloped. Even less was known about the effect of contextual ambidexterity on SMEs (Mom et al., 2009; Raisch & Birkinshaw, 2008; Gupta et al., 2006) and its relationship to commitment to change. This study therefore underscores the importance of studying contextual ambidexterity, but mainly contributes to further understanding on above issues in the way that the study tests the relationship of contextual ambidexterity on commitment to change within the context of SMEs. Recalling the problem statement, the study tried to find an answer to the following problem statement:

"How does contextual ambidexterity affect the commitment to change of employees in small- and medium-sized organizations?"

In the past, He and Wong (2004) and Hill and Birkinshaw (2006) were the first to reveal the positive relationship of structural ambidexterity on respectively sales growth and strategic performance. In the same year, Gibson and Birkinshaw (2004) argued a positive relationship between structural ambidexterity and performance on the business unit level. In this research, they argued that business units that are simultaneously aligned and adaptable to changes will perform better than other business units because every business unit separately will contribute to the exploitation of current customers and the exploration of new activities (Schudy, 2010). During the next years, several authors confirmed this positive relationship between *structural* ambidexterity and firm performance (Cao, Gedajlovic, and Zhang, 2009; Han, 2007), innovation performance (Tushman, Smith, Wood, Westerman and O'Reilly, 2004), strategic performance and product development (Prieto, Revilla and Rodriguez, 2007; Rothaermel & Deeds, 2004). On the other side, some studies found no relationship (Venkatraman, Lee and Iyer, 2007; Bierly & Daly, 2007; Yang & Atuahene-Gima (2007) or even a negative relationship (Lin et al., 2007) with firm performance. The main feature of structural ambidexterity, however, denotes the structural separation of the organization in alignment-oriented and adaptability-oriented business activities. This structural separation is also argued to lead to several organizational tensions as the separate units might lack cohesion and therefore, do not contribute to the organization's core strategy (Schudy, 2010; Gibson & Birkinshaw, 2004; Campbell et al., 2003). Another factor causing failure of structural ambidexterity is the possibility that employees within an

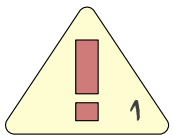
ambidextrous organization are itself not ambidextrous, creating confusion and inefficiency in the aim for structural ambidexterity (Gibson & Birkinshaw, 2004). Contextual ambidexterity therefore goes 'one level down' by emphasizing the importance of ambidextrous behavior on the individual level by letting employees divide themselves between alignment- and adaptability-focused activities (Jansen et al., 2008) and creating a context where structural ambidexterity can prosper. This study is one of the first that empirically relates the contextual ambidexterity hypothesis to the commitment to change, suggesting that individual, ambidextrous behavior positively influences the commitment towards proposed change initiatives of individuals within SMEs, making them more open to changes in their environment and work routines.

The results also indicate that individuals in our sample principally focus more on exploitation than on exploration within their daily business activities, which is supported by Burgelman (1991) and Lubatkin et al. (2006). Both are not only stating that exploration is a prerequisite for exploitation, but also argue that exploration requires an ultimately slower development of skills and internal selection processes and thus, exploitation would be easier to achieve than exploration. The results of this study however show that both affective and normative commitment to change are positively influenced by contextual ambidexterity. Within this relationship, especially *exploration* shows a strong, significant relationship with affective and normative commitment to change, while exploitation is generally weaker in strength. The relationship of contextual ambidexterity on continuance commitment to change is in all cases insignificant and therefore, not relevant to the study. It is assumed that the explanation for this finding might be that ambidextrous employees do not always experience feelings of continuance commitment as this form of commitment is typically defined as *"perceiving that there are no alternatives other than to pursue a course of action"* (Herscovitch & Meyer, 2002, p. 484; Jaros, 2010). Adjacent to this reasoning, continuance commitment is widely argued to be lacking predictive utility (Jaros, 2010; Meyer et al., 2007, Parish et al., 2008) and some authors even believe that continuance commitment can only be related to turnover intentions and not behaviors (Bergman, 2006; Meyer et al., 2002). The results of the relationship of contextual ambidexterity on commitment to change, despite continuance commitment, were in line with the proposed theoretical framework and model.

In accordance with the theoretical framework, it was argued that that individual, explorative behavior could be higher in SMEs than in large-scale organizations. The data, however, suggests that there is no difference in both the explorative and exploitative behavior between SMEs and large-scale organizations. Therefore, the moderating effect on commitment to change was also found to be negligible, which leads to an answer to the problem statement: individual employees, employed in SMEs, that would develop contextual ambidexterity, mainly by pursuing explorative behavior within their daily routine, will according to this study, show a significant higher level of affective and normative commitment to change initiatives in the future. On the other side, the achieved contextual ambidexterity of these employees is asserted to have no significant relationship with an employee's continuance commitment to change. This relationship does however greatly depend on the context of the organization, which should ideally become high-performance by building in stretch, discipline, support and trust (Ghoshal & Bartlett, 1997; Ghoshal & Bartlett, 1994) into the organization.

