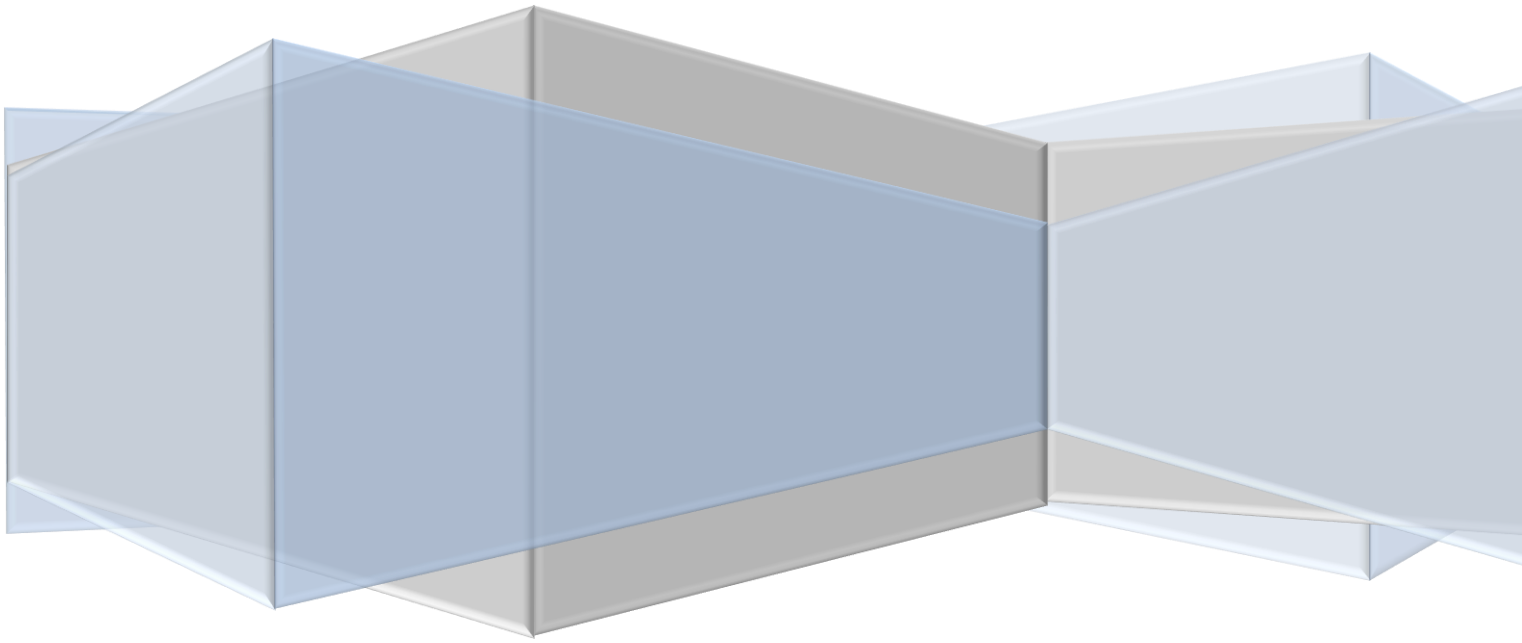
# Balancing between exploration and exploitation in a lean business environment

31 August 2016
Max Joris van Oort
s1120093

1st supervisor: dr. ir. Sandor Löwik
2nd supervisor: dr. Matthias de Visser

UNIVERSITEIT TWENTE.



## Management summary

Since a few decades lean management is a popular production technique. The purpose of lean management is to remove all waste from the production process. Because innovations do not directly add value to the current products organization focus on exploitation at the cost of exploration. By being able to simultaneously performing exploration and exploitation an organization can become ambidextrous. Innovations are vital for organizational survival but because lean organizations do not put a focus on innovative activities this creates a tension. Due to the limited size of small and medium-sized enterprises (SMEs) resource constraints limit the ability to be ambidextrous, moreover do SMEs have a centralized nature which puts extra pressure on exploration. This research examines the tension created by lean SMEs which in exploration and exploitation. The following question is used as the main research question: *How can SMEs which operate with lean techniques handle the tension between exploration and exploitation in order to be successful in short and long term?*

In order to answer the main research question 42 lean SMEs active in the manufacturing industry in the east of the Netherlands were examined. Surveys and interviews were used to gather information. To analyse the information which was gathered at the businesses a fuzzy set Qualitative Comparative Analysis (fs/QCA) was performed. fs/QCA is a method to analyse combinations of factors in relation to a certain outcome. The steps which need to be taken in order to carry out a fs/QCA well are explained in the results section. The results show that there are multiple "paths" for most performance indicators, this means that there is more than one possibility of combinations of factors leading to the form of success.

This paper contributes to the literature in a few ways. It further contributes to the existing literature on SMEs, more specifically in lean management. Moreover does it give an insight in how factors complement each other in facilitating ambidexterity in lean organizations. This information can be useful in practice as it provides managers with valuable knowledge on innovation in relation to successful asset growth, employee growth and product launch. The discussion section further describes which steps organization can take and which factors they should implement to reach their desired form of success as a goal.

# Acknowledgements

De scriptie die nu voor u ligt is het sluitstuk van een gecombineerde Masteropleiding in bedrijfskunde en innovatiemanagement en ondernemerschap. Deze opleidingen worden aangeboden door de Universiteit Twente in Nederland en de Technische Universiteit van Berlijn in Duitsland. Met veel plezier heb ik een aantal jaren aan deze innovatieve universiteiten gestudeerd. De kennis die ik tijdens mijn studies heb opgedaan was zeer nuttig tijdens de uitvoering van dit onderzoek. Dit onderzoek was echter ook prikkelend, het heeft mij veel nieuwe vaardigheden laten ontwikkelen.

Op deze plek wil ik graag mijn begeleider, Sandor, bedanken voor zijn adviezen en ondersteuning. Daarnaast gaat mijn dank ook uit naar Matthias, de tweede begeleider van deze scriptie. De input die zij gegeven hebben bleken van veel betekenis voor de uitvoering van dit onderzoek. Zonder de hulp van mijn begeleiders had deze thesis niet in zijn huidige vorm voor u gelegen.

Speciale dank gaat uit naar mijn ouders en zus die mij hebben gesteund om dit werk te kunnen voltooien. Uiteraard wil ik ook alle bedrijven bedanken die hebben deelgenomen aan dit onderzoek, met name de bedrijven waar ik ook de interviews heb mogen afnemen.

Max van Oort
Augustus 2016

## Table of contents

## Index of figures and tables

## Abstract

**Previous research has shown the existence of different factors which affect the tension of exploration and exploitation in innovation. Some scholars have suggested links between this tension and lean management exist. However, few studies have examined the factors which facilitate ambidexterity in small and medium-sized lean organizations. Performing exploration and exploitation is vital for organizational survival. This research examined 42 small and medium-sized enterprises which are active in the manufacturing industry in the east of the Netherlands. Three ways for organizations to be successful were predefined and analysed in a fuzzy set Qualitative Comparative Analysis in combination with five factors. Data was gathered through surveys and interviews. The analysis led to different solutions for small and medium-sized enterprises to be successful in the short and long term. The findings showed that it is very challenging for organizations to be successful in all three definitions as some performance indicators have contrary success factors.**

*Keywords: lean management, exploration, exploitation, ambidexterity, innovation strategy, innovation tension, formalization, centralization, routinization, staff focus, future revenue, fuzzy set, qualitative comparative analysis*

# 1. Introduction

The current view on lean production techniques has been steadily developed in the last few decades, but it's origins are already older. The 20th century saw some large changes in the methods of industrial production. A major change within the area of industrial production occurred after the second world war in Japan (Melton, 2005). The industrial engineers Taiichi Ohno and Eiji Toyoda developed a socio-technical system at Toyoto Motor Corporation which became known as the Toyota Production System (Beale, 2007). The Toyota Production System was the first step of a system which would evolve to a set of theories known as lean manufacturing (Womack et al., 1990). The focus of lean manufacturing is on continuous improvement. This happens by removing all side-effects of a production process and solely focussing on the main production process which delivers the final product to the customer. Lean management is a hot topic last decades. Being lean is reached through waste elimination, non-value added operations reduction and improve the added value of internal processes. Most organizations work in environments that are changing quickly. By introducing continuous improvement, organizations are trying to stay active in highly competitive markets.

Staying active in highly competitive markets, is it just a matter of continuous improvement or does it require more than that? By producing the same products over and over again, it's possible that products outdated someday, the T-Fords are not produced anymore either. For the survival of a business it needs to work on its incremental and radical innovations, also known as exploitation and exploration. By continuously improving the business processes ("incremental innovation") but also making sure new products, services and ways of production are invented a business can make sure it's just as successful in the future as it is now.

This thesis will explore the tension which exists between exploration and exploitation in a lean environment. Previous studies have pointed out that there are combinations of factors which will facilitate this tension. These factors don't only influence the tension but also influence each other. By applying a fuzzy set Qualitative Comparative Analysis (fs/QCA) the complex relationships in lean small and medium-sized enterprises can be examined and multiple paths leading to success will be presented.

## 1.1 Problem formulation

*"As we are only a small company every day it's a new conflict to assign enough people between production and R&D. I need to reach my monthly targets but also need to pay attention to our future production possibilities, meanwhile does my firm have a strict policy in reducing organizational waste and working lean."*

- Product manager during one of the interviews

A practical problem which occurred to me was the statement above. Many organizations do not know how to spend their scarce resources well and how to put enough focus on radical innovations which cannot be left out at the expense of efficient exploitation. When an organizations works with lean principles this problem becomes even more prevalent as lean management indicates that all waste should be eliminated systematically.

The goal of this study is to examine how small and medium sized-enterprises (SMEs) which operate with lean techniques handle the tension of exploration and exploitation. Exploitation is linked to incremental innovation which is directed at short term efficiency. Exploration on the other hand is linked to radical innovation directed at long term flexibility (March, 1991). Activities include searching for, creating or experimenting with new opportunities. Efficiency in the short term and flexibility in the long term are contrary to each other and creates a tension. Ambidextrous organizations are organizations who are able to create a sustainable competitive advantage. These organizations are able to compete in mature markets and simultaneously develop new products or services for emerging markets (Preda, 2014). Lean techniques are a set of methods derived from the Toyota Production System and have the elimination of waste as a main focus (Womack and Jones, 1990). It wants to create maximum customer value by removing everything from the production system which does not directly add value to the final product (Womack, 2006).

Lean management makes handling the tension of exploration and exploitation harder because of its focus on efficiency. The efficiency, and thus standardization, which is created by lean management stimulate exploitation but reduce exploration. Standardization and a focus on production leaves less possibilities for innovation and creative thinking (Chen and Taylor, 2009). In order to be successful and have a sustainable competitive advantage lean organizations also need exploration instead of only exploitation. Lean management is able to

increase productivity in the short term but decreases the innovation capabilities of an organization in the long term (Chen and Taylor, 2012; Amabile, 1998).

## 1.2 Objective

The objective of this study is to analyse the supposed clash which exists between exploration and exploitation in a lean organization. For many organizations it's a constant struggle how efficiency and innovation can be reached at the same time. Because exploration and exploitation influence both short and long term, both time frames will be taken into account. In the current literature there is no unambiguous agreement on the possibility of organizations to handle the tension of exploration and exploitation, especially in a lean environment. It is argued that balancing exploration and exploitation positively relates to sales growth rates while a relative imbalance is negatively related to growth rates (He and Wong, 2004). How this balance is reached remains an important gap within the existing literature (Chang and Hughes, 2012). In another way is it acknowledged that both exploration and exploitation are essential for organizations but are these actually not able to be performed at the same time due to competition for the same scarce resources. The result from this is that companies still make a choice between exploration and exploitation at the expense of the other (March, 1991).

This study specifically focusses on SMEs because they are relatively under examined in current literature. A lot of research has been conducted on how large multinational companies like British Airways and Apple handle the tension of exploration and exploitation in a lean environment but a gap exists within the literature on the tension in SMEs (Tushman and O'Reilly, 1996). SMEs are an important part of the Dutch economy, out of all companies in the Netherlands almost 99% are considered to be a SME (Roth, 2011). Moreover do SMEs generate about half of the GDP of rich countries and do they employ 75% of the workforce in OECD countries (Roth, 2011). The relative lack of attention to SMEs in current literature on ambidexterity also leaves a disproportionate gap compared to the economic importance of SMEs in not only the Netherlands but also in other major Western economies.

It is vital for a company's survival to be explorative and exploitative. Without optimizing current production techniques and exploitation the current product portfolio a business will be competed out of business. Moreover is exploration necessary as products can get outdated and not up to modern standards. To tackle this problem a company will have to perform radical

innovation. Because simultaneously performing exploration and exploitation are key to success and are at the base of how a company sees its current and future products, exploitation and exploration should both be taken into account in this research. By merely focusing on lean management and exploration the research would be incomplete, as a company cannot only survive on exploration. As March (1991, p. 71) clearly describes: *"Conversely, systems that engage in exploitation to the exclusion of exploration are likely to find themselves trapped in suboptimal stable equilibria. As a result, maintaining an appropriate balance between exploration and exploitation is a primary factor in system survival and prosperity."*

Taking into account the objective of this study the following research question will be asked:

*How can SMEs which operate with lean techniques handle the tension between exploration and exploitation in order to be successful in short and long term?*

This research question will be answered by using a fuzzy set qualitative comparative analysis. In order to answer this research question this thesis will use two sub research questions. The first research question will be answered by conducting an extensive literature study, its purpose is to determine which factors are able to influence the tension. The first sub research question for this study will be as follows:

*Which factors are able to influence the tension between exploration and exploitation?*

The second sub research questions look at the practical side of the factors which were derived in the previous sub question and how they relate to everyday problems in organizations. To answer this research question interviews will conducted. The second sub research question will be as follows:

*How do the factors of this study reflect the practical activities of the organizations?*

This first chapter is an introduction to the topic of this thesis. Chapter two will place the theoretical foundations, these are lean management, the tension of exploration and exploitation in SMEs, success and the different factors used in this research. In chapter three the methodology and operationalization of the variables will be explained. The results are

published in chapter four. Chapter five will discuss the limitations of this study and the future research suggestions. Finally, chapter six will discuss the results and conclude this thesis.

# 2. Theoretical foundations

In this chapter the theoretical foundations for this thesis will be introduced and discussed. The chapter will describe organizational success, lean management and exploration and exploitation (ambidexterity). Finally, this chapter will present the research model and the factors used in this study.

## 2.1 Organizational success

Organization strive for organizational success, but what organizational success is can be interpreted in many different ways. Organizational success in general can be seen as how far an organization is able to pursue its goals. Organizational goals can be defined in multiple ways, profit maximization (Hayter, 2011) or shareholder value maximization (Lazonick and O'Sullivan, 2000) are common goals of organizations. Lingegård and Sandström (2008) state that Levin and Weström (2003) stress out that within the academic world measuring growth in employees is common to measure success. Employee growth is key in determining the success of a small and medium-sized enterprise (SME) (OECD, 2002; Jasra et al., 2011). Growth of the work force of an organization is a better indicator for success than turnover growth (Foreman-Peck et al., 2006).

## 2.2 Lean management

### 2.2.1 Principles of lean

Lean management is a set of techniques which finds it origins in Japan, it's a system which strives for continuous improvement in a production process (Womack et al., 1990). Lean is not reached on an individual level, the principles work on a system wide level and only work in the organization as a whole. The organization has to take a holistic approach to its activities (Fullerton et al, 2014). Even though lean management was originally meant for manufacturing organizations, lean is also applied to service organizations nowadays. Lean management has become an important topic in literature because the technique is seen as a method of best practice (Hampson, 1999), its principles can lead to improved performance and competiveness of an organization as it works on optimizing the organization's processes and eliminating waste. Important within lean management is putting the customer on a central position in the processes, only the activities that directly add value to the product for the customer are allowed to stay in the production process (Womack and Jones, 1996; Büyüközkan et al., 2015).

