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Dynamic capabilities

Myth or real deal for sustaining competitive advantage

ACTA WASAENSIA 414

Vaasan yliopisto
UNIVERSITY OF VAASA

ACADEMIC DISSERTATION

To be presented, with the permission of the Board of the School of Technology and Innovations of the University of Vaasa, for public examination in Auditorium Nissi (K218) on the 26th of February, 2019, at noon.

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Julkaisija	**Julkaisupäivämäärä**	
Vaasan yliopisto	Helmikuu 2019	
Tekijä(t) Jaakko Sivusuo	**Julkaisun tyyppi** Väitöskirja	
Orcid ID	**Julkaisusarjan nimi, osan numero** Acta Wasaensia, 414	
Yhteystiedot Vaasan yliopisto Tekniikan ja innovaatiojohtamisen yksikkö Tuotantotalous PL 700 FI-65101 VAASA	**ISBN** 978-952-476-840-5 (painettu) 978-952-476-841-2 (verkkojulkaisu)	
	URN:ISBN:978-952-476-841-2	
	ISSN 0355-2667 (Acta Wasaensia 414, painettu) 2323-9123 (Acta Wasaensia 414, verkkoaineisto)	
	Sivumäärä 150	**Kieli** Englanti

Julkaisun nimike
Dynaamiset kyvykkyydet – Myytti vai todellinen jatkuvan kilpailukyvyn rakentaja

Tiivistelmä

Digitalisaatio, teknologian kehitys ja globalisaatio ovat muuttaneet yritysmaailmaa rajusti viimeisen vuosikymmenen aikana. Monet strategisen johtamisen viitekehykset ovat menettäneet merkitystä turbulenttisessa liiketoimintaympäristössä. Kilpailussa pärjääminen vaatii organisaatiolta dynaamisia kyvykkyyksiä.

Tämä monitapaustutkimus tarkastelee dynaamisia kyvykkyyksiä kuuden organisaation kautta, jotka toimivat palveluliiketoiminnan toimialalla. Tarkasteltava liiketoiminta-alue on ilmailuliiketoiminta, jossa suurin osa tutkimukseen osallistuvista organisaatioista toimii.

Ensimmäisen tutkimuskysymyksen kautta määritetään tarve ja ajurit dynaamisiin kyvykkyyksiin. Tuloksista havaitaan, että dynaamisille kyvykkyyksille on aito tarve tutkimukseen osallistuvissa organisaatiossa. Tämä ilmenee jokaisessa organisaatiossa, vaikka ne toimivat eri liiketoiminta-aloilla erilaisilla businessmalleilla. Toisen tutkimuskysymyksen kautta määritetään konkreettisesti, mitä nämä dynaamiset kyvykkyydet ovat. Tutkimus antaa tuloksena kolme käytännön mallia dynaamisiksi kyvykkyyksiksi, jotka ovat palveluiden tuotteistus, strateginen kumppanuus sekä tutkimuksen kautta kehitetty model of excellence, huippuosaamismalli.

Tutkimus tuo oman lisänsä dynaamisten kyvykkyyksien teoriaan käytännön menetelmien ja mallien muodossa. Tämä tutkimus antaa uutta näkökulmaa ja tuloksia palveluliiketoiminnan sekä ilmailuteollisuuden näkökulmasta, mutta tuloksia voidaan soveltaa myös muille toimialoille.

Asiasanat
Dynaamiset kyvykkyydet, jatkuva kilpailuetu, palveluliiketoiminta

Publisher	**Date of publication**	
Vaasan yliopisto	February 2019	
Author(s) Jaakko Sivusuo	**Type of publication** Doctoral thesis	
Orcid ID	**Name and number of series** Acta Wasaensia, 414	
Contact information University of Vaasa School of Technology and Innovations Department of production P.O. Box 700 FI-65101 Vaasa Finland	**ISBN** 978-952-476-840-5 (print) 978-952-476-841-2 (online)	
	URN:ISBN:978-952-476-841-2	
	ISSN 0355-2667 (Acta Wasaensia 414, print) 2323-9123 (Acta Wasaensia 414, online)	
	Number of pages 150	**Language** English

Title of publication
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Abstract

Digitalization, technological development and globalization have changed the business world drastically over the last decade. Competition has become more and more intense and new competitors emerge on the markets faster than ever. Many frameworks for strategic management have lost their importance in turbulent markets. Winning the competition requires dynamic capabilities from the organization.

This dissertation compile of multiple case studies, where six organizations are operating mostly in service industry. Most of the study organizations are operating in aviation industry, which is the focused market segment in this research.

This dissertation is built around two main research questions. First research question defines the need and drivers for dynamic capabilities. There is a genuine need of dynamic capabilities for the organizations in this research. Change drivers are the same between the organizations even though they have different business models and operate in different industries. Actual dynamic capabilities are defined in the second research question from the case organizations point of view. As a result three concrete dynamic capabilities are found. These are service productisation process, the model of excellence and strategic partnership.

Findings from this research contribute to the theory of dynamic capabilities with new models on actual dynamic capabilities. Results also yield new knowledge and perspective for service and aviation industries.

Keywords
Dynamic capabilities, competitive advantage, service business

ACKNOWLEDGEMENT

This journey started in year 2014. That was the moment when Josu Takala and I made verbal agreement that I am going to apply for a postgraduate student in University of Vaasa. A few moments later I started my doctoral studies. Most of this entire journey has taught me much more than I could think of. I have been able to visit many different organizations and meet dozens of people. These multiple conversations have been very important for me. Without these people and organizations this dissertation would not have been possible. Big thank you to you all.

Firstly, I would like to thank my supervisor, Professor Josu Takala, for his guidance and discussions thru this journey from start to finish. Josu has given me many practical tips and guidance on the way. I would like to thank also my dad, Henry Sivusuo, for helping me with my dissertation and everything related to it.

A big thanks goes to my friends too. Without fun and free time the studying itself might feel boring. Thanks for your support.

Above all, last but not least, my family. I would like to thank my wife Jutta and son Kaapo for their time and encouragement. I would also like to thank my mom and dad for supporting my studies all the way from primary school to this moment. Without you and your support I would not have been able to write this acknowledgement.

Muurame, January 2019

Jaakko Sivusuo

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Abbreviations

DOA	Design organization approval
EASA	European Aviation Safety Agency
FAA	Federal Aviation Administration
IPR	Intellectual property rights
MRO	Maintenance, Repaire and Overhall
OEM	Original equipment manufacturer
PBH	Power by the hour
PBL	Performance Based Logistics
POA	Product organization approval
RBV	Resource based view
SVY	Sotilasilmailun Viranomaisyksikkö
VRIN	Valuable, Rare, Imperfectly imitable and Non-substitutable

1 INTRODUCTION

1.1 Background to the study

The strategic management framework focuses on how organizations build and maintain sustainable competitive advantage (Ambrosini & Bowman, 2009). This framework includes how organizations' strategy and management routines maintain dynamic renewal (dynamic fit) between internal offerings and the external environment (Miles & Snow, 1978). Sustainable competitive advantage has been one of the main themes in strategic management for many decades. Organizations' competences also play a significant part in strategic management framework (Wang & Ahmed, 2007).