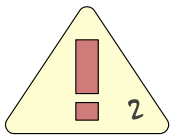
5.2 Discussion

The contributions of this study raise several important issues for both theory and practice. The discussion is centralized around four statements that can be formulated regarding the findings of this study. All statements are based on the theoretical framework and the analysis of the empirical data:



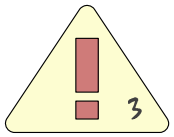
Ambidextrous employees will go the extra mile to adopt change

First, the findings in this study suggest that contextual ambidexterity shows a positive relationship with both affective and normative commitment in SMEs. As discussed earlier, contextual ambidexterity causes employees to go beyond boundaries in their task description, fostering inter-employee support and trust. Furthermore, these employees are stated to be more looking for internal and external linkages and social relationship to benefit the organization. Therefore, ambidextrous employees could be more likely to think in the best interest of the organization they work for, instead of mainly pursuing their own interest (Gibson & Birkinshaw, 2004). Even though it was already suggested that the ambidextrous mindset is hard to achieve, contextual ambidexterity is proposed to render employees that are more likely to believe in change, show stronger commitment to deliver a personal contribution to the success of the organization (affective commitment) and feel more obligated to be part of the subjected change (normative commitment). One of the other characteristics of these two forms of positive commitment to change is that individual employees are willing to do more than is required, even if this requires personal sacrifice in the process (Herscovitch & Meyer, 2002). This is in line with contextual ambidexterity theory, suggesting that ambidextrous individuals are often disciplined and committed towards complex organizational goals (Jansen et al., 2008; Harris & Bromiley, 2007; Bloom, 1999).



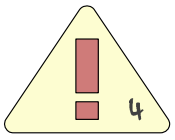
Exploration: the road towards commitment to change

Until now however, no evidence was found that mainly the individual, explorative behavior of contextual ambidexterity explained the commitment to change of employees. Within both SMEs, large-scale organizations and the complete sample, the predictive power of exploration (on affective and normative commitment) was found, on average, twice as strong as the predictive power of exploitation. This main finding suggests that individual employees should preferably be stimulated with exploration-based activities such as “search, variation, risk taking, experimentation, play, flexibility, discovery, innovation” (Baum et al., 2000, p. 768; March, 1991, p.71), instead of exploitation-based activities among which “refinement, choice, production, efficiency, selection, implementation, execution (March, 1991, p.71), in order to increase the commitment towards change of employees. Even though this study did not research the ideal trade-off between explorative and exploitative behaviour, the results do indicate that there is an important ground for future research as exploitative behaviour is still dominant over explorative behaviour in all company sizes, from micro-organization to large-scale organizations.



Contextual ambidexterity offers great potential for SMEs

Third, looking at the interaction effect of company size between the variables contextual ambidexterity and commitment to change, it is important to notice the distinct nature of the contextual ambidexterity variable amongst the different company sizes. Previous research (Li, 2011; Lubatkin et al., 2006) stated that large-scale organizations might be disadvantaged by organizational impediments, such as long and opaque communication lines that lack in SMEs. Therefore, SMEs could potentially reach higher degrees of exploratory behavior than their large-scale counterparts. Furthermore, it was stated that both SMEs and large-scale organizations face the same competitive pressures to pursue exploitation and will thus try to maximize their exploitation behavior (Lubatkin, 2006). The results of this study, however, show that there is not a significant difference between both exploration and exploitation SME and large scale organizations. The reason for this could potentially be found in the scarcity of resources and systems within SMEs: the exploratory behavior of SMEs might potentially be greater than large-scale organizations when SMEs would function in a situation with an abundance of resources and hierarchical administrative systems that can help larger firms to optimalize the organizational context (Ghoshal & Bartlett, 1997) and thus, affect the attainment of contextual ambidexterity (Su, Li, Yang and Li, 2011). However, most SMEs lack both these slack resources and administrative systems, which will not generate the ideal high-performance context that enables every individual employee to integrate exploration and exploitation at his or her level. Other studies also show that SMEs could be biased towards exploratory behavior, such as higher level learning (Busenitz & Barney, 1997), product leadership (Eisenhardt & Schoonhoven, 1990), the proactive acquisition of new information (Zahra, Ireland and Hitt, 2000) and the aggressive use of resources in new arenas (Romanelli, 1987; Lubatkin et al., 2006). In other words, despite facing fewer organizational impediments, employees within SMEs will often become stuck in the reconciliation of their simultaneous operating and strategic role. To illustrate, an employee with roles both in the TMT and as a senior operations manager spends considerable time and energy in a new technology that could improve the energy efficiency of the organization's current products. Although this technique could be operationally important, the manager knows that the team may not support it for strategic reasons and draws back earlier than expected.



With regard to contextual ambidexterity, SMEs are <u>not</u> inferior to large organizations

The last finding of this study, with respect to the sample, is the fact that SMEs should not be perceived inferior in comparison to their large-scale counterparts. No significant differences could be distinguished in either the behavior of contextual ambidexterity or a potential moderating effect of company size on the relationship between contextual ambidexterity and commitment to change. Within the context of individual ambidexterity, this study therefore suggests that, if ambidextrous behavior is indeed crucial to firm survival (Jansen et al, 2005a; Gibson & Birkinshaw, 2004; He & Wong, 2004; Tushman & O'Reilly, 1996) and can create and sustain revolutionary change (Tushman & O'Reilly, 1996), there is an important theoretical and operational opportunity to provide SMEs with more knowledge regarding the benefits and organizational context of the ambidexterity construct in order to optimize their commitment to change, and therefore potential organizational survival, of these valuable organizations in the future.