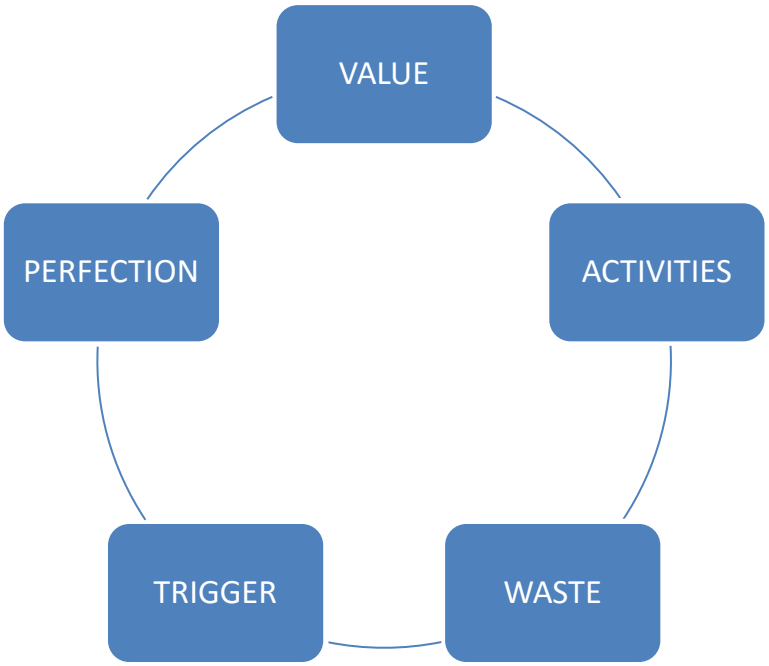



*Figure 1: the five key principles of lean management (Womack and Jones, 1996; Peters, 2015)*

Five key principles play an important role in the elimination of spill overs in becoming *lean*. These key principles are at the base of implementing lean techniques successfully (Womack and Jones, 1996; Peters, 2015). The principles can act as a framework for the implementation of lean management. It is important to know that only small parts in the process add real value for the customer, by acknowledging this recognizing waste will be easier. The identified principles are:

- Specify the added value: only a part of the production process adds real value for the customer. By understanding that this part is small but essential all the other activities that do not add any value can be removed.
- Define all activities in the current process: by knowing how a product is delivered necessary steps can be taken to ensure the customer gets the correct service.
- Eliminate waste: by eliminating all waste in the system you can make sure the product or service can flow easily and without interruption to the customer.
- Let the customer trigger the process: by letting the customer trigger the process products are only produced to customer demand and when the customer wants it. This improves the product flow in the production.

- Strive for perfection: by continuously eliminating waste and improving the flow of the process the customer can be served in a better way. This way, an organisation can become *lean*.

### 2.2.2 Limitations of lean management

Lean management is widely acknowledged as an important production system but it also has its drawbacks. Lean management has benefits in a production process like improving quality, reducing costs and a customer focus (Womack and Jones, 1996) but it is also criticised.. Some critics have stated that lean management lacks overall effectiveness (Näslund, 2008). Lean is usually implemented in an ad hoc and quick way without looking for company characteristics. If the whole company is not reviewed in a holistic way this affects the effectiveness in a negative way. Lean management on itself is also not a new concept (Näslund, 2008), it's just a different version of the previous techniques of just-in-time and total quality management. These techniques are based on the same fundamental approach as lean management, which means lean management cannot be considered to be a technique on itself.

In a lean system production system there are no margins of errors which means it is very hard to become a fully lean organization. Safety stock is non-existent. The costs for implementing lean can be very high as it requires a lot of effort to set up a fully lean system (Fullerton and Wempe, 2008). Moreover does the external environment play a substantial role in lean production. These external factors play a role in for example supplying a firm but cannot always be controlled to the benefit of the company. These external factors are moreover influenced by the dominant company in a supply chain. When supplier dominance exists because of only a few suppliers operating in the market it is not possible to demand extra conditions (Cox and Chicksand, 2005). The same applies to downstream buyers. This means a business is only able to use lean techniques to the fullest when it has both supplier dominance upstream and buyer dominance downstream.

## 2.3 Exploitation and exploration

Exploitation is associated with refinement, production, efficiency and execution (March, 1991). Exploitation within a business context are incremental innovations. Small changes to products can be made but inventing new products does not fit into these actions

(Andriopoulos and Lewis, 2009). Its main purpose is to continue with the current product portfolio and using this as effective as possible. All uncertainty is removed from the process, only current knowledge is put to use. Exploitation is necessary for short term survival of the company, it's directed at short term efficiency.

Exploration is associated with search, risk taking, experimentation, flexibility and innovation (March, 1991). In a rapid changing world, companies are forced to come up with new ideas every day (Dunk, 2011). In order to stay competitive and ahead of competition these organizations should not stick to the capabilities they already have but make sure they develop new ways to align in this ever changing world (Zhang, 2011). Exploration is necessary to stay flexible and survive in the long term (March, 1991). Exploration can be seen as the opposite of exploitation, it is not only directed at products but also at entering new markets with existing products (He and Wong, 2004). Exploration is seen as risk taking to flexibility and discovery (March, 1991). Exploration works in environments which are dynamic and have an open culture to support generating ideas (Chang et al., 2011). The future results of exploration activities is insecure because demand is not known (Greve, 2007), the current exploitation activities of a company are easier to forecast.

Pursuing exploitation and exploration simultaneously is important, yet can be challenging for firms. Exploration and exploitation are a central part in the organization's view of old certainties and new possibilities (March, 1991). Explorative innovation and exploitative innovation are both forms of innovation. Innovation means transforming new knowledge into new or better products, services or processes. Exploration and exploitation can be seen as contradicting as they need to make use of the same limited resources. A tension between these two actions exist as too much focus on one of the two will harm the other (He and Wong, 2004). For the continuity of a business both exploration and exploitation are important as the ability to build upon current capabilities and meanwhile being able to develop new capabilities is essential to the firm's ability to compete overtime (Teece et al., 1997). A so-called "balance" (ambidexterity) is necessary (March, 1991). Ambidexterity means that an organization is able to simultaneously perform exploration and exploitation. To achieve an ambidextrous balance active management involvement is necessary (Raisch et al., 2009). Ambidexterity does not mean both exploration and exploitation get the same amount of attention and resources but it means both get *enough* attention and resources. A stable balance between exploration and exploitation is called an equilibrium. A pure equilibrium with equal

resources for both sides of the innovation scale is very rare, as organizations tend to favour one over the other. This is not a problem as long as an organization can be innovative and effective at the same time. Exploration and exploitation are competing for the same scarce resources (information, knowledge, skills, time, money). To achieve long term success both exploration and exploitation need to adapt to the business needs.

## 2.4 Small and medium-sized enterprises

Small and medium-sized enterprises (SMEs) are not only distinct from large organizations because of their size but also in the different challenges they face. This chapter will look more into these challenges which play an important role in doing business for an SME.

Small and medium-sized enterprises are occasionally called the "engine of the economy" (Rijksoverheid, 2014). SMEs are also considered to play a key role in radical innovations (Cosh and Zhang, 2012). Most of the literature which is available on ambidexterity has a focus on large companies. Large companies however, have a lot more resources (for example: time, money and knowledge) available to support them in being ambidextrous. SMEs feel, because of their smaller size, a larger constraint on the resources which are available to them. Both exploration and exploitation will compete for the same scarce resources (March, 1991). Large companies are able to balance their strategy and simultaneously perform exploration and exploitation.

SMEs are less able to be ambidextrous but also profit less from being ambidextrous (Voss and Voss, 2013). For organizations with more resource constraints it is more beneficial to follow a balanced ambidexterity while organizations who have more access to internal or external are more beneficial following a combined ambidexterity. When resources are sufficient, large organizations don't have to make choices between trade-offs of exploration and exploitation (Cao et al., 2009).

### 2.4.1 Ambidexterity in a lean SME

Exploration and exploitation take in different role in a SME compared to a large firm. The ambidexterity of exploration and exploitation is important in balancing the strategy for short-term efficiency but also flexibility in the long-term (March, 1991; He and Wong, 2004). Resources in a SME are limited which means they cannot always cover all aspects of innovation. Resource constraints are a major reason for organizations to follow a focus

innovation strategy (March, 1991). Due to limited size of SMEs compared to large competitors the restrains of the amount of available resources puts pressure on the innovation system (Terziovski, 2010). In a lean environment all activities that do not directly add value are removed, this includes activities that could possibly generate ideas (Chen and Taylor, 2009). Organizations that focus on productivity, compliance with the regulations and turn the workplace into one of control and surveillance will (unintentionally) annihilate all innovative behaviour (Green, 1999).

Lean management focusses on standardization and efficiency, this means it will enhance exploitation at the cost of exploration. The sole focus on effectiveness and standardization of the work place will reduce job commitment by employees (Chen and Taylor, 2009). Passion for work is lost and an employee will stick to its pure job description. A reduced amount of employee involvement and standardized job characteristics impact exploration negatively (Al Hasan and Al-Zu'bi, 2014). Empowering employees to be able to organize their own work and solve their own problems is key in the ability of employee learning. The impact of lean was observed by Mehri (2006) in the Toyota production system, the design of the system negatively influenced creativity and innovative behaviour of employees.

Due to the limited size of SMEs do resource restraints have a different effect than they have in larger corporations. Innovation ambidexterity is a large challenge for SMEs because of resource constraints which favour exploitation and can decrease employee learning. Moreover is it suggested that the centralized nature of many SMEs increase exploitation as it's seeking to react quickly with current competencies to market uncertainties (Jansen et al., 2006; Chang et al., 2011).

## 2.5 Research model

The research model which is used in this thesis combines the challenges for SMEs as stated in the previous chapter. Not only a tension exists in being ambidextrous but also in being able to perform exploration and being lean. Ordanini et al. (2013) and Cheng et al. (2012) suggest in their work that there are different paths leading to success in innovative organizations through combinations of factors, these factors are complimentary to each other (Hodson and Roscigno, 2004). The existence of combinations of factors leading to success has widely been acknowledged (Mom et al., 2006; Pandey and Sharma, 2009; Voss et al., 2008). Reichert et al. (2016) suggest there are possible combinations of factors which could influence

exploratory performance. This previous research points in a direction of different factors which influence the performance between exploration and exploitation but also the overall success of an organization. Currently, the view of the combinations of these factors are as a facilitator for exploration and exploitation. So these factors enhance the possibility to combine exploration and exploitation in an organization. Sierra and Malone (2003) furthermore suggested that paths leading to success are heavily influenced by lean management in the manufacturing industry. By taking into account previous research which suggests the existence of combinations of factors leading to an organization's success but also the influence of these factors on exploration and exploitation in a lean environment this research will combine these parts and look at the tension of exploration and exploitation in a lean environment. It's expected from previous studies that there are factors which facilitate or hinder ambidexterity of exploration and exploitation.

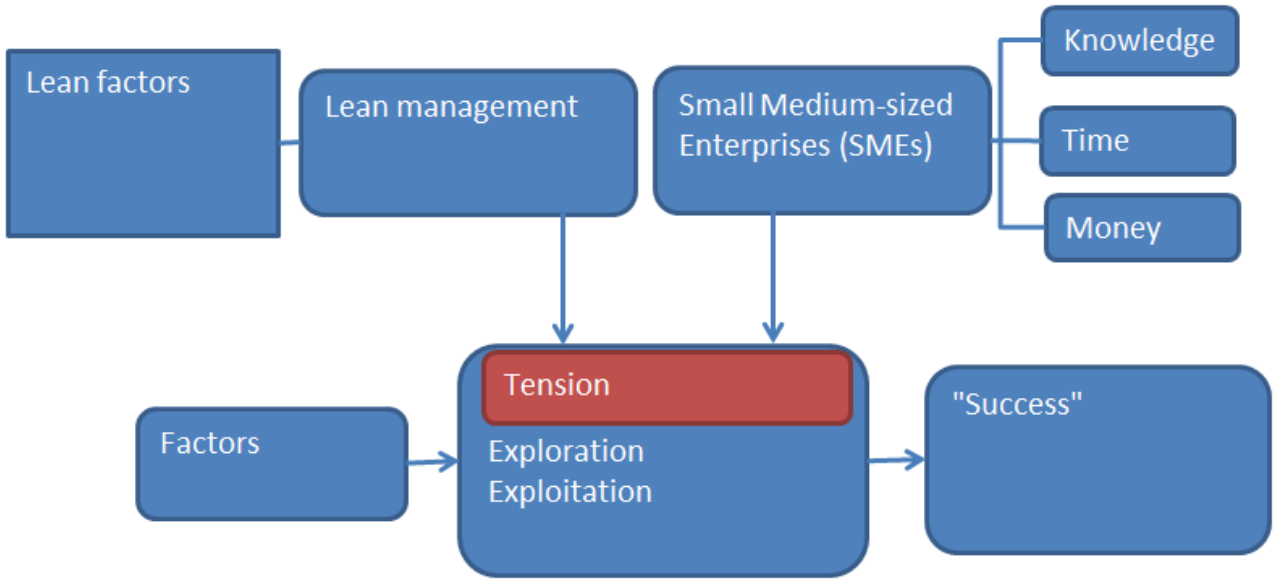



*Figure 2: planned research model*

The proposed research model for this thesis is placed above. This study focusses on the tension of exploration and exploitation, this tension is either positively or negatively facilitated by certain factors. These factors will be described in the next paragraph. Lean management and being a Small Medium-sized Enterprise influence the tension of exploration and exploitation as well. The outcome of the tension of exploration and exploitation has a certain level of success. By being ambidextrous and being able to simultaneously perform exploration and exploitation a company is expected to be successful.

## 2.6 Factors

Different factors influence the tension of exploration and exploitation. To answer the sub question which was stated at the end of the previous paragraph an extensive literature study is performed. Based on literature about different factors on innovation management, five different factors were chosen. These five factors will be used in relation to their ability to influence the tension which exists in the ambidexterity between exploration and exploitation. Defining which factors are important in their relation to the tension between exploration and exploitation in a lean environment is an essential part of this research. The factors were all chosen because of their ability to influence exploration and exploitation. Several studies have already linked these factors to innovation management but have not reviewed these factors in a lean business environment. By selecting these factors it is expected that they have the most important influence within this research and are thus most suitable to examine.

### *Centralization*

Centralization relates to centralization in decision making (Chang et al., 2011). It defines in which way the power in an organization is divided. In a centralized organization the power is hold by top management and all decisions are made by the same top management. In a decentralized organization, departments have more power to decide by their own. Decentralizing an organization makes the organization better and quicker able to fulfil the customer's needs (Sheremata, 2000). SMEs tend to be very centralized which has a negative impact on ambidexterity in SMEs, the centralized nature of SMEs gives it a focus on exploitation at the cost of exploration (Jansen et al., 2006).

### *Staff focus*

With a clear task description it's easier for employees to stick to their day-to-day work (Mahr, 2010). By shifting people between departments an organization can influence it's exploration and exploitation. Hiring out activities is also included in staff focus as a clear distinction between exploitation (internal) and exploration (external) is being made (Tønnessen, 2012). Due to the smallness of many SMEs is it a large challenge to stick to staff focus, SMEs don't have enough staff to make a large distinction between tasks, in general employees will have the responsibility for both explorative and exploitative tasks.

### *(Future) revenue*

Revenue is important for an organization as it needs cash flowing in to pay its current responsibilities (La Rocca et al., 2016). Today's operations generate revenue but it's not sure if exploration will generate future revenue (Andriopoulos and Lewis, 2009). Firms, especially

firms with limited financial abilities, will therefor focus on exploitation of a current product portfolio and will not pay enough attention to future possibilities. SMEs however, are in many occasions family-owned businesses (Madueño et al., 2011). Family-owned businesses are very future or next generation oriented which means (future) revenue will facilitate the tension of exploration and exploitation.

### *Routinization*

Routinization is used to simplify work tasks and give structure to the production process (Chen and Taylor, 2009). It defines to what extent work is formalized and standardized in an organization (Daft et al., 2010) Exploration is reached through trial and error and creativity (Hoerl and Gardner, 2010) which gets minimalized in standardized work positions. Routinization which leads to standardization reduces job commitment (Chen and Taylor, 2009), it is expected that routinization will have a negative effect on the tension because of a focus on exploitation.

### *Formality structure*

Formalization reflects in which way procedures in an organization are arranged within the organization. Formalization in an organization relies on written rules and procedures which are formally institutionalized in a business (Khandwalla, 1977; Jansen et al., 2005). Too much formalization, also seen as too much bureaucracy, reduces exploration as new knowledge cannot be processed quickly (Weick, 1979), which makes formality an important challenge for a SME.

# 3. Methodology and operationalization

This chapter focusses on the methodology used in this study, information about the sample will also be presented. The choice for the research method (fs/QCA) will also be discussed in this chapter. Finally, the variables will be operationalized and the final research model will be presented.

## 3.1 Methodology

Most of the data in this thesis is gathered through questionnaires, in a later stage interviews are also be conducted. The questionnaires are divided into four different parts (see appendix). The first part of the survey is focussed on the way exploration and exploitation are used within the business. Part two looks at several different factors which influence the tension between exploration and exploitation. Part three is about measuring the implementation of lean in an organization. Finally, the last part of the survey looks at how resource scarcity plays a role in an SME. The scales of the questionnaires differ between the different sections but follow a progressive pattern. The answer options were chosen with the use of the commonly used 5 or 7-point Likert-type scales (Dawes, 2008). Questions according to this scale system give uniform answers which can be compared in a cross-sectional study. In the second part it is possible to go deeper into the understanding of how the business is run and how the participant sees the strong and weak points.