Porter's five forces model (Porter, 1980) can be considered as one of the first frameworks for strategic management. This model centers on organizations' external operating environment. The basic idea is that competitive advantage can be reached by grasping external opportunities, while, at the same time, organizations must be able to protect themselves against external threats. When the operating environment becomes dynamic, the five forces model shows its weaknesses (Teece, 2007). It can be said that this model is more like a static view and does not consider the many issues that exist in a competitive and dynamic environment.

The 'next big thing' in the field of strategic management is the theory of the resource-based view (RBV). This theory of resource has its roots in Penrose's studies. These studies concentrate on explaining company success. According to the theory of the RBV, competitive advantage comes from the inside of the organization. Organizations' resources play a major role in building competitive advantage (Peteraf, 1993).

When the business environment turned more dynamic and more competitive, the views were no longer valid from the perspective of resource-based theory. New models and theories were needed for sustaining competitive advantage in dynamic markets where continuous competition is part of everyday life. The theory of dynamic capability was built on that premise.

Nowadays, organizations are operating in a more and more dynamic business environment. Constant changes occur and organizations must react faster and more efficiently than competitors to survive the competition. Over a few decades, many industries have faced big changes, while traditional earnings logic has changed completely. Many industries have shifted from the local to the global. One

reason for this is digitalization. These changes have brought challenges to organizations whereby they have discovered that yesterday's strengths are no longer sustaining competitive advantage. In a rapidly changing environment, organizations need to pay more attention to what they are doing right and what they are seeking to do in a future. Limited resources, competences and time add more complexity to this big picture.

Digitalization, globalization and technology development are the main drivers for creating competition and dynamics almost in every industry. To be successful, organizations must understand how these drivers affect their operations. They must be able to react proactively to changes in order to be victorious in the field of competition.

Global geographic regionalization has also changed from the industry point of view. Historically, the biggest global companies were from Europe, the USA or Japan. Now Chinese, Indians and Latin American organizations have grown at tenfold speed. It can be said that becoming a global organization is easier than before. Competition has also forced organizations to become global (Kim & Mauborgne, 2005)

However, there are businesses and markets where dynamics and competition have not always been present. When changes arise in these kinds of markets, organizations can find it much more difficult to change their operations and activities. In these organizations, most of the top management are only used to growing and managing existing business. They might also develop existing business models. Few executives will think of new ecosystems, industry structures and new types of businesses or system architectures (Doz & Kosonen, 2008).

It is clear that market dynamics are not unambiguous when studying organizations' ability to react to market changes and competition. One productive approach to studying organizations is to concentrates on different industries. Understanding a specific industry gives concrete drivers for dynamic capabilities and also dynamic capabilities in general. Comparing dynamic capabilities between different industries also indicates what dynamic capabilities are industry-specific and which are industry-independent.

With a quick overview, the aviation industry does not look especially dynamic or turbulent, for example, when comparing it to electronics industry. Some components' life cycle can be less than a year in the electronics industry. The aviation industry's life cycles are much longer. The life cycle for single aircraft can be up to 80 years. Market dynamics in the aviation industry are based on something other than just moving onto the next product. Servicing is of great

importance in the aviation industry when focusing on product life cycle. Servicing includes maintenance, repairs, system upgrades, design and spare parts. Customer requirements in the service industry have turned more towards flexible services where customers are presented with options to choose from (Oliva & Kallenberg, 2003).

The aviation industry can be divided into two sections: civil and military. Both of these sides have faced big changes, which have transformed traditional business logic. For example, many airlines are operating via alliances on the civilian side, while, on the military side, the focus has changed from national to international. Business changes and the need for dynamic capabilities are not based on products in the aviation industry, but on services and how to manage them.

Studies have shown that the service industry have faced increasing competition. Organizations, which operate in this field, can see the effects of the competition. The service industry in general is growing. Many manufacturing companies have shifted to the service industry. These findings show that service industries are growing and new competitors may appear from different industry sectors (Edvardsson & Olsson, 1996).

The theory of dynamic capabilities has been the focus of much research in recent decades. There are real-life examples of how organizations are building and maintaining dynamic capabilities in their operations. However, many of these examples are focusing on the product business, while other industries have been ignored. This study is centered on the service industry, which has hardly been explored from the perspective of dynamic capabilities.

If we want to describe dynamic capabilities at a concrete level, we need to delve deeply into organizations' activities. The purpose of this study is to comprehensively understand the elements of competitive advantages and in turn dynamic capabilities. To achieve these goals, the study is going to interrogate the available research on organizations.

1.2 Motivation

Why do some organizations succeed year after year while others fail ahead of the competition? On the other hand, the question defines what kinds of organizations are going to lose out to the competition when they face it. This question has always been the focus of strategic management. This has also been one of the main themes

for the researcher of this study. Strategic management and competitive advantage are the drivers as why the researcher started this study.

Globalization and changes in market economies have shaped companies regardless of their size or owner base. Generally, it can be said that dynamics and changes have become familiar to almost every market area. However, the speed and impacts can differ between different market areas.

The aviation industry is one market area that has faced small, big and revolutionary changes in recent decades. The overall trend in the aviation industry is rising. This can be seen in terms of the increasing number of aircraft fleets. A study on Airbus shows that the number of fleets is going to double by the end of 2025 (Leahy, 2016). This puts pressures on the whole value chain. Airports are struggling to be able to serve more airplanes. More pilots are needed, which is one of the main problems in the aviation industry. Demand has been much bigger than the supply for new pilots. Many airlines have been challenged in turn, while the number of fleets is increasing the need for greater maintenance. This offers opportunities for maintenance, repair and overhaul (MRO) organizations, which are defined as organizations that carry out maintenance in the aviation industry.

At the moment, pilot training alone brings in a turnover of 7 billion dollars for the aviation industry and it is increasing, year by year, by almost 10%. The role of simulators has expanded exponentially, which has had an immediate effect on how actual aircraft is used in training. Actual aircraft is nowadays used much less in training (Kozuba & Bondaruk, 2014), with the focus shifting more and more on actual operations. This change immediately affected MRO organizations.

On the military side, big changes come when the aircraft fleet is replaced. At the moment, the newest fighters are fifth-generation fighters. Their operative use will increase after the 2020s around the globe. New fighters bring a lot of new technologies with them. It is usual that all the value chains are building from scratch when a new generation of aircraft comes. Figure 1 depicts Augustine's law representing the cost structure of different generations of fighters. It can be seen that next-generation fighters are much more expensive than those of previous generations. Costs have actually developed exponentially throughout history. It can be said that cost structure is another driver for changing operating models when a fighter generation is replaced.

