Key Factors for Creating an Innovative Context – a Study of the Development of the BMW i3.

Master Thesis

Martin Elmcrona
Joakim Persson

Blekinge Tekniska Högskola
Course: IY2542 V14 Master’s Thesis MBA
Supervisor: PhD Urban Ljungquist
Submission date: 26th May 2014
Abstract

Innovation has been identified as essential for organisations to stay competitive in existing or entirely new markets, as well as a necessity for long term survival. The ability to innovate is affected by the external environment in the industry and by the internal environment within the organisation. We focused on internal parameters that influenced an innovative development project in the automobile industry. An organisation may shape its internal environment by reducing hurdles as well as strengthening key factors that foster innovations. We combined factors identified by a literature review to build our theoretical framework consisting of seven internal organisational parameters that may form an innovative context. These are: top management support, advocates for intrapreneurship (entrepreneurship within existing organisations), the physical environment, organisational structure, resources, rewards and risk taking. The purpose of this paper was to identify these internal organisational factors and their importance in creating an innovative context in the BMW i3 development project. Our data collection consisted of ten interviews of management and employees involved in the BMW i3 project in which the key factors were addressed. The participants also had the opportunity to rank the importance of the identified internal organisational factors.

Our findings showed that all factors have some importance in creating an innovative context. We find that top management support and advocates for intrapreneurship were the most important factors, followed by risk taking. The importance of the factors showed differences as well as similarities between the literature and our case. Management support, being an inherently wide term and most often including both top management support, advocates and other elements, was found to be of high importance in similar studies as well. A discrepancy was found regarding rewards, which was found to be important in similar studies but was ranked as least important in our case.

This study contributes to the knowledge about organisational factors that should be considered by firms that strive to create an innovative context. The lessons gleamed from this study can be useful in typical innovative projects in the automotive industry and other technology industries.
Acknowledgements

Commencing a master thesis is a demanding task under any circumstances, and we have added another dimension to this challenge by being located in different countries. The time zone difference between Thailand and Germany has actually assisted us, since we have been working at different hours with the documents. We would like to express our sincere gratitude to Blekinge Tekniska Högskola (BTH) in Karlskrona, Sweden, for offering a high quality MBA program. We like to thank our supervisor, Dr Urban Ljunquist, who guided us throughout the entire thesis process, especially by getting us more focused on our topic and for giving us straight, honest and swift feedback, it has been much appreciated.

We would also like to thank all the interviewees at BMW in Munich for taking the time to participate in our interviews, for sharing their experience, perspectives and key insights into the development of BMW i3. We are also very grateful for the proofreaders and reviewers of this thesis who helped us to have a clear and comprehensible content.

And last but not least, from the bottom of our hearts we’d like to thank our families and loved ones for their continued support and understanding by giving us the time and the encouragement to focus on this thesis and get it to completion.

Sincerely,

Martin Elmcrona
martin.elmcrona@gmail.com
(Munich, Germany 2014)

Joakim Persson
joakimerikpersson@gmail.com
(Bangkok, Thailand 2014)
# Table of contents

1. **Introduction** ..................................................................................... 1  
   1.1 Background ................................................................................ 1  
   1.2 Problem discussion ..................................................................... 2  
   1.3 Problem formulation and purpose .............................................. 4  
   1.4 Thesis structure ......................................................................... 5  

2. **Theory** .......................................................................................... 6  
   2.1 The innovation process .............................................................. 6  
   2.2 Factors that influence the innovation process .......................... 8  
   2.3 Concluding theory remarks ..................................................... 11  

3. **Method** .......................................................................................... 14  
   3.1 Overview .................................................................................... 14  
   3.2 Plan ........................................................................................... 14  
   3.3 Design ....................................................................................... 15  
   3.4 Preparation ............................................................................... 15  
   3.5 Collection .................................................................................. 16  
   3.6 Analysis ..................................................................................... 17  
   3.7 Share ........................................................................................ 18  

4. **Case description** ........................................................................ 18  
   4.1 History of BMW ........................................................................ 18  
   4.2 Company Vision ......................................................................... 18  
   4.3 Overview of BMW i3 ................................................................. 18  
   4.4 Design & Innovation of BMW i3 ................................................. 19  
   4.5 Summary .................................................................................. 20  

5. **Analysis** ........................................................................................ 20  
   5.1 Top Management Support ......................................................... 20  
   5.2 Advocates .................................................................................. 22  
   5.3 Physical Environment ............................................................... 24  
   5.4 Organisational Structure ........................................................... 26  
   5.5 Resources .................................................................................. 28  
   5.6 Rewards ..................................................................................... 30  
   5.7 Risk Taking ............................................................................... 31  
   5.8 Ranking of Key Factors ............................................................. 32  
   5.9 Summary of findings .................................................................. 34  

6. **Conclusions** ................................................................................. 37  

7. **References** .................................................................................... 39  

8. **Appendix** ....................................................................................... 42  
   8.1 Appendix A: List of Interview Participants ............................... 42  
   8.2 Appendix B: Interview Guide .................................................... 43  
   8.3 Appendix C: Ranking of Key Factors ......................................... 45
List of Figures

Figure 1. Conceptualisations of the innovation process as linear development in discrete phases. ........................................... 3
Figure 2. Illustration of our theoretical framework with seven internal organisational factors that may form an innovative context.................................................................................. 5
Figure 3. The three theoretical phases of the innovation process used in the concept of dynamic capabilities ....................... 6
Figure 4. The four phases of the innovation process used in the concept of innovation life-cycle management.......................... 7
Figure 5. Three phases of the BMW i3 project ................................................... 20
Figure 6. Participants ranking of the factors in order of importance for creativity ................................................................. 33

List of Tables

Table 1. Internal organisational factors that may form an innovative context........................................................................... 4
Table 2. Description of internal organisational factors. .............................................. 13
1. Introduction

Competition is becoming intensified in many industries with globalisation and information technology among the driving forces. Nowadays customers can easily make informed choices of products and services from a wide range of suppliers. The turnover time for technology generations for consumer products such as automobiles has decreased, which intensifies the competition further. Innovation has been identified as essential for organisations to stay competitive and a necessity for long term survival. Innovation is about generating, developing and implementing new ideas for products, services or processes. The ability to innovate is affected by the external environment in the industry where the organisation is active, and by the internal environment within the organisation. For obvious reasons there is an interest for organisations to build an innovative context in order to foster innovations. An organisation may shape its internal environment by reducing hurdles as well as strengthening key factors that foster innovations.

In this Master thesis we describe the innovation process and factors that influence the process by the means of a literature review. We apply the findings in a case study where we test the key factors for promoting innovativeness found in the literature. In the empirical case study we analyse the innovative context created at BMW Group during the development of their first fully electrical car for sale, the BMW i3. The car is considered as most innovative and our method to analyse the development project includes interviews with managers and employees in the project.

1.1 Background

Several authors point out innovation as crucial for firm success in both short- and long-term. A precondition for firm success in many industries is the ability to continuously bring new innovations to the market (Jantunen et al., 2012). Menguc and Auh (2010, p. 820) state that: “…innovation is the engine for new product performance and, ultimately, firm growth and survival.” A similar view on the importance of innovation is presented by Menzel et al. (2007, p. 732): “…the organisation’s ability to continuously innovate its products and business model is essential to its future success.” Reasons to engage in innovation includes rejuvenating processes, structures and capabilities within the organisation, as well as finding new ways to compete in existing markets or create entirely new markets (Urbano and Turró, 2013). Innovation provides a possibility for both small firms and large enterprises to distinguish its products and services from competitors (Gawlik and Kielbus, 2010).

Different approaches to innovation are presented in the literature. There are conceptualisations of the innovation process (Teece 2007; Beaume et al. 2009) that focus on dynamic capabilities required for innovations in organisations (Teece 2007; Jantunen et al. 2012) or how to manage innovation from a life-cycle perspective (Beaume et al. 2009). Teece (2007) explains the aim of the concept of Dynamic Capabilities in “The ambition of the dynamic capabilities framework is nothing less than to explain the sources of enterprise-level competitive advantage over time, and provide guidance to managers for avoiding the zero profit condition that results when homogeneous firms compete in perfectly competitive markets” (Teece, 2007, p. 1320).

These concepts usually divide the innovation process into discrete phases that starts with idea generation, evolves into contextualisation or seizing opportunities and finalise with deployment or reconfiguring of assets (Teece 2007; Beaume et al. 2009). Another approach is performed by Urbano and Turró (2013) who use two established concepts in an analysis of intrapreneurship and the innovation process. Concepts of the innovation process may be of beneficial use for organisations who aim to strengthen processes that encourage innovation. In an interview with Fortune Magazine, A.G. Laffley, then (and reinstated) CEO
of Procter & Gamble express their aim to strengthen their innovation process: "So the name of the game is innovation. We work really hard to try to turn innovation into a strategy and a process that's a little more consistent, a little more reliable, so that we can build a portfolio of innovations and get the yield we need..." (Fortune Magazine, 2006).

The conceptualisations of the innovation process rests on a set of antecedents, Teece (2007) label them as microfoundations for dynamic capabilities. Cosh et al. (2010) describes what supports organisations dynamic capabilities in: "Turbulent and hostile environments require dynamic capabilities which are supported by specialisation, decentralisation, responsiveness, lack of formalisation and flexibility..." (Cosh et al., 2010, p. 303).

Other approaches focus more directly on identifying and analysing antecedents for innovation with lesser focus on the innovation process. These prerequisites for innovation are broadly divided into factors in the external environment or internal factors within organisations (Jantunen et al. 2012; Antoncic and Hisrich, 2001; Urbano and Turró, 2013). Internal factors that foster innovation is repeatedly analysed in literature regarding entrepreneurship within organisations, labelled as intrapreneurship. Intrapreneurship attracts managers in companies of any size (Menzel et al., 2007) and has become a tool for enhancing firm performance and competitive position (Urbano and Turró, 2013), as well as foster innovation and opportunity exploitation (Rigtering and Weitzel, 2013). Intrapreneurship is described as: "...the basis of technological innovations and firm renewal." (Menzel et al., 2007, p. 732). These descriptions share similarities with other authors’ description of the importance of innovation.

Internal factors that support intrapreneurship includes top management support, advocates, organisational structure, the physical environment, resources, rewards and risk taking (Kuratko et al. 1990; Hornsby et al. 2002; Menzel et al. 2007).

This master thesis applies a focus on these internal factors that foster innovation as they can be influenced by managerial activities, which is in line with our studies. The literature stream for the study includes concepts of the innovation process and intrapreneurship, which overlap to a large extent. To include the prerequisites for innovation, the literature covers several fields from organisational behaviour to entrepreneurship.

1.2 Problem discussion

A study of how to create an innovative context requires knowledge about the innovation process. Factors that affect the creation of an innovative context are merely a small part of all aspects that influence the innovation process. The innovation process has been conceptualised in several ways in the literature. We introduce some of these concepts for two purposes: first we present a description of what part in the innovation process our study will focus on and second we identify elements that affect the process.

Several theoretical concepts have been used in the description of the innovation process. Among these is the concept of Dynamic Capabilities (DC) that describes three phases in the innovation process: sensing opportunities, seizing opportunities and reconfiguring resources and assets (Teece, 2007). Another concept is the Innovation Life-Cycle Management (ILCM) that divides the innovation process into four phases: exploration phase, contextualization phase, development phase and deployment phase (Beume et al., 2009). A common approach of these two concepts is the view of the innovation process as a linear development from idea to product or service, as illustrated in Figure 1. The use of discrete phases has an analytical value as it provides structure to studies of the innovation process. The initial phase in the innovation process includes idea generation and the literature suggests the need for individuals with entrepreneurial mind-set and cognitive and creative skills (Teece, 2007). The later phase where opportunities are seized and transformed
(contextualised and developed) into innovative products or services can be more affected by managerial actions and organisational efforts. Hence, studies of this phase may provide more practical recommendations for organisations. Our study will focus on this phase of the innovation process precisely because it seems most affected by managerial actions.

**Figure 1. Conceptualisations of the innovation process as linear development in discrete phases. Above is an illustration of the concept of Dynamic Capabilities and below the four phases in the concept of Innovation Life-Cycle Management. We focus on the phases highlighted in pink.**

Other concepts that have been used to describe the innovation process focus on the pre-requisites for intrapreneurship, rather than defining discrete phases. These pre-requisites may broadly be divided into the need for people with idea generating capability and the influence of environmental factors that form an innovative context. This thesis will only briefly discuss who the typical driver is in the innovation process. In the literature there are examples with different perspectives: employees (Rigtering and Weitzel, 2013; Birkinshaw and Duke, 2013), the middle-manager (Hornsby et al., 2002) or top management.

The environmental factors that form an innovative context can be narrowed down further and as the literature suggests there are internal as well as external parameters that influence the process. Resource Based Theory (RBT) is a concept that may be used to describe the environmental factors with basis in a firm’s internal resources. Another established concept is Institutional Economics (IE) that may be used to describe how external institutions influence the environmental factors needed to create an innovative context (Urbano and Turró, 2013). External parameters include the market environment, competitors and institutions (Jantunen et al., 2012; Urbano and Turró, 2013). We note that external parameters influence innovation but will focus on the internal parameters, firstly because these appear to be of greater importance (Jantunen et al., 2012; Urbano and Turró, 2013) and secondly because they may be affected by managerial actions (Rigtering and Weitzel, 2013).

In this thesis we focus on internal environmental factors that may form an innovative context within organisations. The literature has several examples where internal organisational factors are divided into similar sets of parameters (Kuratko et al., 1990; Hornsby et al., 2002; Menzel et al., 2007). These authors each define a set of five parameters, or dimensions, which may form an innovative context. There are similarities as they build upon each other’s definitions, see the theory section for detailed descriptions. We summarise these factors in seven points in Table 1 on next page:
Table 1. Internal organisational factors that may form an innovative context.

