

Ambidexterity as capability: how organizations survive in the face of change

A research into how ambidexterity capabilities enable senior management to deal with the ambidexterity tension

Radboud University Nijmegen
Master Thesis Business Administration
Strategic Management

Supervisor
Dr. ir. G.W. Ziggers

Second Examiner
Dr. J. Luyckx

Student
Elise Hoppenreijns
4355814

August 1st 2018

Radboud Universiteit



Content

1. Introduction	4
1.1 Research question	7
1.2 Relevance	7
1.2.1 Theoretical relevance	7
1.2.2 Practical relevance	8
1.3 Outline	8
2. Theoretical background	9
2.1 Ambidexterity tensions	9
2.2 Dynamic capabilities theory	10
2.3 Ambidexterity as a dynamic capability	11
2.3.1 Strategic intent	12
2.3.2 Common vision and values	13
2.3.3 Consensus on strategy	13
2.3.4 Separate aligned units	14
2.3.5 Senior leadership	14
2.4 Later studies	15
2.5 Conceptual model	15
3. Methodology	17
3.1 Method	17
3.2 Data sources and measures	17
3.3 Sample	18
3.4 Operationalization	18
3.5 Data analysis procedure	20
3.6 Quality criteria	21
3.7 Research ethics	22
4. Analyses	24
4.1 Response	24
4.2 Results per organization	25
4.2.1 Organization A	25
4.2.2 Organization B	26
4.2.3 Organization C	29
4.2.4 Organization D	30
4.2.5 Organization E	32
4.2.6 Organization F	33
4.2.7 Organization G	35
4.2.8 Organization H	36
4.3 Summary of main findings	38
5. Conclusion and discussion	45
5.1 Discussion on the main findings	45
5.2 Theoretical implications	48
5.3 Practical implications	49
5.4 Limitations	50
5.5 Future research	50
References	52

Appendix

1. Questionnaire	56
2. Coding scheme	58
3. Summary of codes	60
4. Transcripts organization A-H	64

1. Introduction

How do organizations survive in the face of change? Underlying this question is a rich debate about whether organizations can adapt – and if so, how (O'Reilly & Tushman, 2008). Innovation is widely acknowledged to be a critical source of competitive advantage in an increasingly changing environment (Crossan & Apaydin, 2010). Innovation is the process in which organizations are transforming ideas into new or improved products, services or processes, in order to gain competitive advantage (Baregheh, Rowley & Sambrook, 2009). Therefore, organizations can differentiate themselves by means of innovation and to some scholars it is the most important determinant of firm performance (Crossan & Apaydin, 2010).

Both researchers and practitioners acknowledge the importance of innovation which is demonstrated by thousands of academic papers and numerous business rankings and indices (Crossan & Apaydin, 2010). However, is simply an excessive amount of innovation the key to success, or it is that organizations should stay competitive and does this mean innovate sometimes? This critical view is supported by Siguaw, Simpson and Enz (2006), who explain that a narrow focus on innovation will tempt an organization to continually innovate as an organizational objective. However, these innovations in and of themselves are not necessarily the key to long-term business success (Siguaw et al., 2006). This research challenges the focus on innovation as a standalone goal and critically reflects on this, suggesting it is about finding a balance between innovation and efficiency. Organization's long-term success is determined by its ability to 'exploit' its current competencies while simultaneously 'exploring' fundamentally new competencies (Raisch, Birkinshaw, Probst & Tushman, 2009).

Exploitation extends current knowledge, striving for greater efficiency and improvements (Andriopoulos & Lewis, 2009). It implies efficiency, production, implementation, refinement, control, certainty and variance reduction (He & Wong, 2004; O'Reilly & Tushman, 2008). Exploration, however, entails the development of new knowledge, experimenting to foster the variation and novelty (Andriopoulos & Lewis, 2009). It implies search, discovery, autonomy, experimentation, innovation and embracing variation (He & Wong, 2004; O'Reilly & Tushman, 2008). Exploration returns are more variable and distant in time, while exploitation returns are more certain and closer in time (He & Wong, 2004). Consequently, performance variation is larger for explorative organizations with regards to success and failure, while exploitative organizations are likely to generate more stable performance (He & Wong, 2004).

In defining both exploration and exploitation, contradictions are evident: innovation versus efficiency, autonomy versus control, embracing variation versus variance reduction. The contradictions between exploitation and exploration, as well as the need to reconcile the two, have been discussed in several contexts such as organizational learning, organizational adaptation and strategic management (Raisch & Birkinshaw, 2008). The basic problem confronting an organization is

to commit to sufficient exploitation to ensure the organizations current viability and, at the same time, to devote enough time and resources to exploration to ensure its future viability (O'Reilly & Tushman, 2011). At first, this was seen more as a trade-off, but recent literature describes the ambidextrous organization. Although some research suggests that organizations should focus on exploitation and exploration sequentially, the majority of organizational ambidexterity research provides solutions that enable organizations to pursue the two activities simultaneously (Raisch et al., 2009). Therefore, this research approaches ambidexterity as: "the ability of an organization to explore and exploit simultaneously—to compete in mature technologies and markets where efficiency, control, and incremental improvement are prized and to also compete in new technologies and markets where flexibility, autonomy, and experimentation are needed" (O'Reilly & Tushman, 2013, p.324). To reframe, ambidexterity is simultaneously exploring and exploiting. Furthermore, it is the ability to incorporate multiple contradictory structures, processes, and cultures within an organization (O'Reilly & Tushman, 2013).

The ambidextrous design is most appropriate when a new opportunity is both strategically important and can benefit from the firm's existing assets and operational capabilities (O'Reilly & Tushman, 2008). Another reason to adopt to an ambidextrous organization is that ambidexterity is a prerequisite of organizational survival and success (Raisch & Birkinshaw, 2008). Pursuing both exploration and exploitation simultaneously creates conflicts as well, however it is positively related to performance (Raisch & Birkinshaw, 2008). As demonstrated in the following citation from the study of O'Reilly and Tushman (2008, p. 196): "Both He and Wong (2004) and Venkatraman et al. (2006) found that ambidexterity was associated with higher sales growth. Other studies have suggested that the combination of exploration and exploitation is associated with longer survival (Cottrell & Nault, 2004), better financial performance (Govindarajan & Trimble, 2005; Markides & Charitou, 2004), and improved learning and innovation (Adler et al., 1999; Holmqvist, 2004; Katila & Ahuja, 2002; McGrath, 2001; Rothaermel & Deeds, 2004). Thus, although ambidexterity is a difficult managerial challenge, when executed in the appropriate strategic contexts, these complex designs are associated with sustained competitive advantage".

Since organisations are faced with the challenge to develop new products and services, as well as optimizing existing products and services, this requires different approaches. In an effort to reconcile the contradictions between exploration and exploitation, Raisch and Birkinshaw (2008) describe three organizational antecedents: structure, context and leadership. These three antecedents offer solutions to the contradictions of exploration and exploitation. First, structural solutions are concerned with allowing activities to be carried out in different organizational units (Raisch & Birkinshaw, 2008). There are two basic underlying concepts among the structural solutions, which are spatial separation and parallel structures (Raisch & Birkinshaw, 2008). Spatial separation allow organizations to create separate units, in which each unit is structured according to specific requirements of either exploitation or exploration (Raisch & Birkinshaw, 2008). These specific

requirements are contradictory as exploration is associated with organic structures, loosely coupled systems, improvisation and autonomy (He & Wong, 2004). These units are expected to be small, decentralized and with loose processes. However, exploitation is associated with mechanistic structures, tightly coupled systems, routinization, control and bureaucracy (He & Wong, 2004). These units are expected to be large, centralized and with tight processes. Parallel structures allow organizations to create units that can switch back and forth between types of structures (Raisch & Birkinshaw, 2008). The organization can use its unit's formal primary structure for routine tasks and maintenance of stability and efficiency (Raisch & Birkinshaw, 2008). Simultaneously, a unit's formal secondary structure can be used for project teams or networks to balance shortcomings and support nonroutine tasks (Raisch & Birkinshaw, 2008). Second, contextual solutions are concerned with systems, processes, and beliefs that shape individual-level behaviour in an organization (Raisch & Birkinshaw, 2008). An organization can design a context in which individuals judge for themselves how to best divide their time between the conflicting demands for exploitation and exploration (Raisch & Birkinshaw, 2008). This ability should be nourished by leaders, as they are responsible for designing this context (Raisch & Birkinshaw, 2008). Third, leadership-based solutions make top management team responsible for reconciling and responding to the tensions between the two activities (Raisch & Birkinshaw, 2008). Senior management are the leaders in organizations and are considered to play an important role in fostering ambidexterity (Raisch & Birkinshaw, 2008). These leadership-based solutions are at the basis of this research.

However, Nosella, Cantarello and Filippini (2012) conducted a study into the 'core' papers that provide a key contribution to the development of the ambidexterity construct. They observed that the literature on ambidexterity has departed from the original definition, namely as a capability for resolving tensions (Nosella et al., 2012). Their analysis revealed that the papers failed to go in depth into the specific units where the tension arises, in which they did not include specific processes, mechanisms, and routines that are directly involved in the tensions solution (Nosella et al., 2012). To fill this gap, this research will return to the construct's original definition, ambidexterity as a capability, to examine what these specific processes, mechanisms and routines are that are involved in the tensions solution.

To view ambidexterity as a capability it is essential to define a capability. It refers to the dynamic capability view, which is: "focused on the capacity (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the organization's intangible and tangible assets" (Teece, 2007, p.1319). Teece, Pisano and Shuen (1997) define these capabilities as the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments. To acquire sustainable advantage, organizations must develop unique and difficult-to-replicate dynamic capabilities (Teece, 2007). These capabilities are activities, processes or skills that reflects on organisations' behaviour and their ability to change.

The purpose of this research is to return to the original definition of ambidexterity as a capability. O'Reilly and Tushman (2008) identify a set of propositions that suggest how ambidexterity acts as a dynamic capability. They view ambidexterity as a specific capability embodied in senior leadership's learning and expressed through their ability to reconfigure existing organisational assets and competencies in a repeatable way to adapt to changing circumstances (O'Reilly & Tushman, 2008). As stated by O'Reilly and Tushman (2011), the relevance of ambidexterity as a dynamic capability is theoretically substantiated, however research on dynamic capabilities and ambidexterity is still at an early stage. Furthermore, they state that while the evidence for the benefits of ambidexterity is accumulating, there exists a gap in understanding how ambidexterity is actually managed within organizations (O'Reilly & Tushman, 2011). Subsequently, this is where this research can add value.

1.1 Research question

Ambidexterity will enable a firm's ability to exploit existing assets and positions in a profit producing way and simultaneously to explore new technologies and markets (O'Reilly & Tushman, 2008). Pursuing this strategy will cause tensions. How are organisations dealing with the tension between innovation on the one hand, efficiency on the other? The dynamic capabilities view is central to this research. This research aims to improve the understanding of how organisations are dealing with ambidexterity and which capabilities enable this? To understand how ambidexterity is actually managed within an organization, this research focuses on the capabilities of senior management. Therefore, it aims to help guide senior managers how to use these insights for the purpose of dealing with a changing environment. The research question to attain this purpose is formulated as follows:

“How do ambidexterity capabilities enable senior management to deal with the ambidexterity tension?”

1.2 Relevance

1.2.1 Theoretical relevance

This research is theoretically relevant, because it adheres to the observation made by Nosella et al., (2012), since they recommend that future research should return to the original definition of ambidexterity, which emphasizes the nature of ambidexterity as a capability. Furthermore, the paper of O'Reilly and Tushman (2008) provides theoretical underpinnings of how ambidexterity acts as a dynamic capability, which is crucial for the much needed empirical data. This research aims to fill the gap of understanding how ambidexterity is actually managed within organizations, mentioned by O'Reilly and Tushman (2011). The goal is to reach valuable new insights that could influence future research and reflect on current research.

1.2.2 Practical relevance

This research is practically relevant, because the ambidexterity tension is a problem currently facing many organizations. We are living in a world that is constantly changing, with technologies enabling processes and knowledge sharing faster than ever before. High-level competition forces organizations to innovate, whilst maintaining and exploiting their current business. This research will combine theoretical insights with empirical data from organizations that are dealing with these issues. The insights that will come as a result of this research will help guide senior managers when dealing with a changing environment. Furthermore, it aims to point out the importance of ambidexterity and how to deal with it, since prior research views organizational ambidexterity as a prerequisite of organizational survival and success (Raisch & Birkinshaw, 2008). The relevance of viewing ambidexterity as a capability was already acknowledged by O'Reilly & Tushman (2008). However, this research aims to provide much needed empirical data to observe this concept in practice. The results describing how ambidexterity capabilities enable senior management to deal with the ambidexterity tension will provide relevant insights and practical guidelines for other organizations dealing with these issues or considering to become ambidextrous.

1.3 Outline

This thesis' main purpose is to understand and explain how ambidexterity capabilities enable senior management to deal with the ambidexterity tension. First, a chapter is dedicated to review relevant literature and develop a conceptual framework. Second, the methodological approach will be discussed including a detailed account of how the research is conducted, including method, data sources, sample, operationalization, data analysis, quality criteria and research ethics. After that, the results are discussed. Followed by a conclusion and discussion including the interpretation and contribution of the results, managerial and practical implications, limitations and directions for future research.

2. Theoretical background

This chapter provides an overview of theories and perspectives that are relevant for this research. First, the concept ambidexterity and its tensions are discussed. Followed by an introduction of the dynamic capabilities theory. This is required, since the rapid growth of the dynamic capabilities literature as well as its diversity have led to a rich but complex, and somewhat disconnected body of research pointing in disparate directions (Barreto, 2010). After this, ambidexterity as a dynamic capability is defined based on the study of O'Reilly and Tushman (2008). Followed by an overview of later studies. Finally, the relevant variables and proposed relationship between these variables are indicated by means of a conceptual model.

2.1 Ambidexterity tensions

Organizational ambidexterity is defined as: “an organization’s ability to be aligned and efficient in its management of today’s business demands while simultaneously being adaptive to changes in the environment” (Raisch & Birkinshaw, 2008, p.375). To reframe, an organization needs to explore and exploit simultaneously. Exploration is seeking new and novel knowledge, while exploitation is extending and refining existing knowledge (Kang, Kang & Kim, 2016). Tensions arise when pursuing exploration and exploitation simultaneously, since these two often require different approaches regarding strategies, structures, processes and cultures (O’Reilly & Tushman, 2004). Table 2.1 indicates how these two require different approaches.

Table 2.1

The Scope of the Ambidextrous Organization

Alignment of:	Exploitative Business	Exploratory Business
Strategic intent	cost, profit	innovation, growth
Critical tasks	operations, efficiency, incremental innovation	adaptability, new products, breakthrough innovation
Competencies	operational	entrepreneurial
Structure	formal, mechanistic	adaptive, loose
Controls, rewards	margins, productivity	milestones, growth
Culture	efficiency, low risk, quality customers	risk taking, speed, flexibility, experimentation
Leadership role	authoritative, top down	visionary, involved

Note. Reprinted from “The Ambidextrous Organization”, by O’Reilly, C.A., & Tushman, M.L. (2004), Harvard Business Review, 82(4), p.80.

Organizations that engage in exploration to the exclusion of exploitation are likely to find that they suffer the costs of experimentation without gaining many of its benefits (March, 1991). Conversely, organizations that engage in exploitation to the exclusion of exploration are likely to find themselves trapped in suboptimal stable equilibria (March, 1991). Even though pursuing both exploration and exploitation simultaneously creates tensions, it is positively related to performance (Raisch & Birkinshaw, 2008).