5.3 Limitations and future research opportunities

Even though great care has been taken in order to maintain the accuracy, reliability and validity of this research, several important limitations must be identified to take into account when interpreting the results. These limitations also suggest several issues for future research:

The main focus with the survey was applied to directors/managers, due to the fact that only the names of these employees were available in our database, but these employees could also better describe the essential focus of the change initiatives they were pursuing. This essential focus of the change was questioned within the variable "change context". However, this variable "change context" unfortunately proved to be insignificant and was deleted from the study. This causes several limitations, such as the fact that there is a possibility that our respondents (mainly directors/managers) do not reflect or overestimate the current opinion of employees within their organizations. The robustness check (chapter 3.5) indeed showed a slightly upward motion of commitment to change when the position within the organization holds more responsibilities. Therefore, conclusions regarding specifics within the data, such as means, standard deviations or relationships that are not supported within both sub-samples (employees with/without responsibilities) should always be drawn with caution. This is also the reason why this study does not provide specific recommendations about either organizations or industries.

This also leads to several opportunities for future research, such as repeating the same research setting with a significant sample of only employees without a leader role in the organization or larger sample of large-scale organizations, in order to extend the limitation of this research. Further, it would be interesting to repeat the research setting in several industries that are more important within the region, such as the manufacturing, IT and services industries, but also in different regions. Even though the industry was questioned within our survey, due to the large diversity in respondents and insignificant sample size per industry, no conclusions could be made regarding this aspect. Gibson and Birkinshaw (2004) already pointed out that previous research did not fully cover all variables that influence contextual ambidexterity. As this research shows that contextual ambidexterity is empirically achievable, but also relevant for both SMEs and large-scale organizations to achieve commitment to change, future research should create more insight in the context and drivers of organizations that pursue contextual ambidexterity. Ghoshal and Barlett (1997; 1994) also argued that an organization should pursue a high-performance context with stretch, discipline, support and trust, but more research that explains the exact relationship between these variables and their influence in the facilitation of contextual ambidexterity would be valuable. Lastly, several authors argue that contextual ambidexterity is seen as a stimulus for structural ambidexterity. Therefore, the statistical relationship between these two types of ambidexterity should be subject for further research. In general, hope is expressed that this study inspires scholars to further study the complex phenomenon of contextual ambidexterity and that future research, based on the findings in this study, might enable organizations to prosper and be more successful in the end.

Chapter 6

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Chapter 7

Appendices

Appendix A

Theory: difference structural and contextual ambidexterity, as adapted from Birkinshaw and Gibson (2004).

Structural vs. contextual ambidexterity

	Structural Ambidexterity	Contextual Ambidexterity
How is ambidexterity achieved?	Alignment-focused and adaptability-focused activities done in separate units or teams	Individual employees divide time between alignment-focused and adaptability-focused activities
Where are the decisions made about the split between alignment and adaptability?	At the top of the organization	Front line – by salespeople, plant supervisors, office workers
Role of top management	Define the structure; make trade-offs between alignment and adaptability	Develop the organizational context in which individuals act
Nature of roles	Relatively clearly defined	Relatively flexible
Skills of employees	More specialists	More generalists

Table 5: Structural vs. Contextual ambidexterity (Adapted from Birkinshaw and Gibson, 2004)

Appendix B.1.

Survey: questions contextual ambidexterity, according to Mom et al. (2004; original)

1. Exploration activities

To what extent did you, last year, engage in work related activities that can be characterized as follows:

A. Searching for new possibilities with respect to products/ services, processes or markets
B. Evaluating diverse options with respect to products/ services, processes or markets
C. Focusing on strong renewal of products/ services or processes
D. Activities of which the associated yields or costs are currently unclear
E. Activities requiring quite some adaptability of you
F. Activities requiring you to learn new skills or knowledge
G. Activities that are not (yet) clearly existing company policy

2. Exploitation activities

To what extent did you, last year, engage in work related activities that can be characterized as follows:

A. Activities of which a lot of experience has been accumulated by yourself
B. Activities which you carry out as if it were routine
C. Activities which serve existing (internal) customers with existing services/ products
D. Activities of which it is clear to you how to conduct them
E. Activities primarily focused on achieving short-term goals
F. Activities which you can properly conduct by using your present knowledge
G. Activities which clearly fit into existing company policy

Appendix B.2.

Survey: questions contextual ambidexterity, based on Mom et al. (2004; used)

De volgende **twee** vragen bestaan uit **5** subvragen en zullen gaan over **uw werkzaamheden gedurende het afgelopen jaar**. U vult hier het antwoord in dat het meeste op uw werkzaamheden van toepassing was. De vragen worden aan u gesteld op basis van een 7-puntsschaal van '*helemaal niet van toepassing'* tot '*sterk van toepassing'.*

1. Geef bij de onderstaande stellingen aan wat op uw werkzaamheden van toepassing waren:

Helemaal niet van toepassing – 1 – 2 – 3 – 4 – 5 – 6 – 7 – Sterk van toepassing

In welke mate heeft u, afgelopen jaar, werkzaamheden uitgevoerd, die kunnen worden omschreven als activiteiten:

A. met een focus op vernieuwing van uw huidige producten en/of services
B. met een focus op vervanging van uw huidige producten en/of services
C. waarvan de opbrengsten en/of kosten bij aanvang nog niet duidelijk waren
D. waarvoor u eerst nieuwe vaardigheden of kennis moest ontwikkelen
E. die nog niet beschreven stonden in het beleid van de organisatie

In welke mate heeft u, afgelopen jaar, werkzaamheden uitgevoerd, die kunnen worden omschreven als activiteiten:

A. waar u eerder al ervaring mee had opgedaan in de organisatie
B. die voornamelijk gericht waren op bestaande klanten, producten en/of services
C. die voornamelijk gericht waren op korte-termijn doelstellingen
D. die u kon uitvoeren met parate kennis en/of vaardigheden
E. die destijds duidelijk stonden beschreven in het beleid van de organisatie

Appendix B.3.