<table>
<thead>
<tr>
<th>Internal organisational factor</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Top management support</td>
</tr>
<tr>
<td>2. Advocates for the intrapreneurs</td>
</tr>
<tr>
<td>3. The physical environment</td>
</tr>
<tr>
<td>4. Organisational structure</td>
</tr>
<tr>
<td>5. Resources</td>
</tr>
<tr>
<td>6. Rewards</td>
</tr>
<tr>
<td>7. Risk taking</td>
</tr>
</tbody>
</table>

These organisational parameters describe the internal environment in a firm that may support or undermine the innovation process. These parameters are examined in more detail in the Theory section.

Organisations cultural and social context are in parts shaped by the internal factors that may foster innovation. Studies of innovation may hence be affected by the national and cultural context where it is applied. We note that some studies test the validity between US and particular European countries (Naranjo-Valencia et al., 2011; Antoncic and Hisrich 2001). We find the validity satisfactory and do not investigate this further.

We note that the literature suggest that there is no single best organisational setting for promoting innovation, since it differs between industries and each organisation’s business environment (Tidd, 2001). Despite this, we aim to identify general internal organisational factors that support innovation, and test these in our case study in the automotive industry with its specific characteristics.

1.3 Problem formulation and purpose

The research question examined in our master thesis is formulated as follows:

"What importance do internal organisational factors have in creating an innovative context?"

We identify internal organisational factors by a conducting a thorough literature review with focus on the innovation process and intrapreneurship. Conceptualisations of the innovation process help us determine the phases we will focus on, as discussed earlier and illustrated in Figure 1 above.

The literature suggests that there are internal as well as external parameters that influence the innovation process and we choose to focus on internal parameters. In a literature stream we find internal factors that influence the innovation process identified by Kuratko et al. (1990), Hornsby et al. (2002) and Menzel et al. (2007). We combine factors identified by these authors to build our theoretical framework consisting of seven internal organisational factors that may form an innovative context, as illustrated in Figure 2 on next page.
The purpose of our research study is to identify these internal organisational factors and their importance in creating an innovative context.

We will test our theoretical framework in a case study. The case regards a development project in the automobile industry considered as innovative. Hence, we expect the case study to provide an innovative context suitable for our study. We expect to be able to rank the importance of the identified internal organisational factors. We will compare our results with other similar studies whenever possible.

1.4 Thesis structure

The thesis is structured with the following chapters:

Chapter 2: Theory. The chapter includes definition of used terms and a literature review regarding the innovation process and factors that influence the innovation process.

Chapter 3: Method. The chapter motivates and describes our choice of method for our study.

Chapter 4: Case Description. Our case description includes an introduction of BMW and description of the BMW i3 development project.

Chapter 5: Analysis. The chapter includes the results from the case study and discussions about the results.

Chapter 6: Conclusions. The conclusion chapter summarises the findings in the thesis.
2. Theory

2.1 The innovation process

Innovation\(^1\) is often described as a process. The innovation process has been conceptualised by several authors and analysed in numerous studies. The theory section begins with an examination of some of these conceptualisations. The reason is to describe the different phases typically used in the concepts and briefly describe the governing factors in the phases. The concept descriptions assist in framing our theoretical problem by narrowing down what phase we will study and as an introduction to factors that influence innovation.

The ability of a company to relocate resources in order keep up in a competitive business environment is dealt with in the concept of Dynamic Capabilities (DC). These capabilities can be used to constantly create, extend, upgrade, protect and keep the firm’s unique assets relevant. The dynamic capabilities can be divided into three theoretical phases, all of which are equally important for an organisation to be able to transfer new ideas into new products or services. The theoretical phases are described as: (1) to sense and shape opportunities and threats, (2) to seize opportunities and (3) to stay competitive through enhancing, combining, protecting and reconfigure the firm’s intangible and tangible assets (Teece, 2007). The phases are illustrated in Figure 3 below.

![Figure 3. The three theoretical phases of the innovation process used in the concept of Dynamic Capabilities (Teece, 2007).](image)

The objective of the Dynamic Capabilities framework is to explain sources of competitive advantages over time, and provide guidance about how to avoid a zero profit situation that develops when homogenous firms compete on perfectly competitive markets (Teece, 2007). The Dynamic Capabilities concept is hence not developed to solely describe the innovation process. The aim is rather to integrate the literature of innovation and strategy and provide a framework in order to highlight critical capabilities (Teece, 2007). Teece uses existing literature on strategy, innovation, organisation and dynamic capabilities for an analysis of microfoundations for the framework. The microfoundations, i.e. the important elements, vary for the three different phases. The first phase includes invention\(^2\) and stresses the requirement of individuals with necessary cognitive and creative skills, or embedding scanning and creative processes inside the enterprise itself (Teece, 2007). The second phase, to seize opportunities, focuses on business models, enterprise structures and procedures regarding introducing new products or services to the market. The author emphasises the need of integration of culture, commitment and leadership in the Dynamic Capabilities concept, but leave the integration of these factors to others (Teece, 2007).

---

\(^1\) The term **innovation** is frequently used in everyday language among practitioners and in the literature. There are variations of the definition in the literature but in general, innovation includes a novel idea or sensing of an opportunity followed by an implementation or exploitation of that idea or opportunity. Innovation comprises of products and services as well as processes within organisations. Damanpour (1991) describes innovation as "... the generation, development, and implementation of new ideas or behaviors. An innovation can be a new product or service, an administrative system, or a new plan or program pertaining to organisational members." (Damanpour, 1991, p. 556) Innovation has been likened with opportunity exploitation (Rigtering, Weitzel, 2013, p. 338).

\(^2\) Innovation shares similarities with **invention**, but the latter is generally used with a more narrow description. Invention may be used to describe the first step in the innovation process, the idea generation, and generally concerns technology change in products with a high degree of novelty. (Tidd, 2001, Arthur 2007).
The Dynamic Capabilities concept has been applied in studies with different approaches. In a study by Jantunen et al. (2012) the shaping forces of the dynamic capabilities and the differences between firms within an industry was examined. The dynamic capabilities may be shaped by external forces outside the organisation, like best practice, which would imply that the dynamic capabilities should be similar within a particular industry. They may also be shaped by internal forces as the organisation’s context-specific background and thereby be path-dependent, which imply that the dynamic capabilities should differ between each firm. In a study of four firms within the Scandinavian magazine publishing industry Jantunen et al. (2012) found that neither simplification is correct, but rather that there were both industry similarities and firm specific differences. Seemingly similar practices had very different organisational implications in the studied firms, i.e. applying best practices for seizing opportunities produce very different results depending on firm specifics. It was concluded that the best practice is strongly dependent on the dominant logic within the organisation (Jantunen et al. 2012).

The partitioning of the innovation process into phases is undertaken in several ways in the literature. An alternative way is described by Beaume et al. (2009) who use an analytical concept of Innovation Life-Cycle Management (ILCM) in a study of innovative features in the automotive industry. They divide the innovation life-cycle into four phases: (1) The exploration phase, exploring and preparing innovative features. (2) The contextualisation phase, preparing a specific proposal to a development project. (3) The development phase, developing the feature within the vehicle development process and (4) the deployment phase, the feature is on the market and experience is used to rollout the feature on coherent vehicles (Beaume et al., 2009). The phases are illustrated in Figure 4 below.

![Figure 4. The four phases of the innovation process used in the concept of Innovation Life-Cycle Management (Beaume et al., 2009).](image)

The division of the innovation life-cycle above has similarities as well as differences compared to the more generalised concept of Dynamic Capabilities. The two phases of contextualisation and development described above is similar to the phase of seizing opportunities in the Dynamic Capabilities concept. The analytical concept of Beaume et al. (2009) may be regarded as an application of the concept of Dynamic Capabilities, where it is applied in development projects in the automotive industry. The need for a development team to sell in the advantages of an innovative feature to a vehicle development project is a reason for the division into four phases. The last phase, the deployment phase, in Beaume et al. (2009) has a stronger focus on continued development while the last phase within the concept of Dynamic Capabilities focuses on a firm’s reconfiguring of resources and assets (Teece, 2007).

Urbano, Turró (2013) use two other established concepts in an article about conditioning factors for intrapreneurship. The two concepts are Resource Based Theory (RBT) and

---

3 When speaking specifically about a new technical solution in a product, the term innovative feature may be used, as by Beaume et al. (2009): “We define an innovative feature as a technical solution providing a new functionality which is not included in any existing products of the brand” (Beaume et al., 2009, p. 168).

4 The term intrapreneurship is referred to as entrepreneurship within existing organisations (Menzel et al. 2007, p. 734). Intrapreneurship has been initiated in established organisations for several purposes, among these to foster innovativeness. The concept of intrapreneurship has been described in the literature as “…embodying entrepreneurial efforts that require sanctions and resource commitments for the purpose of carrying out innovative activities…” (Hornsby et al., 2002, p. 255). A broad definition of intrapreneurship
Institutional Economics (IE). Resource Based Theory is a well-established concept and applies the view that firms are bundles of tangible and intangible resources and capabilities. The differences in firm’s performance are explained by valuable, rare, inimitable and non-substitutable resources that are granted, giving the firm competitive advantage. (Urbano and Turró, 2013). The concept of Institutional Economics proposes that organisations adopt structures, processes, policies and/or procedures because of the pressure institutions exert on them. Institutions in this concept are represented by formal political and economic rules and informal code of conduct, conventions, attitudes, values and norms of behaviour (Urbano and Turró, 2013). Institutional Economics provides a concept for analysis of the influence of the external environment on a firm, while Resource Based Theory focuses on the internal environment within a firm. Both these concepts have been used for entrepreneurship but they have not been used much for intrapreneurship (Urbano and Turró, 2013). The separation of antecedents for intrapreneurship into internal organisation and external environment is consistent with earlier studies (Antoncic and Hisrich, 2001).

In summary, there are several concepts available that describe the innovation process and divide it into discrete phases. In the literature study we find division into anything from four phases (Beume et al., 2009) down to two phases (Rigtering and Weitzel, 2013). The use of discrete phases has an analytical value as it provides structure to studies of the innovation process. The choice of a phase to study must depend on the focus of the study. The initial phase in the innovation process includes idea generation and the literature suggests the need for individuals with entrepreneurial mind-set and cognitive and creative skills (Teece, 2007). The later phase where opportunities are seized and transformed into innovative products or services will likely be more affected by managerial actions and efforts conducted by the organisation. Hence, studies of this phase may provide more practical recommendations for organisations. Our study will focus on this phase precisely because it seems most affected by managerial actions.

2.2 Factors that influence the innovation process

There is a literature stream focused on organisational factors that influence intrapreneurship (Kuratko et al., 1990; Hornsby et al., 2002; Menzel et al., 2007) and that may create an innovative context. A thorough literature review of the then available papers regarding factors that influence intrapreneurship was conducted by Kuratko et al. (1990). They summarised a wide variety of factors by identifying five elements that were consistent throughout the literature. The five identified elements were as follows (Kuratko et al., 1990):

- Appropriate use of rewards
- Management support

includes the development and implementation of new ideas into an organisation (Hornsby et al., 2002, p 253). A central element in intrapreneurship is innovation; hence, literature regarding intrapreneurship includes aspects of innovation. There are several dimensions of intrapreneurship that may be classified into; (1) new business venturing, (2) innovativeness, (3) self-renewal and (4) proactiveness. The innovativeness dimension focuses on innovation in technology in products and services, while intrapreneurship is wider and includes improvements, development, production methods and procedures (Antoncic, Hisrich, 2001 p. 498).

Alternative terms instead of intrapreneurship are frequently used, such as corporate entrepreneurship, internal corporate entrepreneurship, corporate venturing (Urbano, Turró 2013; Hornsby et al. 2002; Kuratko et al. 1990; Antoncic, Hisrich 2001).

5 The term entrepreneurship is commonly defined as "the process of uncovering and developing an opportunity to create value through innovation and seizing that opportunity without regard to either resources (human and capital) or the location of the entrepreneur” (Antoncic, Hisrich, 2001, p. 497).

6 Innovative context is a description of a work context with an environment that promotes innovations. The environment can be divided into a formal work context with the organisational structure and resources, and an informal work context with the social exchange concerning communication, trust and relationships within the organisation (Rigtering and Weitzel, 2013, p. 341).
Kuratko et al. (1990) conducted an empirical study where they hypothesised five factors derived from the five identified elements above. The factors included in the hypothesis are similar to the identified elements and include (1) management support for intrapreneurship, (2) organisational structure, (3) risk taking, (4) time-availability and (5) reward and resource availability (Kuratko et al., 1990). In their empirical study they found support for three of the five hypothesised factors. Risk taking was integrated into the management support factor and time availability was integrated into the reward and resource availability factor. The resulting three factors consisted of several items, below is a description of some items that supported the factors in their empirical study (Kuratko et al., 1990):

- **Management support for intrapreneurship** – management encouragement for activities, top management experience with innovation, top management sponsorship, recognition of individual risk-takers, encouragement for calculated risks.
- **Organisational structure** – concern for job description, defining turf is important, difficult to form teams, mistakes as learning experiences.
- **Reward and resource availability** – problems with company budget process, additional rewards/compensation, lack of funding, options of financial support, problem solving time with co-workers.