There are several types of tensions taken into consideration in the ambidexterity literature (Nosella et al., 2012), for example: alignment vs. adaptability, comfort of the past vs. uncertainty of the future, exploration vs. exploitation. This research focuses on the latter, which involves tensions that arise when simultaneously exploring and exploiting. A definition for ambidexterity tension comprising all previously mentioned theory is ‘the extent to which conflict arise when organizations face conflicting demands while simultaneously exploring and exploiting regarding structure, strategy, processes and cultures’.

2.2 Dynamic capabilities theory

The dynamic capabilities theory is an extension of the Resource Based View (RBV). The RBV argues that resources that are simultaneously valuable, rare, inimitable, and nonsubstitutable (VRIN) are a source of competitive advantage (Barney, 1991; Ambrosini & Bowman, 2009). The dynamic capabilities theory addresses how organizations can create VRIN resources and how the current VRIN resources can be renewed in changing environments (Ambrosini & Bowman, 2009). The dynamic capability view is focused on: “the capacity (1) to sense and shape opportunities and threats, (2) to seize opportunities, and (3) to maintain competitiveness through enhancing, combining, protecting, and, when necessary, reconfiguring the organization's intangible and tangible assets” (Teece, 2007, p.1319). Therefore, a dynamic capability can be seen as a set of activities or routines taken by senior management that permit the organization to identify opportunities and threats and reconfigure assets to adapt to these (O’Reilly & Tushman, 2008). The sensing, seizing and reconfiguring allow organizations to deal with a changing environment. Therefore, the dynamic capabilities theory contributes to the scientific research field by accounting for differences between organizations. This is particularly useful for this research as some organizations are better at developing these ambidexterity capabilities than others. Determining the capabilities that differentiate these organizations is the purpose of this research.

As the theory implies capabilities, it is essential to define what these capabilities are. Teece et al. (1997, p.516) define dynamic capabilities as: “the firm's ability to integrate, build and reconfigure internal and external competences to address rapidly changing environments”. The term ‘dynamic’ refers to the capacity to renew competences to adapt to a changing environment (Teece et al., 1997). The term ‘capabilities’ emphasizes the key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional

competencies to match the requirements of a changing environment (Teece et al., 1997). Winter (2003) describes these capabilities as high-level routines or processes. Eisenhardt & Martin (2000) describe them as routines to learn new routines, and as processes embedded in firms. O'Reilly & Tushman (2008) describe them as routines, structures and processes found in the way the organization operates, its structures, cultures, and the mindset of senior leadership. Again, the importance of senior management is cited in which the mindset of senior leadership reveals to be quite important, since dynamic capabilities emphasizes the key role of strategic leadership in appropriately adapting, integrating and reconfiguring organizational skills and resources to match changing environments (O'Reilly & Tushman, 2008). In addition, they are able to seize opportunities through the orchestration and integration of both new and existing assets to overcome inertia and path dependencies (O'Reilly & Tushman, 2008). This reveals that the ability of senior managers is at the core of the dynamic capabilities theory. This ability of senior managers is therefore also at the core of this study. The ability of senior managers is translated as the ambidexterity capabilities of senior managers.

2.3 Ambidexterity as a dynamic capability

To return to the constructs original nature of ambidexterity as a capability recommended by Nosella et al., (2012), the dynamic capabilities theory serves as a theoretical framework: "Ambidexterity as a dynamic capability is not itself a source of competitive advantage, but it facilitates new resource configurations that can offer a competitive advantage" (O'Reilly & Tushman, 2008, p.196). These new resource configurations are based on the sensing, seizing and reconfiguring from Teece et al. (1997). First, ambidexterity requires a coherent alignment of competencies, structures and cultures to engage in exploration, consequently this alignment is also required for exploitation (O'Reilly & Tushman, 2008). Second, to establish and nurture both exploration and exploitation, ambidexterity requires a senior leadership team with cognitive and behavioural flexibility (O'Reilly & Tushman, 2008). *Sensing opportunities* and threats demands for scanning, searching, and exploration, which is especially significant in rapidly changing environments (O'Reilly & Tushman, 2008). They learn that a senior management team is required that facilitates learning, challenges the status quo, accepts failure, and provides for the integration and transfer of knowledge, even as the exploitive subunit emphasizes the opposite (O'Reilly & Tushman, 2008). *Seizing opportunities* involves making the right decisions and executing (O'Reilly & Tushman, 2008). They learn that a senior management is required that has consensus among the senior team about the strategic intent, align the business model and strategy, and disregard the decision traps that originate from path dependencies and mindset (O'Reilly & Tushman, 2008). If organizations are not capable of seizing capabilities, they might be able to sense opportunities, but unable to act on them. The *capabilities for reconfiguring* are the final part of the sensing, seizing and reconfiguring of Teece et al. (1997). They learn that a senior management should be willing to commit resources to long-term projects and be able to ensure

targeted integration between units (O'Reilly & Tushman, 2008). Reconfiguring is crucial for the transformation of competitive advantage into long term success and sustained profitable growth. These skills are not easy to develop, since organizations can not simply buy or transfer them, since they are embedded in procedures, norms, rules, structures and processes (O'Reilly & Tushman, 2008).

O'Reilly and Tushman (2008, p.200) view ambidexterity as: “a specific capability embodied in senior leadership’s learning and expressed through their ability to reconfigure existing organisational assets and competencies in a repeatable way to adapt to changing circumstances”. This research asks the question: what are the capabilities of senior management that enable them to deal with ambidexterity tensions? The literature of ambidexterity as a dynamic capability is largely based on the pioneering work of O'Reilly and Tushman (2008), who give an indication what these capabilities should look like and how they would operate to help a firm sense, seize and reconfigure organizational assets. They provide an identification of specific senior managements behaviour and ability as well as organizational processes and routines that allow firms to reconfigure resources into new value creating strategies (O'Reilly & Tushman, 2008). Their research identified five key activities that suggest how ambidexterity acts as a dynamic capability, which are presented below.

2.3.1 Strategic intent

The first key activity described by O'Reilly and Tushman (2008, p.197) is: “the presence of a compelling strategic intent that justifies the importance of both exploitation and exploration”. They describe how there must be a clear, compelling rationale for the importance of exploration and exploitation. Otherwise, senior management is not able to dedicate attention and resources to exploration because short-term pressures are predominant (O'Reilly & Tushman, 2008). To dominate these short-term pressures, senior management should adopt an explicit strategy that justifies experimentation (O'Reilly & Tushman, 2008). They find that in the absence of a clear strategic intent, success is defined by financial metrics that work against exploration and will almost always move away attention and resources (O'Reilly & Tushman, 2008). The researchers use examples from several cases to indicate what these specific capabilities are that facilitate exploration and exploitation. They describe how the senior management of a newspaper, USA Today, creates an ambidextrous organization as they are expanded beyond its traditional business (O'Reilly & Tushman, 2004). To execute this strategy, the senior management justified to all employees how they would service both exploration and exploitation. Another case, they describe how the organization IBM has made a transformation and one of the reasons for their success is being able to sense, seize and reconfigure (Harreld, O'Reilly & Tushman, 2007). Again, a compelling strategic intent plays a key role as they determine that the senior management articulated a strategy which enabled IBM to address new business opportunities, which explicitly justified to the entire organization why the company needs to fund small, often money-losing new ventures (O'Reilly & Tushman, 2008). Examples of specific capabilities underlying this key activity and case examples are ‘articulating the strategic intent to

justify the importance of both exploitation and exploration’, ‘communicating the strategic intent to justify the importance of both exploitation and exploration to employees’.

2.3.2 Common vision and values

The second key activity described by O’Reilly and Tushman (2008, p.197) is: “the articulation of a common vision and values that provide for a common identity”. They describe how there must be an overarching vision and values that will allow employees from different units to forge a common identity, even when their focus is different with regards to exploration or exploitation (O’Reilly & Tushman, 2008). They find that a vision can help employees to embrace the long-term mindset that is necessary for exploration (O’Reilly & Tushman, 2008). Furthermore, they find that senior managers ability to create value and meaning is important, as this will contribute to collaboration between units with different focus (O’Reilly & Tushman, 2008). The researchers use examples from several cases to indicate what these specific capabilities are that facilitate exploration and exploitation. They describe how the senior management of Ciba Vision, a contact lenses company decides to explore and exploit simultaneously by competing in the mature business as well as exploring new markets (O’Reilly & Tushman, 2008). To execute this strategy, the senior management provided a vision that justified both exploration and exploitation. Another case, they describe how the newspaper company, USA Today adopt the justification of both exploration and exploitation in their organization’s vision (O’Reilly & Tushman, 2008). Another case, they describe how a healthcare company, Johnson & Johnson, provide core values for each different businesses as diverse as pharmaceuticals, baby shampoo, and medical devices (O’Reilly & Tushman, 2008). They find that without this common vision and values, it would be unlikely that these separate businesses would collaborate (O’Reilly & Tushman, 2008). Examples of specific capabilities underlying this key activity and case examples are ‘articulating a common vision to justify the importance of both exploration and exploitation’, ‘communicating a common vision to justify the importance of both exploration and exploitation’.

2.3.3 Consensus on strategy

The third key activity described by O’Reilly & Tushman (2008, p.198) is: “a clear consensus among the senior team about the unit’s strategy, relentless communication of this strategy, and a common-fate incentive system”. They describe there must be consensus among the senior team with regards to the importance of both exploration and exploitation. They find that without a clear consensus about strategy and vision, there will be less information exchange, more unproductive conflict, and a diminished ability to respond to external change (O’Reilly & Tushman, 2008). Furthermore, they find that unity of purpose will benefit ambidexterity and senior management should avoid sending mixed signals which would make the already delicate balancing act between exploration and exploitation more difficult (O’Reilly & Tushman, 2008). They describe how diversity within the senior management team promotes ambidexterity, while lack of diversity reduces ambidexterity (O’Reilly &

Tushman, 2008). The researchers use examples from several cases to indicate what these specific capabilities are that facilitate exploration and exploitation. They describe how the senior management of IBM and Analog Devices rewards the senior team based on company wide performance (O'Reilly & Tushman, 2008). Another case, they describe how the senior leader must be prepared to remove senior members who oppose the ambidextrous form, which was the case for USA Today, Ciba Vision and IBM (O'Reilly & Tushman, 2008). Examples of specific capabilities underlying this key activity and case examples are 'providing clear consensus among senior team about unit's strategy', 'communicating unit's strategy', 'creating an incentive system based on company wide performance'.

2.3.4 Separate aligned units

The fourth key activity described by O'Reilly and Tushman (2008, p.198) is: "separate aligned organizational architectures for explore and exploit subunits and targeted integration". They describe how exploration and exploitation should be separated within the organization by means of separate units. They find that exploring and exploiting separately while being integrated allows the organization to experiment and leverage organizational assets and capabilities that would not be available if the units were operating separately (O'Reilly & Tushman, 2008). Furthermore, they find that exploration units can be dominated by exploitation units, which requires senior management to deal with strategic issues and leverage assets between units (O'Reilly & Tushman, 2008). The researchers use examples from several cases to indicate what these specific capabilities are that facilitate exploration and exploitation. They describe how IBM separates exploration and exploitation by means of creating different horizons, which allows leaders from different horizons to be trained according to their exploration or exploitation focus. They find that the senior team of IBM deals with different management challenges across time horizons (O'Reilly & Tushman, 2008). Another case, they describe how the senior management of USA Today has separate units and integrates by resource allocation on a higher strategic level and a daily tactical level (O'Reilly & Tushman, 2008). They find that integration takes place at USA Today by introducing a common sales force (O'Reilly & Tushman, 2008). Examples of specific capabilities underlying the key activity and case examples are 'allocating resources separately for each unit', 'integration on senior level and tactical level'.

2.3.5 Senior leadership

The fifth key activity described by O'Reilly and Tushman (2008, p.199) is: "senior leadership that tolerates the contradictions of multiple alignments and is able to resolve the tensions that ensue". They find that an ambidextrous organization will lead to conflicts between different units (O'Reilly & Tushman, 2008). The researchers use examples from several cases to indicate what these specific capabilities are that facilitate exploration and exploitation. They describe how the senior management of Ciba Vision includes heads of both exploratory as well as exploitative units in senior management meetings (O'Reilly & Tushman, 2008). Another case, they describe how at Analog Devices, the senior

management has to be able to absorb contradictions and allow opposing managers to discuss by: ‘building a soundproof room where managers could scream at each other’ (O’Reilly & Tushman, 2008). Another case, they describe how senior management of IBM encourage disciplined and fact-based conversations in order to challenge each other (O’Reilly & Tushman, 2008). The importance of conflict resolution skills is emphasized in each example. They find that senior management team should have the capacity to foster discussions and be willing to take action, otherwise the conflicts are likely to undermine the ambidexterity benefits (O’Reilly & Tushman, 2008). Examples of specific capabilities underlying this key activity and case examples are ‘forming senior team including heads of exploration and exploitation units’, ‘senior management fostering arguments/discussion with conflict resolution skills’.

2.4 Later studies

Simultaneous to the increasing interest in the concept of ambidexterity during recent years (Simsek, 2009), research on ambidexterity as a dynamic capability has also increased since the pioneering work of O’Reilly and Tushman (2008). Relevant studies are discussed below. First, there is a category of studies that view ambidexterity as a dynamic capability, however these studies don’t mention specific capabilities or any intention to specificate them (Agostini, Nosella & Filippini, 2016; Tamayo-Torres, Roehrich & Lewis, 2016). Second, there is a category of studies that view ambidexterity as a capability, but include other important key concepts. Several studies apply a quantitative approach, however they do not mention specific capabilities and the relationship with performance is the main focus of these studies (Menguc & Auh, 2008; Vrontis, Thrassou, Santoro & Papa, 2016; Zhan & Chen, 2010; Jansen, Simsek & Cao, 2012; Luger, Raisch & Schimmer, 2018). Vahlne & Johansson (2017) apply a qualitative approach by providing two case studies of IKEA and AB Volvo, however they don’t mention specific capabilities and globalization is the main focus of the study. Third, there is a category of studies that specificate capabilities. Zang and Li (2017) specify marketing and technology capabilities to the result of innovation ambidexterity. Birkinshaw, Zimmerman and Raisch (2016) apply a qualitative approach by providing three case studies for Nestle, GSK and BMW. They split these capabilities up on three levels (structural separation, behavioural integration, sequential alternation) and three categories (sensing, seizing, reconfiguring). Carter (2015) provides a review of existing literature. They provide a hierarchy of capabilities to distinguish dimensions of ambidexterity and link each type to capabilities identified in prior research.