Survey: questions commitment to change, according to Herscovitch and Meyer (2002; original)

Affective commitment items

A. I believe in the value of this change.
B. This change is a good strategy for this organization
C. I think that management is making a mistake by introducing this change
D. This change serves an important purpose
E. Things would be better without this change
F. This change is not necessary

Continuance commitment items

A. I have no choice but to go along with this change

B. I feel pressure to go along with this change
C. I have too much at stake to resist this change
D. It would be too costly for me to resist this change
E. It would be risky to speak out against this change
F. Resisting this change is not a viable option for me

Normative commitment items

A. I feel a sense of duty to work toward this change
B. I do not think it would be right of me to oppose this change
C. I would not feel badly about opposing this change
D. It would be irresponsible of me to resist this change
E. I would feel guilty about opposing this change
F. I do not feel any obligation to support this change

Appendix B.4.

Survey: questions commitment to change, based on Herscovitch and Meyer (2002; used)

Affective commitment items

A. Ik geloof in de waarde van deze verandering
B. De verandering was een goede strategie voor deze organisatie
C. Deze verandering dient een belangrijk doel
D. De situatie was beter geweest zonder deze verandering
E. Deze verandering was niet noodzakelijk

Continuance commitment items

A. Ik had geen keus anders dan mee te gaan in deze verandering
B. Ik voelde druk om mee te gaan met deze verandering
C. Er stond teveel op het spel om weerstand te bieden tegen deze verandering
D. Het zou mij financieel teveel raken om weerstand te bieden tegen deze verandering
E. Weerstand bieden tegen deze verandering was geen optie

Normative commitment items

A. Ik heb een plicht om deze verandering te ondersteunen
B. Ik denk dat het niet juist zou zijn om weerstand te bieden tegen deze verandering
C. Ik voel geen belemmeringen om weerstand te bieden tegen deze verandering
D. Het zou onverantwoordelijk zijn om weerstand te bieden tegen deze verandering
E. Ik zou me niet schuldig voelen om weerstand te bieden tegen deze verandering

Appendix B.5.

Survey: Questions company size, as adapted from KvK (2007; used).

Tijdens de volgende **drie** vragen wordt bepaald of u deel uit maakt van een kleine, middelgrote of grote organisatie. Wij zijn hierin enkel geïnteresseerd of u binnen de officieel door het ministerie van EZ vastgestelde waardes valt en zullen **nooit** vragen naar specifieke of financiële informatie.

Hoeveel werknemers omvat uw organisatie?

- Minder dan 10 werknemers
- Tussen de 10 en 50 werknemers
- Tussen de 50 en 250 werknemers
- Meer dan 250 werknemers

Wat was de laatste jaaromzet van uw organisatie?

- Minder dan €8.8 miljoen
- Tussen de €8.8 en €35 miljoen
- Meer dan €35 miljoen

Wat was de totale balanswaarde van uw organisatie afgelopen jaar?

- Minder dan €4.4 miljoen
- Tussen de €4.4 miljoen en €17.5 miljoen
- Meer dan €17.5 miljoen

Appendix C.1.

Validity: Mono-method bias check

Digital respondents

Amount of employees		Ambidexterity (exploit.*explor.)	Commitment to change (aff+norm+cont)
Micro-organisations	Mean	17,05	12,39
	N	110	110
	Std. Deviation	6,806	2,976
Small- and medium-sized	Mean	19,23	13,60
	N	217	217
	Std. Deviation	6,619	2,516
Large-scale organizations	Mean	19,54	14,54
	N	21	21
	Std. Deviation	6,119	2,225
Average respondent	Mean	18,56	13,27
	N	348	348
	Std. Deviation	6,711	2,724

Print respondents

Amount of employees		Optelsom exploration + exploitation	Optelsom affective, continuance en normative commitment
Micro-organisations	Mean	18,10	12,29
	N	11	11
	Std. Deviation	5,414	2,422
Small- and medium-sized	Mean	17,99	12,56
	N	11	11
	Std. Deviation	5,585	2,299
Large-scale organizations	Mean	0	0
	N	0	0
	Std. Deviation	0	0
Average respondent	Mean	18,04	12,43
	N	22	22
	Std. Deviation	5,368	2,309

Maximum differences:

Contextual ambidexterity (18.56 – 18.04) = 0.52 / 10 questions = 0.052

Commitment to change (13.27 – 12.43 = 0.84 / 14 questions = 0.006

Appendix C.2.

Validity: Non-respond bias

	All respondents		1st 50% respondents		2nd 50% respondents	
Exploration	**Mean**	**St. dev**	**Mean**	**St. dev**	**Mean**	**St. dev**
Focus op vernieuwing	5,06	1,514	4,79	1,589	5,34	1,386
Focus op vervanging	4,01	1,712	3,88	1,732	4,14	1,704
opbrengsten/kosten onduidelijk	3,90	1,717	3,85	1,737	3,94	1,701
nieuwe kennis noodzakelijk	3,76	1,728	3,62	1,716	3,90	1,734
Niet benoemd in beleid	3,35	1,802	3,18	1,786	3,51	1,806

	All respondents		1st 50% respondents		2nd 50% respondents	
Exploitation	**Mean**	**St. dev**	**Mean**	**St. dev**	**Mean**	**St. dev**
Focus op ervaring	4,81	1,742	4,71	1,848	4,90	1,629
Bestaande klanten/producten	5,23	1,435	5,21	1,534	5,25	1,333
Focus op korte termijn doelstellingen	3,49	1,507	3,48	1,568	3,51	1,449
Parate kennis voldoende	5,27	1,629	5,28	1,293	5,25	1,249
Benoemd in beleid	4,35	1,730	4,21	1,813	4,49	1,636