In the survey research, innovative technical organizations will be examined. The surveys will be spread digitally. These are businesses that 1) make use of a manufacturing process and 2) are active in an innovative manner, this means creating new goods or services for customers. Technical organizations are specifically chosen as they make use of a manufacturing process, because lean management originated in the manufacturing industry it is easier to review how lean a technical organization is. Moreover is exploration and exploitation much more important in the manufacturing industry then in the service industry (Gallouj, 2002). So by conducting this research technical organizations were the better choice. Organizations will be selected by their ability to innovate and the way they organize lean techniques. The organizations operate within the Netherlands. The participants have to be in touch with lean management and exploration and exploitation within the company. Preferably these people have a different background on the work floor, this can be a workplace/finance manager or someone responsible for research and development. There will be a focus on SMEs, defined

as companies up to 250 employees. As my focus is on SMEs it is likely that the whole organization gets in touch with lean management and exploration and exploitation.

### 3.1.1 Sample

For this research I will look at small and medium sized-enterprises, in short SMEs. The definition for SMEs varies between countries but for this study the official definition of the Dutch industry organization will be used. This means that a small organization is an organization with less than 50 employees and a mid-sized organization has between 50 and 250 employees (MKB Nederland, 2016). Thus an SME has less than 250 employees.

In this research only production companies will be taken into consideration. As lean management originated from this industry and is most related to the concept it will contribute to a better understanding of the overall work. Because products can get outdated very quickly (Cronin, 2010) production companies are keen in making sure they innovate.

Businesses were selected through different sources, there are varying lean organizations and lean networks which either support businesses or have lean members. Through contact with these organizations and information displayed on their websites the lean organizations for this thesis were selected. The backgrounds of the respondents and their industry differs, the key data from the questionnaires are found in the table below.

| Case | Industry | Position respondent | Age respondent | Empl. years | Establish-ment | Case | Industry | Position respondent | Age respondent | Empl. Years | Establish-ment |
|---|---|---|---|---|---|---|---|---|---|---|---|
| **Company 1** | Metal | CEO | 61 | 32 | 1984 | **Company 22** | Metal | CEO | 52 | 26 | 1910 |
| **Company 2** | Machinery | CEO | 45 | 14 | 2002 | **Company 23** | Metal | Quality officer | 31 | 5 | 1981 |
| **Company 3** | Electronics | Production manager | 36 | 4 | 1970 | **Company 24** | Printing | CEO | 43 | 17 | 1999 |
| **Company 4** | Machinery | Office manager | 26 | 1 | 2002 | **Company 25** | Metal | Quality officer | 25 | 3 | 1990 |
| **Company 5** | Automotive | Production manager | 37 | 4 | 2000 | **Company 26** | Automotive | Product developer | 46 | 1 | 1985 |
| **Company 6** | Automotive | Product developer | 32 | 2 | 2010 | **Company 27** | Metal | Product manager | 32 | 7 | 1931 |
| **Company 7** | Metal | CEO | 52 | 2 | 1993 | **Company 28** | Machinery | Product manager | 57 | 19 | 1956 |
| **Company 8** | Agriculture | Lean manager | 42 | 7 | 1939 | **Company 29** | Agriculture | CEO | 53 | 32 | 1980 |
| **Company 9** | Machinery | Production manager | 32 | 3 | 1982 | **Company 30** | Metal | Production manager | 53 | 30 | 2001 |
| **Company 10** | Automotive | Product developer | 36 | 10 | 1928 | **Company 31** | Packaging | Production manager | 54 | 10 | 1952 |
| **Company 11** | Machinery | CEO | 62 | 37 | 1979 | **Company 32** | Electronics | Production manager | 48 | 8 | 2008 |
| **Company 12** | Maritime | CEO | 57 | 23 | 1900 | **Company 33** | Furniture | Product manager | 26 | 6 | 1888 |
| **Company 13** | Machinery | CEO | 48 | 5 | 1955 | **Company 34** | Machinery | Lean manager | 43 | 8 | 1854 |
| **Company 14** | Metal | Commercial manager | 38 | 12 | 1929 | **Company 35** | Metal | Lean manager | 45 | 9 | 1961 |
| **Company 15** | Metal | Lean manager | 49 | 1 | 1930 | **Company 36** | Automotive | CEO | 53 | 26 | 1969 |
| **Company 16** | Pharmaceutics | Production manager | 23 | 5 | 1993 | **Company 37** | Metal | Process manager | 43 | 9 | 1918 |
| **Company 17** | Metal | Product developer | 57 | 7 | 1935 | **Company 38** | Metal | Production manager | 57 | 30 | 1938 |
| **Company 18** | Metal | Lean manager | 29 | 1 | 1900 | **Company 39** | Automotive | Product manager | 32 | 2 | 1990 |
| **Company 19** | Metal | Production manager | 36 | 16 | 1963 | **Company 40** | Metal | Product developer | 34 | 5 | 1973 |
| **Company 20** | Machinery | Production manager | 47 | 9 | 1974 | **Company 41** | Packaging | CEO | 62 | 22 | 1994 |
| **Company 21** | Machinery | Business analyst | 23 | 1 | 1911 | **Company 42** | Paint | CEO | 48 | 9 | 1970 |

*Table 1: key data questionnaires*

### 3.1.2 Strategy

The strategy which is used in this thesis is to perform questionnaires and based on the gathered data go more in depth through some interviews. Data acquired through interviews and questionnaires will be handled with great care and will not be shared with third parties. When preferred by the interviewees, the exact answers of interviews will not be shared. This is done on purpose to keep an open and honest conversation. For the first part of this thesis data was acquired through questionnaires, questionnaires give the ability to generate a larger pool of data suitable for comparison between different organizations. This was necessary to determine how the factors appear in organizations. The questionnaire was sent to 183 companies in the east of the Netherlands, within a week 48 companies responded of which 40 responses were complete and 8 responses were empty. After one week a reminder was sent to the remaining businesses which had not yet filled in the questionnaire, after this reminder there were 5 more responses out of which 2 were fully filled in. The 2 questionnaires which were filled in after the reminder do not differ from the questionnaires which were filled in immediately. In total there were 53 responses recorded which is a response rate of 28,9%. The response rate of valid responses is 22,9%.

After the questionnaires were analysed, interviews were held. This method was chosen to get a better understanding of the results and how these take place in two of the companies who took part in the questionnaire as well. The owner of company 22 was interviewed for about 1,5 hours. The production manager and an employee of the production preparation department of company 30 were separately interviewed for 1,5 hour. A set of interview questions were prepared but the interviewer was able to ask other questions too and ask further when necessary. These organizations were selected on how they fit into the data, company 30 was less successful than company 22. The solution in which the organizations fit can be seen in chapter four in table XII.

### 3.1.3 Qualitative Comparative Analysis

Qualitative Comparative Analysis (QCA) is a relatively new research tool which is very suitable for comparative case studies (Schneider and Wagemann, 2010). Case studies help to become familiar with a large set of data in a fair amount of time and by applying a QCA it is possible to cluster cases in certain paths which will lead towards a shared outcome. A QCA gives a very in-depth analysis of the differences but also similarities of a group of cases.

A more specific tool in a Qualitative Comparative Analysis is the use of a fuzzy set. The inspiration to create this tool (Ragin, 2008) was that certain variables can be labelled as a degree. More practically, in this research for example can organizations be fully lean or not lean at all. But by stating the variable "lean management" so bold it will be likely (almost) all firms will be labelled as not lean at all which would be harmful to the results of the thesis. So in order to get a complete understanding of the situation in the cases as is, it is necessary to use a fuzzy set instead of a normal Qualitative Comparative Analysis.

Using a fs/QCA is a very suitable research tool to use in this thesis. There is a large pool of data of several cases which needs to be analysed and compared to be able to see if certain factors influence how organizations handle the tension between exploration and exploitation. fs/QCA is best suitable to tackle this problem because of the complex nature of organizations (Fiss, 2011). By translating the scores of the questionnaire into data which is suitable to run a fs/QCA different typologies between the cases will be able to be spotted.

### 3.1.4 Common method variance

Common method variance can occur within self-reporting survey research, it's a bias in which variance in answer cannot be attributed to the actual real life situation but to the variance in the measurement method. It's a potential problem as it reduces validity and can either support non-existing relations or neglect existing relations. Potential sources for common method variance can occur when respondents quickly fill in equal answers to finish the survey in a rush, answers on previous questions influence the choice of answer on a (un)related question (Podsakoff et al., 2003), results are being inflated or deflated against their actual situation. The real effects of common method variance are not undisputed (Spector, 2006) but will be tried to be tackled as much as possible.

Unfortunately obtaining information from the respondents separated by time, space and method will not be possible for this research as it relies on the willingness of the respondents to take the survey and provide enough information. On the other hand will the survey be handed anonymously and with great care, moreover will it be stressed that right or wrong answers do not exist. The survey will be split into two versions with counterbalanced questions, this way the potential interference between the question sets will be reduced. The different topics of the sets are also mixed so the respondents are kept sharp. Some question

sets are split into two and placed on a new page so participants can fully concentrate on a limited amount of questions. Respondents with sufficient knowledge are asked to fill in the survey to be sure a suitable answer is retrieved.

## 3.2 Operationalization

In the conceptual model which was proposed in the introduction several parts were still considered to be unknown or a "black box". The gaps which were still open in the model will be determined in this part of this thesis. In this chapter all concepts will be further defined and operationalized.

### 3.2.1 Lean management

There are multiple ways to measure the leanness of an organization. An important part in this research is to measure to what extent a business performs in a lean manner. As the extent to which lean management is implemented plays an important role in the way the tension between exploration and exploitation is created. Li et al. (2005) used a method to review pull production, short lead times from suppliers, set-up times, continuous quality improvement and streamlining. These factors were combined into the "internal lean practices". The extent to which lean tools are implemented varies between industries (Krishnan and Parveen, 2013) but lean management is used across all sectors. The operations of lean management were captured in 48 tools by Shah and Ward (2007) which was further specified to ten dimensions to measure how far businesses operated lean. These ten dimensions will be used in this research to measure lean within a SME. The ten dimensions all weight the same in the number which is given for lean. Three of these dimensions measure involvement of the supplier, one measures involvement from the customer and the remaining six measure internal issues of the firm. The dimensions are:

- Supplier feedback: measures if organization gives feedback to suppliers about performance
- Just-in-time delivery by suppliers: measures if the right quantity at the right time in the right place
- Supplier development: measures if suppliers are involved in the production process of an organization
- Customer involvement: measures the focus of an organization on the needs of the customers
- Pull: measures just-in-time production

- Continuous flow: measures the easiness of production flow through an organization
- Set-up time reduction: measures downtime between two different production types
- Total productive/preventive maintenance: measures downtime of production due to maintenance, goal is to achieve high availability of equipment
- Statistical process control: measures the extent of units without errors are delivered
- Employee involvement: measures the involvement of employees in solving problems

### 3.2.2 Exploration and exploitation

An important aspect of this research is to examine to what extent the tension between exploration and exploitation can be experienced in an organization. Feeling the tension does not relate to any specific divide between the two terms but can occur at either focus or at complete ambidexterity. In order to measure how exploration and exploitation are used in a company a set of questions which were based on Jansen et al. (2006) were used.

### 3.2.3 Resource scarcity

Within a SME all departments rely on the same limited amount of resources. Because of scale problems which small organizations face does resource scarcity have a larger impact in setting priorities in a SME than in a larger organization. Several factors are determined which influence setting priorities, these are information, knowledge, skills, time and money (financial resources) (Stewart, 1998; Gupta et al., 2006). To achieve long term success both exploration and exploitation need to adapt to the business needs. It is also argued that because of the resources freely available in the external environment not all resources necessary for exploration and exploitation are scarce (Gupta et al., 2006). This study uses knowledge, time and money to determine if resources are widely available within the examined companies, the set of questions were based on Zauberman and Lynch (2005), Kraatz and Zajac (2001) and Holsapple and Joshi (2001). These resources were asked separately and will also be taken separately as three variables in the analysis.

### 3.2.4 Factors

#### *Centralization*

Centralization is measured by using the items of Jansen et al. (2006), Hage and Aiken (1967) and Dewar et al. (1980). This part of the research measures whether employees are free in making their own decisions and if someone up in the hierarchy of the company needs to approve big or small decisions.

#### *Staff focus*

Staff focus is a factor to determine whether employees are able to work on innovative capabilities. Several propositions (Neely et al., 2002; McKenna, 1997) will be stated for the participants in the survey to determine if staff also gets the ability to work on either exploration or exploitation. It's to examine if innovation also gets priority within a firm or that staff is shifted away from the research department.

#### *(Future) revenue*

To measure the (future) revenue focus of an organization it's important to look at the way the organization sees its future. When an organization has a strong focus on future products, services and success it will already need to take action today. (Future) revenue measures if the organization is future oriented. If the future performance already plays an important role in current innovation activities. (Future) revenue is measured by several propositions (Ward, 1997; Storey, 1994).

#### *Routinization*

Routinization is measured by using the propositions of Hage and Aiken (1967) and Dewar et al. (1980). This part of the research measures whether employees work on routine, if tasks are split up and if work is the same from day-to-day. By measuring if work is repetitious the amount of routinization can be determined.

#### *Formality structure*

The formality structure is measured by using the propositions of Jansen et al. (2006), Hage and Aiken (1967) and Dewar et al. (1980). This part of the research measures if the work environment of a firm is formal or informal. The formality of a work environment determines if procedures and bureaucracy drive the organization in following written procedures and rules. Formality is an important indicator of the structure and work place design of a firm.

### 3.2.5 "Success" of a firm

Organizations, including SMEs, strive to be successful. If an organization is not able to handle the ambidexterity between exploration and exploitation it will not be successful. By handling the ambidexterity between exploration and exploitation well a business can grow. In this paper I will use three ways to measure how successful an organization is. The first definition of success used are employee and asset growth over a three year period. Lingegård and Sandström (2008) state that Levin and Weström (2003) stress out that within the academic world measuring growth in employees is common. Employee growth is key in determining

the success of an SME (OECD, 2002; Jasra et al., 2011). In this thesis employee growth is defined as the growth/decline in employees in the last two years. Growth of the work force of an organization is a better indicator for success than turnover growth (Foreman-Peck et al., 2006).

The second definition is asset growth in a business. Asset growth is key in predicting future abnormal returns thus future success (Cooper et al., 2008). Data for asset and employee growth will be taken from balance sheets which are available at the Dutch chamber of commerce, the Kamer van Koophandel. A three year period (Lingegård and Sandström, 2008) is essential in looking at the span of growth as there could be general fluctuations within a one or two year period. By looking at three years a trend can be noticed.

The third definition is looking are product launches by a business. Through open sources, like newspaper articles it can be examined how many product launches have taken place in the last 3 years and will take place in the next 3 years. This way the data gathered on product launches will be independent and reliable. Launching products is an essential part in being successful at exploration and is a key element in sustainable growth (Hart, 1993; Benedetto, 1999). Product launches should happen occasionally in a successful innovative firm (Baker, 2001).