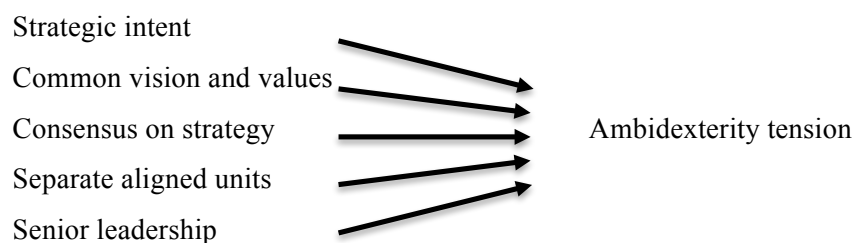
2.5 Conceptual model

This thesis’ main purpose is to understand and explain how ambidexterity capabilities of senior management enable organizations to deal with the ambidexterity tension. Within this research, the dynamic capabilities theory serves as a theoretical framework. The dependent variable is ‘ambidexterity tension’ and the independent variable is ‘ambidexterity capabilities’. The hypothetic

relationship between these two variables is causal, which leads to the following conceptual representation:



To further specify these ambidexterity capabilities, it is crucial to weigh alternatives regarding the possible frameworks. The study of O'Reilly and Tushman (2008) view ambidexterity as a capability and provide five key activities to which senior management should focus. Alternatives to O'Reilly and Tushman (2008) are discussed in several categories. The first category is not suitable, since there is no mentioning of specific capabilities or an intention to specificate these. The second category is also not suitable, since they don't provide specific capabilities and there is an additional variable included which is the main focus of the study. There are partly suitable options within the third category. However, Zang and Li (2017) is not suitable as marketing and technology capabilities and innovation ambidexterity is too specific for this research. Also, Birkinshaw et al., (2016) is too broad for the scope of this research as they provide capabilities on three levels and three categories. Finally, Carter (2015) provides a specification of capabilities that could fit this research, however, their main limitation is "this research does not attempt to argue a comprehensive theoretical framework", which provides reason to doubt the suitability of this study. Furthermore, the study focuses on individual, group and organizational level. As this research attempts to focus on senior management level, this also makes this study less suitable. Concluding, the study of O'Reilly and Tushman (2008) is most suitable to serve as the basis for this study. This is because this study views ambidexterity as a capability, specifies capabilities by providing five key activities which are also focused on senior management level. These considerations makes their study most fitting to this research and will provide an appropriate theoretical framework. Therefore, it is possible to split up these ambidexterity capabilities according to the five key activities. This leads to the following conceptual representation:



3. Methodology

In the previous chapter, relevant theories have been discussed. The purpose of this chapter is to account for and reflect on methodological choices that are made within this research. These choices concern method, data sources and measures, sample, operationalization and data analysis procedure. Finally, quality criteria and research ethics are discussed.

3.1 Method

In order to provide an answer to the research question, a qualitative research design is most fitting. The guiding principle in choosing a method is the research question and its focus (Eriksson & Kovalainen, 2016). The 'how' question insinuates a qualitative approach as its intention is to explore a certain phenomenon and go in depth. Also, this matches the exploratory character this research has. Qualitative research allows the researcher to focus on the complexity of business-related phenomena in their contexts. It produces new knowledge about how concepts are embedded in real-life business contexts, why they work in a specific way, and how we can make sense of them in a way that they might be changed (Eriksson & Kovalainen, 2016). Qualitative research covers the collection and interpretation of linguistic material to make statements about a social phenomenon in reality (Bleijenberg, 2013). Many qualitative approaches, therefore, are concerned with interpretation and understanding, whereas many quantitative approaches deal with explanation, testing of hypothesis, and statistical analysis (Eriksson & Kovalainen, 2016). Within this research, interpretation and understanding are key, furthermore there are no hypotheses that need to be confirmed or refuted. Thus, this methodological approach is appropriate, since this research is seeking to explore, go in depth and build on the ambidexterity capabilities theory.

3.2 Data sources and measures

There are five main methods employed by qualitative researchers: observation, interviewing, ethnographic fieldwork, discourse analysis and textual analysis (Travers, 2001). The data for this research is collected by means of interviews. This is the appropriate measure to answer the research question, because the goal is to study ambidexterity in depth for particular organisations. Interviews allow the researcher to study ambidexterity from the knowledge of the people involved, since interviewing allows to investigate social elements by asking people to talk, and to gather or construct knowledge by listening to and interpreting what they say and to how they say it (Bauman et al., 2002). The interviews are be semi-structured, this way a large amount of targeted information is available in short period of time (Bleijenbergh, 2013). Also, the interview contain open question, which makes it possible to study ambidexterity from the actual words of the people involved.

3.3 Sample

In choosing a sample, the goal is to select a group of respondents who are able to shed light on the processes under investigation (Becker et al., 2002). The sampling strategy must provide an efficient way to answer large questions with a comparatively small group of people (Becker et al., 2002). As the purpose of this research is to provide insights for organizations who are dealing with a changing environment, it is crucial to select a sample that is facing a changing environment. This is the case for many industries. The industry selected is the manufacturing industry, which has to deal with a changing business environment as there is increasing domestic and international competition and rapid technological advancement (Li, 2000). Although the sampling procedure does not need to be strictly random, it is important to choose a sample carefully and with as little bias as possible (Becker et al., 2002). Therefore, the sample requirements need to be clearly defined before selecting a sample in order to avoid messy and poorly defined empirically research (Gobo, 2004). Therefore, all organizations must be established profit firms in the manufacturing industry, who all face a changing environment. The respondents need to be senior managers or equipped with substantial knowledge regarding the senior management and their capabilities. The process of collecting the sample involved emailing all organizations of the ‘Manufacturing Industry Top 100 2017’, which involved a short introduction into the research and specifications and requirements of the respondent. Interviews were scheduled with the interested senior managers of the targeted organizations. The total amount of interviews is ten respondents. The respondents are members of senior management with different range of functions, from managing directors to heads of R&D departments. The total amount of organizations involved is eight. In two cases there were two respondents per organization. This serves as a test to check whether it could benefit to interview multiple respondents per organization. Given the scope of the research, this amount accounts for a representative image of the organizations involved.

3.4 Operationalization

The purpose of operationalization is to be able to systematically analyze the data by making abstract concepts empirically measurable (Vennix, 2011). The operationalization is derived from theories from the previous chapter. Since the operationalization of ambidexterity is based on existing theories, this is a deductive approach. In order to provide an answer to the research question, the following variables need operationalization: ‘ambidexterity tension’, ‘ambidexterity capabilities’ and the specification of these capabilities which are ‘strategic intent’, ‘common vision and values’, ‘consensus on strategy’, ‘separate aligned units’ and ‘senior leadership’.

First of all, ambidexterity tension needs to be operationalized. Organizational ambidexterity is defined as: “an organization’s ability to be aligned and efficient in its management of today’s business demands while simultaneously being adaptive to changes in the environment” (Raisch & Birkinshaw, 2008, p.375). To reframe, an organization needs to explore and exploit simultaneously. In order to

demarcate the concept of ambidexterity, it is essential to further define exploration and exploitation. Within this research exploration is operationalized as: ‘the focus on (product) innovation and renewal’, while exploitation is operationalized as: ‘the focus on efficiency and effectiveness’. Tensions arise when pursuing exploration and exploitation simultaneously, since these two often require different approaches regarding strategies, structures, processes and cultures (O’Reilly & Tushman, 2004). Within this research ambidexterity tension is defined as: ‘the extent to which conflict arise when organizations face conflicting demands while simultaneously exploring and exploiting regarding structure, strategy, processes and cultures’.

Second, ambidexterity capabilities need to be operationalized. The term ‘capabilities’ emphasizes the key role of strategic management in appropriately adapting, integrating, and reconfiguring internal and external organizational skills, resources, and functional competencies to match the requirements of a changing environment (Teece et al., 1997). Furthermore, the dynamic capabilities emphasize the key role of strategic leadership in appropriately adapting, integrating and reconfiguring organizational skills and resources to match changing environments (O’Reilly & Tushman, 2008). Conclusively, senior leadership reveals to be quite important. Therefore, this study focuses on the capabilities of senior management. A capability is defined as: ‘an activity, process or skill that reflect on organisations’ behaviour and their ability to change’. Therefore, an ambidexterity capability is defined as: ‘activities, processes or skills of senior management that reflect on organisations’ behaviour and their ability to change that allow organizations to deal with the tensions of pursuing exploration and exploitation simultaneously’.

Finally, to specify these capabilities, the article of O’Reilly and Tushman (2008) serves as the basis. Each key activity is described as a dimension in table 3.1.

Table 3.1

Operationalization ambidexterity capabilities

Key activities	Dimensions	Indicators
The presence of a compelling strategic intent that justifies the importance of both exploitation and exploration	Strategic intent	Articulating the strategic intent that justifies the importance of both exploration and exploitation
		Communicating the strategic intent that justifies the importance of both exploration and exploitation
The articulation of a common vision and values that provide for	Common vision	Articulating and communicating a common vision

a common identity		Articulating and communicating common values
A clear consensus among the senior team about the unit's strategy, relentless communication of this strategy, and a common-fate incentive system	Consensus on strategy	Providing clear consensus among senior team about unit's strategy Communicating unit's strategy Creating an incentive system based on company wide performance
Separate aligned organizational architectures for explore and exploit subunits and targeted integration	Separate aligned units	Allocating resources separately for each unit Integration on senior level and tactical level
Senior leadership that tolerates the contradictions of multiple alignments and is able to resolve the tensions that ensue	Senior leadership	Forming senior team including heads of exploration and exploitation units Senior management fostering arguments/ discussion with conflict resolution skills

The operationalization in table 3.1 serves as a topic guide for creating the questions of the interview guide (Appendix 1). As accounted for in the theoretical chapter, the article of O'Reilly and Tushman (2008) is the most appropriate theoretical framework for this research. The translation of the concept into dimensions and indicators, allow for the indicators to serve as a basis for the main interview items. This leads to gathering data that fits the theoretical concepts. However, as this operationalization serves as a 'guide' for the questions, it is possible to surpass these specific topics and allow for information beyond these topics by asking open questions with regards to these topics and provide minimum guidance.

3.5 Data analysis procedure

The data analysis is conducted in the following chapter. As previously justified, the data analysis measure is interviews. The interviews have been conducted and after that carefully and in full detail transcribed. Fragments of these transcript have been labelled with codes, called 'open coding

(Bleijenbergh, 2013). The codes that are applied to these transcripts are derived from the operationalization of theory. The coding scheme can be found in Appendix 2. The codes allow the different fragments to be categorized on behalf of the analysis. In addition, these codes support a researcher to make a connection between what has actually been observed empirically and abstract theories or general statements that can be made on behalf of this (Bleijenbergh, 2013). This study operationalized the concepts deductively, which serves as a guideline for coding the interviews. The program used for coding and comparing these codes is Atlas.ti, which is qualitative data analysis software (Hwang, 2008). During the coding of the transcripts, it has been thoroughly assessed if they provide good coverage of the concepts and if not, it was possible to add open codes. The indicators connect the theoretical concepts and findings in the empirical material. After the coding was completed by using indicators, fragments fell into the same categories. Comparing the coded fragments provided insight into certain patterns, which lie at the basis of the analysis.

3.6 Quality criteria

When assessing the quality of a research, objectivity is the essential basis of all good research, without it there would be no reason for any reader to accept the conclusions of the research (Kirk & Miller, 1986). Objectivity should be obtained by realizing as much reliability and validity as possible (Kirk & Miller, 1986). Validity is concerned with how well the concept is defined by the measures, whereas reliability is concerned with the consistency of the measures (Hair, 2014). However, there exists debate on whether the terms are as suitable for qualitative research as they are for quantitative. As pointed out by Kirk and Miller (1986, p.14): ‘the description of reliability and validity ordinarily provided by non qualitative social scientists rarely seems appropriate or relevant to the way in which qualitative researchers conduct their work’. Others question the appropriateness of validity and reliability for qualitative research as well (Leung, 2015; Hannes, 2011). As some researchers prefer the validity and reliability, others plead for an adjustment of these concepts (Hannes, 2011; Symon & Cassell, 2012), which is depicted below in table 3.2. The criteria used in this research are credibility, transferability, dependability and confirmability.

Table 3.2

Quality criteria for qualitative research

Quantitative Term	Qualitative Term
Internal validity	Credibility
Generalizability	Transferability
Reliability	Dependability
Objectivity	Confirmability

Note. Reprinted from ‘Qualitative Organizational Research: Core Methods and Current Challenges, by Symon, G., & Cassell, C. (2012), SAGE Publications, Inc, p. 205

A credible research “provides a good fit between constructed realities of respondents and the reconstructions attributed to them” (Symon & Cassell, 2012, p.205). This research realizes credibility by means of peer debriefing and member checks. Peer debriefing was accomplished with the supervisor of this research, who is familiar with the subject and resulted in discussions about the ongoing research practice, with the purpose of reflexivity (Symon & Cassell, 2012). Peer debriefing was also accomplished with fellow master students, who were unfamiliar with the subject to allow an outside view on the research process. In addition, member checks took place after the interviews were transcribed, by which each respondent was given the possibility to adjust the transcript of the interview to check for mistakes or misconceptions.

A transferable research “provides enough detail about the specific research case (e.g. through thick description) that the reader can judge what other (similar) contexts might be informed by the findings” (Symon & Cassell, 2012, p.206). This research realizes transferability by providing contextual background information and demographics (Hannes, 2011). The sample selection criteria are well specified, which leads to a clear description of the respondents and organizations, which ensures that the outcomes of the research contain contextual truths. The analysis chapter is also provided with full detail contextual descriptions.

A dependable research “demonstrates how methodological changes and shifts in constructions have been captured and made available for evaluation” (Symon & Cassell, 2012. p.206). This research realizes dependability by providing a clear and thorough description of the methodological choices that are made within this research in the methodological chapter. These choices must be documented so it is possible for readers to evaluate the quality of the research and judge the decisions that are made.

A confirmable research “seeks to make clear where the data came from (interview, document, observation, etc.) and how such data were transformed into the presented findings” (Symon & Cassell, 2012, p.206). It provides a detailed account of the data collection to ensure outcomes are rooted in contexts and respondents involved instead of the researchers imagination (Symon & Cassell, 2012). This research realizes confirmability by recording and transcribing the interview in full detail. In addition, these coded transcripts show how data has been transformed into presented findings. Furthermore, the research was conducted in a transparent manner as the researcher documented and recorded every step of the research.

3.7 Research ethics

Ethical issues arise in the research process and dealing with these issues is crucial to ensure quality. Guillemin and Gillam (2004) developed a framework for dealing with these ethical issues, in which they distinguish two dimensions: procedural ethics and ethics in practice.

Procedural ethics are formal procedures such as the completion of an application form for a research ethics committee (Guillemin & Gillam, 2004). The researcher has signed a research integrity

form from the university which entails details regarding the code of conduct to respect academic integrity (Nijmegen School of Management, 2017). In this code of conduct there are several aspects included. First, the researcher strictly follows the APA references rules, delivers original work and is transparent in the data processing and representation (Nijmegen School of Management, 2017). A second aspect is concerned with the treatment of participants during the research. The researcher provides appropriate information to all that are involved and ensures informed consent from the participants (Nijmegen School of Management, 2017). A third aspect is guaranteeing confidentiality and anonymity. The researcher is responsible with the storage and use of data and guarantees anonymity of the participants and organizations involved (Nijmegen School of Management, 2017). Therefore, the exact number of FTE of the organizations is categorized to ensure anonymity since the organizations are all involved in the 'Manufacturing Industry Top 100 2017'. The researcher also asks permission to record and transcribe the interview at the beginning of each interview. A fourth aspect is adequate ways of informing all participants about the results. The researcher uses member checks, in which each respondent was given the possibility to adjust the transcript of the interview to check for mistakes or misconceptions (Nijmegen School of Management, 2017). The researcher shares the results with all participants after completion of the research. Finally, a fifth aspect is providing possible implications of how the findings may be applied in the organization (Nijmegen School of Management, 2017). The researcher will discuss practical implications in the final chapter.