	All respondents		1st 50% respondents		2nd 50% respondents	
Ambidexterity	**Mean**	**St. dev**	**Mean**	**St. dev**	**Mean**	**St. dev**
Manager's exploration	4,02	1,695	3,86	1,712	4,17	1,666
Manager's exploitation	4,63	1,609	4,58	1,611	4,68	1,459
Manager's ambidexterity	*4,32*	*1,652*	*4,22*	*1,662*	*4,42*	*1,563*

Maximum differences:

Manager's exploration (4.17 - 3.86) = 0.31 / 5 questions = 0.062
Manager's exploitation (4.68 – 4.58) = 0.10 / 5 questions = 0.010
Manager's ambidexterity (4.42- 4.22) = 0.20 / 10 questions = 0.020

Appendix C.3.

Validity: Robustness Check

All respondents

Commitment to change	**Mean**	**St. dev**
Affective commitment	5.62	1.357
Normative commitment	3.36	2.007
Continuance commitment	4.50	1.968
Totaal	*4.49*	*1.777*

Employees with leader role

Commitment to change	**Mean**	**St. dev**
Affective commitment	5.64	1.377
Normative commitment	3.44	2.077
Continuance commitment	4.77	1.876
Totaal	*4.62*	*1.777*

Director / owner

Commitment to change	**Mean**	**St. dev**
Affective commitment	5.67	1.318
Normative commitment	3.35	1.970
Continuance commitment	4.40	1.999
Totaal	*4.47*	*1.762*

Employees with NO leader role

Commitment to change	**Mean**	**St. dev**
Affective commitment	5.15	1.532
Normative commitment	3.13	2.076
Continuance commitment	4.45	1.948
Totaal	*4.24*	*1.852*

Maximum differences:

Affective commitment (5.67+5.64)/2 = 5.655 - 5.15 = 0.505 / 5 questions = 0.101
Normative commitment (3.35 + 3.44)/2 = 3.395 - 3.13 = 0.265 / 5 questions = 0.053
Continuance commitment (4.40 + 4.77)/2 = 4.585 - 4.45 = 0.135 / 4 questions = 0.033

Appendix D

Reliability: statistics contextual ambidexterity and commitment to change

Scale 1: exploration

Reliability Statistics

Cronbach's Alpha	N of Items
,719	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
v01	15,01	24,005	,516	,659
v02	16,06	23,990	,415	,696
v03	16,18	23,142	,476	,672
v04	16,31	22,514	,516	,655
v05	16,73	22,643	,470	,675

Scale 2: exploitation

Reliability Statistics

Cronbach's Alpha	N of Items
,652	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
v06	18,34	16,389	,396	,606
v07	17,92	17,714	,434	,587
v08	19,66	19,110	,276	,657
v09	17,88	17,297	,578	,535
v10	18,80	16,509	,392	,608

Scale 3: Affective commitment to change

Reliability Statistics

Cronbach's Alpha	N of Items
,769	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
v16	22,43	15,845	,672	,683
v17	22,67	15,572	,706	,672
v18	22,48	15,405	,658	,685
v19	22,10	18,380	,418	,764
v20	22,73	16,919	,334	,816

Scale 4: Normative commitment to change

Reliability Statistics

Cronbach's Alpha	N of Items
,662	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
v26	17,00	27,688	,438	,599
v27	16,86	25,545	,572	,532
v28	17,22	29,551	,370	,630
v29	17,18	26,636	,539	,552
v30	17,99	33,436	,181	,708

Scale 5: Continuance commitment to change

Reliability Statistics

Cronbach's Alpha	N of Items
,854	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
v21	13,20	42,670	,639	,832
v22	13,63	44,294	,643	,831
v23	13,42	39,962	,773	,796
v24	13,70	43,944	,615	,837
v25	13,27	40,671	,672	,824

Model check: KMO and Barlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		,803
Bartlett's Test of Sphericity	Approx. Chi-Square	3171,036
	df	276
	Sig.	,000

Appendix E

Factor analysis: contextual ambidexterity and commitment to change

Scale 1: Contextual ambidexterity

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,381	23,806	23,806	2,381	23,806	23,806
2	2,199	21,994	45,800	2,199	21,994	45,800
3	1,087	10,869	56,669	1,087	10,869	56,669
4	,893	8,934	65,603			
5	,811	8,113	73,717			
6	,722	7,217	80,934			
7	,589	5,887	86,820			
8	,529	5,288	92,108			
9	,418	4,183	96,291			
10	,371	3,709	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component		
	1	2	3
v01	**,733**		
v02	**,635**		
v03	**,678**		
v04	**,700**		
v05	**,660**		,443
v06		**,611**	
v07		**,687**	
v08		**,476**	,504
v09		**,803**	
v10		**,632**	

Extraction Method: Principal Component Analysis.

a. 3 components extracted.

Scale 2: Commitment to change

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,278	30,554	30,554	4,278	30,554	30,554	4,069	29,061	29,061
2	3,224	23,032	53,586	3,224	23,032	53,586	2,785	19,892	48,953
3	1,118	7,987	61,572	1,118	7,987	61,572	1,767	12,619	61,572
4	,965	6,892	68,465						
5	,815	5,823	74,287						
6	,633	4,524	78,811						
7	,576	4,113	82,924						
8	,476	3,401	86,326						
9	,436	3,116	89,442						
10	,365	2,605	92,046						
11	,342	2,446	94,492						
12	,291	2,075	96,567						
13	,253	1,806	98,373						
14	,228	1,627	100,000						

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component		
	1	2	3
v16		**,738**	
v17		**,760**	
v18		**,737**	
v19		**,650**	
v20		**,650**	
v21	**,717**		
v22	**,705**		
v23	**,860**		
v24	**,729**		
v25	**,826**		
v26	,632		**,283**
v27			**,558**
v28			**,780**
v29	,594		**,431**

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 6 iterations.