The study by Kuratko et al. (1990) has been used as a platform for further studies of factors that influence intrapreneurship. Hornsby et al. (2002) identify the middle manager as having the vital role for creating an environment that encourages innovation (Hornsby et al., 2002). They performed an empirical study by collecting data by questionnaires to several hundreds of middle managers in different industries in US and Canada. The empirical study supports the division of internal organisational factors that encourage intrapreneurship into five dimensions (Hornsby et al., 2002). With support of their literature review they conclude that internal organisational factors play a major role in encouraging intrapreneurship (Hornsby et al., 2002). They set up five dimensions of internal organisational factors in parts derived from Kuratko et al. (1990). These five dimensions of internal organisational factors used by Hornsby et al. (2002) are as follows:

- **Appropriate use of rewards** – an effective reward system that spurs entrepreneurial activity must consider goals, feedback, emphasis on individual responsibility and results-based incentives. Appropriate rewards can also enhance willingness to assume risk.
- **Management support** – willingness of managers to facilitate and promote entrepreneurial activity in the firm. Includes championing innovative ideas, providing necessary resources and expertise.
- **Resource availability** – employees must perceive the availability of resources for innovative activities. Slack resources usually encourage experimentation and risk taking behaviours.
- **Supportive organisational structure** – The structure determines how ideas are evaluated, chosen and implemented.
- **Risk taking** – indicates the willingness to take risks and tolerance for failure.

A study by Menzel et al. (2007) builds in parts upon Hornsby et al. (2002) and Kuratko et al. (1990). Menzel et al. (2007) use a division of the innovation process in a similar manner as in the previously described conceptualisations. They focus on the origins of the intrapreneurship capacity in engineering settings of high-tech firms. They analyse who the intrapreneur\(^7\) is, what organisational support is required, and the desired revisions of the organisational structure.

---

\(^7\) The term **intrapreneur** derives from entrepreneur. Entrepreneurs that are active within a company are referred to as intrapreneurs, the main difference being that the latter does carry lesser risk in the event of
education and work processes. They aim to include both the intrapreneurial individuals and the organisational context in the analysis, since both forms the cultural and social context. Menzel et al. (2007) stress the importance of people with entrepreneurial mindset and an environment that supports the process. In order to foster technological innovation in engineering practice the authors analyse the following organisational parameters (Menzel et al., 2007):

- The physical environment
- Organisational structure
- Top management’s role
- Advocates for the intrapreneurs
- Resource availability and allocation

The point regarding organisational structure involves decreasing hierarchy, increasing knowledge sharing and generating ideas. Top management’s role includes having a helicopter perspective to encourage initiative in line with the organisation’s goals and strategies as well as being perceptive to ideas. Resource allocation involves how to avoid a trap where resources are allocated only to known processes and current affairs, and too little resources to new opportunities with uncertain future. Menzel et al. (2007) identify a need for further studies regarding the definition and modelling of intrapreneurship-supportive culture. Even though the individual parameters listed above are found to be well-identified separately, there is lack of an integrative approach.

Fear of failure as a factor that influences intrapreneurship is described by the Urbano and Turró (2013). As most individuals are risk averse, the (perceived) fear of failure is an important parameter. The willingness to take risks by individuals and the risk permissiveness by managers who encourage intrapreneurship is affected by how tolerant the organisational culture is towards innovative projects that fails (Urbano and Turró, 2013). The authors did set up six hypotheses: three concerning internal factors analysed with the Resource Based Theory concept and three concerning external (environmental factors) analysed with the Institutional Economics concept. They use data from the Global Entrepreneurship Monitor (GEM) database and use regression analysis’s to test the hypotheses. They conclude that the internal factors positively affect intrapreneurship, including resources, education level, networking with other entrepreneurs and ability to identify business opportunities. External environmental factors such as fear of failure, effect of media and number of days to start a business are non-significant factors in the study (Urbano and Turró, 2013).

Stam et al (2012) describe six groups of antecedents (pre-requisites) for intrapreneurship, these are: dispositional traits, demography, cognitive abilities, job design, work context, broader environment. The authors describe these antecedents in a thorough literature review including typical correlation found between the studied antecedent and intrapreneurship, entrepreneurial behaviour or innovative work behaviour. The two groups of antecedents most associated with strengthening intrapreneurship were found to be (1) cognitive ability including education and experience and (2) job design including job type, job autonomy, job variety and external work contacts (Stam et al, 2012). From the six identified groups of antecedents job design and work context are most interesting for managers as they may be affected by managerial actions (Rigtering and Weitzel, 2013). The authors make a distinction between formalised work context, that can act as a catalyst or barrier, and the informal work context of exchange relationship between the manager and employee (Rigtering and Weitzel, 2013). They set up a two-step model where they define intrapreneurial behaviour (idea-generation and identifying opportunities) in the first

failure, and at the same time a smaller chance of personal reward and financial attainment (Menzel et al. 2007, p. 735).
step and intrapreneurship (initiate and lead innovative projects) in a second step. This division of the process has similarities with the other mentioned concepts.

In their study, Rigtering and Weitzel (2013) conclude that both the formal and informal work context plays an important role in stimulating intrapreneurial behaviour among employees. In line with other research they find that a formal work context with little constrains on employees provide support for innovations, and that an informal work context with a high degree of trust between manager and employee can enhance intrapreneurial behaviour. An interesting observation is that employees with a high degree of trust in their managers are not significantly obstructed by high levels of formalisation and show more innovative workplace behaviour. Rules and formal procedures can be obstructive, but also serve a certain purpose within organisations as they can offer guidance to employees when dealing with uncertain situations (Rigtering and Weitzel, 2013). Other studies also conclude that decentralisation improves the ability to innovate when it is supported by some formal structure (Cosh et al., 2010). Trust in the employee/manager relationship, therefore, can be crucial when intrapreneurial actions motivate employees to abandon formal organisational procedures and employees must be able to trust their direct manager to provide support in case things go wrong (Rigtering and Weitzel, 2013).

Tidd (2001) discusses another dimension of innovation: he argues that there is no best practice because differences between industries have to be taken into account. He aims to include the environment, the degree of novelty\(^8\), organisation and performance in his analysis of innovation management. Different industries have different sources of innovation and different technological opportunities and market opportunities (Tidd, 2001). The sources of technological opportunities are divided into three mechanisms: (1) advances in scientific understanding (advances in science as innovation source), (2) technological advances in other related industries (other industries and networks as innovation source) and (3) positive feedback from prior advances (customers as innovation source) (Tidd, 2001). He exemplifies with the pharmaceutical industry as being dependent on advances in basic science as a source of innovation and describes the automobile industry as a technical parity competition where the technical knowledge is available to most firms, and competition is focused on producing new products to low cost (Tidd, 2001). He argues that innovation research should consider the organisations environment in studied industries, since generalisations are invalid. The paper concludes that the most suited organisational configuration in respect to specific technological and market environment should be identified, rather than to seek a best practice for any context (Tidd, 2001).

The corporate culture is repeatedly referred to as a parameter that influences intrapreneurship as it includes the values, beliefs and hidden assumptions among the members in an organisation. Hence, it is of interest to consider cultural differences in different nations. Much of the literature has its base in the U.S. and there is a lack of studies of the link between culture and innovation in a European context (Naranjo-Valencia et al., 2011). Studies of the organisational cross-culture validity supports the U.S. influenced concepts of intrapreneurship in general regarding Spanish firms (Naranjo-Valencia et al., 2011) and Slovenian firms (Antoncic and Hisrich 2001).

### 2.3 Concluding theory remarks

There is a common thread in the studied literature regarding what kind of parameters that potentially can stimulate innovation and intrapreneurship. Teece (2007) concludes that design of business model, procedures and formal organisation need to be integrated with

---

\(^8\) The degree of novelty in innovation explains how profound the innovation is in relation to current products, services or processes offered by the organisation or available on the market. The degree of novelty is described on a scale as; incremental, complex, radical or disruptive (Tidd, 2001, p. 170). Others distinguish fewer degrees, as incremental or radical (Menguc and Auh, 2010).
corporate culture. An analysis of how dynamic capabilities are shaped shows that firm specific parameters influence how practices may be applied (Jantunen et al. 2012). Tidd (2001) states that the external environment in different industries influences the innovation process and that the organisational configuration has to consider this. Menzel et al. (2007) highlight the cultural and social context as a foundation for intrapreneurship and suggest a set of organisational parameters that can foster innovation and call for an integrated analysis of these. A set of internal organisational parameters that can encourage innovation was described by Kuratko (1990), revised by Hornsby et al. (2002) and revised by Menzel et al. (2007). They all identify similar dimensions of organisational parameters with minor discrepancies in their descriptions.

Stam et al (2012) identify job design as the most important pre-requisites for enhancing intrapreneurship, together with individual cognitive ability. The study by Urbano and Turró (2013) of conditioning factors for intrapreneurship conclude that internal factors within the organisation are of high importance. These studies strengthen the view that internal factors are vital in stimulating innovation and intrapreneurship.

We identify the relevance of internal organisational factors that may stimulate innovation and recognise the interest of analysing the seizing phase of the innovation process. We analyse these internal factors in our case study with a focus on organisational parameters that can stimulate innovation. With basis in the literature we summarise the internal organisational factors in Table 2 on next page.
<table>
<thead>
<tr>
<th>Internal organisational factors</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Top management support</td>
<td>Having a helicopter perspective, encourage initiative in line with the organisation’s goals and strategies, being perceptive to ideas (Menzel et al., 2007). Willingness to facilitate and promote entrepreneurial activity in the firm. Includes championing innovative ideas, providing necessary resources and expertise (Hornsby et al., 2002). Management encouragement, top management experience, top management sponsorship, recognition of individual risk-takers, encouragement for calculated risks (Kuratko et al. 1991).</td>
</tr>
<tr>
<td>2 Advocates for the intrapreneurs</td>
<td>Managers or employees whose support influences intrapreneurship in three possible ways: the promoter who supports the idea and communicates it, the sponsor who see the commercial value, the gate-keeper who monitors the process of implementation (Menzel et al., 2007).</td>
</tr>
<tr>
<td>3 The physical environment</td>
<td>Physical nearness. Support privacy and quiet as well as spontaneous chance interaction and face-to-face communication (Menzel et al., 2007).</td>
</tr>
<tr>
<td>4 Organisational structure</td>
<td>Decreasing hierarchy, increasing knowledge sharing and generation of ideas (Menzel et al., 2007). Determines how ideas are evaluated, chosen and implemented (Hornsby et al., 2002). Job description, defining turf, team formation, mistakes as learning experiences, boundaries (Kuratko et al., 1990). Trust in the employee/manager relationship helps overcoming organisational barriers and hurdles (Rigtering and Weitzel, 2013).</td>
</tr>
<tr>
<td>5 Resources</td>
<td>Time availability, company budget process, lack of funding, options of financial support, problem solving time with co-workers (Kuratko et al., 1990). Perceived availability of resources for innovative activities (Hornsby et al., 2002). Allocating resources to new opportunities with uncertain future and not only to known processes and current affairs (Menzel et al., 2007).</td>
</tr>
<tr>
<td>6 Rewards</td>
<td>Rewards that consider goals, feedback and emphasis on individual responsibility. Results-based incentives (Hornsby et al., 2002). Additional rewards or compensation (Kuratko et al., 1990).</td>
</tr>
<tr>
<td>7 Risk taking</td>
<td>Willingness to take risks and tolerance for failure (Hornsby et al., 2002). Recognition of individual risk-takers, encouragement for calculated risks (Kuratko et al., 1990) Fear of failure (Urbano and Turró, 2013).</td>
</tr>
</tbody>
</table>
3. Method

3.1 Overview

This chapter gives an overview of the research design and methods used to identify internal organisational factors and their importance in creating an innovative context. The research method chosen was the Case Study as depicted by Yin (2009), who suggests techniques for organising and conducting the research successfully and further proposes that six steps should be used: plan, design, prepare, collect, analyse and share (Yin, 2009). The approach we used in designing the case study was the single-case design, in which we studied one unique project with special access to key informants that were present on site.

Of the various research methods (i.e. survey, experiment, interviews, a history, etc) we decided that the interview method was the most insightful, realistic, attractive and relevant for our purposes. The interview method chosen for this research study comes the closest to being defined as an “exploratory interview” (Kvale and Brinkmann 2009), in which 10 semi-structured interviews were performed in English and German while following prepared interview guidelines. At the end of each interview the interviewee was asked to rank the 7 key factors from literature research in terms of importance in creating an innovative context (see Appendix C: Ranking of Key Factors).

Throughout the interview process we tried to have high quality and high validity. Five out of ten interviews were held in German because it was believed that we would have higher quality of answers in the interviewee’s mother tongue and also because it’s the company’s working language. Any names and dates that were given by interviewees were verified. The participants remained anonymous and had altered identities, such as Participant 1, Participant 2, etc. When reporting the interviews, our approach was to question and then validate the answers, especially if participants were to give us quantitative data. For this study, most data was qualitative.

The chosen interview analysis method was “Bricolage”, which is a general approach of interview analysis using whatever tools are at hand (Kvale and Brinkmann 2009). The outcome of the interviews was summarised according to questions asked, interpreted, and compared with current existing literature.

3.2 Plan

According to Yin (2009), the Case Study was the most appropriate method to follow to help us investigate internal organisational factors and their importance in creating an innovative context. The plan was to form exploratory questions based on “how & why”, that didn’t require control of behavioural events, and were based around contemporary events. “What” questions may also be exploratory, in which situation a case study research method is also appropriate (Yin, 2009).

The research questions we asked for our topic were exploratory in nature, and as Yin (2009) advised the purpose of literature review was not necessarily to determine answers to a known topic, but rather to develop sharper and more insightful questions about the topic. Our approach, therefore, was to perform a literature review to narrow down our topic (see Table 2), formulate and clarify our research question (see Chapter 1.2) and then perform an interview study.