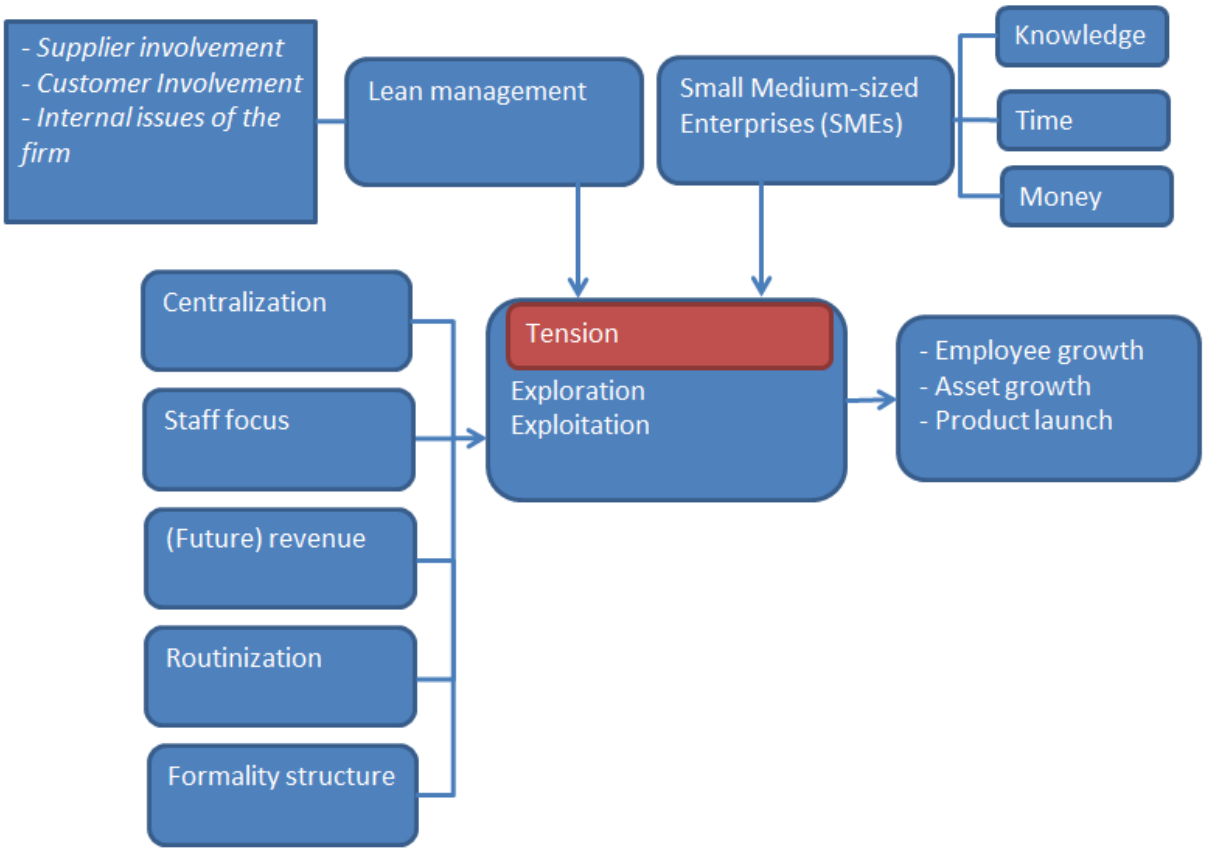



*Figure 3: research model*

In line with the factors which were determined and the way lean management can be measured the final research model is proposed. The model shows the relationship between centralization, staff focus, (future) revenue, routinization and formality structure how they positively or negatively facilitate the tension of exploration and exploitation. Moreover is lean management devided in the three parts: supplier involvement, customer involvement and the internal issues of the firm. The problems which SMEs face are determined by scarcity of knowledge, time and money. Lean management and the characteritics of SMEs also influence the tension between exploration and exploitation. Whether a business is successful in handling ambidexterity is determined by employee growth, asset growth and product launches.

# 4. Results

This chapter reviews the results which were gathered through the surveys. Cases will be compared on a few key data and by using the fs/QCA program of Ragin et al. (2006). The chapter starts off with a paragraph about the reliability of this study and an overview of the steps which are taken in the two-step approach of a fs/QCA and the analysis itself. This chapter finishes by answering the last sub research question.

## 4.1 Reliability

Reliability relates to the overall consistency of a study, it is therefore important to test if results will be similar under similar conditions. Even though this thesis has a relatively small number of cases it is important to review the reliability of this study. Cronbach's alpha is a measure of internal consistency (UCLA, 2016), it's considered to be a measure of scale reliability. The reliability of a test should be measured before any conclusions can be drawn (Tavakol and Dennick, 2011). A Cronbach's alpha between 0,70 and 0,95 is considered to be good in general whereas a number between 0,60 and 0,70 is questionable (Nunnally and Bernstein, 1994). Most of the variables in this research fall into the good category. However, due to the low amount of questions and items per variable the remaining variables can also be considered to be reliable. Cronbach's alpha minimum bound can be lowered to 0,60 (Slavec and Drnovsek, 2012). Even though the variables with a Cronbach's alpha between 0,60 and 0,70 will be accepted for this study, they should be viewed with caution (Hulland, 1999).

| Variable | Number of items | Mean | Variance | Cronbach's alpha |
|---|---|---|---|---|
| Exploration | 5 | 3.22 | 0.746 | 0.717 |
| Exploitation | 7 | 3.18 | 0.249 | 0.679 |
| Centralization | 4 | 5.38 | 0.766 | 0.650 |
| Staff focus | 4 | 3.00 | 2.196 | 0.723 |
| (Future) revenu | 4 | 3.43 | 1.642 | 0.685 |
| Routinization | 4 | 4.20 | 1.484 | 0.651 |
| Formality structure | 5 | 4.18 | 1.665 | 0.755 |
| Lean management | 10 | 2.86 | 0.395 | 0.800 |
| Time | 3 | 4.39 | 1.637 | 0.757 |
| Knowledge | 4 | 3.92 | 1.034 | 0.634 |
| Money | 4 | 3.84 | 1.302 | 0.651 |

*Table 2: reliability*

The table below shows an schematic overview of all the steps which were taken in this fs/QCA analysis of Ragin (2008). It describes what is happening in each step through which activities. The table is taken from Löwik (2013) and based on Devers et al. (2013).

| **Step #** | **Description** | **Activity** |
|---|---|---|
| Step 1 | Calibrating the fuzzy set | - Software calibration method |
| Step 2 | Analysis necessary conditions | - Calculate software necessary conditions<br>- Apply threshold of ≥ 0.70 |
| Step 3a | Remote causal conditions | - Determine remote conditions based on theoretical arguments<br>- Calculate software fuzzy set truth tables<br>- Select case frequency ≥ 1<br>- Select case consistency ≥ 0.70<br>- Select parsimonious model as solution |
| Step 3b | Proximate causal conditions | - Determine proximate conditions based on theoretical arguments<br>- Calculate software fuzzy set truth tables for each remote condition with all proximate conditions<br>- Select case frequency ≥ 1<br>- Select case consistency ≥ 0.70<br>- Select complex model as solution |
| Step 4 | Solutions for remote and proximate conditions | - Determine the proximate causal condition (3b) for every remote causal condition (3a)<br>- Calculate software fuzzy set truth tables for each combination of remote and proximate conditions<br>- Select case frequency ≥ 1<br>- Select case consistency ≥ 0.70<br>- Select intermediate model as solution |
| Step 5 | Determine final configurations | - Select solution formula with highest coverage<br>- Asses quantity of cases uncovered<br>- Add solution formulas until enough cases are covered<br>- Minimize solution formulas when possible<br>- Repeat steps 2 to 5 for negated outcome |

*Table 3: schematic overview of the steps necessary for a fs/QCA analysis (Löwik, 2013; Devers et al., 2013)*

## 4.2 Step 1: calibration

Calibration of a data set is essential in performing a fs/QCA. In the first part of the analysis no calibration had been used yet, these were just the uncalibrated results which were acquired through the survey. The calibrating of the data set is giving a meaning to the answers which are given by the participants in this research, a ratio or interval variable will be transformed into a fuzzy set using this method. The values of the conditions need to be transformed into numbers which need to be anywhere in between 0 and 1. 0 means the answer is not applicable at all in the organization and when the answer is 1 it means falls into the category of fully applicable within the business (Ragin, 2000). It is possible to use uncalibrated fuzzy sets but these are inferior to calibrated fuzzy sets (Ragin, 2008).

In this research the calibrating technique which is offered by the fs/QCA 2.0 software (Ragin, 2008) is used. The data acquired in this research are fluid and can take any number in between 0 and 1. It's a so-called "continuous" fuzzy set (Ragin, 2008). Due to the continuous character of the set the three thresholds for the calibration were set at the percentiles of 25%, 50% and 75%. Values are distributed normally, this means 0 is no membership while 1 is full membership (Ragin, 2008). Up to the first quarter is set as full non-membership while the top quarter is full membership. The thresholds for the percentiles are shown in the table in the next chapter.

### 4.2.1 Conditions

Setting frequency and consistency thresholds refine the data which can be produced in a truth table in the fs/QCA programme (Ragin, 2008). In frequency thresholds it is shown to what extent the combinations of the different factors in this research are also empirically existent (Leischnig et al., 2014). A cut-off point for the frequency threshold ensures that a minimum of observations also occur. A cut-off frequency point of 1 is recommended by Ragin (2008) and will be used in this study as well.

The second condition is the consistency threshold. The consistency threshold is the degree to which the outcome is sufficient according to the combination of conditions used in the test (Schneider and Wagemann, 2002). A cut-off point for consistency of 0.70 is suggested. This cut-off point is lower than the 0.75 or 0.90 which is used in other studies but a lower cut-off point for consistency makes sure no cases which might also be interesting will be cut-off. The

cut-off point of 0.70 is used during the whole study. ~ means the factor or condition is negated. The table below shows the descriptive of the variables in this study.

| | | | | | Percentiles | | |
|---|---|---|---|---|---|---|---|
| **Variable** | **Mean** | **Standard deviation** | **Min.** | **Max.** | **25%** | **50%** | **75%** |
| Exploration | 3.22 | 0.86 | 1.25 | 5.00 | 2.80 | 3.40 | 4.20 |
| Exploitation | 3.18 | 0.50 | 1.61 | 4.11 | 2.80 | 3.20 | 3.60 |
| Centralization | 5.38 | 0.87 | 2.08 | 6.70 | 4.50 | 5.30 | 5.90 |
| Staff focus | 3.00 | 1.48 | 0.89 | 5.83 | 2.10 | 3.10 | 4.00 |
| (Future) revenue | 3.43 | 1.28 | 0.60 | 5.25 | 2.50 | 3.40 | 3.90 |
| Routinization | 4.20 | 1.22 | 1.79 | 7.00 | 3.20 | 4.10 | 5.20 |
| Formality structure | 4.18 | 1.29 | 1.43 | 6.52 | 3.10 | 4.20 | 5.00 |
| Lean management | 2.86 | 0.63 | 1.57 | 4.64 | 2.30 | 2.80 | 3.40 |
| Time | 4.39 | 1.28 | 0.40 | 7.00 | 3.40 | 4.40 | 5.70 |
| Knowledge | 3.92 | 1.02 | 1.79 | 7.00 | 3.30 | 3.90 | 5.20 |
| Money | 3.84 | 1.14 | 1.45 | 7.00 | 3.10 | 3.80 | 5.30 |
| Success employee growth | 1.14 | 2.68 | -4 | 9 | 0.00 | 1.10 | 2.90 |
| Success asset growth | 6638.00 | 8609.00 | -8541.00 | 25671.00 | 0.00 | 6000.00 | 10000.00 |
| Success product launch | 0.69 | 0.40 | 0.00 | 1.00 | 0.00 | 0.60 | 0.90 |

*Table 4: descriptive of variables. Exploration, exploitation and lean management are measured on a 5-point Likert scale. Centralization, staff focus, (future) revenue, routinization, formality structure, time, knowledge and money are measured on a 7-point Likert scale. Employee growth is in people. Asset growth in euros and product launch as a fraction between 0 and 1.*

## 4.3 Step 2: necessary causal conditions

An analysis of the necessary conditions should be performed before the fs/QCA will be executed (Schneider and Wagemann, 2010). Without the necessary conditions however, the outcome cannot occur (Dul, 2015). In this thesis there are no necessary conditions (threshold value >0.80) as can be seen in the table below. This means that none of the conditions need to be present before the success (outcome) can occur.

| Causal condition | Consistency value for necessity | | |
|---|---|---|---|
| | Success employee | Success assets | Success product launch |
| Exploration | 0.34 | 0.73 | 0.67 |
| Exploitation | 0.20 | 0.67 | 0.64 |
| Centralization | 0.73 | 0.71 | 0.76 |
| Staff focus | 0.71 | 0.71 | 0.40 |
| (Future) revenue | 0.54 | 0.76 | 0.43 |
| Routinization | 0.23 | 0.64 | 0.63 |
| Formality structure | 0.15 | 0.62 | 0.62 |
| Lean managment | 0.10 | 0.68 | 0.60 |

*Table 5: necessary conditions for outcomes*

## 4.4 Remote and proximate conditions

For this research a two-step approach is used to lower the amount of combinations between the variables. With the 11 conditions in this research there would be 2048 ($2^{11}$) possibilities when all examined at once, by using a two-step approach and split them into two groups the amount of possibilities is drastically decreased to 64 ($2^6$). Schneider and Wagemann's (2006) two-step approach distinguishes between remote and proximate conditions. The two-step approach helps in to test data with a medium amount of cases and contributes to a better understanding of social phenomena. Scheider and Wagemann (2006) portray the difference between remote and proximate conditions as a continuum on which the causal factors are placed. Remote factors are factors that are stable overtime, frequently called structural factors. In this thesis exploration, exploitation, lean management, time, knowledge and money are considered to be remote factors. Exploration and exploitation are a certain strategy which a firm is using over a longer time-period, just like lean management is a production technique which takes time to be implemented or changed. The availability of resources like time, knowledge and money are variables which stay stable overtime. Time can be created by hiring new employees or by changing task division through a reorganization. Knowledge which can be gathered by an organization is a process which spans over a longer time-period. Money is the organizations financial resource which will not fluctuate a lot over the years, financial stability requires planning over multiple years, especially in usually family owned SMEs.

On the other hand are proximate conditions, these are conditions which vary over time. These conditions do not originate in a far past. These conditions are closer to the outcome and are thus closer linked to this outcome. In this thesis centralization, staff focus, (future) revenue, routinization and formality structure are considered to be proximate factors. Centralization

can change quickly as decision making power can be moved either up or down the hierarchical chain very fast, it can be changed for certain decisions or overall decision making power (Sueur et al., 2011; Cosh et al., 2012). Staff focus can be changed upon the needs of departments in a short time period (Small, 1993). (Future) revenue policies can be implemented quickly when an organization wants to look more forward into the future. Routinization depends on how much of the work is repetitive, routinization can be implemented for a short time period to meet current demands (Kirchmer, 1999). It is a factor which can be changed depending the on the business needs. Finally, formality depends on the rules and procedures in an organization, these can be updated and changed when needed on a short term basis (Cosh et al., 2012). These factors, centralization, staff focus, (future) revenue, routinization and formality are all factors which are related to a company's strategy and can therefore be changed upon the needs of a business. This differs from the long term innovation and production techniques (exploration, exploitation and lean management) (Atkinson, 2006; Anheiter and Maleyeff, 2005) and the resources (time, knowledge and money) (Mabert et al., 2003) which are dependent on the environmental factors as well and therefore ask for long term planning.

### Step 3a: remote conditions

The remote conditions are calculated through a fs/QCA Truth Table (Ragin et al., 2006) through a sufficiency test on the basis of the conditions exploration*exploitation*lean management*time*knowledge*money, where * stands for the logical and-function. The three different parsimonious solution tables for success employee, success asset and success product launch outcomes are shown below. The conditions which are explained in chapter 4.3 are used. Outcome value 1 was set to "true" while outcome value 0 was set to "false", logical remainders were set to "don't care". By setting the value 1 outcome to "true" the amount of logical combinations which lead to success are minimized (Schneider and Wagemann, 2006).

| Parsimonious solution success assets | Coverage | Consistency | Number of cases >0.5 |
|---|---|---|---|
| exploration*exploitation | 0.59 | 0.73 | 26 |
| exploration*exploitation*lean | 0.41 | 0.71 | 18 |
| exploitation*lean | 0.49 | 0.83 | 22 |
| ~lean*money*time | 0.37 | 0.79 | 15 |
| exploration*exploitation*lean*~money | 0.32 | 0.71 | 14 |
| Solution coverage: | 0.78 | | |
| Solution consistency: | 0.71 | | |

*Table 6.1: parsimonious solution for success in asset growth*

| Parsimonious solution success employee | Coverage | Consistency | Number of cases >0.5 |
|---|---|---|---|
| exploration*exploitation | 0.56 | 0.71 | 23 |
| ~exploitation*time*money | 0.43 | 0.74 | 19 |
| exploration*~exploitation*money | 0.46 | 0.72 | 19 |
| exploration*lean*time*money | 0.41 | 0.78 | 16 |
| Solution coverage: | 0.71 | | |
| Solution consistency: | 0.70 | | |

*Table 6.2: parsimonious solution for success in employee growth*

| Parsimonious solution success product launch | Coverage | Consistency | Number of cases >0.5 |
|---|---|---|---|
| exploration*~exploitation | 0.51 | 0.73 | 20 |
| exploration*time*money | 0.54 | 0.73 | 23 |
| exploration*~time*knowledge*money | 0.40 | 0.71 | 17 |
| lean*~time*knowledge | 0.45 | 0.75 | 19 |
| exploration*money | 0.65 | 0.77 | 27 |
| Solution coverage: | 0.73 | | |
| Solution consistency: | 0.74 | | |

*Table 6.3: parsimonious solution for success in product launch*

### Step 3b: proximate conditions

The five proximate conditions of this thesis are combined with the relevant contextual factors of the previous table. The tables below show how the proximate solutions are combined with the remote conditions. The numbers stand for the amount of cases of that specific combination. Unlike in the remote conditions section the logical reminders are set to “false”, no simplifying assumptions can be made. This will result in a complex solution. The conditions are set as explained in chapter 4.3. The tables below show the proximate formulas

for the different forms of success in the rows which are derived from the remote conditions in the columns.

| Proximate solutions | Remote conditions for success assets | | |
|---|---|---|---|
| | **Exploration** | **Exploitation** | **Lean** |
| centralization*routinization | 19 | 16 | |
| formality*routinization | | | 18 |