Correlations

			v01	v02	v03	v04	v05	v06	v07	v08	v09	v10
Spearman's rho	v01	Correlation Coefficient	1,000	,530**	,301**	,325**	,224**	,095	,137**	-,101	,061	,103*
		Sig. (2-tailed)	.	,000	,000	,000	,000	,068	,008	,053	,245	,048
		N	370	370	370	370	370	370	370	370	370	370
	v02	Correlation Coefficient	,530**	1,000	,254**	,229**	,208**	,012	-,002	-,002	-,032	-,018
		Sig. (2-tailed)	,000	.	,000	,000	,000	,821	,972	,969	,537	,731
		N	370	370	370	370	370	370	370	370	370	370
	v03	Correlation Coefficient	,301**	,254**	1,000	,374**	,385**	,063	-,067	,068	-,116*	-,004
		Sig. (2-tailed)	,000	,000	.	,000	,000	,224	,202	,191	,026	,943
		N	370	370	370	370	370	370	370	370	370	370
	v04	Correlation Coefficient	,325**	,229**	,374**	1,000	,498**	-,053	-,050	-,029	-,165**	-,025
		Sig. (2-tailed)	,000	,000	,000	.	,000	,313	,336	,582	,001	,637
		N	370	370	370	370	370	370	370	370	370	370
	v05	Correlation Coefficient	,224**	,208**	,385**	,498**	1,000	-,004	-,027	,030	-,053	-,121*
		Sig. (2-tailed)	,000	,000	,000	,000	.	,946	,606	,562	,306	,019
		N	370	370	370	370	370	370	370	370	370	370
	v06	Correlation Coefficient	,095	,012	,063	-,053	-,004	1,000	,287**	,151**	,337**	,292**
		Sig. (2-tailed)	,068	,821	,224	,313	,946	.	,000	,004	,000	,000
		N	370	370	370	370	370	370	370	370	370	370
	v07	Correlation Coefficient	,137**	-,002	-,067	-,050	-,027	,287**	1,000	,129*	,430**	,240**
		Sig. (2-tailed)	,008	,972	,202	,336	,606	,000	.	,013	,000	,000
		N	370	370	370	370	370	370	370	370	370	370
	v08	Correlation Coefficient	-,101	-,002	,068	-,029	,030	,151**	,129*	1,000	,328**	,137**
		Sig. (2-tailed)	,053	,969	,191	,582	,562	,004	,013	.	,000	,008
		N	370	370	370	370	370	370	370	370	370	370
	v09	Correlation Coefficient	,061	-,032	-,116*	-,165**	-,053	,337**	,430**	,328**	1,000	,363**
		Sig. (2-tailed)	,245	,537	,026	,001	,306	,000	,000	,000	.	,000
		N	370	370	370	370	370	370	370	370	370	370
	v10	Correlation Coefficient	,103*	-,018	-,004	-,025	-,121*	,292**	,240**	,137**	,363**	1,000
		Sig. (2-tailed)	,048	,731	,943	,637	,019	,000	,000	,008	,000	.
		N	370	370	370	370	370	370	370	370	370	370

**. Correlation is significant at the 0.01 level (2-tailed).

*. Correlation is significant at the 0.05 level (2-tailed).

Appendix F.1.

Statistics I: paired sample t-test to test difference mean exploration - exploitation

Paired Samples Correlations

		N	Correlation	Sig.
Pair 1	Exploration & Exploitation	370	,014	,793

Paired Samples Test

		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference Lower	Upper			
Pair 1	Exploration - Exploitation	-,615	1,525	,079	-,771	-,459	-7,757	369	,000

Conclusion: reject hypothesis; the mean of exploration and exploitation are significantly different from each other

Appendix F.2.

Statistics II: one-way ANOVA & independent sample Test to test Hypothesis 4:

"the mean for exploration within SMEs is significantly higher than the same mean of large-scale organizations"

ANOVA

Exploration

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	14,116	2	7,058	5,319	,005
Within Groups	487,045	367	1,327		
Total	501,161	369			

$p < \alpha$, thus H_0 should be rejected, thus explorative behavior not equal within all three groups

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Exploration	Equal variances assumed	1,433	,232	-,134	258	,894	-,025	,190	-,400	,349
	Equal variances not assumed			-,144	64,546	,886	-,025	,177	-,378	,327

t = -.134; p = 0.894; α = 0.05 ⇨ p > α, thus H_0 should not be rejected

H_0: μ *exploration* behaviour SME = μ *exploration* behaviour large-scale organizations (equal means)

H_1: μ *exploration* behaviour SME ≠ μ *exploration* behaviour of large-scale organizations (unequal means)

Appendix F.3.

Statistics III: One-way ANOVA to test Hypothesis 5:

"the mean for exploitation within SMEs is equal to the mean of exploitation in large-scale organizations"

Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Exploitation	Equal variances assumed	1,123	,290	-,230	258	,819	-,036	,156	-,343	,271
	Equal variances not assumed			-,245	63,755	,808	-,036	,147	-,329	,257

t = -.230; p = 0.819; α = 0.05 ⇨ p > α, thus H_0 should not be rejected

H_0: μ *exploitation* behaviour SME = μ *exploitation* behaviour large-scale organizations

H_1: μ *exploitation* behaviour SME ≠ μ *exploitation* behaviour of large-scale organizations

Appendix F.4.