Ethics in practice are day-to-day ethical issues that arise in the research process (Guillemin & Gillam, 2004). The authors describe these issues as 'ethically important moments' that arise during the interview (Guillemin & Gillam, 2004). One example they provide is how a respondent unexpectedly discloses something important and the ethical issue is how the researcher should react. The researcher should avoid embarrassing or judging the respondent. Similarly, the reaction of the researcher shapes the knowledge produced by asking questions, the way they listen and interpret these answers (Bauman et al., 2002). These issues are important to be aware of in the preparation, but mainly in conducting the interviews.

4. Analyses

In the previous chapter the methodological choices are discussed that are made within this research. The transcribed and coded interviews are attached in Appendix 4. This chapter provides an analysis of these interviews based on the coded transcripts. The codes are derived from the operationalization from the methodological chapter based on theory. First, the respondents and organizations are discussed. Followed by the results section in which the analysis first focuses on each organization separately. Finally, the chapter ends with a main summary in which the capabilities of senior management, that enable them to deal with the ambidexterity tension, are compared between organizations and analyzed per theme.

4.1 Response

Eight organization are involved in the research. In total ten respondents were interviewed. All organizations are established profit firms in the manufacturing industry, who face a changing environment. The respondents are senior managers with different range of functions, from managing directors to head of R&D departments. Each respondent has been introduced into the topic by a brief explanation of the concepts, purpose, goals and research question. All respondent were provided with the same definitions: ambidexterity is exploring and exploiting simultaneously; exploration is the focus on (product) innovation and renewal; exploitation is the focus on efficiency and effectiveness. For two organizations there were two respondents interviewed, while on behalf of the other organizations one respondent was interviewed. Multiple respondents per organization serves as a test to check whether it could benefit to interview multiple respondents per organization. The table below provides an overview of the respondent, their function and the size of the company in FTE.

Table 4.1

Characteristics of organizations and respondents

Organization	Respondent	Function	Industry	FTE
A	1	Managing Director	Manufacturing Industry	250-300
B	2	Manager Product Development	Manufacturing Industry	150-200
C	3	Managing Director	Manufacturing Industry	<50
D	4	Managing Director	Manufacturing Industry	200-250
E	5	Managing Director	Manufacturing Industry	150-200
F	6	Director Operations	Manufacturing Industry	>500
F	7	Chief Operations Officer	Manufacturing Industry	>500
G	8	Manager Product Development	Manufacturing Industry	>1500
H	9	Director International Sales	Manufacturing Industry	150-200
H	10	Director Product Development	Manufacturing Industry	150-200

4.2 Results per organization

In the following paragraphs the data is analyzed and presented. Since the concept ambidexterity is complex and difficult to grasp in practice, it is most interesting to analyze per organization first. This will offer an holistic view of the concept and provide in depth knowledge. Each organization will be analyzed according to the same structure. First, the ambidexterity within the organization is discussed. Second, how this ambidexterity is structurally organized in the organization. Third, what ambidexterity tensions arise. Finally, which ambidexterity capabilities senior management are using to deal with these tensions. These ambidexterity capabilities are: “activities, processes and skills that reflect on organisations’ behaviour and their ability to change that allow organizations to pursue exploration and exploitation simultaneously”. To add some structure to the analysis, these capabilities are categorized into five themes: strategic intent, common vision and values, consensus on strategy, separate aligned units and senior leadership.

4.2.1 Organization A

Organization A is ambidextrous, since it focuses on exploitation and exploration simultaneously. Exploration is a crucial part of their existence, since it is hard for them to compete in Europe considering its high wages. Organization A distinguishes itself from their competitors, purely from the exploration and innovation they can offer their customers. At the same time, the company is more than aware that exploitation allows for exploration, since *‘we are a manufacturing organization, exploitation is how we earn our money’*. Accordingly, both concepts are part of daily operations. Furthermore, the senior management believes the advantages of ambidexterity outweigh the disadvantages of the tensions as they note: *‘we see that, we acknowledge that [the tensions]’*, however *‘if we don’t do this, we will no longer be competitive’*.

Exploration is structurally organized by means of an R&D department and sales department, which are both focused on innovation and acquisition of new projects. Exploitation is centered around the production department.

Ambidexterity tensions arise in several ways for Organization A. First, when the R&D department develops a new project and has to pass along this innovation to production, it creates tensions. *‘The process of developing a new product to an efficient production is challenging, because we at R&D like new things and have trouble with all that whining from production’*. R&D and sales are already working on the next exploration project, while production is having problems with transforming the new innovation into the current production process. Second, there are differences in focus. The culture of Organization A is based on *‘wow, cool new things’*, while this is the opposite for production *‘since in production, you want your people to focus on efficiency, output, put people to work and we have no time to waste’*.

Organization A is able to deal with the ambidexterity tension by means of several capabilities. First, there is one capability on behalf of strategic intent. The senior management establishes regularly

formal gatherings with regards to developments process: *'annually, around the Christmas Party, we provide an overview of what we have done, where we stand, what the developments are, and we do this a couple times in the year per department, but people know what we are doing'*. Second, there are several capabilities on behalf of common vision and values. A capability of senior management is including both exploration and exploitation in the common vision, which is: *'without profit we cannot invest, therefore not innovate, and without innovation we will not survive in the long term. Therefore, we need to make money, and that is only possible with efficiency'*. The senior management frequently addresses this vision and also share this with one another. According to them, this is accomplished by creating a culture of openness and approachability of management, as this will lead to involvement: *'everyone has their own focus and it is more about communication, an open corporate culture and that you can address each other.'* Third, there are several capabilities on behalf of consensus on strategy. Regarding the strategic intent, they are creating consensus within the senior management team regarding the future. They developed the strategic plan together and agree which direction the organization should take. Fourth, there are several capabilities on behalf of separate aligned units. The senior management are actively dividing the organization into cells: *'At first everyone had two hats on, for R&D as well as production, but now we are splitting up R&D, where we put the focus on new product development on the one hand and product improvement to guide a new project into the production process on the other'*. According to the organization, this structure is beneficial as it keeps the teams compact and able to collaborate. Also, they are adopting more formal meeting structures to integrate the exploration and exploitation departments. In addition, they integrate the different departments by appointing them the same head, since *'the head of the exploration department is also the head of the exploitation department'*. Finally, there are several capabilities on behalf of senior leadership. The composition of the senior management team allows the organization to deal with ambidexterity as they utilize each different focus regarding exploration or exploitation within the senior management team: *'the different focus of each senior management member allows us to ensure a good balance'*. The separation of the R&D department into two areas is a good example of how this interaction allows both exploration and exploitation to benefit: *'the technical director and R&D director says: I need R&D capacity, because I can't manage any more. To which the financial director says: that is fine, but only if this person does nothing else than optimizing production efficiency'*.

4.2.2 Organization B

'If you would approach it theoretically at the moment, then we have a trajectory in which we both run exploration and exploitation simultaneously'. In the past six years, organization B has developed from an organization that was technique-driven to a market-driven organization: *'we need to listen to what our customer wants, not now, but in a few years'*. Due to strong growth, they focused on lifting dated

products to newer standards by means of exploration. While in the meantime, exploitation is the foundation of the organization, since this is built around efficiency and economies of scale.

Exploration is structurally organized by means of a Product Management department and a R&D department, which are both entirely separated from daily operations: *'We develop based on what we see in the future, vision, strategy, not customer related'*. Product Management is non-stop working on improvements, new product ideas, new concepts. R&D is responsible for the development of these new ideas. Exploitation is centered around the daily operational activities.

Tensions due to this ambidextrous form arise in several ways for organization B. The first tension is with regards to different structures for exploration and exploitation departments. The R&D departments and the departments that focus on daily operational activities have different structures that result in different ways of working. This lack of structure is also noticed by other employees of exploitation departments, who report in employee satisfaction surveys: *'that it looks as if the boys [of exploration] are just doing what they feel like'*. This tension is from an exploitation perspective. In addition, this structure also leads to different ways of monitoring performance, since it is difficult for the financial director to monitor the R&D departments performance, whether the lack of structure is controlled or uncontrolled. Another tension is the conflicting priorities regarding long and short term focus from R&D, the account managers and daily operations. R&D puts priorities into future possibilities, while the account managers focus on current possibilities. On top of that, daily operations is solely focused on short term as they have no direct link to future possibilities. At the same time, even though R&D focuses on future possibilities, when there is a current offer and R&D doesn't put priority on it, this is also not good for current business. Another tension while simultaneously exploring and exploiting, is with regards to sharing information between departments. There are multiple steps in the process to exchange information between the exploration and exploitation departments: *'We then face the dilemma, should we share a new project with the risk that it is actually sold before it is there. Or should we keep that more to ourselves and only start to share it when it really can'*. A final tension is having long and short term focus combined within the R&D department. The R&D engineers are supposed to focus on long-term development, projects and structure: *then it can not be that you are broken up at every customer project and you have to drop everything out of your hands again.*

Organization B is able to deal with the ambidexterity tension by means of several capabilities. First, there are no capabilities on behalf of strategic intent. Second, there is one capability on behalf of common vision and values. The senior management includes only exploitation in the common vision, as they describe the vision as: *'this will be centered around exploitation for the biggest part of the organization, since the entire organization is based on efficiency and economies of scale'*. Third, there are several capabilities on behalf of consensus on strategy. At first, there was no consensus among the senior management team about how to deal with the ambidextrous organization structurally: *'The CTO was convinced with regards to putting them apart, it needs creativity. You need people who have their*

focus outward and not be concerned with daily operations. Our CEO was more sensitive to customer requests'. It was a long trajectory, but they were able to create consensus by building the process over the years and slowly integrating this per department. To reach consensus on the purpose of ambidexterity, they communicate internally and externally about this trajectory and the role of exploration and exploitation. Fourth, there are several capabilities on behalf of separate aligned units. The senior management places the Product Management department geographically with the sales department, not with R&D who are their direct colleagues. 'The simple reason is that the activities that product management undertakes are actually close to those of sales and marketing'. This is where the action occurs, also product management is easier to approach by account managers and vice versa. A capability of senior managers to solve the problem of conflicting long and short term focus is geographically isolating the long term focus departments from the short term departments. They isolate the product management and R&D departments from daily operations, which allows the former to focus on the long term: 'you have two groups of people who can focus on what they are good at. Switching it is very difficult, I know from experience too. If you are going through very fundamental market research, broad, creative, you name it. And you have to go to an issue that plays internally, that switch is difficult to make'. Consequently, they have a permanent focus on long and short term. Even though the isolation has separated R&D as a department, the senior management also establishes an integration mechanism, where someone from exploitation is involved during the exploration process: 'they are under guidance of a product manager as the most important stakeholder: who remains involved from the sidelines during the entire process to check whether this is in the direction in which we originally intended it'. Furthermore, to deal with the conflicting demands of exploration and exploitation, another capability is developing a more structured approach that established which department is responsible for what by separating tasks and making them explicit. Finally, there are several capabilities on behalf of senior leadership. How the senior management deals with the lack of structure that is noticed by other employees is, is by opening up the conversation about it as much as possible: 'we try to do this more and more: what are the boys currently doing? Which projects are they focused on? What we think it will render in the future. This creates clarity and if we are lucky, more involvement'. To deal with the tension of different structures of the departments and whether the structure of exploration is controlled or uncontrolled, the senior management establishes a direction decision at the end of a project, where all documentation is presented and the board can decide whether to initiate the project. This allows the financial director to monitor the performance of the department. Another capability to deal with this tension is senior management placing the responsibility for exploration with the employees which is their job: 'the senior management must trust that the boys do the right things, that they are responsible'. Another capability of senior management is utilizing the different focus regarding exploration and exploitation among the senior management team, since each member has their own interests. Some are more concerned with now and tomorrow and not the day after tomorrow. However, this may lead to inconsistency in

communication: *'yes, that is what I expect honestly, because of the long or short term focus of that department'*.

4.2.3 Organization C

Organization C explores and exploits simultaneously to offer their customers everything related to their product: *'We must develop new products, at least that is what we aim for. We try to listen to our customers, what their problems are, and if you solve their problems better than the next one, then the business is doing well'*. Exploitation is crucial for revenues and they describe it as something that follows from exploration: *'Often it is, if we think this new technology is going to be important for our customers or us or both, then it is actually a fact that we have to do something with it. Just look for the right work processes, in which form you are going to cast it, how do you want to get paid. We will do that later.'*

Exploration and exploitation are structurally organized in dual functions. Every employee has time available to explore next to their exploitation tasks: *this is a cultural thing, or ad hoc. It is not formalized'*.

There are several ambidexterity tensions that arise for Organization C. One of the tensions is leaving exploitation revenues to explore, which is justified by the following statement: *'Well, it is contradictory that you leave revenues in the beginning to explore, but we make quite a nice margin in our industry. And we owe that to the fact that we do new things, others can't'*. This process of exploration is continuous: *'we have those projects running all the time'*. These projects are allowed to not render revenues, but after a while they start looking into what it should deliver and whether it is able to earn money. Another tension is when the focus on exploration is predominant: *'He would prefer nothing else than to figure things out all day long. That does not work either. That is not fun for colleagues, who have to take the lead. It is also quite expensive, so you also have to find a bit of a middle ground'*. Another tension that arises when exploring and exploiting simultaneously, is when they find a solution that is technologically superior, but unaffordable due to high labour intensity. They strive for solutions that are technologically and financially superior. However, technological superiority usually implies not being able to be financially superior as well as financial superiority usually implies not being able to be technologically superior. This results into tensions when trying to achieve both.

Organization C is able to deal with the ambidexterity tension by means of several capabilities. First, there is one capability on behalf of strategic intent. The senior management is communicating the strategic intent regarding exploration and exploitation and the role of employees: *'Well, we do not really have formal rules for this. But we always try to make it clear: in two ways you can progress in the company. In other words: you just do your job, your job, and you do it well and you become better at it and then you climb. Or: you turn less into turnover or billable hours, but you would rather invest your time in inventing new ideas'*. Second, there are several capabilities on behalf of common vision

and values. The senior management is involving exploration in the culture of exploitation: *'people are proud of it [innovation], it attracts certain people and they like it. Everyone is aware that it is really important'*. In addition, the senior management tries to accomplish this by letting them visit clients to stimulate ideas, because *'they are the one where the ideas must come from'*. Third, there are no capabilities on behalf of consensus on strategy. Fourth, there are several capabilities on behalf of separate aligned units. The senior management structures exploration by means of subtasks. In addition, the senior management integrates exploration in to current exploitation activities, where they incorporate new projects into current projects with the old way of working as their backup plan: *'this way you may not financially benefit yet, but you will learn from it'*. Finally, there are several capabilities on behalf of senior leadership. To deal with the tension of having to make resources available for projects that are unsure of yielding money, a capability of senior management is weighing exploration opportunities: *'If you see that it becomes more important in the revenues, then you can also put in a bit more time. This is how we try to weigh that a bit'*. Another way of making resources available for projects that are unsure of yielding money involve the law 'Promotion Research and Development Work'. To drive exploration, the Dutch Government introduced a law that stimulates organization to explore. This law provides a financial incentive because the government pays fifty percent of the income tax on the hours spent on innovation. This also provides incentive to invest in exploration. This also allows senior management to deal with the ambidexterity tension by applying subsidies to suppress the costs of exploration. Another capability of senior management to deal with over-exploration is engaging in conversation: *'to discuss things and explain how I see things'*. They want the process to proceed in consultation, where the senior management confronts people by engaging in conversation. The senior manager wants to keep the employees' ideas realistic and for them to keep checking this during the process. Another capability to deal with over-exploration is a establishing a short presentation round: *'this allows everyone to be involved, it avoids for someone to get completely lost [in exploration]*. Weighing exploration opportunities is also the capability that allows to deal with the tension of conflicting technological and financial demands. They ask themselves the question: *'do we think it is worth it?'*

4.2.4 Organization D

Organization D has always paid all their attention to exploitation and the daily operations. However, three and a half years ago a new managing director arrived, who started asking the following questions: *'where do we want to go with the company on the long term?'* And *'how do we want to distinguish ourselves from our competitors?'*. Organization D is therefore new at ambidexterity, as its focus on strategy and subsequently exploration has started with the arrival of the new managing director.