*Table 7.1: proximate solution formulas for success in asset growth*

| Proximate solutions | Remote conditions for success employee | | | |
|---|---|---|---|---|
| | **Exploration** | **~Exploitation** | **~Lean** | **Money** |
| centralization*formality | 17 | | | |
| ~centralization*staff focus | | 13 | | |
| centralization*~formality | | | 8 | |
| ~formality*staff focus | | | | 13 |

*Table 7.2: proximate solution formulas for success in employee growth*

| Proximate solutions | Remote conditions for success product launch | |
|---|---|---|
| | **Exploration** | **~Time** |
| ~routinization*formality | 13 | 7 |
| ~routinization*staff focus | 12 | |
| routinization*staff focus | | 6 |

*Table 7.3: proximate solution formulas for success in product launch*

## 4.5 Step 4: remote and proximate solutions

In the second-to-last step of this analysis combinations of factors within the contextual dimensions which lead to different forms of success are determined (Schneider and Wagemann, 2006). Each analysis consists of four conditions, the sufficiency test uses the same thresholds as it did for the remote conditions. The remote conditions are placed within the proximate conditions. The table also states the consistency and coverage of the combinations of conditions. The table shows the results of the fuzzy set truth tables from Ragin (2008).

| Intermediate solution | Remote conditions | Proximate conditions | Consistency | Coverage |
|---|---|---|---|---|
| Success assets | exploration*exploitation | centralization*routinization | 0.83 | 0.42 |
| | lean | formality*routinization | 0.75 | 0.42 |
| Success employee | exploration | centralization*formality | 0.72 | 0.37 |
| | ~exploitation | ~centralization*staff focus | 0.76 | 0.29 |
| | ~lean | centralization*~formality | 0.74 | 0.34 |
| | money | ~formality*staff focus | 0.71 | 0.31 |
| Success product launch | exploration*~time | ~routinization*formality | 0.86 | 0.31 |
| | exploration | ~routinization*staff focus | 0.76 | 0.30 |
| | ~time | routinization*staff focus | 0.75 | 0.43 |

*Table 8: intermediate solution with configurations for different forms of success*

## 4.6 Step 5: fuzzy set fs/QCA

The main purpose of the different steps which were taken in the previous chapters was to determine the configurations of the fs/QCA software. The configurations should cover as many cases as possible. The positive outcome of different forms of success were shown in the different steps, the negated outcome of the different forms of success was determined in the same way. The solution of the negated forms of success are also shown in the table below. As can be seen in the table below the overall coverage of the results is fairly high. The consistency of the results are all above 0.70. The coverage does not relate to overall coverage but to the coverage of the solution in the specific category. The cases which are covered by the solution are shown in the last column.

| Solution formulas | Consistency | Coverage | Cases covered |
|---|---|---|---|
| *High success assets* | | | |
| exploration*exploitation*lean*centralization*routinization + | 0.80 | 0.39 | 2, 8, 10, 18, 26, 29, 33, 39 |
| exploration*exploitation*lean*formality*routinization | 0.74 | 0.39 | 1, 2, 5, 15, 20, 25, 31, 38 |
| *Low success assets* | | | |
| ~exploitation*time*~formality*staff focus | 0.74 | 0.65 | 4, 7, 16, 21, 23, 28, 34, 40 |
| *High success employee* | | | |
| exploration*exploitation*~lean*centralization*formality + | 0.75 | 0.31 | 3, 13, 17, 24, 35, 36 |
| ~exploitation*~centralization*staff focus | 0.76 | 0.33 | 4, 7, 14, 16, ***22***, 28, 37 |
| *Low success employee* | | | |
| ~exploration*~exploitation*formality*routinization + | 0.71 | 0.40 | 6, 11, 12, 32, 41 |
| ~exploration*lean*formality*centralization | 0.73 | 0.32 | 9, 12, 19, 42 |
| *High success product launch* | | | |
| exploration*~routinization*formality*~time | 0.79 | 0.71 | 3, 13, ***22***, 24, 27, 35 |
| *Low success product launch* | | | |
| exploitation*~(future) revenue*~staff focus*~knowledge + | 0.72 | 0.67 | 1, 8, 15, 20, 29, ***30***, 36 |
| ~exploration*~formality*time*~money | 0.75 | 0.52 | 4, 23, ***30***, 34, 37 |

*Table 9: summary of the final solutions from fs/QCA*

### *Analysis*

From the results in the table above it can be noted that for most of the outcomes in success there are more "paths" which lead to success. The plus sign indicates there are two different paths which can be taken and lead to the outcome. In general the solutions cover most of the cases in the respective category but there is obscurity about the relationships between conditions and results for the cases which are not covered. For some forms of success different conditions are required, for example to have a high success in asset growth an organizations needs score high on lean. To have a high success in employee growth however, an organization needs to have low forms of lean.

Furthermore can it be noted that solutions differ across the different forms of success which exposes the complexity of fs/QCA and its solutions. Causations are conjunctural which means multiple conditions are in one solution, equifinal which stands for different paths lead to the same solution and asymmetry which means different conditions are used in positive and negative outcomes (Schneider and Wagemann, 2002; Rihoux and Ragin 2009). To be

successful in different indicators like success asset growth, success employee growth and success product launch a business needs to score high on different factors. This also means that being successful on all indicators will be incredibly difficult as these sometimes contradict each other. Firms which are able to score good on multiple indicators are likely to be successful in handling the tension of exploration and exploitation.

## 4.7 Practical activities

*How do the factors of this study reflect the practical activities of the organizations?*

In order to answer the second research question, which is stated above, more in-depth interviews (appendix III) are held with two of the participants in the questionnaire. The interviews were held at company 22 and company 30. The solution formulas which are related to these organizations can be found in the previous chapter.

### 4.7.1 Interview I

The first interview is held at company 22. Company 22 is a small family owned company located in Apeldoorn, the Netherlands. It currently has 13 employees but the amount of employees is growing almost on a yearly basis. Assets grew slightly over the last years, several new products were launched last few years and more new products are planned to be launched in the next few months. It's a technical company producing small metal tubes and parts for the central heating. The business is highly innovative within the market for parts of central heating as this market is driven by government regulations to reduce energy costs. The business is considered to be successful.

One of the foremost and most obvious points which was raised in the interview was how the company is able to be ambidextrous in its explorative and exploitative capabilities but meanwhile is still able to be lean and successful. Special attention went to the implementation of the different factors in combination with the different forms of success. The fs/QCA data suggested that combinations of several factors had an positive influence on the successfulness of organizations. Moreover did I want to know how exploration relates to lean and how the tension between exploration and exploitation is being handled.

This organization fully focusses on rules and procedures. Every employee has its tasks clearly written down at a central point, the employee does not diverge from its so called "core" tasks. This means formality and routinization is high in this organization. By dividing the tasks and decentralize decision power it's for everybody in the organization clear who is responsible for exploration and exploitation. By describing clear job structures, lean works very well in their organization as a certain flow is created. This organization believes that decentralization of decision making and having high forms of staff focus is one of the best strategies which fits

their business needs. This way the organization can work through lean principles in one department but meanwhile have less focus on lean in other departments. Communication lines in the organization are short, which means staff can easily reach to top level to get permission for certain activities. Because of the company's small size it's easier for top management to draw up procedures but also check if the procedures are kept. Top management continuously stays in touch with the senior manager of the R&D department. Problems are discussed in a special meeting twice a week.

To conclude, the largest contributor to why the organization is able to handle the ambidexterity between exploration and exploitation and lean is the large focus on rules and procedures, routinization and a focus on centralization. By describing employee tasks and by sticking to the described tasks they are able to create room for innovations and a certain flow which supports lean management.

### 4.7.2 Interview II

At the second company, number 30, multiple interviews were held. This business has 41 employees and is an independent office of a larger international firm. Its located in the east of the Netherlands. The firm is specialized in the cutting of stainless steel which is a task which cannot be performed by many other organizations. Because of changing materials but also changing demands of customers is it important for this company to keep up with the innovations in the stainless steel market in which it operates. New approaches and machines need to be developed to be able to keep serving the customers well. The business is not considered to be successful at the moment.

The company has a few problems which make it unable to get fully lean and be innovative. The first and foremost problem which was raised in nearly every interview was the old software system. The old software system lacked the possibilities for a smooth planning of the production. Moreover does the system not integrate departments, all departments have their own software package which is not connected to the rest of the organization. This makes communication and giving feedback very challenging. The employees try to work on the plant layout and on smooth product production but because the basis, a good software system, does not exist it is very hard to become more lean. Top management does not address these issues. The organization scores low on staff focus and (future) revenue. The organization in general

only has machines of more than 15 years old which also slows down the production process. However a new machine is currently being installed. It works with a new production technique which will speed up the process but also guarantees a more stable and improved product quality. Employees usually have more than one task, including the employees who are responsible for exploration. This results in a low staff focus. Many employees want to expand their knowledge by taking extra courses but there is no support from top management, this way the organization loses the possibility to gather knowledge which can be used in order to launch new products.

To conclude, this organization has a low rate of success in product launch. This is mainly due to their low forms of staff focus, formality, knowledge and (future) revenue. Top management is aware of problems on the work floor but does not know how to address them. The results from this thesis will help them to focus on some factors which will need change.

# 5. Discussion and conclusion

This last chapter discusses the finding of this thesis, it furthermore presents the theoretical and practical implications of this study. It finishes with a conclusion.

## 5.1 Discussion

The main motive for this thesis is to fill the gap in the literature about the ambidexterity of exploration and exploitation in a lean environment, moreover would the research give a guide with practical steps to handle the tension between lean and exploration and exploitation. At the start of this research I expected several factors which would influence ambidexterity. To give a clear overview of the results this section will be divided into two parts; the theoretical implications and practical implications.

### 5.1.1 Theoretical implications

In this thesis the use of several factors and their influence on the tension between exploration and exploitation was used in combination with lean management. This research made contributions to the current literature in several ways.

First of all, this thesis adds value to the current literature because of its focus on (a combination of) several factors. In the conceptualization part of this research I defined five different factors by conducting an extensive literature study. The expectation was that all factors would influence the success of handling the ambidexterity of exploration and exploitation in a lean SME. These factors were selected for the sole reason they would likely influence the here for mentioned ambidexterity. Contrary to Green's (1999) suggestion that rules and surveillance, which are related to the factor formality, would annihilate all innovative behaviour does this thesis support the opposite.

Secondly, this thesis further defines several concepts like centralization (Chang et al., 2011), formalization (Chen & Taylor, 2009) and routinization (Daft et al., 2010) but also combines these different factors through a Qualitative Comparative Analysis. Previous studies pointed into the direction of (a combination of) factors which would not only influence the result but would also strengthen or weaken each other. By conducting empirical research this thesis found enough evidence to proof that combining several factors positively or negatively

influence ambidexterity and lean and that there is not just one “path” to success but that it has a high causal complexity.

Thirdly, this research did not only research ambidexterity but also the implementation of lean in small and medium-sized enterprises. In the current literature about lean management there is a lot of focus on large organizations, this is not surprisingly as the origins of lean management lay in the large car manufacturing industry. However, due to resource scarcity it is very interesting to look at SMEs too in a lean context. This research shows that SMEs are also able to be lean while performing exploration and exploitation. Many SMEs don’t see their size as a problem for exploration but tend to benefit from short communication lines which means they can serve the customer better and quicker. These short lines of communication also guarantees a smooth production process. Some solutions are contrary, which means that it is not possible, according to the solution, to have a high success in one performance indicator and high success in another. To relate this to the main research question does this mean that it is hard for SMEs to be successful in the short and long term unless these factors can appear differently in different departments of the organization.

### 5.1.2 Practical implications

This research was conducted to offer managers in SME companies a practical guide with steps which are suggested to be taken to be ambidextrous and lean. The thesis gave some surprising results of which factors influence the tension in a successful way and which do not. Next to the data which was gathered through surveys and analysed through a Qualitative Comparative Analysis did the interviews also proof to be a good source to retrieve information how these factors work in practice and are facilitated within a company.

- First of all, the basis in the organization needs to be suitable for lean management to be implemented. When current information systems are not suited for the task change them. Every employee on the work floor needs to be able to stop the production process at all times when an error occurs.
- Secondly, make sure employees communicate. This also relates to the first point, if the information systems in the company are not adequate there will not be exchange of information necessary for exploration. All important information should be documented.

- Thirdly, implement lean management. In practice this is not a one-time step. To implement lean management successfully the production process needs to be improved constantly. Only by continuous improvement an organization can become lean.
- Fourthly, implement the factors which were examined positively in this thesis. These factors are dependent on the form of success. As pointed out in the interview at organization 22, if high forms of success in multiple categories want to be reached, make sure there are no opposing factors. For example one form of success requires high forms of lean while the other requires low forms of lean. Try to place the responsibility for success into different business units.
- Fifthly, this last point related to point four and two, by formulating clear job-descriptions employees should focus on their work without distraction of other departments. This way a clear distinction between exploration departments and exploitation departments arises. However this does not mean employees should stick to their own department, only through communication are plans thought out well. Exploration and exploitation rely on each other and to handle this ambidexterity communication is essential.

## 5.2 Conclusion

At the start of this thesis I wanted to reach an answer on the following main research question: *How can SMEs which operate with lean techniques handle the tension between exploration and exploitation in order to be successful in short and long term?* The purpose of this question was to analyse what can contribute to the success of an organization but also make sure that an organization can execute incremental and radical innovations. This was done by examining five different factors, lean management and exploration/exploitation in 42 different organizations. This research found several relations by performing a fuzzy set Qualitative Comparative Analysis in which some factors positively and some factors negatively influenced the successfulness of the organizations in the short and long term.

So to conclude, by introducing the right set of factors into a lean organization it can lead to short and long term success in a SME. Does this mean these factors are the holy grail to success? Likely not as there is so much more on which success depends, but this is a good step in handling the tension of exploration and exploitation in a lean organization.

# 6. Limitations and future research suggestions

This chapter discusses the limitation of this thesis and gives some suggestions which can be further examined.

## 6.1 Limitations

In this thesis was the sole focus on the production industry, no other industries were taken into consideration. This means that the results of this thesis are also limited to the production industry and might not be relevant for other industries. The production industry is still very broad, as can be seen in the table of the characteristics of the companies used in this thesis. Differences within the production industry are also possible. Next to this industry focus did SMEs take a central role in this thesis. Large corporations were ignored. Without further research it cannot be concluded if large organizations work the same as SMEs, because of their larger character they might be able to handle the tension between exploration and exploitation in a different way than smaller organizations.

This research is limited to the boundaries of the Netherlands, and more specifically, to the central/eastern part of the country. This geographic focus delivers special cultural and regional results which might not be universally applicable in other regions or countries in the world.

Some organizations choose for a specific kind of innovation strategy, this research did not take this into account. It looked at organizations that perform exploration and exploitation but not their innovative strategy behind this, having a focus strategy or a strategy of some form of ambidexterity could influence why businesses use specific conditions.

The possibility of bias in the interview results is possible. The use of certain factors are a tense or secretive topic in an organization. It is possible that respondents gave a likeable answer to be able to contribute to this study. Certain methods were used in this study to tackle this problem but a bias is still possible to occur. However it is also possible that interviewees were not completely open as they feared their answer would not be appreciated by fellow colleagues. By anonymising the results interviewees are less likely to not being completely open.

## 6.2 Future research suggestions

There are various future research suggestions which are aligned to the limitations of this study. First of all would a study to a different sector be very useful. Lean management has its foundation in the production industry but is also applied to different sectors, like the financial sector. This is still a research field without much attention yet. Because of the different factors which play an important role in the financial industry the results could be surprisingly different from the results from this thesis.

This thesis selected some factors which would influence the ambidexterity. There are however many more factors to examine. Other studies are able to examine a whole new set of factors or switch some of the factors used in this thesis for some other factors. Further research can also be conducted to why certain factors influence the outcomes. For example, having a lot of time does negatively influence product launch. This could possibly happen because of a lack of time pressure to launch new products.

Moreover is this research focussed on the Netherlands, which is a country in Western Europe with European values. Lean management is not just a European technique as Japan played a large role in developing the theories behind lean management. A stronger focus on a different country or culture could deliver different results than this thesis. By taking into account cultural values which play a large role on the work floor the motivation of employees, management structure and innovation strategies could be significantly different from the results which were acquired in the Netherlands.

Furthermore was this research conducted in SMEs. As argued in my thesis does the tension between exploration and exploitation in a lean environment play a larger role in a SME than in a larger business. Larger businesses usually have more tools to reach ambidexterity between exploration and exploitation. However, without future research on this topic is it impossible to say this tension also influences the innovation strategy of large firms. By acknowledging that this research is limited because of its focus on SMEs future research can take a deeper look into the scarcity of resources and ambidexterity between exploration and exploitation in a lean environment in a large corporation.