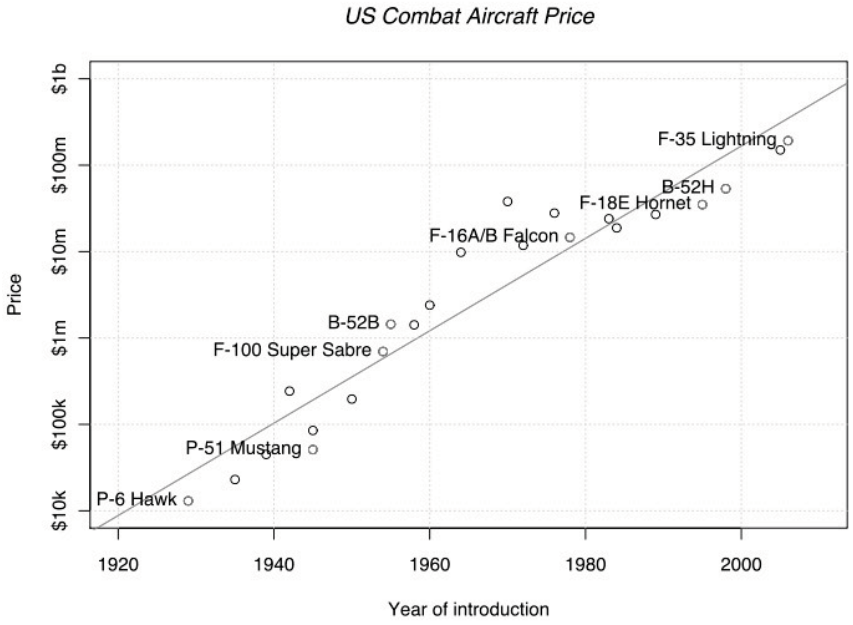

Figure 1. Augustine's law for aircraft price (Gallagher, 2014)

Another interesting theme at the center of this study is the service business. Studies have shown that organizations involved in the service business see themselves more favorably than actual customers. Allen, Reichheld, Hamilton and Markey (2005) show in their study that 80% of organizations say that they deliver a transcendent customer experience. On the other hand, 8% of customers say that they have received a transcendent experience. This perspective is of importance when studying the growing number of organizations operating in the service business. Do organizations understand real customer needs? Do organizations really understand the true meaning of customer value?

Many organizations are turning from offering a traditional product business to a service business. There are good examples of how traditional product organizations have made this transformation. It can be said that the demarcation between service and product businesses is increasingly blurred (Bowen & Youngdahl, 1998; Grove, Fisk & John, 2003). At the heart of the service business is the customer. The service business represents a critical area to study from the dynamic capabilities point of view. One key question concerns whether dynamic capabilities differ in the service industry from those in others.

1.3 Aviation industry and dynamics in the MRO business

This study takes the form of multiple-case study research. The study's organizations operate in different market segments and their business logic differs from each other. Organizations have seen that the bigger the company grows, development and resource allocation become harder. The case organization in this study has increasing numbers of customers, different locations and numbers of people inside the organization. As earning logic turns more complicated, organizations must still be able to manage knowledge, competences and resources now and in the future. All of these elements have an effect on competitive advantage. That is why it is crucial to develop them in a proactive way ahead of their competitors.

The case organization operates in the aviation industry. In order to look at the industry-specific dynamic capabilities, one must first understand the industry more deeply. This chapter explores the aviation industry, while, at the same time, paying significant attention to the MRO business.

Air traffic regulations in Europe were dismantled at the beginning of the 1990s. This forced carriers to reform their strategies and make decisions as to where to focus. There were multiple options, for example, growth, focusing on niche or price strategies. Whichever option they chose, organizations were forced to reduce the operational costs in responding to global competition.

In the aviation industry, organizations offering maintenance services are called MRO organizations. MRO is a recognized term in civilian and military businesses. Usually MRO organizations have a high degree of specialization related to their services, products and processes. They also have strong relationships with their customers and also their customers' products and services.

Trends and changes in markets differ between civil and military aviation. Differences can be found, for example, in terms of overall industry development or from the perspective of product life cycle. What they have in common, however, is change (Ward & Graves, 2005).

Studies have identified change drivers, which affect MRO value chains. One change that has been mentioned is that organizations from product markets are moving towards service markets. One example is that of original equipment manufacturers (OEMs). Another big change has come from customers, who are outsourcing traditional manufacturing, knowledge and competences, in order to consolidate their core competences (Schneider, Spieth & Clauss, 2013).

Market dynamics in the military segment relate to the aging of the aircraft fleet. In the aviation industry, fighter aircraft is divided into generations. When one generation turns to the next, the development in technology, systems and features takes a huge leap. Currently, the latest fighters represent the so-called fifth generation. Usually, a new generation requires building up entire service and operation concepts from scratch again. This is the turning point for organizations operating in the military segment, as previously perceived successful knowledge and capabilities could end up obsolete, while new dynamic capabilities are needed.

In civil aviation, these kinds of significant changes cannot be seen. The changes in the civilian market are always present. Critical operations and competences are outsourced time after time and modified much aggressively than in military markets. Even the civil and military sides have their own characteristics about change. Surviving in both of these markets requires competitive advantage and dynamic capabilities from the organizations.

Changes in customer requirements have created the greatest changes in the aviation industry. Customer requirements have changed from single products or services to comprehensive reliability or availability. Customers want to pay for their products to work without needing to be repaired. This change has dramatically transformed organizations' value chains and also how they generate value for customers. It can be said that, on the defense and civil side, customers want comprehensive services, decreasing costs and more availability (Ward & Graves, 2005).

Availability- or performance-based operations offer many possibilities to suppliers. In practice, this means that the supplier can define how to meet their customer needs. The goal is availability or capability and the supplier can decide what kinds of services can fulfil that goal. One driver for outsourcing in the aviation industry is related to risk-sharing. Availability- or performance-based contracting is one way of sharing risks with suppliers (Ward & Graves, 2005; Schneider et al., 2013).

Providing services is not standardized in the aviation industry. As a consequence, suppliers and customers tailor contracts on a case by-case basis. This causes organizations to spend a lot of time defining and managing contracts (Sahay, 2012).

Achieving availability-based contracting in the aviation industry could include a number of different contracts in numerical and substantive terms. There can also be different billing models for contracts. Some work may be charged at a fixed price and some based on actuals. Another big difference between contracts is the

duration of the contract. The shortest time that an agreement covers could be one single service. On the other hand, the longest contracts could last many decades covering all areas of work.

Short contracts do not bind the customer to a specific supplier. This gives the customer the opportunity to compete for individual entities. Single bidding, on the other hand, bring costs to the customer. These costs result from finding the right suppliers, making them competing with each other and then creating the contracts. Deeper cooperation between the customer and the supplier is not usual inside short contracts.

Long-term contracts bind the customer and the supplier together. This brings the element of developing business together. Both sides, the customer and the supplier, are able to develop their current and future businesses. These characteristics cannot be found in businesses based on short contracts.

Long-term contracts include many different kinds of maintenance during the time period. Power-by-the-hour (PBH) and availability-based contracts are examples of long-term contracts. Performance-based logistics (PBL) refers to one long-term contract model. Initially, PBH contracts focused on aircraft engines, but nowadays the scope of these kinds of contracts is growing in the aviation industry.

There are some contracts covering an entire aircraft fleet. These contracts are called integrated fleet management contracts. The focus of these contracts is on keeping aircraft airworthy. In other words, that the supplier is offering availability or capability to the customer. These business models usually mean that the customer is outsourcing almost everything to the supplier.

Many organizations in the aviation industry are positioning themselves as a service provider. These organizations recognize that they operate in the service business. Figure 2 represents the development of the aviation industry from the service point of view. It shows the different contracting models, which are discussed earlier in this chapter.

The more organizations go towards service orientation, the more traditional repair and maintenance shift towards availability and capability. Availability means that a unit is ready to perform tasks, for example, an aircraft is ready to fly. Capability can be seen as extended availability. It means that the unit can perform the tasks assigned to it without any interruptions. For example, commercial aircraft can fly from A to B without any kind of problems or interruptions.