Statistics IV: Simple linear regression hypothesis 3a

Analysis A: interaction contextual ambidexterity and affective commitment

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	27,339	1	27,339	30,419	,000[a]
	Residual	330,745	368	,899		
	Total	358,084	369			

a. Predictors: (Constant), Ambidexterity

b. Dependent Variable: Affective

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,853	,148		32,871	,000
	Ambidexterity	,041	,007	,276	5,515	,000

a. Dependent Variable: Affective

Hypothesis 3a

$\beta = 0.276$; $p < 0.001$; $\alpha = 0.05$ ⇨ $p < \alpha$, thus H_0 should be rejected

H_0: β contextual ambidexterity = 0 when compared to *affective* commitment to change (no relationship)

H_1: β contextual ambidexterity ≠ 0 when compared to *affective* commitment to change (relationship)

Analysis B: interaction exploration/exploitation and affective commitment

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	29,119	2	14,559	16,243	,000[a]
	Residual	328,965	367	,896		
	Total	358,084	369			

a. Predictors: (Constant), Exploration, Exploitation

b. Dependent Variable: Affective

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,265	,287		14,874	,000
	Exploitation	,098	,049	,099	1,984	,048
	Exploration	,225	,042	,266	5,316	,000

a. Dependent Variable: Affective

Statistics V: Simple linear regression hypothesis 3b

Analysis A: interaction contextual ambidexterity and normative commitment

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	22,768	1	22,768	14,328	,000[a]
	Residual	584,789	368	1,589		
	Total	607,558	369			

a. Predictors: (Constant), Ambidexterity

b. Dependent Variable: Normative

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,613	,196		18,402	,000
	Ambidexterity	,038	,010	,194	3,785	,000

a. Dependent Variable: Normative

Hypothesis 3b

$\beta = 0.194$; $p < 0.001$; $\alpha = 0.05$ ⇨ $p < \alpha$, thus H_0 should be rejected

H_0: β contextual ambidexterity = 0 when compared to *normative* commitment to change

H_1: β contextual ambidexterity ≠ 0 when compared to *normative* commitment to change

Analysis B: interaction exploitation/exploration and normative commitment

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	26,345	2	13,173	8,318	,000[a]
	Residual	581,212	367	1,584		
	Total	607,558	369			

a. Predictors: (Constant), Exploration, Exploitation

b. Dependent Variable: Normative

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,022	,381		7,928	,000
	Exploitation	,094	,065	,073	1,428	,154
	Exploration	,214	,056	,194	3,801	,000

a. Dependent Variable: Normative

Statistics VI: Simple linear regression hypothesis 3c

Analysis A: interaction contextual ambidexterity and continuance commitment

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5,878	1	5,878	2,312	,129[a]
	Residual	935,561	368	2,542		
	Total	941,440	369			

a. Predictors: (Constant), Ambidexterity

b. Dependent Variable: Continuance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,005	,248		12,103	,000
	Ambidexterity	,019	,013	,079	1,521	,129

a. Dependent Variable: Continuance

Hypothesis 3c

$\beta = 0.079$; $p = 0.129$; $\alpha = 0.05$ ⇨ $p > \alpha$, thus H_0 should not be rejected

H_0: β contextual ambidexterity = 0 when compared to *continuance* commitment to change

H_1: β contextual ambidexterity ≠ 0 when compared to *continuance* commitment to change

Analysis B: interaction exploitation/exploration and continuance commitment

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	9,518	2	4,759	1,874	,155[a]
	Residual	931,922	367	2,539		
	Total	941,440	369			

a. Predictors: (Constant), Exploitation, Exploration

b. Dependent Variable: Continuance

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	2,446	,483		5,067	,000
	Exploration	,069	,071	,050	,970	,333
	Exploitation	,138	,083	,086	1,662	,097

a. Dependent Variable: Continuance

Appendix F.5.

Statistics VII: linear regression to relationship contextual ambidexterity – commitment to change in SMEs

Analysis A: interaction contextual ambidexterity and commitment to change

ANOVA[b]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	935,225	1	935,225	22,757	,000[a]
	Residual	15123,595	368	41,097		
	Total	16058,820	369			

a. Predictors: (Constant), Commitment

b. Dependent Variable: Ambidexterity

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	10,706	1,689		6,340	,000
	Commitment	,594	,125	,241	4,770	,000

a. Dependent Variable: Ambidexterity

Analysis B1: interaction effect contextual ambidexterity on affective commitment (in SME subset)

ANOVA[b,c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	13,922	1	13,922	15,878	,000[a]
	Residual	188,512	215	,877		
	Total	202,434	216			

a. Predictors: (Constant), Ambidexterity

b. Dependent Variable: Affective

c. Selecting only cases for which v31 = Tussen de 10 en 50 werknemers

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,979	,196		25,437	,000
	Ambidexterity	,038	,010	,262	3,985	,000

a. Dependent Variable: Affective

b. Selecting only cases for which v31 = Tussen de 10 en 50 werknemers

Analysis B2: interaction effect exploitation/exploration on affective commitment (SME subset)