According to Kvale and Brinkmann (2009, p. 99) “no standard procedures or rules exist for conducting a research interview or an entire interview investigation”. There were, however, approaches and techniques we could use at various stages of an interview investigation. The authors also mention that different forms of interviews serve different purposes. For example, journalistic interviews report important events in society, therapeutic interviews...
seek to improve debilitating situations in people’s lives, and research interviews have the purpose of producing knowledge. The research interview is based on the conversations of daily life and is a professional conversation. The authors define an interview as an inter-view, where knowledge is constructed in the inter-action between the interviewer and the interviewee about a topic of mutual interest.

The strength of using the case study method is that data (not just empirical but also stories and anecdotes) can be collected over a period of time and be put in the right context. A limitation of the case study includes the presence of biased views that may influence the direction of findings and conclusions based on the interpretations of the case researcher. Other concerns about case studies are that they take too long, have massive documents, and make a generalisation from a single case or a single experiment (Yin, 2009).

3.3 Design

According to Yin (2009), a way of thinking about design is as a “blueprint” for the research, dealing with at least four problems: what questions to study, what data is relevant, what data to collect, and how to analyse the results. The approach we used in designing the case study was the single-case design, which is analogous to a single experiment. A primary distinction in designing case studies is between single- and multiple-case designs. Multiple-case designs contain more than one case (analogous to multiple experiments), require extensive resources and time, but the advantage is that the “evidence from multiple cases is often considered more compelling, and the overall study is therefore regarded as being more robust” (Yin, 2009, p. 53).

The rationale for using this single-case study was that we were studying one unique project with special access to key informants that were present on site. The case study may be considered representative of a typical project among many different projects and the lessons learned from this case are assumed to be informative about the experiences of the average industry (Yin, 2009). In our case, the lessons gleamed from this case study can be used in a typical innovative project in the automotive industry and other technology industries.

Kvale and Brinkmann (2009) further define the design of an interview study as planning the procedures and techniques, the “how” of the study and further advise to develop an overview of the entire investigation before starting the interview. For this study, current existing literature and data on innovative projects was compared to the outcome of the interviews.

Deciding how to analyse the interviews, according to Kvale and Brinkmann (2009, p. 190) should be done before the interview process even begins, and the method of analysis should then “guide the preparation of the interview guide, the interview process, and the transcription of the interview”. In addition, he suggests that the analysis may also be built into the interview situation itself, interpreting “as you go” before even leaving the interview itself.

3.4 Preparation

In preparation to collect case study evidence from multiple sources, we focused on preparing interview guidelines, establishing rules of confidentiality, arranging for an audio-recording device, identifying key people to interview and preparing to contact these individuals. We also focused on forming “good questions” (both in English and German), where the answers were then be categorised, measured, interpreted or analysed.

According to Kvale and Brinkmann (2009), the interview method chosen for this research study comes the closest to being defined as an “exploratory interview” which is open and with little pre-planned structure. The interviewer introduced a question or a topic and then
followed up on the subject’s answers and sought new information about the new angles on the topic. When scripting the interview in preparation, the semi-structured guide included an outline of topics that were covered with suggested questions.

Kvale and Brinkmann (2009) further suggest in preparation of the interview to develop two interview guides: one with the research project’s thematic questions (see Table 2) and the other with the interview questions to be posed (see Appendix B: Interview Guide). For our study, the interviewer had to have a firm understanding of the issues being studied, which came from literature research. There were 10 participants in the interviews from various departments, each with different tasks and perspectives of the project (see Appendix A: List of Interview Participants). All the interviewees received the same questions, but with different follow up questions based on how they answered the primary questions.

In our semi-structured and open-ended interviews, participants were asked the prepared questions and were allowed to speak freely and in their own terms which could lead to valuable data. More structured interviews were, of course, a possibility with predefined question-answer pairs, but we didn’t want our conceptions and current impressions to be imposed on the interviewees (Krippendorff, 2004). “The unfolding of stories and new insights can be rewarding for both parties in the interview interaction” (Kvale and Brinkman, 2009, p. 15). The researcher kept in mind that interpreting the transcribed interviews may have inspired the researcher to new interpretations and the interview transcriptions could contribute substantial new knowledge to a field.

As Yin advised (2009) the interviewer tried to be a good listener, adapted to unanticipated plans or events, had a firm grasp of the issues being studied beforehand and reduced the likelihood of bias by being responsive and accepting contradictory evidence.

### 3.5 Collection

The data collection involved interviewing key managers, project members and project coordinators. The interviews were requested to be performed in English. If English was not accepted by the interviewee, however, the interview proceeded in the German language. The interviews were audio-recorded on an iPhone, then transferred to a computer and afterwards transcribed. Five of the ten interviews were held in German and required an additional step to be translated to English. The researchers took great care to translate as accurately as possible, including the correct translations of slang and idioms. As Kvale and Brinkmann (2009) advised, the transcriber also listened carefully to what was said and how it was said and paid attention to any new interpretations of the meanings that may have spontaneously arisen.

As Yin advised (2009) the interviewer tried to be a good listener, adapted to unanticipated plans or events, had a firm grasp of the issues being studied beforehand and reduced the likelihood of bias by being responsive and accepting contradictory evidence.

As Kvale and Brinkmann (2009) advised, each participant was informed about the research purpose, the “why”, of the overall investigation and the main features of the design, as well as of any possible risks and benefits from participation in the research project. Each participant was also informed about confidentiality and who will have access to their answers. In order to protect their identity and avoid serious legal problems all participants remained anonymous (Kvale and Brinkmann, 2009).

Krippendorff (2004, p. 34) mentioned that conversations are not a mechanical system and participants alter the rules of their interaction as it unfolds. In order to minimise misleading interpretations of the interviewee’s answers, we were as explicit about framing the questions within the right context, “so that the results of the analyses will be clear to the scientific peers.” Kvale and Brinkmann (2009, p. 82) further clarified that “knowledge of the topic of the interview is in particularly required for the art of posing second questions when following up the interviewee’s answers”. Throughout the interview Kvale and Brinkmann (2009) also suggested the interviewer attempt to clarify meanings relevant to the project during the interview so that when it comes time to analyse the interview at a later time any
ambiguous statements can be clarified right there, during the interview process. This also communicated that the interviewer is listening, understanding and was interested in what the participant was saying.

Per Kvale and Brinkmann’s advice (2009) the interview was rounded off with the interviewer mentioning some of the main points that he has learned from the interview and asked if there is anything else the interviewee may want to bring up – giving the interviewee an additional opportunity to deal with issues he or she has been thinking about during the interview. The interviewer also set aside 10 minutes of quiet time after each interview to reflect and document his impressions of the live interview.

3.6 Analysis

The chosen interview analysis method was "Bricolage", which is termed by Kvale and Brinkmann (2009). The Bricolage method is a general approach of interview analysis and includes putting together an analysis using whatever tools are at hand. It’s an eclectic mixture of gathering meaning, whose outcome can be generated in words, in numbers, in figures, in flow charts or in a combination of these.

In this method the interpreter "adapts mixed technical discourses, moving freely between different analytic techniques and concepts" (Kvale and Brinkmann, 2009, p. 233). It is a common mode of interview analysis using ad hoc methods and conceptual approaches. Some examples of ad hoc techniques include noting patterns, themes, seeing plausibility and clustering. It is a way to achieve more integration among diverse pieces of data.

The main objective of the analysis was to extract findings from the data collected during the research process. Our data consisted of the transcribed and translated interviews which were systematically organised in an excel spreadsheet. In this spreadsheet, we had 10 tabs for the 10 interviewees with tab 1 representing Participant 1, and so on. The participants remained anonymous and have altered identities, such as Participant 1, Participant 2, etc. Within each tab we further organised the responses in categories according to interview questions, so that we could be able to select and extract relevant information. However, we found it helpful, at certain times, to use our word document where all the 10 interviews were transcribed and translated in conjunction with the excel spreadsheet.

Before analysing and interpreting the interviews, our approach was to question and then validate the answers, especially if participants gave us quantitative data. For example, Participant 5 mentioned that the project lasted 5 - 6 years, which we verified through BMW's online website (Sattig, BMW Group). We discovered a few potential relevant points that required more clarification and an additional telephone follow-up was performed. However, most of our data was qualitative.

We went carefully through the validated interview transcripts and selected quotes based on whether they answered the research question that was within our research focus. The quotes, which can be seen as fragments of the conversation, were put in the correct context and were interpreted and tried to have a balance between quotes and text. Kvale and Brinkmann (2009) recommend the quotes to be short (no longer than half a page) and to use only the best quote (i.e. the most illuminating and well-formulated statement). The authors also point out that if there are many different answers to a question, that it will be "useful to present several quotes, indicating the viewpoints they express” (2009, p. 280).

The outcome of the interviews was then summarised according to questions asked and interpreted, all the while looking for logical patterns, links or combinations (Yin, 2009) so that we could answer our research question. Our findings were then compared with current existing literature.
3.7 Share

Sharing the case study consisted of preparing, reviewing the draft by others, reporting and re-writing the final report whose target audience is the master thesis committee. Yin advises (2009, p. 164) that the “best general advice is to compose portions of the case study early (e.g. the bibliography and the methodology section), rather than waiting until the end of the data analysis process”.

According to Kvale and Brinkmann (2009), there are no standard modes of presenting the results of qualitative interview studies. However, the authors do point out that presenting interview findings through selected quotes give the reader an “impression of the interview content, and preferably also the personal interaction of the interview conversation, and they exemplify the material used for the researcher’s analysis” (2009, p. 279).

Throughout the thesis it was important to have a high validity. It was not only important in the report but in the whole process. Kvale and Brinkmann (2009) compare validation with a production line. It is not only essential to check the quality at the very end of the line, but validation should be performed throughout the process. The authors also stated that is crucial to verify the sources used, to dispute and to verify the interview findings. They state that “the quality of the craftsmanship in checking, questioning, and theorizing the interview findings leads ideally to transparent research procedures and convincing evident results” (2009, p. 253).

4. Case description

4.1 History of BMW

BMW originated in 1916 as Bayerische Flugzeugwerke and in 1918 became what is known today as BMW AG, Bayerische Motoren Werke. BMW AG is an automobile, motorcycle and engine manufacturing company that has its headquarters in Munich, Germany and is the parent company of the BMW Group. The primary business object of the BMW Group is the development, manufacture and sale of engines as well as all vehicles equipped with engines. The BMW Group is subdivided into the Automotive, Motorcycles, Financial Services and Other Entities segments. With BMW, MINI and Rolls-Royce, the BMW Group owns three of the strongest premium brands in the automotive industry. (BMW Group, 2014)

4.2 Company Vision

According to the 2012 BMW annual report, "Long-term thinking and responsible action have long been the cornerstones of our success” (BMW Group, 2014, p. 18). BMW’s vision for the year 2020 is to be the leading provider of premium products and premium services for individual mobility. They also set ambitious targets which “aim to reduce resource consumption per vehicle produced by 45% from 2006 levels by 2020” (BMW Group, 2014, p. 17). "To us, being the leading premium supplier also means being a leader in the field of sustainability. In every project, we consider environmental and social factors, as well as economic aspects, in our decision-making processes”. (BMW Group, 2014, p. 16)

4.3 Overview of BMW i3

The BMW Group confirmed its position as the pacesetter for future mobility in 2013 by presenting the series model of the BMW i3 simultaneously in New York, London, Beijing and Munich. BMW i3 is the first electric vehicle to be launched as part of a new sub-brand, BMW i, whose main goal is to develop innovative products concerning mobility. This will be followed in 2014 by the second model from the BMW i family, the BMW i8 plug-in hybrid sports car. (BMW Group, 2014)
The company vision and the goals for the BMW i3 describe mobility rather than cars and illustrate challenges and necessary changes in the future ahead. This identified need for changes stimulate the company’s ability to relocate resources in their competitive business environment. It strikes a chord of similarities with the objective of the Dynamic Capabilities framework in how to explain sources of competitive advantages over time (Teece, 2007).

According to Mui and Carroll (2013, p. 10) who write about a road map to innovation and success in large companies, they found three major principles that separated the successful companies from the failures: "The successful companies thought big, started small and learned fast. The failures did not". In the beginning of the BMW i project in 2007, BMW started small and thought big. Under the care of Ulrich Kranz, the project i leader who had overseen the rebirth of MINI and the highly successful launches of the X3 and X5 SUVs, an initial team of seven people began debating what the car of the future would look like. For example, it had to run on alternative energy, have a trendy modern design, incorporate technology in an intelligent way, and, most of all, it had to suit the lifestyle of the world’s megacities (Pollack, 2013).

4.4 Design & Innovation of BMW i3

The authors Mui and Carroll (2013) also came to the conclusion that businesses with successful innovation start with a clean sheet of paper. "The design team was installed in a building away from BMW’s main studios to keep its thinking fresh." "We had a sketch-off as we do with any new project" (Patton, 2011). Dr Norbert Reithofer, CEO and Chairman of the Board of Management of BMW AG, said "With this innovative vehicle, designed from the ground up, we will be creating new benchmarks for electric mobility from 2013 on. Our megacity vehicle will be significantly lighter than conventional cars and, in terms of sustainability, will set a new standard across the entire value-added chain.” He further stated that "This vehicle will radically alter the motor industry as we know it. The BMW Group is currently the only company that will be launching a volume-production vehicle on the market that features carbon fiber-reinforced material”. (BMW Group Corporate News, 2010)

The result was an electric car made entirely out of materials recycled using renewable energy. It’s made of recycled carbon-fiber and faux-wood paneling. Carbon-fiber, most notably used in the production of Formula One race cars, was incorporated into the design because of its high-strength, lightweight properties which also provides outstanding protection to vehicle passengers (BMW automobiles, 2013a). “This is the first time an entire passenger compartment made of carbon-fiber-reinforced plastics (CFRP) has been mass-produced” (BMW Group, 2014, p. 16).