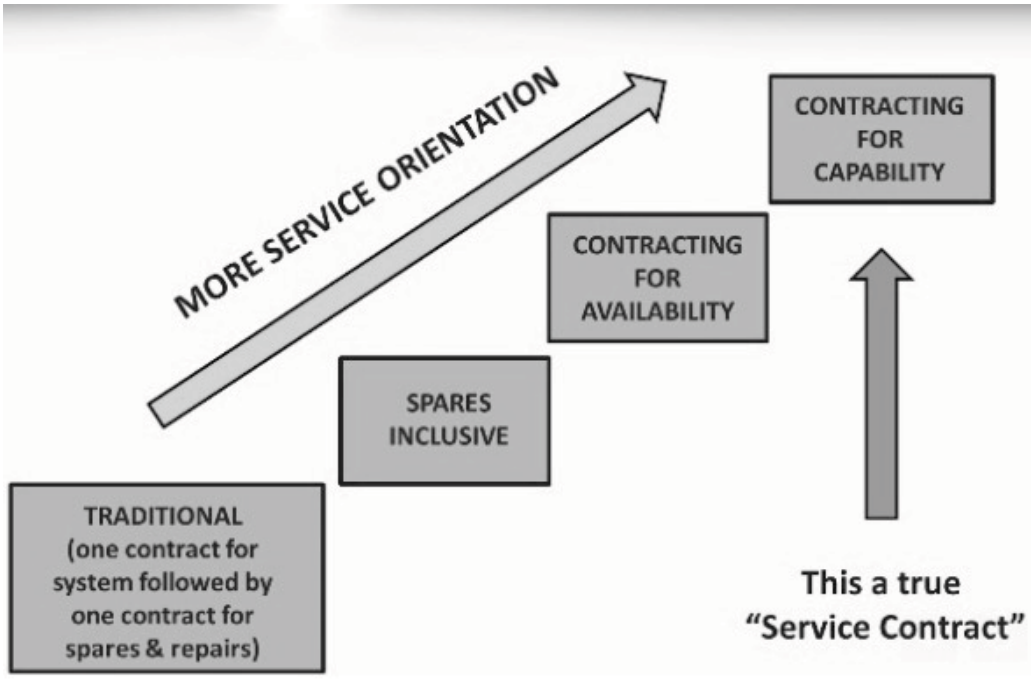

Figure 2. Evolution of contracting in aerospace (Rojo, Javier, Roy, Shehab & Wardle, 2009)

The aviation industry has its own special features. It is highly regulated, which imposes boundaries on organizations. From the dynamic capabilities point of view, it is crucial to understand what these features are and how they have an effect on dynamic capabilities. When organizations step inside the competition arena in the aviation industry, they must understand all the features and regulations necessary to be able to compete.

The first consideration concerns the aviation authorities. For example, the EASA is the European aviation authority, the FAA operates in the US, Trafi is the Finnish aviation authority and the SVY operates in the military segment in Finland. The main task for the aviation authorities is to ensure that organizations' activities comply with aviation regulations. It must be understood that the aviation industry is heavily regulated when compared to other industries. The main and the only reason for this is safety.

Type certificate organizations are responsible for continuing airworthiness. Usually, type certificate organizations are the same as the original design organizations. However, exceptions can be found. The role of these organizations is rarely outsourced because it would require a deep understanding of the actual

product and that knowledge is usually generated in the design phase of the product.

There are plenty of organizations whose role is to ensure airworthiness. These include continuing airworthiness management organizations, design and manufacturing organizations and training organizations. A design organization, which has the design organization approval (DOA) status, is also able to make changes to the design of products. An organization with product organization approval (POA) can implement those changes to the actual product. Maintenance organizations, in other words, MRO organizations, are able to perform maintenance, repair and overhaul tasks for the aircraft.

The role of the operator belongs to the organization that actually operates the product. Usually, in civil aviation, the role of the operator is assumed by the carrier. In the military segment, the role is usually an organization with the remit of the government, for example, the air force. The owner of the actual aircraft is not an unambiguous issue. In civil aviation, this role can belong to the operator or finance organizations. It is common for an operator to rent the actual aircraft from the finance organization. Table 1 summarizes the roles and responsibilities in the aviation industry.

Table 1. Roles and responsibilities in the aviation industry

Role	**Responsibilities**
Aviation authorities	Ensure that activities comply with aviation regulations
Type certificate organization	Responsible for continuing airworthiness.
Design organization	Can make design changes to the product
Product organization	Can implement design changes to the actual product
Maintenance organization	Can implement MRO activities
Operator	Operates the product
Owner	Owns the actual product

Product life cycles are very long compared to those in others industries. The same aircraft can operate for almost a century. Lee, Ma, Thimm and Verstraeten (2008) state that the car industry and the aviation industry are the ones that have most widely applied the definition of the product life cycle. A deeper understanding about the life cycle is key to becoming successful in the aviation industry. From an MRO point of view, the life cycle can be separated into three sections: infancy, designed productive lifetime and wear out, where the actual MRO operations take

place during the designed productive lifetime (Boydstun, Graul, Benjamin & Painter, 2002).

Every action starts from the design table. In practice, this means commencing the aircraft manufacturer's design activities. The aircraft manufacturer does not do all the work itself but builds a large network where many different organizations participate. These include the original equipment manufacturer, whose role can include responsibility as the type certificate organization. Many organizations can work together at the same time as partners and suppliers. Such confrontation can be found between OEM and MRO organizations. This introduces a new perspective in the case of dynamic capabilities, which must be taken into the account when building competitive advantage.

Figure 3 shows the structural changes when a product is completed at the design stage and starts being operating. The key point from Figure 3 is the increasing number of operators involved from the design table to the aftermarket. The actual number of such organizations can multiply. This figure also shows that there is plenty of room for many different kinds of organizations in the aviation industry.

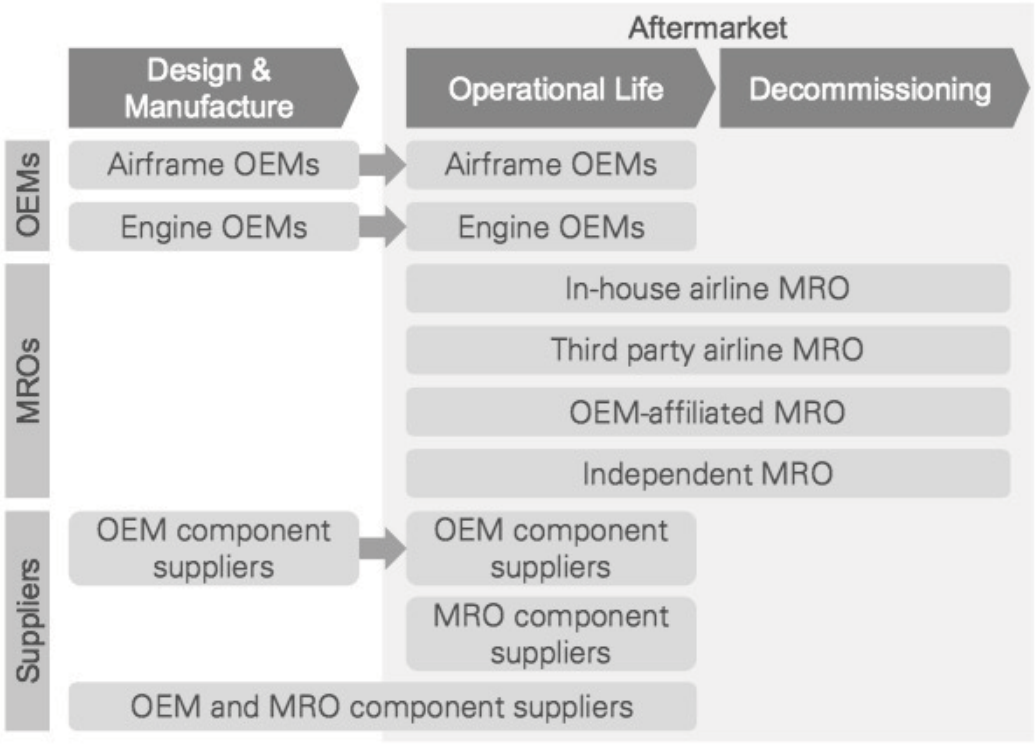

Figure 3. Structural changes in the aftermarket (Smith, Pell, Knab & Romanus, 2016)

New organizations will not emerge overnight in the aviation industry. One reason for that concerns the regulations, which must be in order before organizations can start operating in the industry. On the other hand, this imposes static elements on organizations in the aviation industry. If an organization operating in this industry renews its operations or value chains, reacting to this may be very slow from other organizations.