## 7. List of references


Retrieved 03-10-2015, from www.leanmanagement.nl

(OECD), O. F. E. C.-O. A. D. (2002). High-Growth SMEs and Employment. Paris, France.

Aiken, M. and J. Hage (1967). "Program Change and Organizational Properties: A Comparative Analysis." American Journal of Sociology **72**(1): 503-519.

Al-Hasan, R. and Z. b. Al-Zu'bi (2014). "EVALUATING THE RELATIONSHIP BETWEEN LEAN MANUFACTURING DIMENSIONS AND RADICAL PRODUCT INNOVATION IN THE JORDANIAN PHARMACEUTICAL SECTOR." European Scientific Journal **10**(28): 230-258.

Alizon, F., et al. (2009). "Henry Ford and the Model T: lessons for product platforming and mass customization." Design Studies **30**(5): 588-605.

Alves, X. (2015). "Production management model integrating the principles of lean manufacturing and sustainability supported by the cultural transformation of a company." INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH **53**(17): 5320-5333.

Amabile, T. M. (1998). "How to Kill Creativity." Harvard Business Review **76**(5): 76-87.

Andriopoulos, C. and M. W. Lewis (2009). "Exploitation-Exploration Tensions and Organizational Ambidexterity: Managing Paradoxes of Innovation." Organization Science **20**(4): 696–717.

Arnheiter, E. D. and J. Maleyeff (2005). "The integration of lean management and Six Sigma." The TQM Magazine **17**(1): 5-18.

Atkinson, H. (2006). "Strategy implementation: a role for the balanced scorecard?" Management Decision **44**(10): 1441-1460.

Babbie, E. (2007). The Practice of Social Research. Belmont, United States of America, Wadsworth.

Baker, M. J. (2001). Marketing, critical perspectives on business and management. New York, United States of America, Routledge.

Barney, J. (1991). "Firm Resources and Sustained Competitive Advantage." Journal of Management **17**(1): 99-120.

BARRINGER, B. R. and A. C. BLUEDORN (1999). "THE RELATIONSHIP BETWEEN CORPORATE ENTREPRENEURSHIP AND STRATEGIC MANAGEMENT." Strategic Management Journal **20**: 421–444.

Beale, J. (2007). "Employee Motivation to Adopt Lean Behaviours: Individual-level Antecedents " Revista de Administração FACES Journal **6**(2): 11-31.

Begam, M. S., et al. (2013). "Current Trends on Lean Management – A review " International Journal of Lean Thinking **4**(2): 15-21.

Benedetto, C. A. D. (1999). "Identifying the Key Success Factors in New Product Launch." Journal of Product Innovation Management **16**(1): 530–544.

Benner, M. J. and M. L. Tushman (2003). "Exploitation, Exploration, and Process Management: The Productivity Dilemma Revisited." Academy of Management Journal **28**(2): 238-256.

Brunswicker, S. and F. Ehrenmann (2013). "Managing Open Innovation in SMEs: A Good Practice Example of a German Software Firm." International Journal of Industrial Engineering and Management **4**(1): 33-41.

Büyüközkan, G., et al. (2015). "Assessment of lean manufacturing effect on business performance using Bayesian Belief Networks." Expert Systems with Applications **42**: 6539–6551.

Cao, Q., et al. (2009). "Unpacking Organizational Ambidexterity: Dimensions, Contingencies, and Synergistic Effects." Organization Science **20**(4): 781-796.

Chameeva, T. B. and O. Dupouët (2008). Balancing exploration and exploitation: a formal comparison of punctuated equilibrium and ambidexterity. European Network on the Economics of the Firm.

Chang, Y.-Y. and M. Hughes (2012). "Drivers of innovation ambidexterity in small- to medium-sized firms." European Management Journal **30**: 1-17.

Chapman, C. S., et al. (2007). Handbook of Management Accounting Research. Amsterdam, the Netherlands, Elsevier.

Chen, H. and R. Taylor (2009). Exploring the Impact of Lean Management on Innovation Capability PICMET.

Chen, H. and R. D. Taylor (2012). The Impact of Lean Design Practices on an Organization's Radical Innovation Capability: An Empirical Study. Proceedings of PICMET '12: Technology Management for Emerging Technologies.

Cheng, C.-F., et al. (2013). "Configural paths to successful product innovation." Journal of Business Research **66**(1): 2561–2573.

COOPER, M. J., et al. (2008). "Asset Growth and the Cross-Section of Stock Returns." The Journal of Finance **63**(4): 1609–1651.

Cosh, A., et al. (2012). "Organisation structure and innovation performance in different environments." Small Business Economics **39**(1): 301-317.

Cosh, A. and J. J. Zhang (2012). Ambidexterity and Open Innovation in Small and Medium Sized Firms (SMEs). Open innovation: new insights and evidence conference. Imperial College London, United Kingdom.

Cox, A. and D. Chicksand (2005). "The Limits of Lean Management Thinking: Multiple Retailers and Food and Farming Supply Chains." European Management Journal **23**(6): 648-662.

Crafts, N. and C. Harley (1992). "Output growth and the British industrial revolution." Economic History Review **14**(1): 703-730.

Cronin, M. J. (2010). Smart Products, Smarter Services. Cambridge, United Kingdom, Cambridge University Press.

Cusumano, M. A. (1994). "The limits of "lean"." Sloan Management Review **35**(4): 27-32.

Daft, R. L., et al. (2010). Organization Theory and Design. Hampshire, United Kingdom, South-Western Cengage Learning.

Dawes, J. (2008). "Do data characteristics change according to the number of scale points used?" International Journal of Market Research **50**(1): 61-77.

Day, G. S. (1994). "The Capabilities of Market-Driven Organizations." Journal of Marketing **58**(4): 37-52.

Denison, D. R. and A. K. Mishra (1995). "Toward a Theory of Organizational Culture and Effectiveness." Organization Science **6**(2): 204-223.

Deshpandé, R. and G. Zaltman (1982). "Factors Affecting the Use of Market Research Information: A Path Analysis." Journal of Marketing Research **19**(1): 14-31.

Devers, K. J., et al. (2013). Using Qualitative Comparative Analysis (QCA) to Study Patient-Centered Medical Homes. Rockville, United States of America, Agency for Healthcare Research and Quality.

Dewar, R. D., et al. (1980). " An Examination of the Reliability and Validity of the Aiken and Hage Scales of Centralization, Formalization, and Task Routiness." Administrative Science Quarterly **25**(1): 120-128.

Dul, J. (2015). "Identifying single necessary conditions with NCA and fsQCA." Journal of Business Research **69**: 1516–1523.

Dunk, A. (2011). "Product innovation, budgetary control, and the financial performance of firms." The British Accounting Review **43**(2): 102-111.

Emiliani, B., et al. (2003). Better Thinking, Better Results: Case Study and Analysis of an Enterprise-Wide Lean Transformation. Wethersfield, USA, CLBM.

Fiss, P. C. (2011). "Building better causal theories: a fuzzy set approach in organization research." Academy of Management Journal **54**(2): 393-420.

Foellmi, R., et al. (2014). "The macroeconomics of Model T." Journal of Economic Theory **153**: 617-647.

Foreman-Peck, J., et al. (2006). "Growth and Profitability of Small and Mediumsized Enterprises: Some Welsh Evidence." Regional Studies **40**(4): 307-319.

Fullerton, R. R., et al. (2014). "Lean manufacturing and firm performance: The incremental contribution of lean management accounting practices." Journal of Operations Management **32**: 414–428.

Fullerton, R. R. and W. F. Wempe (2008). "Lean manufacturing, non-financial performance measures, and financial performance." International Journal of Operations & Production Management **29**(3): 214-240.

Gallouj, F. (2002). "Innovation in services and the attendant old and new myths." The Journal of Socio-Economics **31**(2): 137-154.

García-Salmones, L. and J. Z. Yin (2014). "Developing Adaptability for New Competitive Advantage." ASEAN JOURNAL OF MANAGEMENT & INNOVATION **1**(2): 61-73.

Gedajlovic, E., et al. (2012). "Corporate shareholdings and organizational ambidexterity in high-tech SMEs: Evidence from a transitional economy." Journal of Business Venturing **27**: 652-665.

GIBSON, C. B. and J. BIRKINSHAW (2004). "THE ANTECEDENTS, CONSEQUENCES, AND MEDIATING ROLE OF ORGANIZATIONAL AMBIDEXTERITY." Academy of Management Journal **47**(2): 209-226.

Glove, W. J., et al. (2015). "The relationship between continuous improvement and rapid improvement sustainability." INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH **53**(13): 4067-4086.

Goossen, M. C. and N. Bazazzian (2012). Consistently Capricious: Simultaneous and Sequential Exploration and Exploitation. DRUID Academy. Cambridge, United Kingdom.

Green, S. D. (1999). THE DARK SIDE OF LEAN CONSTRUCTION: EXPLOITATION AND IDEOLOGY. Seventh Annual Conference of the International Group for Lean Construction, Berkeley, United States of America, University of California.

Greve, H. R. (2007). "Exploration and exploitation in product innovation." Industrial and Corporate Change **16**(5): 945-975.

GUEST, G., et al. (2006). "How Many Interviews Are Enough? An Experiment with Data Saturation and Variability." Field Methods **18**(59): 58-82.

Gupta, A. K., et al. (2006). "THE INTERPLAY BETWEEN EXPLORATION AND EXPLOITATION." Academy of Management Journal **49**(4): 693-706.

Hampson, I. (1999). "Lean Production and the Toyota Production System Or, the Case of the Forgoften Production Concepts." Economic and Industrial Democracy **20**(3): 369-391.

Hart, S. (1993). "Dimensions of success in new product development." Journal of Marketing Management **9**(1): 23-41.

He, Z.-L. and P.-K. Wong (2004). "Exploration vs. Exploitation: An Empirical Test of the Ambidexterity Hypothesis." Organization Science **15**(4): 481-494.

Hicks, B. (2007). "Lean information management: Understanding and eliminating waste." International Journal of Information Management **27**(4): 233-249.

Hinckley, C. M. (2007). "Combining mistake-proofing and Jidoka to achieve world class quality in clinical chemistry." Accred Qual Assur **12**(1): 223-230.

Hodson, R. and V. J. Roscigno (2004). "Organizational Success and Worker Dignity: Complementary or Contradictory?" American Journal of Sociology **110**(3): 672-708.

Holsapple, C. W. and K. D. Joshi (2001). "Organizational knowledge resources." Decision Support Systems **31**: 39–54.

Holweg, M. (2007). "The genealogy of lean production." Journal of Operations Management **25**(2): 420-437.

Hulland, J. (1999). "Use of Partial Least Squares (PLS) in Strategic Management Research: A Review of Four Recent Studies." Strategic Management Journal **20**(2): 195-204.

Jansen, J. J. P., et al. (2005). "Managing potential and realized absorptive capacity: how do organizational antecedents matter?" Academy of Management Journal **48**(6): 999-1015.

Jansen, J. J. P., et al. (2006). "Exploratory Innovation, Exploitative Innovation, and Performance: Effects of Organizational Antecedents and Environmental Moderators " Management Science **52**(11): 1661–1674.

Jasra, J. M., et al. (2011). "DETERMINANTS OF BUSINESS SUCCESS OF SMALL AND MEDIUM ENTERPRISES " International Journal of Business and Social Science **2**(20): 274-280.

Jaworski, B. J. and A. K. Kohli (1993). "Market Orientation: Antecedents and Consequences." Journal of Marketing **57**(2): 53-70.

Khandwalla, P. N. (1977). The design of organizations. New York, United States of America, Harcourt Brace Jovanovich.

Kirchmer, M. (1999). Business Process Oriented Implementation of Standard Software. Heidelberg, Germany, Springer-Verlag.

Kraatz, M. S. and E. J. Zajac (2001). "How Organizational Resources Affect Strategic Change and Performance in Turbulent Environments: Theory and Evidence." Organization Science **12**(5): 632-657.

Kremer, J. (2013). The Kanban System.

Krishnan, V. and C. M. Parveen (2013). "Comparative Study of Lean Manufacturing Tools Used in Manufacturing Firms and Service Sector." Proceedings of the World Congress on Engineering **1**(1).

Kyriakopoulosa, K. and C. Moorman (2004). "Tradeoffs in marketing exploitation and exploration strategies: The overlooked role of market orientation." Journal of Research in Marketing **21**: 219-240.

Leischnig, A., et al. (2014). Performing Configurational Analyses in Management Research: A Fuzzy Set Approach. IMP Conference. Bordeaux, France.

Levin, H. and A. Weström (2003). Tillväxt i småföretag - Företagens villkor och verklighet. Nutek. Stockholm, Sweden.

Levinthal, D. A. and J. G. March (1993). "The Myopia of Learning." Strategic Management Journal **14**: 95-112.

Li, S., et al. (2005). "Development and validation of a measurement instrument for studying supply chain management practices." Journal of Operations Management **23**(6): 618–641.

Liker, J. K. (2004). The Toyota Way: 14 Management Principles from the world's Greatest Manufacturer. New York, United States of America, Mcgraw-Hill Education-Europe.

Lingegård, S. and E. Sandström (2008). Dressed for Success - A study of Success Factors For Small and Medium-sized Manufacturing Enterprises in Sweden Department of Management and Engineering. Linköping, Sweden, Linköping universitet.

Löwik, S. (2013). Micro-foundations of absorptive capacity: a study on knowledge processes for innovation in SMEs, University of Twente.

Lubatkin, M. H., et al. (2006). "Ambidexterity and Performance in Small- to Medium-Sized Firms: The Pivotal Role of Top Management Team Behavioral Integration." Journal of Management **32**(5): 646-672.

Mabert, V. A., et al. (2003). "The impact of organizationsize onenterprise resource planning (ERP) implementations in the US manufacturing sector." Omega **31**(3): 235–246.

Madueño, J. H., et al. (2011). "Effects of family ownership on SME performance." REVISTA DE EMPRESA FAMILIAR **1**(2): 5-16.

Magee, D. (2007). How Toyota Became # 1 Leadership Lessons from the World's Greatest Car Company. New York, United States of America, Pengiun Group.

Mahr, F. (2010). Aligning Information technology, Organization and Strategy on firm performance. München, Germany, Ludwig-Maximilians-Universität München.

March, J. G. (1991). "Exploration and Exploitation in Organizational Learning." Organization Science **2**(1): 71-87.

Marodin, G. A. and T. A. Saurin (2013). "Implementing lean production systems: research areas and opportunities for future studies " INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH **51**(22): 6662-6680.

MBENGUE, A. (2011). Strategic Planning Flexibility and Firm Performance: The Moderating Role of Environmental Dynamism. 31st Annual Conference of the Strategic Management Society. Miami, United States of America.

McKenna, R. (1997). Real Time: Preparing for the Age of the Never Satisfied Customer. Boston, United States of America, Harvard Business School Press.

Mehri, D. (2006). "The darker side of Lean: An insider's perspective on the realities of the Toyota Production System." Academy of Management Perspectives **20**(2): 21-42.

Melton, T. (2005). "THE BENEFITS OF LEAN MANUFACTURING

What Lean Thinking has to Offer the Process Industries." Chemical Engineering Research and Design **83**(6): 662–673.

Mom, T. J. M., et al. (2006). "Managers' Exploration and Exploitation Activities: The Influence of Organizational Factors and Knowledge Inflows " Journal of Management Studies **44**(6): 910-931.

Monden, Y. (2012). Toyota Production System, An Integrated Approach to Just-in-Time. Boca Raton, United States, CRC Press.

NADKARNI, S. and V. K. NARAYANAN (2007). "TRATEGIC SCHEMAS, STRATEGIC FLEXIBILITY,AND FIRM PERFORMANCE: THE MODERATINGROLE OF INDUSTRY CLOCKSPEED." Strategic Management Journal **28**(1): 243-270.

Näslund, D. (2008). "Lean, six sigma and lean sigma: fads or real process improvement methods?" Business Process Management Journal **4**(3): 269-287.

Neely, A., et al. (2002). Getting the measure of your business. Cambridge, United Kingdom, Cambridge University Press.

Nunnally, J. and L. Bernstein (1994). Psychometric theory. New York, United States of America, McGraw-Hill Higher.

O'Reilly, C. A. and M. L. Tushman (2013). "Organizational Ambidexterity: Past, Present and Future " The Academy of Management Perspectives **27**(4): 324-338.

Ohno, T. (1988). Toyota Production System: Beyond Large-Scale Production, Productivity Press.

Ordanini, A., et al. (2013). "When the Recipe Is More Important Than the Ingredients: A Qualitative Comparative Analysis (QCA) of Service Innovation Configurations." Journal of Service Research **20**(10): 1-16.

Pandey, S. and R. R. K. Sharma (2009). "Organizational Factors for Exploration and Exploitation." JOURNAL OF TECHNOLOGY MANAGEMENT & INNOVATION **4**(1).