Exploration is structurally organized in two ways. The first being a few members of the organization who are mainly focused on exploration. This is the senior management team and one

staff member, *'who focuses only on innovation, he has nothing to do with daily affairs'*. The other way exploration is structurally organized, is by partially involving exploration into a job description: *'furthermore, it is just a sub-task of people who, for example, a product manager, who has as a sub-task also to continuously check how we can renew things'*. Exploitation is centered around the daily operational activities.

One of the ambidexterity tensions that arise for Organization D is the different focus of the directors and the managing director. The mentality of the directors is grown out of a SME-state of mind, where at the end of a meeting they said: *'well, let's get back to work then, which means they don't see a meeting as work'*. The directors prefer exploitation and are focused on daily affairs. The managing director states: *'they have become accustomed to the fact that I am very fond of that exploration. And also to the extent that things sometimes initially cost money and don't yield any revenue for a while, but I have to keep on dragging them on, because if I don't do that, then it might be that people will get back into the mode of exploitation, the daily affairs'*. In addition, the managing director is more focused on opportunities, while the directors are more focused on costs. Another tension that arises when simultaneously exploring and exploiting is about time and priority, where only in certain job descriptions it is recorded how much time people can spend on strategy and innovation, while in others this is less recorded. It is always a question of setting the right priorities: *'certainly in a company where the emphasis is on exploitation, so the daily routine, it is dangerous to combine too many sub-tasks in one role'*. Another ambidexterity tension occurs when deciding when to invest: *'to do more sales, the more you are able to do on innovation. It is a bit of the question of the chicken and the egg. You are going to invest and thereby grow, or vice versa. That is always a bit of the conflict in which you are'*.

Organization D is able to deal with the ambidexterity tension by means of several capabilities. First, there are several capabilities on behalf of strategic intent. The senior management is communicating exploration and exploitation in the strategy. Organization D articulates their strategy through formulating five pillars in which both exploration and exploitation are present: *'So I have to point out very often: we are doing this so I have separate sessions in which we also let the strategy come back and that strategy, those pillars we have also subdivided into different subgoals'*. Furthermore, they accomplish this by making plans, setting deadlines: *'if you don't do this, things will run on the long term and then they will say: we have no time'*. Another capability of senior management is conducting targeted discussions to establish strategic plans and subsequently innovation: *'it is a matter of consulting with each other'*. Second, there is one capability on behalf of common vision and values. The senior management is communicating exploration and exploitation in the common vision: *'at all meetings that you have with staff, keep focusing on: well, these are our pillars for the coming period. We have televisions in the canteen in which news passes, we show it there. And a very important one is the performance appraisals ... You have to ensure that what people are concerned with, that it is also linked to the long-term goals'*. Third, there are no capabilities on

behalf of consensus on strategy. Fourth, there are several capabilities on behalf of separate aligned units. The senior management structures exploration by means of subtasks. Structural reform is a way to deal with the tension of subtasks in a function. They have recently started to accommodate many of those sub-tasks in one completely new function: *'By centralizing that just a little bit in one person, or in several people, depending on the task, you get specialization and then you can get maximum quality from such a role'*. Finally, there are several capabilities on behalf of senior leadership. To deal with the differences in focus of directors and managing director, another capability is selecting a middle management that values exploration and exploitation: *'another funny thing, is you start to notice how middle management starts to exist, because of recruitment and selection that put an emphasis on that, which asks critical questions to the directors'*. They persuade and engage in conversation: *'that's what I'm trying with the MT, convincing them that this is a smart decision. This remains a tension, so that is purely good trying to explain where your dot is on the horizon and people there continuously to ensure that they have that spot on that spot, and if that is not so, then you have to see if you put him in can put the middle or something*. A final capability is coaching leadership, in which it is important to find out what motivates employees: *'this will motivate people and involve them in the job'*.

4.2.5 Organization E

Organization E is ambidextrous, as stated by the chief executive officer: *'I see much more potential in simultaneously exploring and exploiting, because it will give you feedback on what the market thinks of it much faster'*. Exploitation is essential as it is a manufacturing company, which exist of a big line of products with innovative parts that come from the R&D department. At the same time, exploration, in the form of development of new products, is an important aspect of their business as well.

Exploration is structurally organized by a separate Research and Development department which focuses on new product development. A group of five are put separately from the daily operations, which enables them *'to inspire and motivate each other'*. The reason for this is: *'on this innovation department, the R&D department, you get to work smarter and faster, come up with solutions, than if you do that in a traditional sequential production department'*.

'Yes, exploration, how does that relate to exploitation, well on tense terms'. These tensions arise due to simultaneously exploring and exploiting, and are caused by the development that runs together with producing orders. The R&D department has two tasks, the first is innovation of a new product, the second is guiding the first implementation. This is a messy process: *'The R&D guys have an unpleasant feeling about this, they also express it regularly: we are put under pressure again, while we are quietly developing, to think about a project'*. To illustrate, they are developing a product, but at the same time they already have fifteen current orders.

Organization E is able to deal with the ambidexterity tension by means of several capabilities. First, there are no capabilities on behalf of strategic intent. Second, there are several capabilities on behalf of common vision and values. The senior management is maintaining a shared vision that

includes exploration and exploitation, which has always centered around innovation and high quality: *'we always want better and different and faster and more beautiful so that innovation an sich is with us, that is not up for discussion. So culture fits very well'*. In addition, the senior management is accurate in passing on a shared vision: *'every employee acknowledges the importance of innovation'*. Third, there is one capability on behalf of consensus on strategy. They are able to create consensus among the senior management, as they all acknowledge the usefulness and necessity of ambidexterity. Fourth, there are several capabilities on behalf of separate aligned units. The senior management separates departments into exploration and exploitation. They form a mixed team with exploration and exploitation employees for structural integration. The chief executive officer does this by composing a team with people from R&D and people from production. This will lead to information sharing, because: *'everything that comes up, will end up with both departments'*. They also stimulate the interaction between R&D and other department, which leads to integration of exploration and exploitation departments. Finally, there are several capabilities on behalf of senior leadership. The senior management is engaging in conversation about the purpose and goals of ambidexterity. The chief executive officer tries to explain again and again: *'this tension is a necessary evil'*. According to him, this messy process is necessary since an innovation always has to be commercially relevant, therefore: *'it makes no sense to work on a project or development where there is no direct commercial relevance and because of the commercial relevance we also get business'*. In addition, a capability of senior management is accepting there is tension: *'so I don't worry about the disruption. Time and technique will make people more inventive and creative, maybe it is a way of control even'*. Furthermore, this ambidextrous form of operating was explicitly mentioned to all employees as it was considered an important milestone for Organization E. The senior managements capability therefore is explicitly explaining the purpose and goals of ambidexterity. Finally, the senior management strives for an open culture, in which they actively discuss problems or asking for input department wide.

4.2.6 Organization F

Organization F is a first and second tier supplier that exploits by following their customers wishes regarding the kind of products, measurements, edits, etc. Exploration runs simultaneously and is in the form of technological innovation: *'we are constantly observing which technologies are interesting for us'*.

Exploration is structurally organized in two different ways. There is a chief technology officer with a small group of people that are full time on exploration. There is also a group of employees from each part of the organization that have exploration as a subtask. Exploitation is centered around the daily operational activities.

For Organization F tensions arise due to exploring and exploiting simultaneously. The first is in the conversion of exploration outcomes into the exploitation process. When new technologies are being adopted into the current processes, this will cause frustration: *'the operation departments have*

to execute it, and that never works the first time, which leads to frustration'. Another tension is concerned with time and priorities. Organization F has always been revenue driven historically. However, currently when they explore, targets are under pressure. When technological innovation, thus exploration, could cause progress with regards to exploitation. This costs time and money, which puts the targets under pressure. In addition, with regards to culture, young people are more open to exploration than older people, which leads to differences in employees' focus with regards to exploration and exploitation. A final tension that senior management face, is that people are against change, which makes it difficult to justify exploration and involve them.

Organization F is able to deal with the ambidexterity tension by means of several capabilities. First, there are several capabilities on behalf of strategic intent. The senior management tries to justify the need for exploration and exploitation. In addition, they emphasize the exploration and exploitation tasks by involving employees through a meeting each month with the entire staff. This meeting includes all the current figures, but also which innovation and developments are of importance, because: *'in the end these employees will be involved in the actual design of that process'*. Second, there is one capability on behalf of common vision and values. The senior management is able to create a culture of doing things together and openly. Third, there are several capabilities on behalf of consensus on strategy. The senior management reach consensus among the senior management team because all members are on the same page with regards to the extent of exploitation and exploration. In addition, they create consistency with regards to consensus, since there is a strategic plan and technology roadmap made by the senior management, which is a guideline for all management below. Fourth, there are several capabilities on behalf of separate aligned units. The senior management allows exploration tasks to be within a full time function, which leads to success because: *'we do realize that if you really put time and energy into it, we have unlocked people, if you do not, it will not start, because operational people never have time for that'*. In addition, they organize exploration subtasks organization wide, since the senior management team has put together a group of people with exploration as their subtask: *'I think that combination is very powerful because then people always try to develop something that is also practically applicable'*. These employees are from every part of the organization, which is consistent with the culture of the organization of doing thing together. Moreover, the senior management incorporates a successful accountability structure of exploration and exploitation departments: *'exploration policy is developed central, but introduced decentralized (i.e. accountability to decentralized) and exploitation is decentralized with accountability towards central'*. Finally, there are several capabilities on behalf of senior leadership. They senior management is engaging in conversation about the purpose and goals of ambidexterity: *'we need to pay attention to our people and make sure we keep explaining why it is so important'*. They also believe that when you involve people in the process, this will result in a higher success rate and less resistance. Furthermore, they utilize different focuses in senior management: *'every member has their own focus, the chief technology officer always wants a lot of new things, the chief operating officer is always concerned*

with the operations if it is manageable, he always asks for more breathing space, the chief executive officer focuses on the customer field and what their needs'.

4.2.7 Organization G

Organization G is exploring and exploiting simultaneously, since they altered their strategy three years ago and positioned themselves as innovation centered. Exploration is *'innovation based on function, on design, on circular, on cradle to cradle, on modularity'*. Exploitation is also fundamental, because their pursuit is to become market leader and this demands for low production costs: *'therefore, the entire supply chain is aimed at producing as efficiently as possible'*.

Exploration and exploitation are structurally organized by means of separate units. There is an Innovation Center, a Research department and a Development department that all focus on innovation. The supply chain is operational and purely exploitation.

For Organization G tensions arise due to exploring and exploiting simultaneously. This tension is with regards to capacity. The conversion of exploration outcomes into the exploitation process takes part in the ongoing operational process for two reasons. The first is because of shared resources and duplicating these would mean high costs. The second is that implementing these innovations into the ongoing operational process leads to involvement of these employees and a start into the implementation process. However, the tension arises when there is too little capacity: *'if an employee has one hundred hours of orders waiting and there is ten hours for a research project, this project will get no attention. They should have freed up capacity for this, but this is not always well communicated'*. In addition, the velocity of the innovation center is higher than what the organization can handle.

Organization G is able to deal with the ambidexterity tension by means of several capabilities. First, there are several capabilities on behalf of strategic intent. The senior management remains consistent with regards to strategic intent, because they create a central road map which is a clear plan to reach exploration objectives next to the exploitation activities. They set priorities with regards to which projects are important. The strategy is composed on the highest level and this forms the base for every management layer downwards, which leads to consistency with regards to strategic intent. In addition, the senior management tries to involve every employee in the process of achieving innovation objectives by integrating the cradle to cradle and lean philosophy in every part of the organization. At the same time, they organize the entire supply chain to be as efficient as possible, so that focus is also well represented. Another capability of senior management is integrating exploitation principles in the exploration process by using the concept of modularity as innovation principle, which enables efficiency: *'with modularity you not only have new innovative products, so for different target groups with different techniques, but also this is easier in the factories, with a high degree of efficiency and standardization.* Moreover, the board of directors informs the entire organization in their quarterly visit about the progress on objectives. Second, there are several capabilities on behalf of

common vision and values. The senior management is capable of realizing a shared vision that includes exploration and exploitation, and there are clear goals and objectives with regards to this: *'to inspire people, to show them where we are heading and to convince people'*. Subsequently, another capability of senior management is remaining consistent in vision, which leads to a solid and reliable basis for employees: *'the vision we implemented a few years ago, is still valid'*. In addition, they are capable of creating an open culture by making sure senior management is accessible: *'the distance between the work floor and direction is not large'*. Third, there are several capabilities on behalf of consensus on strategy. The senior management is able to create consensus among senior management about strategic intent: *'a large degree of consensus, we do not notice any disagreement between the various members'*. Fourth, there are several capabilities on behalf of separate aligned units. The senior management separates departments into exploration and exploitation. They form an integration mechanism in which members of both exploration and exploitation are present in the development of a new product: *'this way we know the interests of production, the interests of the market when it comes to the product innovation'*. In addition, they integrate exploitation departments into the conversion of exploration to exploitation. The first steps are only exploration, but after exploitation departments are involved in different ways. Exploitation departments like production are involved: *'after they have received information and training from the innovation center'*. Also, the entire system has to be involved including a training for the outside technicians and the sales department. Another capability of senior management is appointing a head of exploration with knowledge of exploitation, which leads to more understanding of how the two processes work. Currently the head of innovation at Organization G was formerly responsible for production: *'so I know a lot about how efficiency, and efficiency is negatively influenced from product design'*. Finally, there are several capabilities on behalf of senior leadership. The senior management is engaging in conversation about the purpose and goals of ambidexterity to the employees: *'we are also a lean company, so we are just trying to improve every day with what we do. You need all the people in the organization to be involved.'* In addition, they are introducing a renewed intranet system to stimulate information sharing about objectives and ideas. Furthermore, the senior management is able to trust and support the employees: *'with the support of the directors and that they are unambiguous, that helps'*. With regards to capacity, another capability of senior management is being aware of capacity in which they are aware of the higher velocity of the innovation center and to fix this they let some prototypes be for a while.

4.2.8. Organization H

Organization H is also in the manufacturing industry. They are market leader in their field of expertise, which is a conservative market. They are ambidextrous, because *'we see that if you want to keep that lead, you have to come up with innovative things as market leader'*. Exploration, driven by a strong focus on innovation, is represented in the mission, vision and strategy: *'we want to be market leader in*

innovation in the market in which we operate'. Exploitation lies at the core of the business: *'this is how we earn our living'* and *'the old models who always performed well, those are the cash cows'*.

Exploration tasks are structured by means of subtasks. The order engineers are supposed to spend thirty percent of their hours on innovation. This originates from capacity possibilities. They started measuring hours, which were ten to fifteen percent two years ago and are currently from twenty being raised to thirty. Exploitation is centered around the daily operational activities.