2 RESEARCH DESIGN

This chapter presents the research design. It includes the research questions, methods for collecting data, procedures and a description of the research process. In summary, the research design is the framework, which is used for answering the research questions. One central concept in the philosophy of science is reasoning. Methods for reasoning can be divided into three basic types: deduction, induction and abduction. These types also determine the path of the research process.

Deduction, induction and abduction are very old methods, whose roots can be found in the times of ancient history. Pierce (Reichertz, 2009) can been seen as the first use the terms 'deduction' and 'induction', which went onto attract much attention.

"Deductive reasoning is reasoning from a general statement or hypothesis to a single one."

The basis for deduction is a model or a theory. Previous research and results are used for creating hypotheses. These hypotheses are verified by empirical tests, which can take the form of interviews. It can be said that this approach requires previous research results on the phenomena and also variables that can explain the phenomenon (Anttila, 2006).

"Inductive reasoning is reasoning from a single statement or hypothesis to a general one."

The basis for induction is empirical research. Inductive reasoning is based on making findings. These findings are used for making generalizations and forecasts. Induction is also the most common form of reasoning. New models and theories are built for the purpose of using inductive reasoning. The basic process in induction starts from collecting data, for example, via interviews. Based on the collected data, the researcher develops perceptions and concepts, which can be used for making new theories. This dissertation is based on induction.

Abduction can be seen as a third method for reasoning, which can be seen as a mix of deduction and induction. It is an illogical process, which can go back and forth. Figure 4 shows the basic processes and differences concerning these methods.

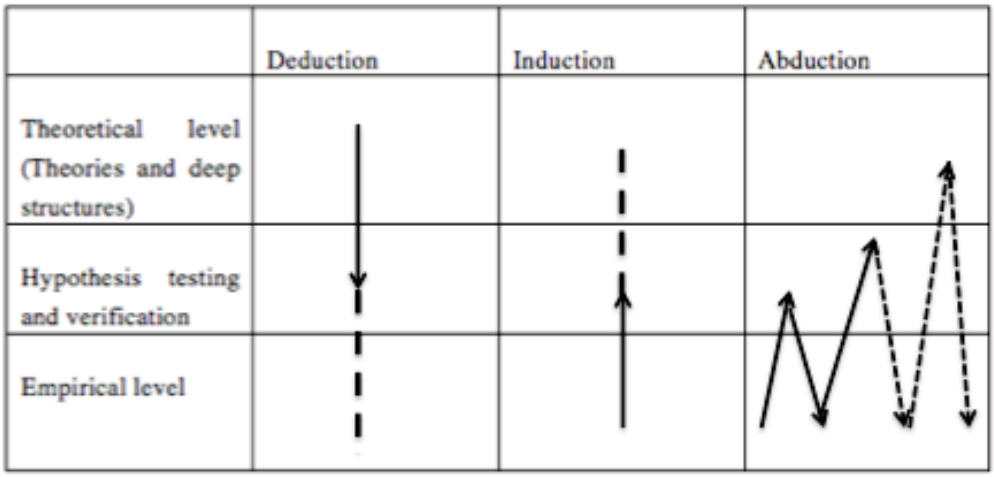

Figure 4. HAMK lecture, deduction, induction and abduction (Anttila, 2006)

This study is based on induction. This is because of the case study research method. The researcher sees that induction is best suited to case study research and also that is the best reasoning approach from the perspective of the research questions.

2.1 Research problem and research questions

In the qualitative research process, it is commonplace that it may not be possible to pinpoint specific questions at the beginning of the implementation of the study. The main reason is that, in qualitative research, the research questions will be refined as the process goes forward. This must be considered in the research process. There can be moments when the research must be able to return back to the start for reflecting more closely the results.

Even the research process is iterative; there must be some kind of goal for the research from the start. Otherwise, the literature review and the deeper study of the subject will become impossible. For these reasons, the study's main subject and preliminary research questions are determined from the start.

The main theoretical framework for this research is dynamic capabilities. The role of dynamic capabilities has been identified as an important factor for sustaining competitive advantage in turbulent environments, where competition is part of everyday activities. This research is going to delve deeper into the world of dynamic capabilities from the perspective of the organizations participating in this study.

Research problem

"The research problem is the most difficult and important part of the whole research process." (Kerlinger, 1986; Ellis & Yair, 2008)

The research problem and its definition play important roles in research. Usually, the research problem should be something that has value for the scientific community or the organization(s) being studied. The research problem must be built narrow enough so that the research framework is able to search for answers. On rare occasions, the research problem is limited too narrowly. Too often the goal of the research is the only one to be defined. If the goal remains at the general level, it gives no support to the practical implementation. It is also important to narrow the research area.

The research problem is made more easily understandable through research questions. Usually, research includes up to five research questions. Less is more when focusing on research questions. Having one or two research questions gives the research a clear goal. When the number of questions is raised, the goal of the research becomes more blurred.

In this research, the main goal is to provide concrete solutions and models to research organizations through this study. These organizations are struggling more and more in the dynamic environment. Whether they want them or not, dynamics and competition are factors they cannot ignore. From the scientific community point of view, dynamic capabilities, competitive advantage and competitiveness are themes whose roles have expanded in business economics.

Organizations in this research need dynamic capabilities when they want to survive in the competition. However, dynamic capabilities can be just big words and not so easy to understand. These two elements together generate the research problem of this research. How organizations in this study are able to survive in the competition if the dynamic capabilities are unclear?

Research questions

- **What are the real needs and drivers for dynamic capabilities?**

This question includes two separate components. At first, the real need for dynamic capabilities must be defined. To be able to answer this, organizations must understand the content of dynamic capabilities. When this is clear, we can move onto the next component, which is the definition of the drivers.

Drivers are the concrete entities, which drive the organizations to build and maintain dynamic capabilities in their operations. In this way, we are seeking to find out whether the drivers are industry-dependent. While dynamic capabilities are sustaining the competitive advantage, the drivers show the basis of where the competition comes from.

Dynamic capabilities are today's global phenomenon and competitive advantage can be heard in every organization's narrative. However, this research question is concerned with determining where the actual need for competitive advantage comes from. This also includes conversations about the drivers for dynamic capabilities, whether industry- or market-dependent.

- **What exactly are the dynamic capabilities and what is their concrete content?**

From this question, we are trying to find concrete dynamic capabilities and their content. Through this question, the concrete solution or the models can also be built. This includes considering the differences in organizations' market segments and industries.