Peters, H. Retrieved 06-10-2015, from https://www.pdcacyclus.nl/verbetermethoden/lean/lean-management/.

Podsakoff, P. M., et al. (2003). "Common Method Biases in Behavioral Research: A Critical Review of the Literature and Recommended Remedies." Journal of Applied Psychology **88**(5): 879-903.

Preda, G. (2014). "ORGANIZATIONAL AMBIDEXTERITY AND COMPETITIVE ADVANTAGE: TOWARD A RESEARCH MODEL." Management & Marketing Journal **15**(1): 67-74.

Price, W., et al. (1994). "A review of optimisation models of Kanban-based production systems." European Journal of Operational Research **75**(1): 1-12.

Ragin, C. C. (2008). Redesigning social inquiry. Fuzzy sets and beyond, Chicago: University of Chicago Press.

Ragin, C. C., et al. (2006). Fuzzy-Set/Qualitative Comparative Analysis 2.0. Tucson, United States of America, Department of Sociology, University of Arizona.

Raisch, S., et al. (2009). "Organizational Ambidexterity: Balancing Exploitation and Exploration for Sustained Performance." Organization Science **20**(4): 685-695.

Reda, H. M. (1987). "A REVIEW OF '"KANBAN"-THE JAPANESE "JUST-ITIME" PRODUCTION SYSTEM " Engineering Management International **4**(1): 143-150.

Reiter-Palmon, R., et al. (1997). "Problem Construction and Creativity: The Role of Ability, Cue Consistency, and Active Processing." Creativity Research Journal **10**(1): 9-23.

Rihoux, B. and C. C. Ragin (2009). Configurational Comparative Methods Qualitative Comparative Analysis (QCA) and Related Techniques. Thousand Oaks, United States of America, SAGE Publications.

Rijksoverheid (2014). from https://www.rijksoverheid.nl/actueel/nieuws/2014/03/12/32-miljoen-voor-innovatie-en-samenwerking-mkb.

RITCHIE, J. and J. LEWIS (2003). QUALITATIVE RESEARCH PRACTICE London, United Kingdom, SAGE Publications.

Rocca, M. L., et al. (2016). "Long-term investment sensitivity to cash flow and financial crisis." Applied Economics Letters **23**(6): 411-414.

Rosenthal, M. (2002). The Essence of Jidoka, Lean Manufacturing.

Roth, M. (2011). "Het mkb in Nederland." Deutsche Bank Research.

SCHNEIDER, C. Q. and C. WAGEMANN (2002). Reducing Complexity in Qualitative Comparative Analysis (QCA): Remote and Proximate Factors and the Consolidation of Democracy. DPVW Conference. Greifswald, Germany.

Schneider, C. Q. and C. Wagemann (2006). "Reducing complexity in Qualitative Comparative Analysis (QCA):Remote and proximate factors and the consolidation ofdemocracy." European Journal of Political Research **45**: 751–786.

Schneider, C. Q. and C. Wagemann (2010). "Standards of Good Practice in Qualitative Comparative Analysis (QCA) and Fuzzy-Sets." Comparative Sociology **9**(1): 1-22.

Schuh, G. and A. Kampker (2011). Strategie und Management produzierender Unternehmen. Heidelberg, Germany, Springer.

Servicedesk, M. Retrieved 13-01, 2016, from http://www.mkbservicedesk.nl/569/informatie-over-midden-kleinbedrijf-nederland.htm.

Shah, R. and P. T. Ward (2003). "Lean manufacturing: context, practice bundles, and performance." Journal of Operations Management **21**(2): 129–149.

Shah, R. and P. T. Ward (2007). "Defining and developing measures of lean production." Journal of Operations Management **25**(4): 785–805.

Sheremata, W. (2000). "Centrifugal and centripetal forces in radical new product development under time pressure." Academy of Management Review **25**(2): 389-408.

Sierra, J. E. and L. Malone (2003). Quality Constraint Approach: A Six Sigma / Throughput Approach in Manufacturing to Achieve Company Success and Continuous Improvement. 47th Annual Fall Technical Conference, El Paso, United States of America.

Slavec, A. and M. Drnovšek (2012). "A perspective on scale development in entrepreneurship research." ECONOMIC AND BUSINESS REVIEW **14**(1): 39-62.

SMALL, T. (1993). "SMALL BUSINESS BANKRUPTCY CASES." American Bankruptcy Institute Law Review **305**.

Spear, S. and H. K. Bowen (1999). "Decoding the DNA of the Toyota Production System." Harvard Business Review(5): 97-106.

Spector, P. E. (2006). "Method Variance in Organizational Research: Truth or Urban Legend?" Organizational Research Methods **9**: 221-232.

Stewart, T. (1998). Intellectual Capital: the new wealth of organizations. New York, United States of America, Doubleday Dell Publishing Group.

Storey, D. J. (1994). Understanding the Small Business Sector. Andover, United Kingdom, Cengage Learning.

Sueur, C., et al. (2011). "From Social Network (Centralized vs. Decentralized) to Collective Decision-Making (Unshared vs. Shared Consensus)." PLoS ONE **7**(2): 1-10.

Sugimori, Y., et al. (1977). "Toyota production system and Kanban system materialization of just-in-time and respect-for-human system." INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH **15**(6): 553-564.

Tamura, T., et al. (2011). "Optimal production sequencing problem to minimise line stoppage time in a mixed-model assembly line." INTERNATIONAL JOURNAL OF PRODUCTION RESEARCH **49**(14): 4299–4315.

Tavakol, M. and R. Dennick (2011). "Making sense of Cronbach's alpha " International Journal of Medical Education **2**: 53-55.

Teece, D. J., et al. (1997). "Dynamic Capabilities and Strategic Management." Strategic Management Journal **18**(7): 509-533.

Terziovski, M. (2010). "INNOVATION PRACTICE AND ITS PERFORMANCE IMPLICATIONS IN SMALL TO MEDIUM ENTERPRISES (SMEs) IN THE MANUFACTURING SECTOR: A RESOURCE-BASED VIEW " Strategic Management Journal **31**(8): 892-902.

Tønnessen, T. (2012). Managing Process Innovation through Exploitation and Exploration. Wiesbaden, Germany, Springer Gabler.

Tushman, M. L. and C. A. O'Reilly (1996). "Ambidextrous Organizations: Managing Evolutionary and Revolutionary Change." California Management Review **38**(4): 8-30.

UCLA (2016). "http://www.ats.ucla.edu/stat/spss/faq/alpha.html."

VOSS, G. B., et al. (2008). "THE EFFECTS OF SLACK RESOURCES AND ENVIRONMENTAL THREAT ON PRODUCT EXPLORATION AND EXPLOITATION." Academy of Management Journal **51**(1): 147–164.

Voss, G. B. and Z. G. Voss (2013). "Strategic Ambidexterity in Small and Medium-Sized Enterprises: Implementing Exploration and Exploitation in Product and Market Domains." Organization Science **24**(5): 1459-1477.

Ward, J. L. (1997). Keeping the family business heallthy. New York, United States of America, Palgrave Macmillan.

Weick, K. E. (1979). The Social Psychology of Organizing. New York, United States of America, McGraw-Hill.

Womack, J. P. (2006). Mura, Muri, Muda?, Lean Enterprise Institute.

Womack, J. P. and D. T. Jones (1996). "Beyond Toyota: How to Root Out Waste and Pursue Perfection." Harvard Business Review(5): 140-154.

Womack, J. P., et al. (1990). The Machine That Changed The World: The Story of Lean Production- The Secret Weapon in the Global Car Wars That Is Now Revolutionizing World New York, United States of America, Free Press.

Yin, R. K. (2009). Case Study Research: Design and Methods. Thousand Oaks, United States of America, SAGE Publications.

Zairi, M. (2000). "Managing customer dissatisfaction through effective complaints management systems." The TQM Magazine **12**(5): 331-337.

Zauberman, G. and J. G. Lynch (2005). "Resource Slack and Propensity to Discount Delayed Investments of Time Versus Money." Journal of Experimental Psychology **134**(1): 23-37.

Zhang, M. (2011). "Firm-level performance impact of IS support for product innovation." European Journal of Innovation Management **14**(1): 118-132.

Zugelder, T. J. (2012). Lean Six Sigma Literature: A Review and Agenda for Future Research. Integrated Systems Engineering. Ohio, United States of America, The Ohio State University.

## Samenvatting

Lean management is een serie van managementtechnieken dat zijn oorsprong vindt in de Verenigde Staten en Japan. Het kwam hier in ontwikkeling na een grote drang tot standaardisatie en een hoge vraag naar efficiëntie. Aan de basis van lean (letterlijk “slank”) management staat het soepel laten verlopen van de verschillende processen door de verwijdering van alle handelingen die niet direct waarde toevoegen aan het eindproduct. Verschillende technieken zijn in de laatste decennia ontwikkeld en kunnen, al dan niet tegelijk, geïmplementeerd worden om tot een efficiëntere organisatie te komen.

Exploratie en exploitatie zijn twee uitersten van een innovatie. Exploratie, ook wel radicale innovatie, is het onderzoeken en ontwikkelen van volledige nieuwe producten, diensten of processen. Exploitatie, ook wel incrementele innovatie, is het gebruiken van het huidige bestand aan producten, diensten en processen op een zo gunstig mogelijke manier. Daarmee is exploitatie voornamelijk gericht op efficiency van het bestaande. Door het verwijderen van processen, zoals radicale innovatie, die geen directe waarde aan het eindproduct toevoegen, ontstaat er een spanningsveld tussen het efficiënt lopen van een productieproces en innovatief blijven voor de toekomst. Doordat organisaties beperkte middelen zoals kennis, geld en tijd hebben, is het van belang om deze zo goed mogelijk te verdelen tussen aan de ene kant exploratie en aan de andere kant exploitatie. Deze verdeling heet ook wel ambidexteriteit.

In dit onderzoek kwam voornamelijk dit spanningsveld aan bod, aan de ene kant het willen verlagen van productiekosten en aan de andere kant het innoveren om mee te blijven gaan met de wensen van de klanten. Door het houden van enquêtes onder 42 verschillende bedrijven is er een dataset ontstaan die gebruikt is voor een Qualitative Comparative Analysis (QCA). QCA is een geavanceerde techniek die de mogelijkheid biedt om verschillende factoren met elkaar te vergelijken in relatie tot een bepaalde uitkomst. Uit de analyse van dit onderzoek blijkt onder meer dat er verschillende combinaties van factoren zijn die bijdragen aan succes.

Verder onderzoek zal moeten uitwijzen hoe deze verschillende factoren zich verder tot elkaar verhouden. Mogelijk zijn er nog andere factoren die van invloed zijn op het spanningsveld van exploratie en exploitatie in een lean bedrijf. Dit onderzoek beperkte zich tot elf variabelen.

# Appendix

## Appendix I

To measure how exploration and exploitation are used within an organization a 5-point Likert scale (Dawes, 2008; Lubatkin et al., 2006) in a Matrix Question Format (Babbie, 2007). The original scale and its translation into Dutch can be found below.

| | |
|---|---|
| Strongly disagree | Geheel mee oneens |
| Partly disagree | Deels mee oneens |
| Neither disagree/agree | Niet mee oneens/eens |
| Partly agree | Deels mee eens |
| Strongly agree | Geheel mee eens |

Measurement of the different factors and resources happens on a 7-point Likert-type scale (Dawes, 2008; Jaworski and Kohli, 1993), several factors were examined by using the scale and it is a relevant scale for this research too. This scale will be used to examine all relevant factors in this research. The original scale with its translation into Dutch can be found below.

| | |
|---|---|
| Strongly disagree | Geheel mee oneens |
| Mostly disagree | Mee oneens |
| Somewhat disagree | Deels mee oneens |
| Neither agree or disagree | Niet mee oneens/eens |
| Somewhat agree | Deels mee eens |
| Mostly agree | Mee eens |
| Strongly agree | Geheel mee eens |

The extent to which lean management is implemented is measured on a 5-point Likert scale (Dawes, 2008; Shah and Ward 2007). The original scale and its translation into Dutch can be found below.

| | |
|---|---|
| No implementation | Geheel geen implementatie |
| Little implementation | Weinig implementatie |
| Some implementation | Enigzins implementatie |
| Extensive implementation | Veel implementatie |
| Complete implementation | Gehele implementatie |

## Appendix II

# Onderzoek naar de relatie tussen lean management en innoveren

Beste respondent,

De vragenlijst die voor u ligt is een deel van mijn onderzoek naar de relatie tussen lean management en de mogelijkheid van bedrijven om innovatief te kunnen blijven. De resultaten zullen worden verwerkt in mijn masterscriptie voor de Universiteit Twente en de Technische Universiteit van Berlijn.

De vragenlijst wordt voorafgegaan door een algemeen gedeelte waarin een aantal gegevens worden gevraagd. De vragenlijst zelf is onderverdeeld in vier delen. In deze verschillende delen worden bepaalde stellingen of situaties voorgelegd waarna u de mogelijkheid heeft een bepaald antwoord te kiezen. De delen, waaruit deze vragenlijst bestaat, zien er als volgt uit:

- Deel I: de mate van exploratie en exploitatie
- Deel II: factoren die van invloed kunnen zijn binnen uw organisatie
- Deel III: lean management
- Deel IV: resources

Als u deze enquête op papier maakt kunt u uw antwoord kiezen door een kruis (X) in het door u gewenste hokje te zetten. Wilt u een antwoord achteraf veranderen zet dan een kruis (X) in het nieuwe door u gewenste hokje en omcirkel het foutieve antwoord.

De gegevens die u hier invult zullen anoniem worden verwerkt. De antwoorden die u geeft zullen niet naar u te herleiden zijn en zullen niet worden gedeeld met derden. Indien u uw e-mailadres achterlaat, zullen de resultaten van dit onderzoek met u worden gedeeld.

Er is geen juist antwoord mogelijk binnen dit onderzoek, het gaat om de situatie zoals u die ervaart. Bij elke vraag is slechts één antwoord mogelijk en ik verzoek u dan ook om alle vragen te beantwoorden.

Bij voorbaat dank voor uw medewerking,

Max van Oort
m.j.vanoort@student.utwente.nl
Masterstudent aan de Universiteit Twente en de Technische Universiteit van Berlijn

Algemene gegevens

| | | | | | | |
|---|---|---|---|---|---|---|
| Naam | | | | | | |
| Geslacht | Vrouw | | | Man | | |
| Leeftijd | 20 jaar of jonger | Tussen de 21 en 30 jaar | Tussen de 31 en 40 jaar | Tussen de 41 en 50 jaar | Tussen de 51 en 60 jaar | 61 jaar of ouder |
| Bedrijfsnaam | | | | | | |
| Functie binnen het bedrijf | | | | | | |
| Aantal dienstjaren bij dit bedrijf | | | | | | |
| Branche | | | | | | |
| Jaar van oprichting van bedrijf | | | | | | |
| Eigenaarsstructuur | Familie | Stichting | Vennoten | Anders, namelijk… | | |

Deel I Exploratie en exploitatie

*The questions in this section were mixed at random in the questionnaire.*

*The questions in this section were partly based on the questions of Jansen et al. (2006), the original in Dutch and English translation are below each other.*

| In deze lijst zijn stellingen opgenomen, waarbij u één van de vijf mogelijkheden kunt aankruisen. Deze luiden van links naar rechts: geheel mee oneens, deels mee oneens, niet mee oneens/eens, deels mee eens, geheel mee eens | Geheel mee oneens | Deels mee oneens | Niet mee oneens/eens | Deels mee eens | Geheel mee eens |
|---|---|---|---|---|---|
| **Exploration** | | | | | |
| Ons bedrijf accepteert vragen die verder gaan dan bestaande producten en diensten<br>*Our unit accepts demands that go beyond existing products and services* | | | | | |
| Wij experimenteren met nieuwe producten en diensten in onze lokale markt<br>*We experiment with new products and services in our local market* | | | | | |
| Regelmatig benutten we kansen in nieuwe markten<br>*We frequently utilize new opportunities in new markets* | | | | | |
| Ons bedrijf gebruikt regelmatig nieuwe distributiekanalen<br>*Our unit regularly uses new distribution channels* | | | | | |
| Wij zoeken en benaderen regelmatig nieuwe klanten in nieuwe markten<br>*We regularly search for and approach new clients in new markets* | | | | | |
| **Exploitation** | | | | | |
| Regelmatig verfijnen we de levering van bestaande producten en diensten<br>*We frequently refine the provision of existing products and services* | | | | | |
| Regelmatig voeren wij kleine aanpassingen aan bestaande producten en diensten uit<br>*We regularly implement small adaptations to existing products and services* | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Regelmatig verhogen wij de schaalvoordelen in bestaande markten<br>*We increase economies of scales in existing markets* | | | | | |
| Het verlagen van de kosten van interne processen is een belangrijk doel<br>*Lowering costs of internal processes is an important objective* | | | | | |
| Wij verbeteren de efficiëntie van onze leveringen van producten en diensten<br>*We improve our provision's efficiency of products and services* | | | | | |
| Ik heb niet de mogelijkheid om iets nieuws voor de klant te bedenken, omdat dit teveel tijd kost<br>*I do not have the possibility to come up with something new for the customers because it costs too much time* | | | | | |
| Efficiëntie is belangrijker dan innovatie<br>*Efficiency is more important than innovations* | | | | | |
| Het bedienen van bestaande klanten is belangrijker dan op zoek gaan naar nieuwe klanten<br>*Serving existing customers is more important than looking for new customers* | | | | | |