ANOVA[b,c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	15,159	2	7,580	8,661	,000[a]
	Residual	187,274	214	,875		
	Total	202,434	216			

a. Predictors: (Constant), Exploitation, Exploration

b. Dependent Variable: Affective

c. Selecting only cases for which v31 = Tussen de 10 en 50 werknemers

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,304	,395		10,906	,000
	Exploration	,209	,055	,250	3,804	,000
	Exploitation	,117	,067	115	1,749	,082

a. Dependent Variable: Affective

b. Selecting only cases for which v31 = Tussen de 10 en 50 werknemers

Analysis C1: interaction effect contextual ambidexterity on normative commitment (SME subset)

ANOVA[b,c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	6,993	1	6,993	5,088	,025[a]
	Residual	295,520	215	1,375		
	Total	302,513	216			

a. Predictors: (Constant), Ambidexterity

b. Dependent Variable: Normative

c. Selecting only cases for which v31 = Tussen de 10 en 50 werknemers

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,921	,245		15,999	,000
	Ambidexterity	,027	,012	,152	2,256	,025

a. Dependent Variable: Normative

b. Selecting only cases for which v31 = Tussen de 10 en 50 werknemers

Analysis C2: interaction effect exploitation/exploration on normative commitment (SME subset)

ANOVA[b,c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	8,017	2	4,009	2,913	,056[a]
	Residual	294,495	214	1,376		
	Total	302,513	216			

a. Predictors: (Constant), Exploitation, Exploration

b. Dependent Variable: Normative

c. Selecting only cases for which v31 = Tussen de 10 en 50 werknemers

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,476	,495		7,023	,000
	Exploration	,158	,069	,154	2,289	,023
	Exploitation	,068	,084	,054	,802	,423

a. Dependent Variable: Normative

b. Selecting only cases for which v31 = Tussen de 10 en 50 werknemers

Analysis D: interaction effect contextual ambidexterity on continuance commitment (SME subset)

ANOVA[b,c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2,366	1	2,366	1,013	,315[a]
	Residual	502,299	215	2,336		
	Total	504,665	216			

a. Predictors: (Constant), Ambidexterity

b. Dependent Variable: Continuance

c. Selecting only cases for which v31 = Tussen de 10 en 50 werknemers

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3,133	,319		9,806	,000
	Ambidexterity	,016	,016	,068	1,006	,315

a. Dependent Variable: Continuance

b. Selecting only cases for which v31 = Tussen de 10 en 50 werknemers

Appendix F.6.

Statistics IIV: linear regression to test hypothesis 6

Analysis A: relationship contextual ambidexterity and commitment to change is significantly moderated by size"

ANOVA[c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	154,376	1	154,376	22,757	,000[a]
	Residual	2496,433	368	6,784		
	Total	2650,809	369			
2	Regression	229,140	2	114,570	17,363	,000[b]
	Residual	2421,669	367	6,599		
	Total	2650,809	369			

a. Predictors: (Constant), Ambidexterity

b. Predictors: (Constant), Ambidexterity, v31

c. Dependent Variable: Commitment

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	11,471	,406		28,280	,000
	Ambidexterity	,098	,021	,241	4,770	,000
2	(Constant)	10,609	,475		22,336	,000
	Ambidexterity	,090	,020	,222	4,428	,000
	v31	,520	,154	,169	3,366	,001

a. Dependent Variable: Commitment

Excluded Variables[b]

Model		Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
						Tolerance
1	**v31**	**,169[a]**	**3,366**	**,001**	**,173**	**,987**

a. Predictors in the Model: (Constant), Ambidexterity

b. Dependent Variable: Commitment

Analysis B: interaction effect ambidexterity on affective commitment (large-scale subset)"

ANOVA[b,c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,506	1	,506	,763	,388[a]
	Residual	27,205	41	,664		
	Total	27,712	42			

a. Predictors: (Constant), Ambidexterity

b. Dependent Variable: Affective

c. Selecting only cases for which v31 = Meer dan 250 werknemers

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5,583	,478		11,668	,000
	Ambidexterity	,021	,024	,135	,873	,388

a. Dependent Variable: Affective

b. Selecting only cases for which v31 = Meer dan 250 werknemers

Analysis C: interaction effect ambidexterity on normative commitment (large-scale subset)"

ANOVA[b,c]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	,079	1	,079	,075	,785[a]
	Residual	42,993	41	1,049		
	Total	43,072	42			

a. Predictors: (Constant), Ambidexterity

b. Dependent Variable: Normative

c. Selecting only cases for which v31 = Meer dan 250 werknemers

Coefficients[a,b]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4,627	,601		7,692	,000
	Ambidexterity	,008	,030	,043	,274	,785

a. Dependent Variable: Normative

b. Selecting only cases for which v31 = Meer dan 250 werknemers

*Analysis C: interaction effect contextual ambidexterity * company size*

Tests of Between-Subjects Effects

Dependent Variable:Commitment

Source	Type III Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1739,478[a]	246	7,071	,954	,624
Intercept	32831,593	1	32831,593	4431,194	,000
Ambidexterity	1252,702	169	7,412	1,000	,502
v31	65,061	2	32,530	4,391	,014
Ambidexterity * v31	350,487	75	4,673	,631	,984
Error	911,331	123	7,409		
Total	68046,920	370			
Corrected Total	2650,809	369			

a. R Squared = ,656 (Adjusted R Squared = -,031)

Hypothesis 6

$\beta = 0.631$; $p = 0.984$; $\alpha = 0.05$ ⇨ $p > \alpha$, thus H_0 should not be rejected

H_0: test of between subjects-effect contextual ambidexterity * company size = 0 (no interaction)

H_1: test of between subjects-effect contextual ambidexterity * company size ≠ 0 (interaction)