This question includes more sub-questions, which are presented at the end of this research. These questions are based on Teece's definition about dynamic capabilities. Figure 5 shows the connection between the research questions within the research process.

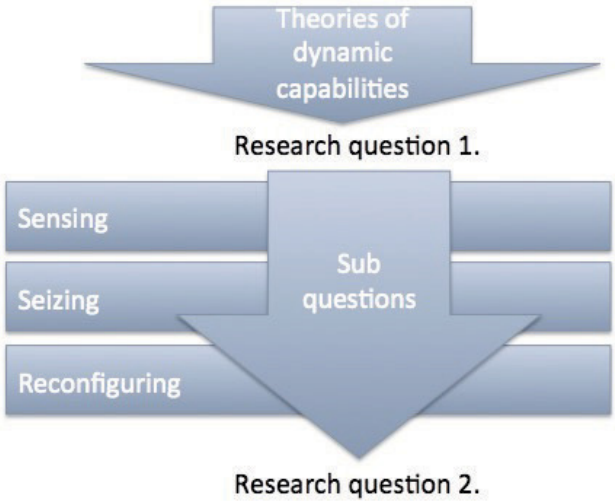

Figure 5. Research questions within the research process

2.2 Research gaps

The theory of dynamic capabilities has been around more than 20 years and the amount of research related to it has been increasing all the time. For dynamic capabilities, there are many different kinds of definitions from different authors. These definitions seek to define, for example, the role of dynamic capabilities, what they actually are and how they are built. These definitions have been criticized for being vague and confusing (Danneels, 2008).

Nowadays, there are relatively comprehensive case studies available, which go deeper into practical examples in the world of dynamic capabilities. Koskinen (2014), in his research, focuses on high-tech business. Kuuluvainen, on the other hand, centers his research on small and medium-sized enterprises (Kuuluvainen, 2011).

The aviation industry is an arena where the number of real case studies related to dynamic capabilities is close to a zero. However, there are studies, which aim to develop organizations' activities for example supply-chain management (Somarin, Asian, Jolai, & Chen, 2018). These might have effect on organizations' competitive advantage. But the dynamic capability as a framework in a case study is missing from the field of research. It can be said that there is a gap between the dynamic capabilities and aviation industry. This study intends to fill that gap. This industry has faced many changes over the last decade and these changes have forced organizations to change their business models. It is clear that models and concrete dynamic capabilities are needed in that industry.

2.3 Philosophy of science, research approach and methodology

"The philosophical orientations of science are the scientific views and ways in which the other methodological choices of research are based." ("Philosophical Trends in Science", 2015)

The University of Jyvaskyla's definition clarifies the basic supposition of science philosophy. Based on that definition, behind science philosophy, there is research strategy, methods for data collecting and data analysis. Generally speaking, every attempt at research is based on some science philosophy, whether or not this is intentional.

There are also many different research approaches available. The research goal, the subject and the research problem usually define what is the best approach to

use. Different research approaches are not mutually exclusive, but they have the same kinds of elements. Research can be theoretical or empirical. In theoretical research, observation is not made directly through the subject. Theoretical research attempts to build models, explanations and structures based on existing research. Empirical research, on the other hand, is focused on the subject and in turn findings are made. These findings can be the roots of new theories.

Descriptive research is mainly concerned with the types of questions that describe events relating to a particular issue or phenomenon. Descriptive research can be quantitative or qualitative. Descriptive phenomena are usually facts and the results can be verified in the same way, regardless of the researcher (Knupfer & McLellan, 1996).

Normative research includes much analysis and many descriptions, which may include the researcher's footprint. These results may not be as easy to prove as descriptive research. Normative research also includes opinions and observations, which may be dependent on the researcher. Figure 6 shows the different kinds of research approaches.

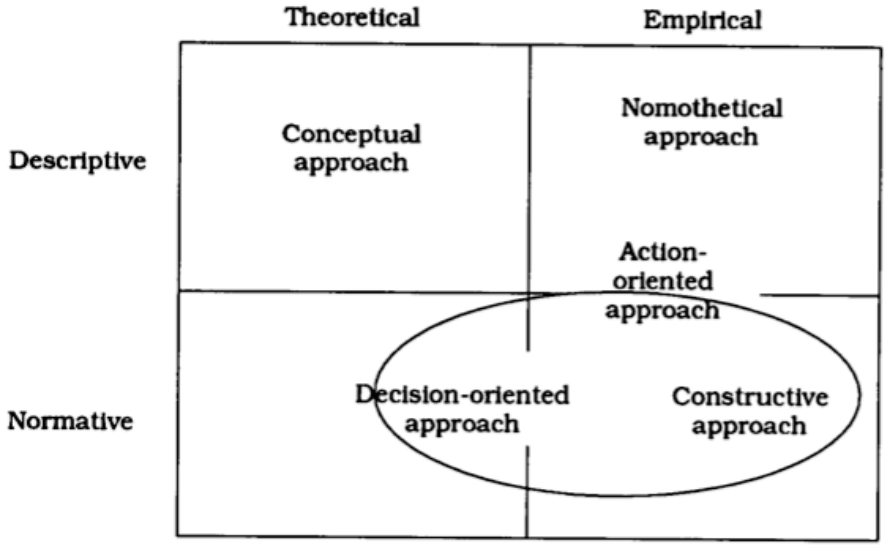

Figure 6. The location of the constructive approach in the context of established accounting research approaches (Kasanen & Lukka, 1993)

This research is based on the action-oriented approach. This research type is characterized by topics that address organizations' management, operations, decision-making, development and change processes (Olkkonen, 1993). Close connection between the researcher and the subject is also essential for this

approach. In this research, the researcher is strongly involved in performing and participating in weak market tests. This strengthens the interface between the researcher and the research subject. The action-oriented approach in this content contains descriptive and normative elements. In this case, this study cannot be trapped within a single department. On the other hand, this is very common when doing research.

When the goal of research is to find some new explanation, hypothetical theory or problem solving inside the organization, then the action-oriented approach is well suited as a method. This includes cases where the number of them can be very small while mathematical methods cannot be applied (Olkkonen, 1993). This definition has hermeneutical research elements, too. Subjective interpretations and deep understanding of the phenomena studied are in the focus.

Within the above definition, the case study is appropriate when the goal is to focus on a small number of organizations. Another possible research method could have been the constructive approach, which is quite similar to the action-oriented approach. On the other hand, the action-oriented approach includes elements of constructive methodology.

In this research the role of the researcher is an active participant and descriptive rather than just an observer. The data collection method is semi-structured interviews where the researcher has an active part. This role includes active discussion and reflection between the researcher and the interviewees. It also includes the descriptive role in which observations and deeper questions are brought during the interviews by the researcher as an active participant. It can be said that the researcher does not have the consultative or decision maker's role, where final solutions or right answers would be offered. The researcher does not have the role of profound expert. Interviewees are told just the basic concept about the dynamic capabilities by the researcher, and it is just the only part where the researcher's role can be described as an expert.

The researcher does not have any decisive or executive role in the organizations studied. This fact is important because it might bring some biases on the table if this kind of role would exist. Researcher tries to remain critically and objectively neutral during the interviews to avoid any pre-assumptions, which might effect on the results.