Deel II Factoren – let op de schaalverdeling

*The questions in this section were mixed at random in the questionnaire.*

*The questions in this section were partly based on the questions of Jansen et al. (2006), Chapman et al. (2007), Jaworksi and Kohli (1993), Neely et al. (2002), McKenna (1997), Desphandé and Zaltman (1982.) The original in Dutch and English translation are below each other.*

| In deze lijst zijn stellingen opgenomen, waarbij u één van de zeven mogelijkheden kunt aankruisen. Deze luiden van links naar rechts: geheel mee oneens, mee oneens, deels mee oneens, niet mee oneens/eens, deels mee eens, mee eens, geheel mee eens | Geheel mee oneens | Mee oneens | Deels mee oneens | Niet mee oneens/eens | Deels mee eens | Mee eens | Geheel mee eens |
|---|---|---|---|---|---|---|---|
| **Centralization** | | | | | | | |
| Ik kan bijna alles doen zonder het met mijn baas te overleggen<br>*I can do almost anything I want without consulting my boss* | | | | | | | |
| Kleine zaken behoeven geen goedkeuring van iemand hoger in rang<br>*Small matters don't need approval of some higher up* | | | | | | | |
| Beslissingen die ik neem hebben niet de goedkeuring van mijn baas nodig<br>*Decisions I make do not need the approval of my boss* | | | | | | | |
| Dit bedrijf is een goede plek voor iemand die graag zijn eigen beslissingen neemt<br>*This business is a good place for someone who likes to make his own decision* | | | | | | | |
| **Staff focus** | | | | | | | |
| Wij krijgen genoeg tijd om ons werk af te maken<br>*We receive enough time to finish our work* | | | | | | | |
| Als je op een afdeling werkt, hoef je nooit op een andere afdeling bij te springen<br>*When you work on a department you never have to fill in at another department* | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| De werknemers bij onderzoek en ontwikkeling (R&D) hebben geen andere taken naast ontwikkeling<br>*The employees at research and development (R&D) do not have any other tasks besides development* | | | | | | | |
| Onderzoek en ontwikkeling wordt bij ons uitbesteed<br>*We have outsourced research and development* | | | | | | | |

**(Future) revenue**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| De targets die nu staan moeten ook nu gehaald worden<br>*The current targets have to be hit now* | | | | | | | |
| De productieafdeling is belangrijker dan de onderzoeks- en ontwikkelingsafdeling<br>*The production department is more important than research and development* | | | | | | | |
| Onze producten zijn toekomstbestendig<br>*Our products are ready for the future* | | | | | | | |
| Er wordt binnen ons bedrijf niet over de toekomst nagedacht<br>*Within our company we do not think about the future* | | | | | | | |
| Wat er in de toekomst gaat gebeuren is nu nog niet van belang in ons bedrijf<br>*What happens in the future is not yet important in our business* | | | | | | | |

**Routinization**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Binnen ons bedrijf doe je elke dag hetzelfde werk<br>*Tasks in our department are the same from day-to-day* | | | | | | | |
| Het werk in ons bedrijf is eentonig<br>*The duties in our department are not repetitious* | | | | | | | |
| Het werk in ons bedrijf voelt als routine<br>*The work in our department is routine* | | | | | | | |
| Hetzelfde werk wordt meestal op dezelfde manier uitgevoerd<br>*People in this department do about the same job in a same way most of the time* | | | | | | | |

**Formality structure**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Welke situatie zich ook voor doet, er bestaan procedures om hiermee om te gaan<br>*Whatever situation arises, written procedures are available for dealing with it* | | | | | | | |
| Regels en procedures nemen een centrale plek in binnen de organisatie<br>*Rules and procedures occupy a central place in the organizational unit* | | | | | | | |
| Van iedere werknemer wordt het functioneren bijgehouden<br>*Written records are kept of everyone's performance* | | | | | | | |
| Werknemers in onze organisatie worden gecontroleerd op het overtreden van de regels<br>*Employees in our organizational unit are checked for rule violations* | | | | | | | |
| Functiebeschrijvingen zijn geformuleerd voor functies binnen het hele bedrijf<br>*Written job-descriptions are formulated for positions at all levels in the organizational unit* | | | | | | | |

Deel III Lean management – let op de schaalverdeling

*The questions in this section were mixed at random in the questionnaire.*

*The questions in this section were based on the questions of Shah and Ward (2007), the Dutch translation and original version are below each other.*

| In deze lijst zijn stellingen opgenomen, waarbij u één van de vijf mogelijkheden kunt aankruisen welke een mate van implementatie van lean management voorstellen. Deze luiden van links naar rechts: geheel geen implementatie, weinig implementatie, enigszins implementatie, veel implementatie, gehele implementatie | Geheel geen implementatie | Weinig implementatie | Enigszins implementatie | Veel implementatie | Gehele implementatie |
|---|---|---|---|---|---|
| **Supplier feedback** | | | | | |
| We onderhouden veelvuldig contact met onze leveranciers<br>*We frequently are in close contact with our suppliers* | | | | | |
| Onze leveranciers krijgen altijd feedback op kwaliteit en leveringsprestaties<br>*We give our suppliers feedback on quality and delivery performance* | | | | | |
| Wij streven ernaar om een langdurige relatie aan te gaan met onze leveranciers<br>*We strive to establish long-term relationship with our suppliers* | | | | | |
| **Just-in-time delivery by supplier** | | | | | |
| Leveranciers zijn direct betrokken bij het ontwikkelingsproces voor nieuwe producten<br>*Suppliers are directly involved in the new product development process* | | | | | |
| Onze leveranciers leveren volgens het *just-in-time (JIT)* principe<br>*Our key suppliers deliver to plant on just-in-time (JIT) basis* | | | | | |
| We hebben een formeel certificatieprogramma voor leveranciers<br>*We have a formal supplier certification program* | | | | | |
| **Supplier development** | | | | | |
| Onze leveranciers zijn contractueel verplicht om jaarlijks de kosten te verlagen<br>*Our suppliers are contractually committed to annual cost reductions* | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| We onderhouden op topmanagementniveau contact met onze belangrijkste leveranciers<br>*We have corporate level communication on important issues with key suppliers* | | | | | |
| Onze voorraad is in beheer van onze belangrijkste leveranciers<br>*Our key suppliers manage our inventory* | | | | | |
| Wij proberen actief het aantal leveranciers te verminderen<br>*We take active steps to reduce the number of suppliers in each category* | | | | | |

**Customer involvement**

| | | | | | |
|---|---|---|---|---|---|
| We onderhouden veelvuldig contact met onze klanten<br>*We frequently are in close contact with our customers* | | | | | |
| Onze klanten geven ons regelmatig feedback op de kwaliteit en bezorgprestaties van onze producten<br>*Our customers give us feedback on quality and delivery performance* | | | | | |
| Onze klanten denken direct mee over hoe wij onze bestaande producten kunnen verbeteren<br>*Our customers are actively involved in current and future product offerings* | | | | | |

**Pull**

| | | | | | |
|---|---|---|---|---|---|
| Onze productie werkt volgens het *pull* principe<br>*We use a pull production system* | | | | | |
| Naar aanleiding van wat er met de verkoop gebeurt bepalen wij onze productie<br>*Production is pulled by the shipment of finished goods* | | | | | |
| Onze productie werkt volgens het Kanban/kaartenbak systeem<br>*We use Kanban, squares, or containers of signals for production control* | | | | | |

**Continuous flow**

| | | | | | |
|---|---|---|---|---|---|
| Verschillende groepen producten bepalen hoe onze werkvloer is ingedeeld<br>*Families of products determine our factory layout* | | | | | |
| Bepaalde producten zijn gegroepeerd om ze tegelijkertijd te kunnen verwerken<br>*Products are classified into groups with similar processing requirements* | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| Apparatuur is zo gegroepeerd dat het een continue stroom van productfamilies kan produceren<br>*Equipment is grouped to produce a continuous flow of families of products* | | | | | |

**Set-up time reduction**

| | | | | | |
|---|---|---|---|---|---|
| Wij werken continu aan de opstarttijd van onze machines<br>*We are working to lower setup times in our plant* | | | | | |
| Onze werknemers oefenen het opstarten van de machines om de opstarttijd te verkorten<br>*Our employees practice setups to reduce the time required* | | | | | |
| Wij hebben korte opstarttijden van onze apparatuur<br>*We have low set up times of equipment in our plant* | | | | | |

**Total productive/preventive maintenance**

| | | | | | |
|---|---|---|---|---|---|
| Er wordt elke dag onderhoud besteed aan de apparatuur<br>*We maintain all our equipment regularly* | | | | | |
| Het onderhoud van apparatuur wordt zorgvuldig bijgehouden in onderhoudsrapporten<br>*We maintain excellent records of all equipment maintenance related activities* | | | | | |
| De onderhoudsrapporten worden met de medewerkers gedeeld<br>*We post equipment maintenance records on shop floor for active sharing with employees* | | | | | |

**Statistical process control**

| | | | | | |
|---|---|---|---|---|---|
| Onze processen worden bekeken voordat we een nieuw product gaan produceren<br>*We conduct process capability studies before product launch* | | | | | |
| Procesvariatie wordt bij ons verminderd met behulp van statistische technieken<br>*Extensive use of statistical techniques to reduce process variance* | | | | | |
| Onze foutmarges worden weergegeven in op de werkvloer gebruikte diagrammen<br>*Charts showing defect rates are used as tools on the shop-floor* | | | | | |

**Employee involvement**

| | | | | | |
|---|---|---|---|---|---|
| De werkvloer draagt regelmatig verbeteringen aan | | | | | |

| | | | | | |
|---|---|---|---|---|---|
| *Shop-floor employees drive suggestion programs* | | | | | |
| De werkvloer is cruciaal voor probleemoplossende teams<br>*Shop-floor employees are key to problem solving teams* | | | | | |
| Werknemers zijn cruciaal in product- en procesverbeteringen<br>*Shop-floor employees lead product/process improvement efforts* | | | | | |

Deel IV Resources - let op de schaalverdeling

*The questions in this section were mixed at random in the questionnaire.*

*The questions in this section were based on Zauberman and Lynch (2005), Kraatz and Zajac (2001) and Holsapple and Joshi (2001). The Dutch translation and original version are below each other.*

| In deze lijst zijn stellingen opgenomen, waarbij u één van de zeven mogelijkheden kunt aankruisen. Deze luiden van links naar rechts: geheel mee oneens, mee oneens, deels mee oneens, niet mee oneens/eens, deels mee eens, mee eens, geheel mee eens | Geheel mee oneens | Mee oneens | Deels mee oneens | Niet mee oneens/eens | Deels mee eens | Mee eens | Geheel mee eens |
|---|---|---|---|---|---|---|---|
| **Time** | | | | | | | |
| Binnen onze organisatie is er genoeg tijd om te innoveren<br>*Within our business there is enough time to innovate* | | | | | | | |
| De meeste werknemers krijgen het werk op tijd af<br>*Most employees finish their work on time* | | | | | | | |
| Als ik mijn werk niet op tijd af heb, is dit problematisch voor mijn collega's<br>*When I do not finish my work on time, my colleagues have a problem* | | | | | | | |
| Er zijn genoeg werknemers beschikbaar voor onderzoek en ontwikkeling<br>*Enough employees are available for research and development* | | | | | | | |
| **Knowledge** | | | | | | | |
| We hebben genoeg kennis in huis om te innoveren<br>*We have enough in-house knowledge to innovate* | | | | | | | |
| Als we niet genoeg kennis in huis hebben om te innoveren, dan nemen we een nieuwe werknemer aan<br>*When we do not have enough knowledge to innovate we will hire a new employee* | | | | | | | |
| Er vindt veel kennisoverdracht plaats tussen oude en nieuwe werknemers<br>*A lot of exchange of knowledge takes* | | | | | | | |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| *place between old and new employees* | | | | | | | |
| Regelmatig missen wij de kennis om te kunnen innoveren<br>*Regularly we do not have the knowledge to innovate* | | | | | | | |

**Money**

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| We hebben genoeg financiële middelen om te innoveren<br>*We have enough financial resources to innovate* | | | | | | | |
| Er is een bepaald budget beschikbaar voor onderzoek<br>*A set budget is available to do research* | | | | | | | |
| Er moet regelmatig bezuinigd worden op het innovatiebudget<br>*Regularly innovation spending needs to be cut* | | | | | | | |
| Al het geld dat beschikbaar is voor onderzoek en ontwikkeling wordt opgemaakt<br>*All the money which is available for research and development is used* | | | | | | | |

Opmerkingen

| |
|---|
| |

Hiermee is deze vragenlijst tot een einde gekomen. Ik dank u voor het invullen van deze enquête. Met het achterlaten van uw e-mailadres worden de resultaten met u gedeeld.

| | |
|---|---|
| E-mailadres voor vervolgcontact | |

## Appendix III

*Mondelinge uitleg doel van het interview*
Dit interview vormt een belangrijk deel van mijn thesis. De bedoeling van dit interview is om een goed beeld te krijgen van innovatie binnen uw bedrijf in relatie tot lean management. Het interview zal worden opgenomen om de resultaten beter te kunnen analyseren maar dit zal wel anoniem gebeuren.

*Algemene gegevens*
Datum en tijd
Namen van aanwezigen
Leeftijd
Bedrijf
Aantal jaren werkzaam

*Vragen*
**Het bedrijf**

1. Wat houdt uw functie binnen het bedrijf in?
2. Waar houdt u zich binnen het bedrijf mee bezig?
3. Heeft u meerdere functies binnen dit bedrijf bekleed?
4. Houdt het management zich actief bezig met de werkzaamheden in dit bedrijf?
5. Hoeveel invloed heeft het managent op uw werk?

**Lean**

1. Wat verstaat u onder lean management?
2. Hoe komt lean management in uw bedrijf naar voren?
3. Wordt er continu aan het productieproces gewerkt om deze te verbeteren?
4. Hoe werkt dit in de praktijk? Is er contact met klanten en leveranciers?
5. Worden er problemen ervaren met het gebruik van lean management?
6. Hoe wordt er met deze problemen omgegaan?
7. Wat was de reden om lean te implementeren?

**Exploratie/exploitatie**

1. Wat wordt er binnen uw bedrijf onder innovaties verstaan?
2. Wordt er binnen uw bedrijf geïnnoveerd? Is dit naar uw tevredenheid?
3. Hoe wordt er binnen uw bedrijf geïnnoveerd?

4. Heeft uw bedrijf de juiste kennis in huis om te innoveren?

5. Wie is/zijn er verantwoordelijk voor innovatie?

6. Welke innovaties zijn er de laatste 3 jaar uitgebracht door uw bedrijf? Welke innovaties worden nog uitgebracht?

**Factoren**

*Centralization*

1. Moet u regelmatig met een manager overleggen voor u een beslissingen kunt nemen?

2. Hoe staat uw baas tegenover het delegeren van de beslissingsbevoegdheid?

*Staff focus*

1. Hebben werknemers op de R&D afdeling alleen onderzoek tot hun takenparket? Wat doen ze nog meer?

2. Worden ontwikkelingsactiviteiten uitbesteed?

3. Is er genoeg tijd om uw werk af te maken? Wat wordt hiermee gedaan?

*(Future) revenue*

1. Hoe belangrijk zijn targets binnen uw bedrijf? Wat zijn de consequenties van het niet halen van deze targets?

2. Naar welke afdelingen gaat er binnen uw bedrijf de meeste aandacht? Productie of onderzoek?

*Routinization*

1. Hoe routinematig is het werk binnen uw bedrijf? Hoe wordt hiermee omgegaan?

2. Is er wel eens afwisseling in taken voor de werknemers?

*Formality structure*

1. Hoe routinematig is het werk binnen uw bedrijf? Hoe wordt hiermee omgegaan?

2. Hoe wordt er omgegaan met regels en procedures binnen uw bedrijf?

3. Wordt uw functioneren bijgehouden? En wordt hier ook wat mee gedaan, zo ja: hoe?

**Verandering/verbetering**

1. Is uw bedrijf klaar voor de toekomst?

2. Wat zou u veranderen om nog beter klaar te zijn voor de toekomst?

3. Wat kan uw bedrijf leren van concurrenten en wat kunnen concurrenten leren van uw bedrijf?