For Organization H tensions arise due to exploring and exploiting simultaneously. The senior management wants to innovate and are aware that it is beneficial to put emphasis on exploration. However, they are not able to free up as much capacity for innovation as they would like: *'a budget for the engineering department/R&D department is of course simply linked to sales and margins we make. So, if we do better, we are also able to hire more people'*. They state that: *'we have to grow to make room for that'*. However, at the same time, there is one person, a hirer, that is only focusing on exploration and they mention that: *'if you give the right attention to it and say the right capacity, it also indicates that it can work'*. But currently: *'scored orders always have priority. Because yes, you know, it's going to be paid. And we live on that. And that is sometimes quite frustrating, I can tell you'*. Another tension is with regards to innovation velocity. The innovations have a deadline and have to be conducted by the ones also active in the production process. This leads to tension since there is not always enough time and capacity available.

Organization H is able to deal with the ambidexterity tension by means of several capabilities. First, there is one capability on behalf of strategic intent. The senior management has established targeted strategy meetings every two months to discuss and prioritize which innovation projects are on the agenda. Second, there are several capabilities on behalf of common vision and values. The senior management is communicating exploration in the shared vision: *'you also read this on our website, we want to be the innovator within the industry'*. However, in practice the bulk of the organization is focused on exploitation. At the same time, they come to the conclusion that: *'in reality, the old products have always performed well, those are our cash cows. And on the one hand we pretend to be innovative, that is what we are, but on the other hand you also see that it is also difficult to put it on the market, because that market is so conservative'*. In addition, the senior management is able to create an open culture in which communication is easy since: *'we have very short lines'* and *'quick communication'*. Moreover, to provide for common vision and values the senior management persuades the exploitation departments of the exploration need, for example by involving exploitation employees from operations by taking them to fairs for example. Third, there are several capabilities on behalf of consensus on strategy. With regards to consensus, this does not always come naturally: *'well, not always, I just have to be honest about that. There are generally differences of insight in the people responsible for operations and the people commercially responsible. That leads to differences of opinion'*. However, the senior management is able to reach consensus at a given time: *'there is consensus reached at a given time, because then there are agreements made, this is what we go for*

and then some people might be displeased, but they have to deal with it'. They are able to create consistency with regards to this consensus: *'I think we are fairly unambiguous'*. After they reach a difficult consensus, it is up to the layers below to translate this to the rest of the organization and this process is clear and straightforward. Fourth, there are several capabilities on behalf of separate aligned units. The senior management structures exploration by means of subtasks. This is due to cost consideration and flexibility options: *'If it is a bit quieter in innovations, or it is a bit quieter in the orders, then you can do more of one or the other. If you really have a R&D department, and you have no work for it, those people can't work, that costs a lot of money'*. A capability of senior management is integrating exploitation in the exploration process when exploration has developed new products by means of showing things: *'than it is made by production, so the people that normally do everything, they built it together and it gets tested here at our location'*. In addition, the senior management sets up meetings that include heads of both exploration(tasks) and exploitation departments. Finally, there are several capabilities on behalf of senior leadership. To involve both exploration(tasks) and exploitation departments in new product development the senior management is meeting every department from service, product development, production to sales, and ask for their input. A capability of senior management to deal with the tension of time and capacity, is to involve employees early in the exploration process: *'look guys, this is coming. We want to do this. It's getting clearer over time. The awareness is there, and it is not that they will be surprised at once that they know how to deliver an innovation within a few, two and three months'*. Another capability is engaging in conversation about the purpose and goals of ambidexterity: *'we have to keep pushing and explaining why it is important to explore. We keep repeating this'*.

4.3 Summary of main findings

The analysis is presented in the previous paragraphs. However, this is per organization. For this main summary, it is essential to compare the capabilities of senior management of all organizations. These capabilities are compared by theme. An overview of all capabilities is attached in Appendix 3.

The first theme is strategic intent. In two of the eight organizations the capabilities with regards to strategic intent are not present. However, in the other six organizations there was a clear focus from senior management on strategic intent. Multiple capabilities are concerned with forming strategic plans, such as targeted strategy meetings and targeted discussions to establish strategic plans. Others are about providing information internally and externally about this strategic intent, such as formal gatherings, meetings and quarterly visits. Conclusively, senior management are communicating the strategic intent, justifying the strategic intent and doing this consistently. An overview of the capabilities is provided in table 4.2.

Table 4.2

Capabilities strategic intent

Strategic intent capabilities (organization)

- establishes regularly formal gatherings with regards to developments process (A)
 - communicating the strategic intent regarding exploration and exploitation and the role of employees (C)
 - communicating exploration and exploitation in the strategy (D)
 - making plans, setting deadlines (D)
 - conducting targeted discussions to establish strategic plans (D)
 - justify the need for exploration and exploitation (F)
 - involving employees through a meeting each month with the entire staff (F)
 - remains consistent with regards to strategic intent (G)
 - involve every employee in the process of achieving innovation objectives (G)
 - organize the entire supply chain to be as efficient as possible (G)
 - integrating exploitation principles in the exploration process (G)
 - informs the entire organization in their quarterly visit about the progress on objectives (G)
 - established targeted strategy meetings (H)
-

The second theme is common vision and values. In eight of the eight organizations there are capabilities with regards to common vision and values present. Ten of fifteen capabilities concern common vision, whilst the other five concern values. With regards to common vision, six organization have capabilities in place for including exploration and/or exploitation. However, only four of these organization include both exploration and exploitation in the common vision. Organization B includes only exploitation and organization H includes exploration in the common vision. In addition, two organizations mention capabilities concerned with passing on this vision, for example by frequently addresses it. One organization mentions a capability with regards to consistency of this shared vision. Another way to reach common vision is the capability of persuading the exploitation departments of the exploration needs. With regards to values, the word culture is present in each capability mentioned. Five organizations mention the importance of approachability of management, open culture, easy communication and including both exploration and exploitation in the culture. An overview of the capabilities is provided in table 4.3.

Table 4.3

Capabilities common vision and values

Common vision and values capabilities (organization)

- including both exploration and exploitation in the common vision (A)
 - frequently addresses this vision and also share this with one another (A)
 - creating a culture of openness and approachability of management (A)
 - includes only exploitation in the common vision (B)
 - involving exploration in the culture of exploitation (C)
 - communicating exploration and exploitation in the common vision (D)
 - maintaining a shared vision that includes exploration and exploitation (E)
 - passing on a shared vision (E)
 - create a culture of doing things together and openly (F)
 - shared vision that includes exploration and exploitation (G)
 - remaining consistent in vision (G)
 - creating an open culture by making sure senior management is accessible (G)
 - communicating exploration in the shared vision (H)
 - create an open culture in which communication is easy (H)
 - persuades the exploitation departments of the exploration need (H)
-

The third theme is consensus on strategy. In two of the eight organizations the capabilities with regards to consensus on strategy are not present. However, in the other six organizations there is consensus among the senior management team. Five of the eleven capabilities concern the capability of creating consensus for five organizations. Four of the eleven capabilities concern how this is accomplished for three organizations. The two remaining capabilities concern the consistency with regards to consensus for two organizations. An overview of the capabilities is provided in table 4.4.

Table 4.4

Capabilities consensus on strategy

Consensus on strategy capabilities (organization)

- creating consensus within the senior management team (A)
 - developed the strategic plan together and agree which direction the organization should take (A)
 - create consensus by building the process over the years and slowly integrating this per department (B)
 - communicate internally and externally about this trajectory and the role of exploration and exploitation (B)
 - able to create consensus among the senior management (E)
-

-
- acknowledge the usefulness and necessity of ambidexterity (E)
 - reach consensus among the senior management team (F)
 - create consistency with regards to consensus (F)
 - create consensus among senior management about strategic intent (G)
 - able to reach consensus at a given time (H)
 - create consistency with regards to this consensus (H)
-

The fourth theme is separate aligned units. First, in four of the organizations the capabilities with regards to structure are based on separate units. Four of the thirteen capabilities describe how the organization separate the departments. One capability is concerned with developing a clear structure for which department is responsible for what. The other seven capabilities describe how they provide for integration between these departments. This integration takes place in many different forms. One way of integration is by stimulating interaction between departments and involving both in the process, for example by forming mixed team, adopting formal meeting structures. Another way of integration is the selection of the head of the departments, either appointing both departments the same head or appointing a head of exploration with knowledge of exploitation. Second, in two of the organizations the capabilities with regards to structure are not based on separate structures. Two of the five capabilities describe how these organizations structure exploration as a subtask next to the exploitation tasks. The other three capabilities, all from one organization, describe how they provide for integration between the exploration(tasks) and exploitation departments. They integrate by simulating interaction and involving both in the process, for example by a meeting that includes both. Third, two of the organizations combine the two forms previously discussed. Four of the five capabilities describe how they organize this with regards to structure. Also, one capability describes how they incorporate a successful accountability structure of exploration and exploitation departments. An overview of the capabilities is provided in table 4.5.

When comparing these three different options to structure ambidexterity, it is relevant to observe how these organizations experience tensions, and especially if any forms experience more tensions. Organizations that have separate aligned units have the smallest average of tensions. Four organizations mention eight tensions in total. The two organizations that don't have separate aligned units mention five tensions in total. Organizations that don't have separate aligned units have the highest average of tensions. Two organizations mention eight tensions in total.

Table 4.5

Capabilities separate aligned units

Separate aligned units capabilities (organization)

- actively dividing the organization into cells (A)
 - adopting more formal meeting structures to integrate the exploration and exploitation
-

departments (A)

- integrate the different departments by appointing them the same head (A)
 - geographically isolating the long term focus departments from the short term departments (B)
 - establishes an integration mechanism, where someone from exploitation is involved during the exploration process (B)
 - developing a more structured approach that established which department is responsible for what by separating tasks and making them explicit (B)
 - structures exploration by means of subtasks (C)
 - integrates exploration in to current exploitation activities (C)
 - structures exploration by means of subtasks (D)
 - accommodate many of those sub-tasks in one completely new function (D)
 - separates departments into exploration and exploitation (E)
 - forms a mixed team with exploration and exploitation employees for structural integration (E)
 - stimulate the interaction between R&D and other department (E)
 - allows exploration tasks to be within a full time function (F)
 - organize exploration subtasks organization wide (F)
 - incorporates a successful accountability structure of exploration and exploitation departments (F)
 - separates departments into exploration and exploitation (G)
 - form an integration mechanism in which members of both exploration and exploitation are present (G)
 - integrate exploitation departments into the conversion of exploration to exploitation (G)
 - appointing a head of exploration with knowledge of exploitation (G)
 - structure exploration by means of subtasks (H)
 - integrating exploitation in the exploration process (H)
 - involve exploitation employees from operations by taking them to fairs (H)
 - set up meetings that include heads of both exploration(tasks) and exploitation departments (H)
-

The fifth theme is senior leadership. Senior leadership capabilities are present in each of the eight organizations. When comparing the capabilities, several can be grouped within the same category. First, thirteen of the twenty six capabilities are concerned with engaging in conversation about the purpose and goals of ambidexterity as well as stimulating information sharing. Second, eight of the twenty six capabilities are concerned with senior leadership, such as weighing opportunities, coaching leadership and being aware of tensions. Third, four of the twenty six capabilities are concerned with

utilizing the different focus of senior management. The remaining capability is utilizing a financial opportunity by applying subsidies to suppress the costs of exploration. An overview of the capabilities is provided in table 4.6.

Table 4.6

Capabilities senior leadership

Senior leadership capabilities (organization)

- utilize each different focus regarding exploration or exploitation within the senior management team (A)
 - opening up the conversation about it as much as possible (B)
 - establishes a direction decision at the end of a project (B)
 - placing the responsibility for exploration with the employees (B)
 - utilizing the different focus regarding exploration and exploitation among the senior management team (B)
 - weighing exploration opportunities (C)
 - applying subsidies to suppress the costs of exploration (C)
 - engaging in conversation (C)
 - establishing a short presentation round (C)
 - weighing exploration opportunities (C)
 - selecting a middle management that values exploration and exploitation (D)
 - persuade and engage in conversation (D)
 - coaching leadership (D)
 - engaging in conversation about the purpose and goals of ambidexterity (E)
 - accepting there is tension (E)
 - explicitly explaining the purpose and goals of ambidexterity (E)
 - actively discuss problems or asking for input department wide (E)
 - engaging in conversation about the purpose and goals of ambidexterity (F)
 - utilize different focuses in senior management (F)
 - engaging in conversation about the purpose and goals of ambidexterity (G)
 - stimulate information sharing about objectives and ideas (G)
 - able to trust and support the employees (G)
 - being aware of capacity (G)
 - meeting every department from service, product development, production to sales, and ask for their input (H)
 - involve employees early in the exploration process (H)
 - engaging in conversation about the purpose and goals of ambidexterity (H)
-

After the capabilities are analyzed per theme, it is relevant to consider the occurrence of capabilities per theme. It is notable that for example senior leadership has provided more capabilities than consensus on strategy. When adding the capabilities per theme, these are the following outcomes: strategic intent a total of thirteen, common vision and values a total of fifteen, consensus on strategy a total of eleven, separate aligned units a total of twenty four, senior leadership a total of twenty six. These quantities could indicate several outcomes. It is possible that themes with a higher quantity are more important, since the senior management puts more attention to these. However, it is also possible that the themes with a lower quantity include capabilities that perform well. As this is only an analysis on the quantity of the capabilities, further research is needed to include performance.

This analysis has provided a detailed but demarcated description of how exploration and exploitation occur within eight organizations. It is presented how exploration and exploitation are structurally embedded within the organization. Furthermore, the ambidexterity tensions that arise in the organizations are discussed. In addition, the capabilities of senior management that allow them to deal with these tensions are presented. Subsequently, to compare the organizations with each other, the capabilities are grouped and discussed per theme. To end this chapter, a summary of these capabilities is provided. The next chapter will interpret these results and combine them with the theories discussed in chapter two. Furthermore, the theoretical and practical implications are discussed. Followed by a detailed description of the limitations and directions for future research.

5. Conclusion and discussion

A narrow focus on innovation will tempt an organization to continually innovate as an organizational objective, however innovations in and of themselves are not necessarily the key to long-term business (Siguaw et al., 2006). This research challenges the focus on innovation as a standalone goal and critically reflects on this, suggesting it is about finding a balance between innovation and efficiency. Organization's long-term success depends on its ability to exploit its current capabilities while simultaneously exploring fundamentally new competencies (Raisch et al., 2009). Ambidexterity is the term for simultaneously exploiting and exploring. Future research on ambidexterity should return to the construct's definition, which emphasizes the nature of ambidexterity as a capability (Nosella et al., 2012). Accordingly, while the evidence for the benefits of ambidexterity is accumulating, there exists a gap in understanding how senior managers are dealing with ambidexterity (O'Reilly & Tushman, 2011). Therefore, this study analyzes how ambidexterity capabilities of senior management enable them to deal with the ambidexterity tensions. It aims to help guide senior managers how to use these insights for the purpose of dealing with a changing environment. The results of this study were discussed in the previous chapter. This final chapter is concerned with the conclusion and discussion. First, there will be a discussion on the main findings. Followed by the theoretical and practical implications. This will be continued by a paragraph concerning the limitations. Finally, this chapter ends with suggestions for future research.