Burrell and Morgan (Burrell & Morgan, 1979) divide paradigms related to organization and management research in four separate sections. These are ways of approaching the research. Paradigm is defined as a way of looking at something that represents an established standard, a set of related ideas. The four sections

and the location of this study are shown in figure 7. This research has subjective elements because it has the hermeneutic nature. The case –study research has also the elements where the research phenomenon is build from the individual's point of view. Even though this research is looking for dynamic capabilities - which might include elements of the radical change - within the four paradigms point of view this research has more elements from the sociology regulation segment. Therefore, this work sees the organizations in the situation, where they can be studied inside the interpretive segment. It is also common that in this segment the researcher can and has to take part deeply in practice for example by interviews.

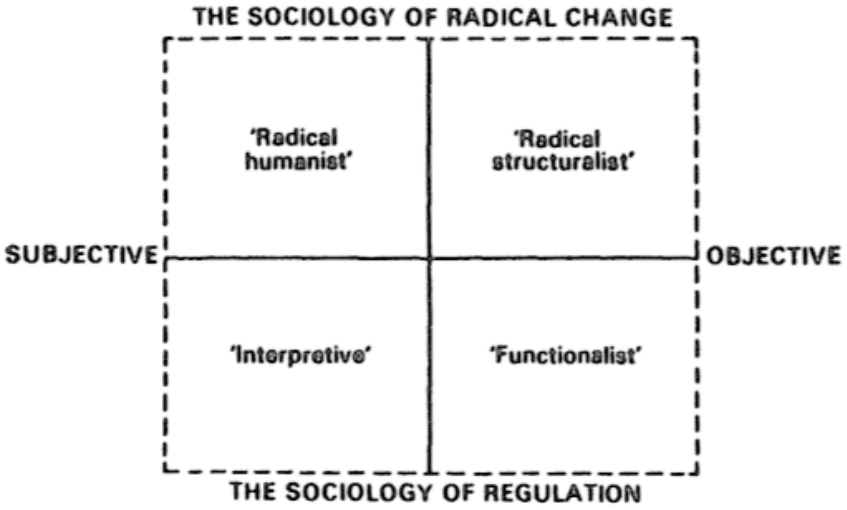

Figure 7. Four paradigms for the analysis of social theory (Burrell & Morgan, 1979)

2.3.1 Case study research

"The chosen research method is strongly influenced by the research perspective and the research problem. These provide the framework for the principles of the research process and the operational scope of the study." (Arbnor & Bjerke, 1997)

The case study approach is used to answer the how and why questions. The nature of the case study can be descriptive, testing a theory or creating the theory. There are many definitions for the case study, but what they share in common is that the focus is on producing detailed and comprehensive knowledge, which is based on data from many different sources, in other words, from different cases (Varis, 2012).

The actual case study can be implemented in many different ways and it is not tied to any particular operating model. Quantitative and qualitative methods, as well

as a combination of them, can be used for data collecting. Field research, archive materials, interviews and different kinds of observations are examples of data collecting methods (Yin, 1981) Eisenhardt, 1989; Jensen & Rodgers, 2001).

The case study can also involve a single case or multiple cases at the same time (Yin, 2003). Perren and Ram (2004) also divide the case study into single and wide cases. In single-case study, the aim is to understand a single case in a profound and holistic way. In a multiple-case study, it tests theories and findings between different organizations. Furthermore, a case study is suitable for a situation where the subject or theory to be investigated is new (Eisenhardt, 1989).

The case is usually a restricted system. These are, for example, individuals, groups, programs, organizations or some part of the organization (Stake, 1995). Some researchers have mentioned that it is not worth considering an overly large entity, such as a whole organization. It is also important that the researcher defines the case. Determining the case may take place before or after the collection of the data (Eriksson & Koistinen, 2005).

Eriksson and Koistinen (2005) set out a few preconditions whose fulfillment supports the use of a case study. There are four preconditions, which are close to Yin's (2003) corresponding definitions. These preconditions are:

- What, how and why questions are central
- The researcher has little control over the events
- There has been little empirical research on the topic
- The focus of the research is certain phenomenon from this era, in other words, a hot topic

What, how and why questions can be found in the research questions for this study. It can be said that the first precondition is met. The role of the researcher is clear but the control over the events is not so clear. For some of the organizations in this research, the researcher has no control over events. But, for the case organization, the researcher is taking part in a weak market test. It can be said that this precondition is met but not easily.

The third precondition is about the topic of the research. There is little empirical research on the theory of dynamic capability is not something. But when we focus on the aviation industry, we step into the business area on which there has been no empirical research. It could mean that the third precondition is met. The last is the phenomenon. It can be said that the role of dynamic capabilities as a source of competitive advantage plays an important role and the role is expanding into the

future. Many industries and market areas are facing many different kinds of changes, which are forcing organizations to foster dynamic capabilities for surviving furious competition. It can be said that the last precondition is met. Thus the case study research approach is a suitable method for this study.

2.3.2 Research organizations

There are several organizations taking part in this research. Organizations are been selected according the industry, size and the business model. One goal is to select them from different business areas. This is to ensure the possible generalizability of the results. All of the organizations are large or medium-sized where the number of employees is over 100. As most of the organizations are operating in the service business, this should enable a deep understanding about that business segment. There are also smaller numbers of organizations from other segments. This will give perspective to the results.

Organizations are divided into two categories in this research: the case organization and A-organizations. The research process, research questions and interviews methods are the same for every organization. The case organization differs from other organizations, which is why the number of interviewees is greater. The market test is also implemented mainly for the case organization. This research is conducted as a longitudinal study, whose focus is only on the case organization. Number of interviewees in organizations A1 to A5 is one in each of them. These interviews are striving to give some more exploration and support for the deeper case research. If the number of these interviewees from A1 to A5 had been bigger then the focus of this research would have been different.

Organizations' customers consist of a variety of different ownerships. The government owns some of them and some are listed companies. Some customers are huge global companies and some are even individual consumers. Generally speaking, the customer base is heterogeneous. This sets up the dynamics between the organizations in this research. Table 2 summarizes the organizations in this research and also some basic information about them.

Table 2. Summary of the organizations in this research

Organization	Main industry	Business marker	Number of employees	Customer segments	Number of interviewees
Case	Aviation industry	Service business	900	B2B, B2C	10
A1	Aviation industry	Service and project business	200	B2B	1
A2	Aviation industry	Part manufacturing	150	B2B	1
A3	Mainly other industry, some business in aviation industry	Service business	1100	B2B	1
A4	Aviation industry	Service business	500	B2B	1
A5	Other industry	Project business	400	B2B	1

Every person is part of his or her organization's management team where their roles and responsibilities are the same on the higher level regardless of their mother organizations. Their main responsibilities are taking care of profits and losses. By that fact they also have the roles to build and maintain resource and competence pool for the strategic competitive advantage. Therefore, each interviewee has a genuine opportunity for building and maintaining dynamic capabilities in his or her organization.

2.3.3 Research process

One of the research questions requires consistency in the basic understanding of dynamic capabilities. The researcher sets out the basic concept for the interviewees before the actual interviews starts. The basic concept is built around the theories of dynamic capabilities where the main focus is on Teece's relevant definition.

The first phase of the research process involves the interviews. Every interview consists of the same questions and topics to be discussed. The semi-structured interview approach has been selected, and the questions can be found in the Appendix. These questions are built around Teece's definition of dynamic capabilities where sensing, seizing and reconfiguring are basic elements. The questions are divided according to these elements.