"To an engineer, it’s a rolling platform of innovations, especially in terms of packaging and material choices, starting with the extensive use of carbon fiber-reinforced plastic, which makes up the underlying body structure“ (Henry, 2014). The vehicle architecture is made by two separate units: the Life module, which is the passenger cell made of carbon, and the Drive module with suspension, the drive components and the high-voltage battery. BMW calls this vehicle architecture LifeDrive. (BMW automobiles, 2013b)

According to Benoit Jacob, Head of Design BMW i, the “i” stands for intelligence, innovation, and inspiration. On the eve of winning the Gold iF Award for design in 2014, Jacob further states that "what a good design needs, and that actually reflects very well into the i3, is of course a lot of curiosity about things and also probably some courage. If you want to push a design to the boundaries and if you want to make it progressive you have to break, a little bit, being afraid." (InsideEVs, 2014a)

The company assembled a special group to speed the project to completion. "We put a team together of 15 exterior and interior designers, together with engineers", he said. "If
you want to create something very new in a short time frame you have to have everybody sitting together.” “It is sometimes hard for designers to get their heads around the change,” Mr van Hooydonk said. He added, “The chance to work on such a new formula is a once-in-a-lifetime opportunity.” (Patton, 2010)

The BMW i3 was selected as finalist for the 2014 World Car of the Year Award (InsideEVs, 2014b) and at the 2014 New York International Auto Show was announced as the winner of the 2014 World Green Car of the Year and also 2014 World Car Design of the Year (Henry, 2014).

4.5 Summary

The BMW i3 starts a new segment, a new era, for BMW with the integration of new technologies (i.e. pure electric vehicle, light weight, more sense of space). These new technologies are future/forward thinking, as is this entire new BMW i segment. The i3 project was chosen for this thesis because one of the thesis’ authors has been working for BMW for 13 years and was involved in the development of the first hybrid project as well as the i8 project. Therefore, for this thesis we had the necessary connections (engineers and managers) and access to the organisational setting in Munich, Germany where we could investigate the innovative context which supported the i3 project.

5. Analysis

The following section presents data from the analysis and interpretation of 10 interviews. The interviewees were 4 application engineers, 3 managers and 3 coordinators (see Appendix A: List of Interview Participants). All participants (referred to as Participant 1, Participant 2, Participant 3, etc.) were asked the same set of questions (see Appendix B: Interview Guide) and no one received the questions in advance. The 10 interviews were transcribed, data given was validated and five of the ten interviews that were performed in German were translated into English.

For the purpose of this thesis, the i3 project can be subdivided into three phases: the exploratory phase, the development phase and the stability phase (see Figure 5). The exploratory phase included a handful of creative and innovative people whose main goal was to define the project and set the goals of the project. The exploratory phase was the most innovative phase of the project, in which the automobile was designed from scratch (Participant 6, 2014). The development phase was also a very creative phase where many functions and the character of the car was developed. The third phase, stability phase, had the focus to stabilise and fine-tune the vehicle to get it ready for the launch. This phase was the least innovative phase and the willingness to accept new ideas from management decreased (Participant 3, 2014).

Figure 5. Three phases of the BMW i3 project. Note that this is an illustration of the timeline in the project and not an illustration of the innovation process.

5.1 Top Management Support

Overall, all the participants 1-10 (2014) thought that the top management’s role was very important in the project. The project i leader had the support from BMW’s Chief Executive Officer, Dr Norbert Reithofer, whom in 2006 took over as Chairman of the Board of
Management and CEO of BMW. The CEO gave the project leader the assignment, the power and the budget to develop project i. From this project i two vehicles were developed, BMW i3 and BMW i8. This project’s top management support from the CEO was a crucial key factor for the whole project. (Participant 6, 2014)

"The project leader had a very big assignment and had full freedom to do whatever he wanted. He also let people know that he had that freedom". (Participant 4, 2014)

"The project leader was strong enough and had a clear vision on the top level. On the top level the vision should be clear. If you go down a few levels, the targets should be flexible." (Participant 9, 2014)

Middle management was also recognized for their leadership and experience, which played an important and supportive role in the project.

"One of the key factors, at least for our group, was that we had a very strong leader for our group. He had a very high know-how from previous similar projects that also were developed and launched for the market. He was a role model for us and worked hard concerning our planning, timing and content for our tasks. He also made sure, that we delivered our tasks correctly. It is a great advantage to have an experienced leader who knows which direction will most likely be the most efficient one".

(Participant 1, 2014)

Many participants mention motivation as an important factor in the interviews. Our theoretical framework does not specifically examine motivation, but it may be considered as a part of several of the analysed factors. Urbano and Turró (2013) state that the boundaries between different concepts in social sciences are not very clear and that intrapreneurship can be analysed with other theoretical approaches, like the expectancy theory or the motivation theory. Continued motivation for intrapreneurship is affected by the relationship between managers and employees (Rigtering and Weitzel, 2013), which combined with the fact that many interviewees mention management in regards to motivation encourages us to bring up motivation in this sub-chapter.

"He (the project leader) was top-management that managed in his own way to motivate the whole team for the project and also, how should I say it, to perform. He managed to motivate the people to solve, at the time, unsolvable problems. The way he motivated the teams and how he interacted with the people was fantastic. We had far too little vehicles, we got the vehicles too late, the vehicles did not work properly etc., but he somehow influenced the right people so everything in the end worked out with a great success". (Participant 2, 2014)

"The motivation for me was to be able to work for a project where I can be very innovative and be able to initiate and improve features. That was a giant motivation to be able to be that creative at work. Also sometimes during dinner on test trips, the management held motivation speeches for us". (Participant 3, 2014)

Motivation came not only from management during meetings and test trips, but also the cooperation within the group was, in itself, motivational (Participant 2, 2014) as was the project (Participant 4, 2014) and the vehicle itself.

"Even though the (test) car was half camouflaged at that time, the reaction from pedestrians and from other people was very positive and very enthusiastic. People really looked at the car. They even waved. I have never got a reaction like that from pedestrians before. This feedback increased my working motivation for the project even more and I felt that we are putting a very good product on the market". (Participant 3, 2014)
“The project succeeded to motivate and to push all the employees to their absolute highest limit because it was pure joy to develop this product - to develop something totally new.” (Participant 7, 2014)

“I think what motivated everyone in the i3 project, was that we knew that we worked with a brand new product. We did something new for BMW. This was the true first electric vehicle for BMW, the first purpose design electric vehicle, the first electric vehicle with carbon body and with its own developed powertrain. There were factors that were completely new, for us, for BMW, it was not the twentieth combustion engine project and it was not the fourth 5 series etc. but something completely new. This was definitely a motivation for the employees”. (Participant 2, 2014)

We recognise that the interviewees where motivated by top management, by the cooperation in the project and by the high degree of novelty in the product. The discussions indicate that high motivation positively influences innovation, but we will not analyse how, as that is not part of our theoretical framework.

According to Participant 6 (2014), extremely high and focused goals were set by top management which helped set the direction of the project. In other, more mainstream projects, such as the BMW 3 series, rather small improvements are done from one generation to the next one. It is probably also necessary since a customer that has been buying the last generations neither wants nor expects a completely new vehicle with new characteristics. The BMW i3 has no previous model and is therefore a vehicle with complete new characteristics. To really be able to develop something innovative, these few but extremely high goals that were set in the beginning of the project helped everyone to develop in the same direction and be creative to be able to meet the goals. (Participant 6, 2014)

“We set some radical initial goals at the beginning of the project. These goals were extremely high. That is, by the way, a secret success factor for innovation, setting extremely high targets. These extremely high targets give you an impulse to be innovative.” (Participant 6, 2014)

“The spirit was: Go without a map and maybe it is a nice place where we end up. Maybe we have to take a step back, but when you haven’t been there you can’t know it’s right. People need some direction, but not too much in detail. We had a goal to go to the south and for that we didn’t need GPS. You can first tell if Florence or Rome is the best place when you have been there. During this process, you know where you are and you can compare to other places you have been to. Therefore it is ok to go back a step. Although, to set the perfect target from the very beginning is more or less impossible in many cases. Therefore, set only a few general goals in the beginning to show the direction and let the team in the project make sure that the best possible result is reached. If you are initially being told where to go, then the project can’t be innovative”. (Participant 9, 2014)

We find that setting high goals was a tool for top management in encouraging initiative in line with the strategy and goals for the project. This is one aspect of how top management may stimulate innovation according to Menzel et al. (2007).

5.2 Advocates

Our findings indicate that the interviewee’s answers regarding top management support is intervened with advocating, which is discussed in this sub-chapter. The term advocates may have been difficult to interpret for the interviewees. It may have been interpreted as advocates for the project rather than advocates for innovations within the project, e.g. by
Participant 4 (2014) who on a question regarding advocates, identified a project leader who was “really strong to get things done”.

An explanation may be that in our case the top management supported and were involved in the project to a high degree and hence, also acted as advocates for it. Menzel et al. (2007) describe three kinds of advocates including promoter, sponsor and gate-keeper. A promoter is someone who supports an innovation and communicates it to decision makers high in the organisation, a sponsor sees the commercial value and a gate-keeper monitors the process of implementation (Menzel et al. 2007). Based on the definition on an intrapreneurial advocate from Menzel et al. (2007), we conclude that the BMW i3 project had two types of advocates: the promoter and the gate-keeper.

These employees, who had an advocate role as part of their job, actively supported ideas and functions that were created in one department and made it possible to be implemented in another department (i.e. gate-keeper), as stated by Participant 5 (2014).

"It was for me a very challenging experience because I had a lot of contact with many engineering faculties inside our powertrain development. At the same time, I had a possibility of taking these very good ideas coming from the project and trying to develop them inside our engineering department”. (Participant 5, 2014)

The engineers and line managers helped to present the relevant information at the right time, to the right people and in essence kept the information flowing (i.e. promoter). (Participant 5, 2014). The engineers saw themselves as having an active role in bringing new ideas forth, in an advocative role. We conclude that many innovative ideas were engineer driven, rather than management driven, but management had a supportive role and the ultimate decision making.

According to all the interviewees, the project leader had the focus of innovation and new ideas were very much welcomed. This project pointed to having communication that was open in two directions, from management to engineers and engineers to management. For the i3 project, management and engineers both had the advocate role and supported each other.

It was also very important to the project that the CEO and the project leader supported the project and were very involved in the project. The supportive, or advocative role, from management trickled from top management down the chain to the engineers. Participant 4 (2014) stated that top management encouraged unconventional thinking and leaving the normal paths.

"This advocated role, I believe, was more up to the application engineer himself. I was able to bring the innovation forward. When something didn’t work out properly for different reasons, the leaders were involved and had a supportive role". (Participant 3, 2014)

“For the topics we were responsible for we needed to push them ourselves.” (Participant 1, 2014)

“Everyone had the personal responsibility to make sure that ideas find the right desk. Since the connection between the engineers and the PV’s (Line Managers) were very good, many of the ideas went that way. The PV’s were responsible for the vehicle’s functions and through them everyone had the chance to bring in innovations. They also had a personal interest to make sure that a good product was developed". (Participant 7, 2014)
“We could not only take for granted what was coming from the top, but we also put our own ideas into the project and let them live inside the project.” (Participant 5, 2014)

In the literature regarding factors that may form an innovative context, management support is repeatedly mentioned (Kuratko et al., 1990; Hornsby et al., 2002). Management support is however a wide measure and may include any management level or i.e. focus on trust in the relation between employee and manager (Rigtering and Weitzel, 2013). This may be one reason why Menzel et al. (2007) instead of using management support as a factor, used two similar factors: top management support and advocates. Our findings indicate that these two factors may actually overlap.

5.3 Physical Environment

Three different kinds of physical environments are discussed in the interviews: the building outside the main developmental area (where the project is started), the main developmental area (FIZ), and the working environment on test trips.

In the beginning of the i3 project a small group of people were personally hand-picked by the project leader. This small group, which grew over time, was placed outside of the normal development working environment. According to the interviewees that were present at the beginning part of the project, it was very important to be physically outside the normal environment where creativity could flourish.

“In the beginning the whole project area was in a very old building and it was very "hands on" building, very basic, like a white sheet of paper, which was the symbol for the whole project. They started exactly what they needed with a blank piece of paper and a pencil and that was how the building looked like too.” (Participant 4, 2014)

“The way of doing something and to have freedom, is needed to be innovative. Hence, the project i was initially developed outside of BMW innovation centre, away from FIZ, somewhere where we could close the doors and no one unexpected could enter the room.” (Participant 6, 2014)

“We purposely decided not to be in the big influential FIZ area, but rather to separate ourselves and to some extent, be free.” (Participant 8, 2014)

The group that was outside the main developmental area, at one point in the project, moved back to the main developmental area (FIZ) for practical reasons and to work more efficiently with other departments.

“At one point however, we found out that it is better to go back to the FIZ area since you need a big community to develop a car. It was hundreds of engineers involved. It’s not very efficient that everyone is walking to the little room, sometimes it’s better if the little room goes where the resources are”. (Participant 8, 2014)

The Project house, in the BMW innovation centre, is a less than ten year old building located within the main development area (FIZ). The building was designed with a pronounced criterion in its architecture: to simplify communication. The interior involves plenty of glass, including glass doors, with the purpose of reducing privacy and enhancing communication. An atrium functions as a central working area and also shortens walking distance between departments. The physical environment in the building assisted in reducing barriers and enable direct communication, both between hierarchy level and between departments (Weidenhammer, 2005). Some interviewees worked in the Project house during the development phase of the project (see Figure 5), and commented on the physical environment:
"We had a project facility in FIZ, where we were all together, where the whole project is based, and that helps a lot, because all the people have their working place in the same open space office and you can talk a lot with people and can hear what is going on ten meters away from you. So that is very important." (Participant 5, 2014)

However, not all departments were located within the main development area (FIZ) and there are experiences of difficulties with being separated on different locations (Participant 2, 2014).