5.1 Discussion on the main findings

The objective of this research is to analyze how organizations are dealing with a changing environment. A way to deal with this is for organizations to adopt to the ambidextrous form. Following the theoretical nature of ambidexterity as a capability (Nosella et al., 2012), this leads to a research into the ambidexterity capabilities of senior management. This led to the following research question: *"How do ambidexterity capabilities enable organizations to deal with the ambidexterity tension?"*

In order to answer this research question, the theoretical literature has been studied. All relevant theories have been discussed in chapter two. The study of O'Reilly and Tushman (2008) proved to be most suitable to serve as the basis for this study, since it views ambidexterity as a capability and provides capabilities on senior management level. The interview guide is based on the operationalization of theoretical assumptions. The research took place within the manufacturing industry since this industry has to deal with a changing business environment as there is increasing domestic and international competition and rapid technological advancement (Li, 2000). All organizations are established profit firms. The total amount of organizations involved is eight. Ten respondents were involved in the data collection.

After analyzing the data, it became clear that the ambidexterity tension expresses itself differently for each organization. Resulting in different capabilities demanded from senior management. The analysis is based on a detailed description of the construct for each organization first, since the concept ambidexterity is complex and difficult to grasp in practice. Furthermore, this will offer an holistic view of the concept and provide in depth knowledge. After that the capabilities of senior management have been thematically arranged. In the following paragraphs the observed capabilities are discussed per theme and compared to the theory.

The first theme is strategic intent. An overwhelming part, six of the eight organizations, finds this important as the senior management uses several capabilities based on communicating the strategic intent with regards to exploration and exploitation. This analysis provides specific capabilities of senior management as it describes specific activities, skills or processes. The main purpose of these capabilities are forming strategic plans, providing information internally and externally as they communicate and justify the strategic intent. When comparing this to the theory, the authors describe the first activity as follows: “The presence of a compelling strategic intent that justifies the importance of both exploration and exploitation” (O’Reilly & Tushman, 2008, p.197). The outcomes of the analysis compared to the theory are quite similar as they both cover the same aspects. However, the outcomes of the analysis are more explicit as they mention specific capabilities instead of a key activity. This key activity describes only what an organization should accomplish but the outcomes of the analysis describe how senior managers accomplish this.

The second theme is common vision and values. In all eight organizations, senior management uses capabilities with regards to this theme. The overarching focus of the vision capabilities is the inclusion of exploration and/or exploitation in the vision, passing on this vision and consistency. The overarching focus of the values capabilities is culture, in which approachability of management and an open culture are central. When comparing this to the theory, the authors describe the second activity as follows: “The articulation of a common vision and values that provide for a common identity” (O’Reilly & Tushman, 2008, p.197). The outcomes of the analysis compared to the theory are complementary. The analysis provides more detail towards common vision and values. Not in a sense that it describes how senior managers should accomplish this, since the development of vision, values and culture are not simply given. However, the analysis does provide more detail in what the vision should consist of and it provides examples of values, such as openness, approachability and easy communication.

The third theme is consensus on strategy. Six of the eight organizations are actively embedding senior management capabilities with regards to consensus on strategy and communication of this strategy. This analysis provides specific capabilities of senior management as it describes specific activities, skills or processes. There are capabilities that emphasize creating consensus, others are concerned with how this is accomplished and others emphasize consistency of consensus. When comparing this to the theory, the authors describe the third activity as follows: “A clear consensus

among the senior team about the unit's strategy, relentless communication of this strategy, and a common-fate incentive system" (O'Reilly & Tushman, 2008, p.198). The outcomes of the analysis compared to the theory result in some differences. The first two parts of the activity are well represented in the data, there is even a complementary description that includes how to reach consensus from the analysis. Furthermore, the outcomes of the analysis are more explicit as they mention specific capabilities instead of a key activity. However, the last part about a common-fate incentive system has not come forward in the analysis.

The fourth theme is separate aligned units. Four organizations have separate aligned units. Two organizations do not have separate aligned units, but structure exploration as a subtask within exploitation. Two organizations combine the two previously mentioned forms. The analysis provides specific capabilities of senior management as it describes specific activities, skills or processes. There are capabilities that describe how they organize this with regards to structure. Other capabilities describe how to provide for integration, in which multiple examples are included. When comparing this to the theory, the authors describe the fourth activity as follows: "Separate aligned organizational architectures for explore and exploit subunits and targeted integration" (O'Reilly & Tushman, 2008, p.198). The outcomes of the analysis compared to the theory are partially confirmative and complementary, since for half of the organizations these separate aligned units is how they structure their organization. The key activity describes what an organization should accomplish but with regards to the integration aspect, the outcomes of the analysis describe how senior managers accomplish this including examples. However, the outcomes of the analysis are also conflicting, since this recommended approach is only applied in half of the organizations. This research therefore expresses criticism towards O'Reilly and Tushman for not involving these other forms of structuring the organization. This criticism is strict as the outcomes observe this key activity in only half of the organizations, which is a substantial amount. To add some nuance to this criticism, there is a possibility that structural separation is the best option with regards to structure, since these have the lowest amount of tensions when comparing the number of tensions across the different forms. Nevertheless, this does not justify excluding the other forms, as this research shows there is a substantial amount of these alternative forms in practice. This theme is renamed structure within this research. Another interesting observation is how senior management dedicates multiple capabilities with regards to integration for both of the forms separately. However, the two organizations that combine the both forms do not mention any capabilities with regards to integration at all. This observation could be further investigated in future research. Overall, when comparing the outcomes of the analysis to the theory for each form of structure, the outcomes of the analysis are more explicit as they mention specific capabilities instead of a key activity.

The fifth theme is senior leadership. All eight organizations are actively using these capabilities to deal with the ambidexterity tensions. This analysis provides specific capabilities of senior management as it describes specific activities, skills or processes. The overarching focus of

these capabilities is engaging in conversation, stimulating information sharing, senior leadership and utilizing the different focus of senior management. When comparing this to the theory, the authors describe the fifth activity as follows: “Senior leadership that tolerates the contradictions of multiple alignments and is able to resolve the tensions that ensue” (O’Reilly & Tushman, 2008, p.199). The outcomes of the analysis compared to the theory are complementary. The key activity describes only what an organization should accomplish but the outcomes of the analysis describe how senior managers accomplish this and provide specific examples. The outcomes of the analysis are more explicit as they mention specific capabilities instead of a key activity.

As this discussion and the main summary of the previous chapter are mainly concerned with the analysis of capabilities, it is relevant to consider the relationship to ambidexterity tensions. This also reflects on the main purpose of this final chapter, which is to answer the research question. How do ambidexterity capabilities of senior management enable them to deal with the ambidexterity tension? The question, in particular the word ‘enable’, is confirmed to be correct as opposed to for example ‘solve’. The capabilities of senior management are used to deal with these tensions. It are the capabilities these senior managers see fit to deal with the situation. However, these will not make the tensions disappear. Tensions will remain and the capabilities will help senior management deal with these. As an answer to the how question, capabilities are focused on the specifics of different tensions. Another interesting observation with regards to this how question, is that capabilities that came forward in the analysis are not solely focused or aimed on the tensions that are mentioned. Moreover, as performance has not been included in this analysis, additional research could provide more insights into which capabilities are ‘the best’.

All together this study builds further on the literature of ambidexterity and its nature as a capability. This research main contribution has been providing complementary insights to the research of O’Reilly and Tushman (2008) by providing specific capabilities. This is simultaneously the main criticism with regards to O’Reilly and Tushman (2008), since they operationalized capabilities as key activities instead of specific capabilities. Another criticism is with regards to structure as they do not involve other structural forms than separate aligned units. The analysis emphasizes the complexity of the construct and the need for additional research. The following paragraph will discuss what this research adds to the existing literature.

5.2 Theoretical Implications

The findings of this research contribute to the literature of ambidexterity as a capability, its tensions and how senior management attempts to deal with these. It adheres to the recommendation of Nosella et al. (2012) to return to the constructs original definition of ambidexterity as a capability. This research main theoretical contribution is providing specific capabilities, whereas O’Reilly and Tushman (2008) only provide five key activities. This research criticizes this previous research and adds value by providing a deeper and more specific understanding of what these capabilities are.

Another criticism towards O'Reilly and Tushman (2008) is on behalf of the separate structure activity. They exclude other forms as they only consider separate aligned units, while the empirical material of this research shows there is a substantial amount of these alternative forms in practice. This indicates O'Reilly and Tushman (2008) do not fully cover the entire construct. This research implies there are other forms to be considered.

In addition, O'Reilly and Tushman (2011) mention there exists a gap in understanding how ambidexterity is actually managed within organizations. This research has provided new insights on behalf of this gap by analyzing specific capabilities of senior management. It extends the literature by filling this gap with a qualitative approach, which is appropriate since ambidexterity is a complex and difficult concept to grasp in practice. This qualitative approach is of added value to the existing literature, since it provides a detailed description of the construct for each organization in which capabilities and tensions are jointly analyzed. This will offer an holistic view of the concept and provide in depth knowledge in comparison to the existing quantitative research. Moreover, this research indicates the relevance of more research on behalf of this concept as the findings show that organizations are diverse and ambidexterity tensions arise in different ways.

5.3 Practical Implications

Besides theoretical implications, this research also implies practical implications. This research provides managers with an extended understanding of ambidexterity, its tensions and capabilities to deal with these tensions. As these concepts are rather theoretical, this study provides the much needed empirical data that shows how it expresses itself in practice. The research is relevant for managers within the manufacturing industry, and can be inspirational for other industries as well.

“Organization’s long-term success depends on its ability to exploit its current capabilities while simultaneously exploring fundamentally new competencies” (Raisch et al., 2009, p.685). Naturally, long-term success is why this research is practically relevant. However, this ability that is mentioned, this is where the added value of this research comes into play. This research showed ‘how’ senior management is dealing with the tensions of ambidexterity by providing specific capabilities.

This research encourages managers to actively consider the implications of ambidexterity tensions and offers solutions based on strategic intent, common vision and values, consensus on strategy, structure and senior leadership. The ambidexterity tension expresses itself differently for each organization. Resulting in different capabilities demanded from senior management. This indicates there are multiple ways of dealing with ambidexterity since in the end, it is a balancing act. It is beneficiary for senior management to be more aware of capabilities and compare these to others.

These practical implications are unmistakably relevant for managers of organizations that are ambidextrous already. In addition, this study may also be relevant for managers of organizations that are considering becoming ambidextrous. It provides information that is helpful beforehand, for example structural insights and senior management team composition.

5.4 Limitations

A limitation of this research is that it lacks generalization. The amount of interviews is too small to be able to generalize to a larger group. In addition, senior management is a broad understanding. The respondents have different functions. This could have led to different perspectives, for some being more exploration or exploitation centered. Furthermore, this study has interviewed two respondents for two organizations. The other organizations are analyzed based on one interview. From the analysis, it was noticeable and advantageous to include multiple respondents per organization as it provided multiple perspectives. However, this was not possible considering the scope of this research. It would have been preferable for each organization to interview at least two or more respondents per organization to get different perspectives.

Another limitation with regards to the respondents is whether each respondent experiences exploration and exploitation the same. This is also the case for tensions, as some might experience tensions differently. Furthermore, dealing with ambidexterity is measured by asking respondents how they think they should deal with it. Whether or not they are actually capable of dealing with ambidexterity therefore is subjective. In addition, conditions under which ambidexterity leads to success are scarce. This study does not take performance into consideration, as it only describes how organizations deal with the tensions and the capabilities senior management use. This makes it difficult to draw conclusions with regards to which capabilities are the best. A more distant but relevant limitation is whether ambidexterity is the best form. Evidently there is research that confirms ambidexterity is the best form, in comparison to a spin off or outsourcing for example. However, this is not unambiguous.

5.5 Future research

Future research can build on this research and overcome the limitations mentioned in the previous paragraph. A large contribution of future research is to include performance. This will benefit future outcomes as to indicating which capabilities are superior. It could also provide more insights into assessing which themes are more important for senior management to focus on. Additional studies that account for the ambidexterity performance relationship will make the concept more tangible for organizations and their practices.

Methodologically, increasing the amount of organizations will benefit generalizability as more organizations can be analyzed. Also, increasing the amount of interviews per organization will also benefit future research as this will accommodate multiple perspectives and increase internal validity. This will also overcome the limitation of different functions between respondents, as each organization will then account for multiple functions and perspectives. Future research should also account for different views on exploration, exploitation and tensions. More research will expand the understanding of the concepts and more data will reveal differences between organizations. In addition, future research could distinguish between incremental and radical innovation as this might

account for differences. Another methodological contribution of future research is a longitudinal approach, in which the concepts and relationships between variables can be measured evolving over time. This will provide insights into either early stages or later stages. Another contribution of future research is to analyze across multiple levels of analysis, individual, group and organizations' capabilities.

The outcomes of this study show ambidexterity tensions express themselves differently for each organization, which results in different capabilities demanded from senior management. Future research could account for different ambidexterity models for different tensions. In addition, how do these different models evolve?

So far the conceptual model and the individual relationships between the ambidexterity capabilities and ambidexterity tension are analyzed. However, to delve deeper into this research and its results, it is useful to observe the relationships from a different perspective. Future research could determine whether there are other relationships between the variables? Is it possible to discover a moderator or mediator? Future research should also account for other forms besides ambidexterity. More research could determine the exact conditions to when ambidexterity is the superior form in comparison to a spin off or outsourcing.

References

- Agostini, L., Nosella, A., & Filippini, R. (2016). Towards an Integrated View of the Ambidextrous Organization: A Second Order Factor Model. *Creativity and Innovation Management*, 25(1), 129-141.
- Ambrosini, V., & Bowman, C. (2009). What are dynamic capabilities and are they a useful construct in strategic management? *International Journal of Management Reviews*, 11(1), 29-49.
- Andriopoulos, C., & Lewis, M.W. (2009). Exploitation-Exploration Tensions and Organizational Ambidexterity: Managing Paradoxes of Innovation. *Organization Science*, 20(4), 696-717.
- Barney, J. (1991). Firm resources and Sustained Competitive Advantage. *Journal of Management*, 17(1), 99-120.
- Baregheh, A., Rowley, J., & Sambrook, S. (2009). Towards a multidisciplinary definition of innovation. *Management Decision*, 47(8), 1323-1339.
- Barreto, I. (2010). Dynamic Capabilities: A Review of Past Research and an Agenda for the Future. *Journal of Management*, 36(1), 256-280.
- Bauman, Z., Beck, U., Beck-Gernsheim, E., Benhabib, S., Burgess, R., ... & Solberg, A. (2002). Qualitative interviewing: asking, listening and interpreting. In May, T. *Qualitative research in action* (pp. 226-241). London: SAGE Publications Ltd.
- Becker, H., Berger, P., Luckmann, T., Burawoy, M., Gans, H., ... & Mills, C. (2002). Observation and interviewing: options and choices in qualitative research. In May, T. *Qualitative research in action* (pp. 200-224). London: SAGE Publications Ltd.
- Birkinshaw, J., Zimmerman, A., & Raisch, S. (2016). How Do Firms Adapt to Discontinuous Change? *California Management Review*, 58(4), 36-58.
- Bleijenbergh, I. (2013). *Kwalitatief onderzoek in organisaties*. Den Haag: Boom Lemma uitgevers.
- Carter, W.R. (2015). Ambidexterity deconstructed: a hierarchy of capabilities perspective. *Management Research Review*, 38(8), 794-812.