Participants 1, 2 and 3 (2014) pointed out that test trips were an important key factor for the project’s success. Due to the high complexity of the project, the involvement of so many departments and engineers from different teams, participant 2 (2014) stated that:

"During the test trips the team and the colleagues grew tighter together. You also got to know yourself better and everyone worked towards the same goals".

A standard test trip is usually outside Germany, lasts 2-3 weeks and involves the participation team members and management. The test trip is a unique working environment that unites the car being developed with the various personnel, which are typically scattered throughout the company. The engineers and managers typically have long work days on these test trips and work even on Saturdays. The test trips bring the project extremely forward (Participant 2, 2014). But a test trip, however, does not always need to be outside of the country. As participant 2 (2014) pointed out:

"First, we initially started on our local test track outside of Munich, then to different test trips to, for example summer test trips in the south and winter test trips in the north. If we would not have participated, I think each of one of us would have worked with his own topics and then we wouldn’t have come as far as we did. It is crucial that the different colleagues from different departments come together and work in a casual workshop-type environment."

As important as the test trips were to the application engineers in bringing them closer together and to be more efficient, as one participant said the test trips did not really encourage creativity.

"The test trips are mostly done because of the extreme temperatures for testing and bringing the developers together. I don’t think the experience abroad made me more creative". (Participant 1, 2014)

At the test trips a degree of camaraderie seems to have developed. The information flow seems to be enhanced as people got to know each other. Literature regarding leadership recommends activities away from the usual physical environment in order to boost teamwork (DuBrin, 2013). The temporary physical environment at test trips is interpreted as a positive activity for the project, but not necessarily coupled to creating an innovative context. A secondary effect may involve increased communication, which may decrease hurdles within the organisation and thereby promote innovation.

The literature states that physical nearness and simple communication paths foster innovation (Menzel et al, 2007) and those values were in focus in the design of the Project house. The separate building used for the initial phase may have given nearness and good communication between the participants of the initial phase, but our findings show that the main advantage was to stimulate innovation by leaving the usual working environment. We interpret that the demand for a high degree of novelty in innovation required leaving the usual working processes, which was eased by using a separate building.

The building used for the initial phase is recognised by several interviewees as important for fostering innovation. Conducting the initial phase in the separate building gave the
participants a clear message that the usual processes were left behind, thereby increasing the anticipated degree of freedom. Leaving the usual processes is identified by several interviewees as a necessity for this project. The raw, simple atmosphere in the building seems to have enhanced the participants feeling of starting from a blank sheet.

5.4 Organisational Structure

The interviewees repeatedly reflect about differences between the organisational structure of the departments where they usually work and the organisational structure of the development project. This gave us information about parameters that was distinctive for the project.

In line with literature research (Menzel et al., 2007), our evidence shows that a flat organisational structure, or a decreased hierarchy, supported innovativeness, intrapreneurial behaviour, as well as generation and communication of ideas. For Project i, the project leader not only supported and built-up a flat organisational structure, but also exemplified this.

"We had very operative and lean management team. The project leader was very near to the developers and there were no hierarchical constructions between, no matter if it was first line, second line, third line etc. He was talking directly to the developers, sitting in the car and hearing their concerns". (Participant 4, 2014)

"We always had enormous support from the organisation and we were pushed to think in a very open minded way and to push always above our initial aims". (Participant 5, 2014)

The decreased hierarchical structure for project i, which is atypical for a highly structured organisation like BMW, set the scene for other variables to develop. This type of environment turned out to be more conducive for people to connect. Our findings highlights that this type of environment not only brought the employees and management closer together, but also increased the cooperation and team work between employees.

"The organisational structure was more flexible and more lean than other projects. We had very close way of working and very direct contact" (Participant 5, 2014)

"It was not a normal organisation with big overhead. It was very lean team, a very small team with only five persons who were very open minded. He arranged even more open minded persons which were unconventional thinkers and each person of the core group was acknowledged from the CEO. So it was a very high selected board of core people and that was the point why they easily adopt more open minded persons in the development department and so on. It was a very open minded project structure." (Participant 4, 2014)

"Project i was a small project and with a lean organisational structure... I believe that it was a key factor that the project was small, that is true. (Participant 9, 2014)

"The decision making process was kind of easier for people. You had a good idea, you came to a technique meeting and they didn’t send you back to re-evaluate 10 times before the decision, which is normally the case." (Participant 8, 2014)

"If you had a good idea and you know it is a high possibility that the idea can be implemented and approved, then you also really try to give it your best. The work setting we had was very open and undefined, with very high flexibility." (Participant 7, 2014)
Another variable that grew out of this low hierarchical project was that as people got closer together through test trips, having a lot of direct contact, sharing ideas and problem solving, and trust also developed. Rigttering and Wietzel (2013) found that a high degree of trust between manager and employee can enhance intrapreneurial and innovative workplace behaviour and helps overcome organisational barriers. They also found that “trust can be crucial when intrapreneurial actions motivate employees to abandon formal organisational rules and procedures and employees must be able to trust their direct manager to provide support in case things go wrong” (Rigttering and Weitzel, 2013, p. 355).

“So if somebody came and said for example, we can’t do that because someone from “B” has to do that, he was very eager to bring the people together and challenge all the people. A strong “trust situation” was one point and the second point with the unconventional thinking was to start with a blank paper. In many decisions he started with a white clean paper to decide what would be the best way and not to take the normal way, or solution, within BMW Group, but rather to create a unique brand and unique working spirit”. (Participant 4, 2014)

“I enjoyed the development and cooperation within the team and how the team spirit evolved”. (Participant 3, 2014)

“Problems you have, normally you would say in other projects, “it’s not my job” for example, or “we have never done that”. One good point was the spirit of the project, we are one team, we are one group within the whole company. We are within this unique project together and we do everything we need to do. With no discussion if it’s my job or not. So if someone has to do something, the motivation was so high that he did it as far as he could.” (Participant 4, 2014)

The organisational structure that was formed for the project differed from other projects within the BMW organisation. The flat project organisation promoted communication, and the decision making process was quicker than usual. As Hornsby et al. (2002) suggests, this organisational structure affects how ideas are evaluated, chosen and implemented. Our findings indicate that the open communication and quick decision making promoted project participants to put forth their ideas for evaluation and possible implementation. As the organisation was flat and management directly involved in the development, there were lesser administrative hurdles for discussions of new solutions.

Kuratko et al. (1990) found organisational structure to be important. They mention several factors regarding organisational structure but these are not described in detail, hence, the factors are somewhat difficult to use for evaluation of our case. In their study they find defining turf to be important. An interpretation of this factor includes creating a team spirit and sense of belonging. We found that the participant in the case experienced a strong sense of belonging to the project, which according to the findings by Kuratko et al. (1990) is part of creating an organisational structure that promotes intrapreneurship.

Another factor mentioned by Kuratko et al. (1990) is concern about job description. Participants in our case does not describe any uncertainties with their job description, but we note that management promoted participants to take further responsibility by communicating and to find solutions together with other departments, rather than to halt at their end of responsibility. This may be interpreted as the common turf was defined as the complete project rather than individual department, and that this change was a modification of participant’s job description.

Within this low hierarchical, high team spirit framework, there was also evidence of motivation being an important factor.
"For us in the group, specifically for my group it is true, I believe that a big motivation factor was the cooperation in the group. The team members fitted very well together, were a very good match and bonded together on test trips. During the test trips the team and the colleagues grew tighter together. You also got to know yourself better and everyone worked towards the same goals. Outside our group, all the people that were active in the project worked very closely. The human relationships were important, in my personal view. Everyone realised that you come further as a team. I think that was a very important factor". (Participant 2, 2014)

As earlier discussed, a tool used by the top management was to set high goals for the project. These high goals demanded radical innovations with a high degree of novelty. The interviewees describe that these goals would not be reached with the normal processes. The tool of setting high goals made it clear that the organisational structure had to be altered by abandoning the normal processes in the project. Our findings point towards that abandoning the normal processes was necessary for enabling radical innovations.

5.5 Resources

Budget

The participants interviewed mentioned that overall, the i3 project had sufficient resources, when it comes to budget, vehicles and personnel. For example, the budget, or the financial factors were not really an issue. It was not something they worried about. Participant 4 (2014) mentioned that there were resources for working, but not necessarily any extra resources for creativity and innovation.

"In this project there was a lot of money or budget available to implement innovations and developments. The management was also relatively fast with the decisions concerning new ideas and innovations. The management was quick to say, we need that and we don’t need that. We really wanted to bring the car to completion and we were really pushed accordingly, therefore we had the budget that was necessarily to perform efficiently". (Participant 3, 2014)

"For the i3 project, I would say, that budget was definitely not an issue". (Participant 1, 2014)

Personnel

Participant 4 (2014) considered the people were the resource, how they made their decisions and how they communicated. It was not about the money. The interviewees reported that the i3 project was a good combination of young people as well as experienced people.

"A lot of young people were in this project. Which means people who have just finished their studies. We were often with people on test trips who basically saw a vehicle for the very first time and had a huge learning curve. The big advantage with these young and inexperienced people was that they were open to implement new features, often more open than older, who have seen it all. Everybody was thinking “out of the box” and gave everything they could. It was a very pro-active working environment." (Participant 4, 2014)

"When it comes to personnel we had a big advantage. We managed to acquire people who were involved in the project ActiveE and in the MINI E projects. They knew what had to be done. That means that we didn’t have to teach everything about an electrical vehicle project since we could use the knowledge from a previous project. That definitely improved our initial speed". (Participant 2, 2014)
The interviews showed that the participation of employees with their diverse set of skills was effective at problem solving and that having a younger team was an advantage.

"I think it is crucial to have a young team where the people are unmoulded, not as fixed, and even approach some problems with some naivety, because new ideas can be sometimes invented. I think overall the innovation is enhanced with young people in the team". (Participant 3, 2014)

"It was a very young dynamic working team. There were a lot of people with good ideas and that was a very creative source for everybody". (Participant 4, 2014)

Vehicles

When asked this question above, many have also answered that the test vehicles were an important resource. Vehicles, for testing purposes, entered the project during the developmental phase. In the beginning of this phase they had hardware issues (i.e. electric power unit, high voltage battery) since the hardware technology was not yet mature.

"The prototype vehicles were too few in the beginning. After a while it was definitely enough with vehicles available. That we had too few vehicles in the beginning was not because we tried to save money, but rather the high complexity in the project". (Participant 7, 2014)

These topics got a lot of management attention and in the end, the vehicle availability during the project was good (Participant 3, 2014). There were enough test vehicles, when compared to other BMW projects, and overall they had good access to vehicles (Participant 1, 2014).

"We had normally so many vehicles that we were often two persons for every vehicle on test trips. That was a very pleasant situation that we had a good vehicle work environment. To be forced to interrupt a measurement because of other colleagues costs a lot of time". (Participant 1, 2014)

Time

The interview results also showed that during the developmental phase time was a critical factor in the i3 project, especially if the project is very innovative and a brand new product like the BMW i3 was (Participant 5, 2014).

"I think our time management was pretty good, and I think that the project was able to organise time in a very efficient way. A matter of fact, we were extremely fast in the development because we created from scratch, a brand new vehicle in about 5-6 years. I think that was a very good result. When you think that it was really done from scratch, it was starting from zero, so I think that was a very important result". (Participant 5, 2014)

There was a certain pressure to get the car up and running and that they had to keep to the schedule. Scheduling and planning were important aspects of the project, which sometimes created the need for fast decisions. (Participant 4, 2014)

"The whole development was extremely fast and we were often forced to deliver a quick solution. Sometimes, almost without deep thinking, we had to develop a function because the next software delivery was coming up. If more time would have been available, I think even more and better features would have been implemented." (Participant 3, 2014)
"At a certain time in the project, it was clear that we wouldn’t be able to meet the deadline for start of production unless the support from certain departments would increase. Then there was a clear statement, from top down, that from now on i8 is prio two and i3 is prio one. That is how it helped us. But before that it was the other way around, and then it was difficult with the work load. That’s the matrix organisation we have, where a department or a team, or even an employee works for different vehicle projects”. (Participant 2, 2014)

"Since so many things were totally new concerning the project, many had an extreme high motivation and were able to achieve a very high workload. The project to develop the BMW i3 was unique and every employee had the right mind-set in this extremely tight project. We had little time to bring an innovative electric vehicle to the market”. (Participant 7, 2014)

We note that resources in the project were considered as satisfying when it comes to budget and personnel, but limited regarding time. Hornsby et al. (2002) describe that slack resources may stimulate experimenting. We find that even though time was limited in the project, the interviewees do not point out a relation between time restriction and innovation. Kuratko et al. (1990) highlight problem solving time with co-workers as an element that can stimulate innovation. Due to the organisational structure with good communication and widen responsibilities there seem to have been enough of problem solving time across the project, even though the overall time was a limited resource.

5.6 Rewards

All interviewees said that they personally did not receive any special monetary rewards for creativity or innovativeness, aside from the standard BMW bonus system. For many it was a good experience just to be part of this innovative project and for some it was considered a good career move because the project had certain glamour to it (Participant 3, 2014).

"The reward was to be a part of project i. To be one of the core team of the people who were different to the whole BMW Group." (Participant 4, 2014)

"I think for many people the i3 project was a stepping stone. The motivation for me was to be able to work for a project where I can be very innovative and be able to initiate and improve features. That was a giant motivation to be able to be that creative at work”. (Participant 3, 2014)

"The project i3 really motivated the employees. I definitely think we can be happy and proud that we were a part of the BMW i3 development.” (Participant 7, 2014)

Interviewee 2 stated that monetary rewards would be difficult to establish because the question would arise about defining the goals: “If the targets are too low, it’s not good and if they are too high the people fear that they can’t reach them”.