- Crossan, M.M., & Apaydin, M. (2010). A Multi-Dimensional Framework of Organizational Innovation: A Systematic Review of the Literature. *Journal of Management Studies*, 47(6), 1154-1191.
- Eisenhardt, K.M., & Martin, J.A. (2000). Dynamic Capabilities: What Are They? *Strategic Management Journal* 21, (10/11), 1105-1121.
- Eriksson, P., & Kovalainen, A. (2016). *Qualitative Methods in Business Research* (2nd Ed.). London, United Kingdom: SAGE Publications Ltd.
- Gobo, G. (2004). Sampling, representativeness and generalizability. In Seale, C., Gobo, G., Gubrium, J. F. & Silverman, D. *Qualitative research practice* (pp. 405-426). London: SAGE Publications Ltd.
- Harreld, J. B., O'Reilly, C. A., & Tushman, M. L. (2007). *Dynamic capabilities at IBM: Driving strategy into action*. In Stanford GSB Working Paper.
- He, Z., & Wong, P. (2004). Exploration vs. Exploitation: An Empirical Test of the Ambidexterity Hypothesis. *Organization Science*, 15(4), 481-494.
- Hwang, S. (2008). Utilizing Qualitative Data Analysis Software: A Review of Atlas.ti. *Social Science Computer Review*, 26(4), 519-527.
- Jansen, J.J.P., Simsek, Z., & Cao, Q. (2012). Ambidexterity and Performance in Multiunit Contexts: Cross-level Moderating Effects of Structural and Resource Attributes. *Strategic Management Journal*, 33, 1286-1303.
- Kang, J., Kang, R., Kim, S.J. (2017). An Empirical Examination of Vacillation Theory. *Strategic Management Journal*, 38, 1356-1370.
- Kirk, J., & Miller, M. L. (1986). *Qualitative Research Methods: Reliability and validity in qualitative research*. Newbury Park, CA: SAGE Publications Ltd.
- Leung, L. (2015). Validity, reliability and generalizability in qualitative research. *Journal of Family Medicine and Primary Care*, 4(3), 324-327.
- Li, L.L.X. (2000). Manufacturing capability development in changing business environment. *Industrial Management & Data Systems*, 100(6), 261-270.

- Luger, J., Raisch, S., & Schimmer, M. (2018). Dynamic Balancing of Exploration and Exploitation: The Contingent Benefits of Ambidexterity. *Organization Science*, 29(3), 449-470.
- March, J.G. (1991). Exploration and Exploitation in Organizational Learning. *Organization Science*, 2(1), 71-87.
- Menguc, B., & Auh, S. (2008). The asymmetric moderating role of market orientation on the ambidexterity-firm performance relationship for prospectors and defenders. *Industrial Marketing Management*, 37, 455-470.
- Nijmegen School of Management. (2017). *Master Thesis Handbook for Business Administration 2018-2018*. Nijmegen: Authors.
- Nosella, A., Cantarello, S., & Filippini, R. (2012). The intellectual structure of organizational ambidexterity: A bibliographic investigation into the state of the art. *Strategic Organization*, 10(4), 450-465.
- O'Reilly, C.A., & Tushman, M.L. (2004). The Ambidextrous Organization. *Harvard Business Review*, 82(4), 74-81.
- O'Reilly, C.A., & Tushman, M.L. (2008). Ambidexterity as a dynamic capability: Resolving the innovator's dilemma. *Research in Organizational Behavior*, 28, 185-206.
- O'Reilly, C.A., & Tushman, M.L. (2011). Organizational Ambidexterity in Action: How Managers Explore and Exploit. *California Management Review*, 53(4), 5-22.
- O'Reilly, C.A., & Tushman, M.L. (2013). Organizational Ambidexterity: Past, Present, and Future. *The Academy of Management Perspectives*, 27(4), 324-338.
- Raisch, S., & Birkinshaw, J. (2008). Organizational Ambidexterity: Antecedents, Outcomes, and Moderators. *Journal of Management*, 34(3), 376-409.
- Raisch, S., Birkinshaw, J., Probst, G., Tushman, M.L. (2009). Organizational Ambidexterity: Balancing Exploitation and Exploration for Sustained Performance. *Organization Science*, 20(4), 685-695.

- Siguaw, J.A., Simpson, P.M., & Enz, C.A. (2006). Conceptualizing Innovation Orientation: A Framework for Study and Integration of Innovation Research. *Journal of Product Innovation Management*, 23(6), 556-574.
- Simsek, Z. (2009). Organizational Ambidexterity: Towards a Multilevel Understanding. *Journal of Management Studies*, 46(4), 597-624.
- Symon, G., & Cassell, C. (2012). *Qualitative organizational research: Core Methods and Current Challenges*. London: SAGE Publications, Inc.
- Tamayo-Torres, T., Roehrich, J.K., & Lewis, M.A. (2017). Ambidexterity, performance and environmental dynamism. *International Journal of Operations & Production Management*, 37(3), 282-299.
- Teece, D.J., Pisano, G., & Shuen, A. (1997). Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, 18(7), 509-533.
- Teece, D.J. (2007). Explicating Dynamic Capabilities: The Nature and Microfoundations of (Sustainable) Enterprise Performance. *Strategic Management Journal*, 28, 1319-1350.
- Travers, M. (2001). *Introducing Qualitative Methods: Qualitative research through case studies*. London, United Kingdom: SAGE Publications Ltd.
- Vahlne, J.-E., Jonsson, A. (2017). Ambidexterity as a dynamic capability in the globalization of the multinational business enterprise (MBE): Case studies of AB Volvo and IKEA. *International Business Review*, 26, 57-70.
- Winter, S.G. (2003). Understanding Dynamic Capabilities. *Strategic Management Journal*, 24(10), 991-995.
- Zang, J., & Li, Y. (2017). Technological capabilities, marketing capabilities and innovation ambidexterity. *Technology Analysis & Strategic Management*, 29(1), 23-37.
- Zhan, W., & Chen, R. (2013). Dynamic capability and IJV performance: The effect of exploitation and exploration capabilities. *Asia Pacific Journal of Management*, 30, 601-632.

Appendix 1 - Questionnaire

Welkom bij dit interview. Mijn naam is Elise Hoppenreijns en ik ben masterstudent Business Administration aan de Radboud Universiteit Nijmegen. Voor mijn masterthesis doe ik onderzoek naar ambidexterity binnen organisaties. Zoals besproken zal dit interview maximaal een uur in beslag nemen. Ik heb uw organisatie geselecteerd uit de Maakindustrie top 100 van 2017, vanwege de grote rol die innovatie speelt binnen de maakindustrie, en het vanzelfsprekende belang van efficiëntie. De vragen van het interview zullen gaan over hoe senior management ervoor zorgt dat de organisatie zich op exploratie en exploitatie tegelijkertijd kan richten. Heeft u er bezwaar tegen als ik het interview opneem? De resultaten zullen volledig anoniem verwerkt worden.

How do ambidexterity capabilities enable organizations to deal with the ambidexterity tension?

Wanneer we over *exploitatie* spreken, is dit de *focus op effectiviteit en efficiëntie*.

Wanneer we over *exploratie* spreken, is dit de *focus op (product)innovatie en vernieuwing*.

Algemeen

- Wat is de strategie van het bedrijf betreft exploratie en exploitatie
- Hoe gaat het senior management om met een veranderende omgeving?
- Welke middelen of competenties, zoals productiemiddelen/budgetten/human resources, weten zij in te zetten om zich aan te passen aan een veranderende omgeving?
- Wat betekent dit voor het exploreren en/of exploiteren?

Strategic intent

- Hoe is de strategie betreft exploratie en/of exploitatie tot stand gekomen?
- Hoe wordt aan werknemers verantwoord hoe het bedrijf streeft naar exploratie en/of exploitatie?

Consensus on strategy

- In hoeverre is er binnen het senior team consensus wat betreft strategie betreft keuze voor exploratie en/of exploitatie?
- In hoeverre is het senior team eenduidig in communicatie naar werknemers over de strategie betreft keuze voor exploratie en/of exploitatie?

Structuur

- Hoe zijn exploratie en/of exploitatie ingebouwd qua structuur?
- Hoe is dit tot stand gekomen?

- Wat maakt deze structuur succesvol in het omgaan met exploratie en/of exploitatie?

Mogelijke vragen in het geval van gescheiden units

- *Hoe worden deze afdelingen geïntegreerd?*
- *Hoe worden de top van de afdelingen betrokken bij besluitvorming?*
- *Hoe worden conflicten tussen deze afdelingen opgelost?*
- *Wordt het senior team beloond op basis van performance van het gehele bedrijf of is hier een opsplitsing tussen exploratie en exploitatie afdelingen?*

Common vision

- Als u een gedeelde visie binnen het bedrijf zou beschrijven, in hoeverre is het exploreren en/of exploiteren aanwezig in deze gedeelde visie?

Ambidexterity tension

- In hoeverre richt het bedrijf zich momenteel tegelijkertijd op exploitatie én exploratie?
- Waarom?
- Hoe is dit tot stand gekomen?

Exploratie én exploitatie

- Het tegelijkertijd exploreren en exploiteren, levert dit wel eens spanningen op?
- Hoe gaan jullie als senior management met deze spanningen om?
- Kunt u beschrijven hoe u met deze spanningen omgaat?
- Op welk terrein doen zich dan spanningen voor? (denk aan strategie, structuur, processen, cultuur)
- En als u dan kijkt naar de spanningen, wat zijn volgens u dan cruciale vaardigheden van het senior management om daarmee om te gaan?

Exploratie of exploitatie

- *Waarom richt het bedrijf zich momenteel alleen op exploratie (of exploitatie)?*
- *Zijn er mogelijkheden voor het tegelijkertijd richten op exploratie en exploitatie?*

Appendix 2 - Coding scheme

Exploration¹

Exploitation²

Ambidexterity tension³

Dealing with ambidexterity⁴

Key activities	Dimensions	Indicators
The presence of a compelling strategic intent that justifies the importance of both exploitation and exploration	Strategic intent ⁵	<p>Articulating the strategic intent that justifies the importance of both exploration and exploitation^{5a}</p> <p>Communicating the strategic intent that justifies the importance of both exploration and exploitation^{5b}</p>
A clear consensus among the senior team about the unit's strategy, relentless communication of this strategy, and a common-fate incentive system	Consensus on strategy ⁶	<p>Providing clear consensus among senior team about unit's strategy^{6a}</p> <p>Communicating unit's strategy^{6b}</p> <p>Creating an incentive system based on company wide performance^{6c}</p>
Separate aligned organizational architectures for explore and exploit subunits and targeted integration	Separate aligned units ⁷	<p>Allocating resources separately for each unit^{7a}</p> <p>Integration on senior level and tactical level^{7b}</p>
The articulation of a common vision and values that provide for a common identity	Common vision ⁸	<p>Articulating and communicating a common vision^{8a}</p> <p>Articulating and communicating common values^{8b}</p>

Senior leadership that tolerates the contradictions of multiple alignments and is able to resolve the tensions that ensue	Senior leadership ⁹	Forming senior team including heads of exploration and exploitation units ^{9a} Senior management fostering arguments/ discussion with conflict resolution skills ^{9b}
--	--------------------------------	--

Appendix 3 - Summary of codes

Strategic intent

- establishes regularly formal gatherings with regards to developments process (A)
- communicating the strategic intent regarding exploration and exploitation and the role of employees (C)
- communicating exploration and exploitation in the strategy (D)
- making plans, setting deadlines (D)
- conducting targeted discussions to establish strategic plans (D)
- justify the need for exploration and exploitation (F)
- involving employees through a meeting each month with the entire staff (F)
- remains consistent with regards to strategic intent (G)
- involve every employee in the process of achieving innovation objectives (G)
- organize the entire supply chain to be as efficient as possible (G)
- integrating exploitation principles in the exploration process (G)
- informs the entire organization in their quarterly visit about the progress on objectives (G)
- established targeted strategy meetings (H)

Common vision and values

- including both exploration and exploitation in the common vision (A)
- frequently addresses this vision and also share this with one another (A)
- creating a culture of openness and approachability of management (A)
- includes only exploitation in the common vision (B)
- involving exploration in the culture of exploitation (C)
- communicating exploration and exploitation in the common vision (D)
- maintaining a shared vision that includes exploration and exploitation (E)
- passing on a shared vision (E)
- create a culture of doing things together and openly (F)
- shared vision that includes exploration and exploitation (G)
- remaining consistent in vision (G)
- creating an open culture by making sure senior management is accessible (G)
- communicating exploration in the shared vision (H)
- create an open culture in which communication is easy (H)
- persuades the exploitation departments of the exploration need (H)

Consensus on strategy

- creating consensus within the senior management team (A)
- developed the strategic plan together and agree which direction the organization should take (A)
- create consensus by building the process over the years and slowly integrating this per department (B)
- communicate internally and externally about this trajectory and the role of exploration and exploitation (B)
- able to create consensus among the senior management (E)
- acknowledge the usefulness and necessity of ambidexterity (E)
- reach consensus among the senior management team (F)
- create consistency with regards to consensus (F)
- create consensus among senior management about strategic intent (G)
- able to reach consensus at a given time (H)
- create consistency with regards to this consensus (H)

Structure

- actively dividing the organization into cells (A)
- adopting more formal meeting structures to integrate the exploration and exploitation departments (A)
- integrate the different departments by appointing them the same head (A)
- geographically isolating the long term focus departments from the short term departments (B)
- establishes an integration mechanism, where someone from exploitation is involved during the exploration process (B)
- developing a more structured approach that established which department is responsible for what by separating tasks and making them explicit (B)
- structures exploration by means of subtasks (C)
- integrates exploration in to current exploitation activities (C)
- structures exploration by means of subtasks (D)
- accommodate many of those sub-tasks in one completely new function (D)
- separates departments into exploration and exploitation (E)
- forms a mixed team with exploration and exploitation employees for structural integration (E)
- stimulate the interaction between R&D and other department (E)
- allows exploration tasks to be within a full time function (F)
- organize exploration subtasks organization wide (F)
- incorporates a successful accountability structure of exploration and exploitation departments (F)

- separates departments into exploration and exploitation (G)
- form an integration mechanism in which members of both exploration and exploitation are present (G)
- integrate exploitation departments into the conversion of exploration to exploitation (G)
- appointing a head of exploration with knowledge of exploitation (G)
- structure exploration by means of subtasks (H)
- integrating exploitation in the exploration process (H)
- involve exploitation employees from operations by taking them to fairs (H)
- set up meetings that include heads of both exploration(tasks) and exploitation departments (H)

Senior leadership

- utilize each different focus regarding exploration or exploitation within the senior management team (A)
- opening up the conversation about it as much as possible (B)
- establishing a direction decision at the end of a project (B)
- placing the responsibility for exploration with the employees (B)
- utilizing the different focus regarding exploration and exploitation among the senior management team (B)
- weighing exploration opportunities (C)
- applying subsidies to suppress the costs of exploration (C)
- engaging in conversation (C)
- establishing a short presentation round (C)
- weighing exploration opportunities (C)
- selecting a middle management that values exploration and exploitation (D)
- persuade and engage in conversation (D)
- coaching leadership (D)
- engaging in conversation about the purpose and goals of ambidexterity (E)
- accepting there is tension (E)
- explicitly explaining the purpose and goals of ambidexterity (E)
- actively discuss problems or asking for input department wide (E)
- engaging in conversation about the purpose and goals of ambidexterity (F)
- utilize different focuses in senior management (F)
- engaging in conversation about the purpose and goals of ambidexterity (G)
- stimulate information sharing about objectives and ideas (G)
- able to trust and support the employees (G)
- being aware of capacity (G)

- meeting every department from service, product development, production to sales, and ask for their input (H)
- involve employees early in the exploration process (H)
- engaging in conversation about the purpose and goals of ambidexterity (H)

Appendix 4 – Transcripts Organization A-H

This information is strictly classified to guarantee anonymity to the respondents.

To gain further knowledge of this appendix, contact Elise Hoppenreijns.