For other interviewees the reward was also to be working with a product they could really get behind, where they could enjoy the development and cooperation within the team (Participant 4, 2014). According to Participant 2 (2014) top management also showed their appreciation which was welcoming and rewarding as well.

"I think appreciation from someone like the project leader helped a lot. One time he actually came to a test trip, for example, gathered all the developers and workshop staff and held a half an hour speech. After the speech everyone came out enthusiastic and inspired. We said, “We can do this!” That was really good. Everyone got so much energy from that little moment. The interaction from the top-management during the project helped a lot in my opinion. The project leader is very good to motivate people. If it would have been another person who would have held the speech that
day, a person that is less skilled to motivate an audience, it might even be negative”.
(Participant 2, 2014)

According to the literature, rewards may foster innovations. Hornsby et al. (2002) state that reward systems must consider goals, feedback, emphasis on individual responsibility and results-based incentives. We interpret that viewpoint of reward systems as individualised which may not fit the studied development project. Since only few goals were set, the results would likely be difficult to measure on individual basis and result-based reward systems would thus fail.

Other rewards than monetary, as appreciation and career opportunities, seem to have been important drivers as these are mentioned in many interviews. Career opportunities are obviously an individual reward, while appreciation of the innovative project strikes a collective tone. These non-monetary rewards may have had a limited lifespan though, participant 6 (2014) mention that project members returning to their usual departments faced some difficulties:

"In a BMW perspective, it was a reward for the employees to be allowed to work for the project i, an award, if you will. Many probably thought that if they would achieve these radical goals, they would get a big recognition. That failed though. Why? Because the employee’s management changed after project i ended and the engineer had to prove himself all over again” (Participant 6, 2014)

The theory regarding rewards may better fit any general organisation preoccupied with its usual processes. We studied a case where the managers strived to foster innovations and successfully created a project many employees wanted to be a part of. Combined with the influence the managers had in choosing project participants, just being part of the project was considered as a reward.

Appropriate rewards can also enhance willingness to assume risk (Hornsby et al., 2002), which lead us to the next subchapter.

5.7 Risk Taking

There is a certain component of risk in every engineering activity, and hence within each project. According to our literature research, the willingness to take risks and the tolerance of failure by top and middle management is a major component of intrapreneurial activities within a company (Hornsby et al., 2002; Kuratko et al., 1990). According to Participant 8 (2014), the failure of the BMW i3 project, as in not bringing a car to the market, was not an option since too much money was involved. However, risk taking was present and it was even part of the budget (Participant 3, 2014).

"I would not say that we were encouraged to take special risks or take more risk than normal risks you would normally take in any development process or engineering process in other projects. We had probably another way of approaching risk, another way of understanding if some risks we take have greater or smaller impact on our objectives or on our aims. It wasn’t as we said we will just take many risks and go on. It was a very good balance. (Participant 5, 2014)

Risk taking was present and encouraged, and according to our data the risks were identified, defined, categorised and decisions were then made accordingly. It was not whether there was risk taking involved, but rather about how to manage the risks and making sure the engineers understood the risk.

"People had the feeling for that, the managers and the project leader, had accepted risks to a very high level, higher level than normal, but they had, how should I say, they had the development experience from many years, and they were able to decide
what is a high risk, what is fundamental risk, or which is a defensive manoeuvre. It was encouraged from one side but it was on the other side very dedicated questions if the risks were really that serious or not. The management strongly questioned the risk taking by the engineers, and if they could understand and manage the core of the risk”. (Participant 4, 2014)

The attitude towards risks and how failure was accepted are other aspect affecting creativity (Hornsby et al., 2002; Urbano and Turró, 2013). Our data shows that this project, with so much team spirit, also had open and honest communication about risks and potential failures. Also of importance was that new ideas that didn’t go through and possible mistakes made were not punished.

“Nobody was ever punished for, maybe not being able to follow the pace of the project, or maybe making some wrong decisions. One thing we always said, it is always better to make a wrong decision than to make no decision. When you make the wrong decision you usually find out very quickly. It was wrong and then you act fast”. (Participant 8, 2014)

“Honest communication was important, if we do this and that, this leads to that risk, should we do it or not? Risks were encouraged and there were no punishments if it failed. But I think in general, when people work together, when you are clear with the communication about the possibilities and risks for certain decisions, in my experience, I have never had a bad experience if an idea actually failed in the end. But here in this project, from the management, it was often communicated and stimulated. Please go to the edge. When someone goes over the edge, he will not be punished. I don’t know any person who had a career disadvantage because he went over the edge”. (Participant 9, 2014)

Our data also suggests that there was less risk taking towards the end of the project, in the stability phase. In this phase the willingness of management to accept new ideas decreased and the focus was rather to fine-tune and stabilise the car to get it ready for the market (Participant 3, 2014).

“At the beginning of the project, everything was completely open. One could develop whatever one wanted. But clearly, the closer the project came to start of production, more focus was on monitoring and less on risk taking”. (Participant 3, 2014)

From another perspective, if there are too many innovations there could be a higher risk that the quality of some of these innovations may not be good enough, or that it may not work properly for the customer.

“Too much focus on innovations may lead to less time to test the hardware, which may lead to lower quality for the end customer - which could be a risk for the project, that the product comes out with a lot of innovations that may or may not have the premium quality level we want it to have.” (Participant 10, 2014)

The interview answers indicate that there was a balanced approach towards risk in the project. The perceived fear of failure was low and the willingness to take risks was high, which should stimulate intrapreneurship (Urbano and Turró, 2013), yet there was risk awareness and the risks were managed in a systemised way.

5.8 Ranking of Key Factors

At the conclusion of each interview, the interviewees were asked to rank the seven key factors identified in our literature research in importance of creativity. Figure 6 below shows the average ranking by the ten participants.
According to our literature research and most of the interviewees, all these key factors are important for creating an innovative context. However, when asked to rank these seven key factors our results show that the top three are top management’s role, advocates and risk taking. This is followed by organisational structure, resources and the physical environment. The least of importance was rewards.

The high (and equal) ranking of top management role and advocates in importance for creativity is no surprise in our case, since most interviewees honours top management in many aspects and as we explained in analysis (section 5.2), we propose that most interviewees regarded top management as advocates within the project. Risk taking was also considered of high importance according to our interviewees. Risk taking was present and even encouraged by management. Participant 9, for example, mentioned that engineers could go further, they could go to the edge of what’s possible and there were no punishments if an idea failed.

The organisational structure was also important due to the flat, or lean, hierarchy. This type of structure turned out to be more conducive for people to connect and brought the employees and management closer together, increasing the cooperation and team work. Resources ranked middle importance and participants felt they had sufficient resources for budget, personnel, time and vehicles. However, more time would have been better, according to some participants.

The physical environment was ranked of lower importance, but this was probably affected by the different interviewees experiencing different phases of the project and hence worked in different locations at different times.

A possible explanation of the low ranking for the importance of rewards may be related to how our theoretical concept fits the case and the participants’ interpretation of our interview questions. According to the theory, rewards include both monetary and non-monetary rewards such as appreciation and career-opportunities. Interviewees seem to spontaneously
link rewards with monetary rewards and since there were no monetary rewards, the ranking of the importance of rewards becomes low. We interpret that the interviewees link between rewards and appreciation is weaker since appreciation, though being important, is mentioned in the context of top management support, advocates and organisational structure as well.

5.9 Summary of findings

This summary of findings serves the purpose of bridging our analysis with conclusions in the following chapter. We have analysed our case with focus on seven internal organisational parameters that may create an innovative context. Prior to our interviews we already had the knowledge that the organisation had undertaken this development project in a different way than other development projects. We knew that our case was considered as innovative and that the outcome, the BMW i3, had required many innovations in order to be realised. Our theoretical framework with seven organisational parameters has given us a structure in interviews and analysis. However, we have found that alternative approaches may be more suitable in explaining some elements, i.e. motivation. During the interviews we also had open questions and we asked the interviewees of other parameters that may have influenced innovation. The answers indicate that there are external parameters outside the organisation that influenced innovation: suppliers (Participant 5, 6 and 8, 2014), competitors’ products (Participant 1, 2, 5, 6, 7 and 10, 2014) and appreciation from the public (Participant 3, 2014).

Regarding our interview methodology, there was a balance to consider in how detailed the questions should have been. Personal traits made the interviewees differ: some interviewees easily expanded their answers while others required more details from the interviewer. Our sub questions may have influenced the answers further than desirable, as in question 9 about other parameters where our sub question mention competitors and suppliers. These external parameters also dominated the answers and we could not conclude if it was because they were important or because we brought them up.

We used a timeline to describe phases in the project, illustrated in Figure 5. Our results demonstrate that radical innovations take place in the beginning, in the exploratory phase, and as the project mature the openness for innovations decreases. These findings are similar to the conceptualisations of the innovation process. Our study aimed to focus on the seizing phase described in the Dynamic Capabilities concept which we aligned with the contextualisation and development phase described in the concept of Innovation Life-Cycle Management, as illustrated in Figure 1. Our interviewees worked in all phases of the project, from the exploratory phase to the stability phase. Since we gained data from all phases of the project, our results do not solely focus on the phases of the innovation process that we set out to focus on. However, we allow our analysis to include data from all project phases since we consider the data to have a bearing on the studied factors that may foster innovation.

Our theoretical framework builds upon literature regarding intrapreneurship which we use to identify internal organisational parameters that may foster innovation. The literature may be more suitable in cases where intrapreneurship and innovation is stimulated in organisations within their usual processes. Our case was early on defined as a special project with high demand for innovations, and the organisations usual processes were initially abandoned. We recognise that the most suitable theoretical approach may differ between studies of innovation in organisations usual processes and innovation in our case. However, because the project demanded innovations we have been able to study how the organisation altered its processes and how the participants perceived these changes.
Another advantage with the project setting in our case was that the interviewees were familiar with innovation and had opinions about it.

Compared to other studies our results have similarities as well as differences. In a master thesis conducted by fellow students at BTH, innovation was studied with the concept of Dynamic Capabilities as a basis, yet with a different perspective. Chikumbo and Efremovska (2012) describe innovation agents whose intrapreneurial skills drive innovations through the phases described in the concept of Dynamic Capabilities (sensing, seizing and transforming). As a complement they also use a framework called the innovation value chain, which describes three similar phases of the innovation process and intrapreneurial activities in these phases (Chikumbo and Efremovska, 2012). They describe ten intrapreneurial skills for the innovation agents and some share similarities with factors in our theoretical framework, i.e. skills as bridge builder, information provider, networker, idea evangelist and systems thinker has similarities with our described role of advocates as well as top management. The authors make a ranking of the importance of these intrapreneurial skills, but we make no further comparison as they focus on activities while we also include organisational settings. In the following sub chapters we compare our results with results from similar studies and summaries our findings.

Early in our interviews it became apparent that top management had a major role in the project and that they were important in fostering innovation. Top management defined the project with a high demand of innovation. In the exploratory phase of the project, they were able to handpick a small team that were expected to meet the demand for innovativeness. The project leader had support from the very top management including CEO and the board, and were authorised to use unconventional methods for stimulating development of the innovative product. The interviewees repeatedly mention the project leader as a key person for creating a working environment that stimulated innovations. Top management is also described as very motivating. A tool used by top management was to set very high goals for the project, which the interviewees describe as inspiring. We find that these high goals helped participants to leave the normal processes, be more open-minded and find unconventional solutions.

Kuratko et al. (1990) made their empirical study in the U.S. health care industry and found several items that to a various degree contributed to three elements of intrapreneurship, as described in chapter 2.2. We share similar results regarding top management support as the results by Kuratko et al. (1990) stress the importance of top management sponsorship.

Hornsby et al. (2002) collected data from middle managers in various industries, their first step of the analysis confirmed the five factors of intrapreneurship they used, as described in Chapter 2.2. In the second step of their analysis they obtain importance of the factors they used in their surveys. The results from the study by Hornsby et al. (2002) show that management support is the most important factor, with high load on elements including recognition of risk takers, encouragement for calculated risks and swiftness of the organisation to use improved work methods. We would consider these elements within other factors, reasonably in risk taking or organisational structure. Management support is a factor with an inherent broad content with various descriptions in the literature, there are dissimilarities even within our literature stream. However, we share the results that management support is the most important factor, provided we consider our factors top management support and advocates as a combined factor.

Our results regarding advocates for intrapreneurship is intervened with top management support, likely because the he term advocates was difficult to interpret for the interviewees. We find that the project had two types of advocates among engineers and line-managers: (1) promoters who supports an innovation and communicates it to decision makers and (2) gate-keepers who monitors the process of implementation. Top management with both the
project leader and the CEO was considered as advocates by the interviewees since their support trickled down in the organisation. We compare our results regarding advocates with other studies above as a part of top management support. Menzel et al. (2007) described the role of advocates for intrapreneurship which we used in our theoretical framework, but Menzel et al. (2007) does not provide any empirical study.

Regarding **physical environment** we do not have a unified picture since the interviewees worked in some different locations. Nevertheless we identify three different environments that influenced innovation in the project: (1) The building used in the exploratory phase located outside the usual environment which promoted freedom and innovation. We interpret that the use of this building encouraged participants to leave the organisations usual processes behind. (2) The Project house, a building used by some interviewees in the projects development phase had a design promoting communication, which seem to have assisted in promoting innovation and (3) test trips that created a distinctive working environment where team-spirit and communication flourished. There is a limited amount of results for comparison with other studies, as the factor physical environment is only qualitatively described by Menzel et al. (2007).

Our findings, pertaining to **organisational structure**, show that the project had a lean, or flat organisational structure. This decreased hierarchy supported innovativeness, intrapreneural behaviour, as well as generation and communication of ideas. This type of organisational structure turned out to be more conducive for people to connect because it brought the employees and management closer together and increased team work between employees. Another variable that seemed grow out of this low hierarchical project was that as people got closer together through test trips and having direct contact, trust also developed. Literature research suggests that a high degree of trust between manager and employee can enhance intrapreneural and innovative workplace behaviour (Rigtering and Wietzel, 2013). The flat organisational structure not only promoted communication but also quickened the decision making process since the management was directly involved in development and there were less administrative hurdles of new solutions.

Comparing our results with Kuratko et al. (1990) we find that they elevate job description and defining turf as important, but we do not find these items central. However, team formation scores high in their study and we also identify team building as important. The factors Hornsby et al. (2002) used for collecting data by surveys differed slightly from our factors. Notably the factor work discretion which includes autonomy, freedom, hierarchy and routines, which we categorises as organisational structure. Hornsby et al. (2002) found average importance of work discretion. However, they also used the factor organisational boundaries and found low importance of this. We find organisational structure to be of average importance which is similar to the results from both Hornsby et al. (2002) and Kuratko et al. (1990).

Regarding **resources**, all participants perceived that there were adequate resources for the project. The financial aspect of the project for the people involved was generally not an issue and the interviewees reported that it was not something they worried about and had the budget that was necessary to perform efficiently (Participant 1, 3, 4, 5, 6, 7, 8, 9 and 10, 2014). When it came to personnel, many felt this project had an advantage because they had acquired people that worked on previous electrical vehicle projects (i.e. ActiveE, MINI E) (Participant 2, 2014). Another advantage was that the project also had a very young and dynamic working team, which brought inexperience to some extent but it was coupled with the openness to problem solving, to be more creative and to think outside of the box. The mixture of older experienced engineers and younger, unmolded people was an important component for success in this innovative project. Test vehicles were also an important resource. There were too few vehicles in the beginning of the project due to the complexity of the project, not due to money. This topic got a lot of management attention
and in the end the vehicle availability was very good. Interviewees reported a very pleasant and good vehicle work environment and on test trips they were only two people per every vehicle. Time was a critical factor in the i3 project, especially because it was very innovative and a brand new product. The project was limited in time, however interviewees reported that they focused on good time management and tried to organise the project in a timely and efficient way.

The results by Kuratko et al. (1990) show high importance of resource availability in financial terms, while we in our case did not lack funding but time resources was of higher concern. Hornsby et al. (2002) found average importance for time availability which is in line with our results.

Regarding rewards, all participants said that they personally did not receive any special monetary rewards for creativity or innovativeness. According to our literature research, rewards include both monetary and non-monetary rewards such as appreciation and career-opportunities. According to the ranking of key factors, rewards scored the lowest, possibly because the interviewees linked rewards with monetary rewards. However, for some it was considered as a good career move since the project had a certain prestige about it (Participant 3, 2014). Some interviewees also were proud and happy to be part of the project, and mentioned that the project was a reward by itself (Participant 4, 6 and 7 2014). Top management also showed their appreciation which was welcoming and rewarding as well (Participant 2, 2014).

The results from the study by Kuratko et al. (1990) scored high on additional reward/compensation, the results by Hornsby et al. (2002) show average importance, while we find rewards to be of low importance.

According to all participants, risk taking was present and was an important key factor for the project. Top and middle management accepted and encouraged risks to a very high level, but at the same time they questioned the risk taking by the engineers. It was not whether there was risk taking involved, but rather about how to manage the risks and making sure the engineers understood the risk. Top management had a way of approaching risk, in which the risk was identified, categorized and communicated openly. There were no punishments if something failed (Participant 9, 2014), which shows that failure was accepted by management. However, the failure of the entire BMW i3 project was not an option since too much money was involved (Participant 8, 2014).

We share similar results with Kuratko et al. (1990) regarding risk taking. Their results score high on items concerning encouragement for calculated risk and risk taking as a positive attribute, and we find risk taking as one of the most important factors.

6. Conclusions

We conclude that management support is the most important internal organisational factor for fostering innovation. Our results support this conclusion, when our factors top management support and advocates are considered together as management support. The conclusion is also supported by results from similar studies (Kuratko et al., 1990; Hornsby et al., 2002). It is effortless to further confirm by literature that management support is positive for innovation (Urbano and Turró, 2013; Antoncic and Hisrich, 2001). Hence, our results are not unexpected, but confirm findings in similar studies.

The physical environment we also found to be a key factor that influenced innovation. However, we cannot conclude one single physical environment was the most important, but rather that each of the three environments identified were more suitable in different
phases of the project. In the exploratory phase of the project we found it was more important to be located outside of the main development area and outside of the main processes in order to encourage freedom and innovation. In the development phase we found the main development location, along with test trips, to be the most important to assist in innovation because it brought all the engineers closer together where they could communicate and work more efficiently.

We concur with Menzel et al. (2007) that organizational structure with decreasing, or flat hierarchy is an important key factor, which supports innovativeness, intrapreneurial behaviour, as well as generation of ideas. This type of organisational structure brought the employees and management closer together, increased team work between employees, promoted communication and quickened the decision making process.

We conclude that resources were an important key factor and most participants perceived that there were adequate resources for innovative activities. The project was reported to be well funded and for the people involved, the budget was not an issue. Personnel consisted of young, fresh from the University engineers as well as experienced engineers. The younger employees may have brought some inexperience, to some extent, but it was coupled with the openness to solve problems and to think outside of the box. This turned out to be a good combination and many felt that this dynamic working team was an advantage for the project. We found that vehicles were also an important resource and were crucial for implementing and validating new innovative features and components. The results by Kuratko et al. (1990) show high importance of resource availability in financial terms, while we in our case did not lack funding but time resources was of higher concern.

We found a discrepancy between our results and similar studies regarding the importance of rewards as a factor for fostering innovation. We find rewards to be of least importance while other studies show higher importance (Kuratko et al., 1990; Hornsby et al., 2002). We acknowledge the discrepancy, in our case, to the absence of monetary rewards and that alternative rewards, like appreciation and career opportunities, were considered under other factors.

We found that risk taking was one of the most important key factors and share similar results with Kuratko et al. (1990) and Hornsby et al. (2002). Top and middle management accepted and encouraged risks to a very high level and at the same time did not punish anyone if an idea failed. Those two components coupled together we found encouraged innovative behaviour. It was not a question of if risk was present, but rather how to manage the risk and making sure everyone understood the core of the risk.

We have defined a theoretical framework and used it in a study of internal organisational factors that can foster an innovative context. We note that there are other factors, like motivation and external environment including suppliers and competitors, which may be studied with alternative theoretical framework. Our theoretical framework has supported the study and contributed in giving us a comprehensive insight into the innovative context of the case. Our chosen methodology with semi-structured interviews and Bricolage analysis assisted us in gaining structured qualitative data as well as wider descriptions of the working environment in the case.

We have fulfilled the purpose we set out in Chapter 1.3 by identifying internal organisational factors that may create an innovative context, described their content, ranked their importance and compared our results with other studies. The practical implications of this study include a contribution to the knowledge about organisational factors that should be considered by firms that strive to create an innovative context. Our case was conducted within the automotive industry, and we consider our findings useful for innovative projects in the automotive industry along with other technology industries.
7. References


## 8. Appendix

### 8.1 Appendix A: List of Interview Participants

<table>
<thead>
<tr>
<th>Name of participants</th>
<th>Job function</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participant 1</td>
<td>Application engineer</td>
<td>15.04.2014</td>
</tr>
<tr>
<td>Participant 2</td>
<td>Manager</td>
<td>16.04.2014</td>
</tr>
<tr>
<td>Participant 3</td>
<td>Application engineer</td>
<td>17.04.2014</td>
</tr>
<tr>
<td>Participant 4</td>
<td>Coordinator</td>
<td>23.04.2014</td>
</tr>
<tr>
<td>Participant 5</td>
<td>Coordinator</td>
<td>24.04.2014</td>
</tr>
<tr>
<td>Participant 6</td>
<td>Manager</td>
<td>29.04.2014</td>
</tr>
<tr>
<td>Participant 7</td>
<td>Application engineer</td>
<td>07.05.2014</td>
</tr>
<tr>
<td>Participant 8</td>
<td>Manager</td>
<td>12.05.2014</td>
</tr>
<tr>
<td>Participant 9</td>
<td>Coordinator</td>
<td>12.05.2014</td>
</tr>
<tr>
<td>Participant 10</td>
<td>Application engineer</td>
<td>13.05.2014</td>
</tr>
</tbody>
</table>
## Appendix B: Interview Guide

| INITIAL CONTACT | • Make initial contact & appointment with participants  
| | • Inform participants purpose of interview  
| | • Request permission to audio record |
| PRE-INTERVIEW | • Inform participants of anonymity  
| | • Inform participant who will have access to interview data |

<table>
<thead>
<tr>
<th>English</th>
<th>German</th>
</tr>
</thead>
</table>
| **Question 1:**
What were some key factors that made the project successful?  
Sub question: Why were they important?  
** Frage 1:**
Welche waren einige der wichtigsten Faktoren, die das Projekt zum Erfolg führten?  
**Detailfrage:** Warum waren sie so wichtig? |
| **Question 2:**
What was top management’s role and how involved & supportive were they?  
Sub question: Which role did your leader have in the development project? (perspective or a mindset, …)?  
** Frage 2:**
Welche Rolle spielte das Top-Management im Projekt, wie stark war es daran beteiligt und inwiefern hat es unterstützt?  
**Detailfrage:** Welche Rolle hat Ihre Führungskraft in dem innovativen Entwicklungsprojekt eingenommen? (Perspektive, Denkweise, …) |
| **Question 3:**
How was innovation encouraged in the working environment and who encouraged or advocated for it? (employee-driven innovation vs. top management influence) (i.e. by overcoming organisational hurdles, allocating resources or allowing risk taking?)  
** Frage 3:**
Wie wurde ein innovationsförderndes Arbeitsumfeld in dem Entwicklungsprojekt geschaffen und wer waren dessen Treiber? (Mitarbeiter - getriebene Innovation vs. Top-Management-Einfluss) (d.h. durch die Überwindung organisatorischer Hürden, Zuteilung von Ressourcen oder Risikobereitschaft?) |
| **Question 4:**
How did the physical environment influence creativity/innovativeness in the project?  
** Frage 4:**
Wie hat die physische Umwelt (z.B. Räumlichkeiten) die Kreativität / Innovationskraft im Projekt beeinflusst? |
| Question 5: | Frage 5: 
How did the organisational structure support your innovativeness? | Wie hat die Organisationsstruktur Ihre Innovationskraft unterstützt? |
| Sub question: Where there any obstacles, challenges or barriers in the organisation that affected innovation? | Detailfrage: Gab es Hindernisse oder Herausforderungen in der Organisation, welche die Innovation beeinflusst haben? |
| Question 6: | Frage 6: 
Were there reasonable resources (time, money and personnel) available for creating and sustaining an innovative environment? | Standen angemessene Ressourcen (Zeit, Geld und Personal) für die Gestaltung eines nachhaltig innovativen Umfelds zur Verfügung? |
| Question 7: | Frage 7: 
Were there any special rewards (appreciation, career or monetary) given for stimulating creativity, whether successful or not successful? | Wurden besondere Belohnungen (Würdigungen, Karriere oder monetär) zur Anregung der Kreativität erteilt, unabhängig deren Erfolg? |
| Question 8: | Frage 8: 
Was risk taking encouraged from management? | Wurde Risikobereitschaft vom Management gefördert? |
| Sub question: How tolerated was failure? | Detailfrage: Inwieweit wurde Misserfolg toleriert? |
| Question 9: | Frage 9: 
Were there any other factors, positive or negative, that influenced creativity in the project? (Internal, like the above or external, such as competitor's actions or relationship with suppliers) | Gab es noch weitere Faktoren, positive oder negative, die die Kreativität im Projekt beeinflusst haben? (Intern, wie die oben genannten, oder extern, z.B. wettbewerbsinduziert oder durch Lieferantenbeziehungen) |

| POST INTERVIEW (Record OFF) | • 10 min to reflect and summarise interview at computer
• Systematically organise new files & other data
• Translate (if need be) and transcribe interview
• Verify data
• Share pre-analysis results with partner |
### 8.3 Appendix C: Ranking of Key Factors

#### Ranking the aspects in order of importance of creativity

<table>
<thead>
<tr>
<th>English</th>
<th>German</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Top management’s role</strong></td>
<td><em>Rolle des Top-Managements</em></td>
</tr>
<tr>
<td><strong>Advocates</strong></td>
<td><em>Treiber</em></td>
</tr>
<tr>
<td><strong>Physical environment</strong></td>
<td><em>Physische Umwelt</em> (z.B. Räumlichkeiten)</td>
</tr>
<tr>
<td><strong>Organisational structure</strong></td>
<td><em>Organisationsstruktur</em></td>
</tr>
<tr>
<td><strong>Resources</strong> <em>(time, money and personnel)</em></td>
<td><em>Ressourcen</em> <em>(Zeit, Geld und Personal)</em></td>
</tr>
<tr>
<td><strong>Special rewards</strong> <em>(appreciation, career or monetary)</em></td>
<td><em>Belohnungen</em> <em>(Würdigungen, Karriere oder monetär)</em></td>
</tr>
<tr>
<td><strong>Risk taking</strong></td>
<td><em>Risikobereitschaft</em></td>
</tr>
</tbody>
</table>