The first phase also includes a longitudinal study of the case organization's history. This longitudinal study will focus on the past decade and is informed by the organization's official releases and annual reports. The researcher will conduct this longitudinal study without the interviewees' participation.

In the second phase, the results are generated from the interviews. Qualitative analyses are used to build the results in order to produce and enrich the data. This is also the phase where the answers to the research questions are developed. The second phase also consists of preparing for the weak market tests. This includes defining the projects for the market tests.

In the third phase, the actual market test is implemented. This includes bringing projects from the market test to completion, as well as official and unofficial conversations with the management about the results. The market test is implemented in the case organization. After that, data are collected from the projects to determine the outcome of the weak market test. These projects take some time and will be conducted alongside the longitudinal study on the case organization. Table 3 summarizes the timeline of this research.

Table 3. Timeline of the research

2015	2016	2017	2018
Selection of case organizations Basic literature research Framework for case organization's interview Research questions and problems defined	Implementation of interviews Data collection and conclusions Longitudinal study on case organization	Building projects for the weak market test Implementation of the pilot projects	Weak market test analysis and results

3 LITERATURE REVIEW

3.1 Service industry, productization and customer value

Services have become more and more important to the world economy. Many organizations have transferred from a product business to a service business. Current services are also becoming more complex and this brings more dynamics to the provision and management of services.

Organizations' understanding of their value creation is critical for sustaining competitive advantage. If organizations are not able to understand their value creation mechanisms, they cannot understand who their real competitors are. This way, competitors can appear from surprising directions to win the race.

In the service industry, many organizations claim that they deliver excellent services to their customers. On the other hand, fewer numbers of customers are saying that they receive excellent services (Allen et al., 2005).

There are varying definitions about services and the service industry. Vargo and Lusch (2004) define services as actions and processes produced through organizations' competences. There are also some characteristics separating services from products. Services are usually intangibles, such that their physical examination is impossible. Services are also heterogeneous, making their standardization much harder or even impossible, compared to products. One characteristic of services is that they are produced and used at the same time. In turn, they cannot be stored or made up front. The customer also plays a different role in services. The customer can be part of the service production, while the involvement of the customer can be strong or low (Jaakkola, Orava & Varjonen, 2009).

Being successful in the service business requires much more than focusing on a single service or product. Effective service business requires organizations to change their whole operating model so that it is customer-centric. Practically, this means that organizations are developing services and generating value with the customer (Lusch, Vargo & O'Brien, 2007). Being successful also requires an organization to have some knowledge of services, customers and the overall industry (Jaakkola et al., 2009). This includes understanding internal business models, added value for the customer, and competition and competitors.

Interest towards services and service business has also grown in the aviation industry. One reason is that operators are willing to pay for maintenance, repair

and modification of their current products instead of buying new ones. One driver for this concerns the life cycle costs and total costs of ownership. This change has put pressure on maintenance organizations for developing their services and also the business models surrounding them. This has forced OEMs to focus on services. This is also the point where product providers (OEMs) are willing to turn into service providers (MROs).

While product life cycles are long, this also has an impact on the relation between customer and supplier. Different relationships between customer and supplier in the MRO environment' are described in Figure 8. Sivusuo and Takala's (2016) divides the customer and supplier relationship into three separate sections.

Management element and success factor	**Learning phase**	**Productisation phase**	**PBL Phase**
Risk management	Mitigate	Control	Buy these from customer
Customer encounter	One-time	Continuous	Long-term contracts
Business model	Selling what customer orders	Selling solutions to customer problems	Selling availability, capability and reliability
Trust between provider and customer	Narrow	Wide	Key element
Knowledge transfer from customer	Tacit	Explicit	Open knowledge transfer between supplier and customer
Suppliers role from customer poin of view	Service provider	Partner	Strategic partner
Protection against competition	Poor	Moderate, Building VRIN elements	VRIN elements can be found

Figure 8. Management elements and success factors and their role in different phases in product life cycles (Sivusuo & Takala, 2016)

Customer value can be seen as one of the key focus points in the service industry and also organizations' main area of interest. This does not mean that customer value is unimportant or non-critical, for example, in the product business. This means that services are usually concentrated directly on customer processes, thus identifying customer value is vital. The service business is also characterized by close cooperation between the supplier and the customer. Through customer value, organizations are able to increase customer satisfaction, customer loyalty, and customer permanence, such that they can strengthen their competitive position and increase market share (Cannon & Homburg, 2001; Ulaga & Chacour, 2001; Toivonen, 2011).

3.1.1 Processes and their meaning related to service production

Service productization must be mentioned when studying service business and dynamic capabilities. Service productization can be seen part of organizations' competitive advantage building process (Jaakko Sivusuo & Takala, 2016). Organizations must figure out what services they are going to offer customers and how they will be produced. When productization is done well, it helps the supplier to understand better its service portfolio, while the customer is able to understand the content of the services more fully. This also helps in recognizing and comparing organizations' products against those of competitors (Harmon, WRLC EBSCO E-books & Safari Books Online (Firm), 2007).

Services can be divided into many different categories, depending of the context. One way of dividing is to separate services in terms of the amount of customization to the customer's needs (Chase, 1978) or the depth of the customer's involvement in the service itself (Maister & Lovelock, 1982). Customer involvement in the actual processes can be described as back-office and front-office processes. These processes are concerned with how customer value is developed through customer interface or inside organizations when customer participation is limited (Chase, 1978). Industrial service businesses are highly front-end oriented. The reason for this is that high expertise is required and also cooperation with the customer (Silvestro, Fitzgerald, Johnston & Voss, 1992). On the other hand, via back-office processes, organizations are able to produce services for larger groups, where customer involvement is minor. To be successful, service provider organizations must understand the role and meaning of both of these processes.

Customization defines whether organizations are able to offer the same services for every customer or if every service needs to be modified for each customer. Product-centric organizations emphasize what the customer buys. Process-centric organizations focus on how the customer buys. There are slight differences between the two (Silvestro et al., 1992).

Customization is usual when organizations are offering expert services to customers. In expert services, it is essential that they can be customized for every customer. It can be seen that most expert services are customized. This also emphasizes the role of personal interaction while customer value is generated (Lapierre, 1997).

3.1.2 Service productization and partnership

There is no single definition for service productization, even if it has been recognized as one element for sustaining competitive advantage. There are some

basic challenges inside the service industry, for example, fluctuations in demand, inefficiency, growth and unprofitability. Through service productization, organizations can reduce these challenges. The basic idea behind service productization is to transform non-standardized services into standardized ones. One major building block for service productization is organizations' business strategy, which will provide the direction, goals and boundaries for service development (Jaakkola et al., 2009).

The idea of product life cycles is strongly connected to service productization (Palmer, 2014). When organizations are able to understand the meaning of the life cycle for services, then they can produce the right services at the right time for customers. To succeed in this, organizations must have a reliable view of customer processes, customer needs and the connection between their own services and customer processes. This requires good foresight to enable organizations to react faster than their competitors.

Figure 9 shows the different relations between the service supplier and the customer. In the first step, there is basic supplier. Organizations on this step are concentrating on product and product-oriented approaches. Suppliers are mainly doing business with customers' sales department and delivering compliant products or services to customers. The next step involves the solution supplier. In this step, the supplier tries to solve the customer's problems through the offered services or products. The cooperation with the customer happens inside the customer's operations and processes, not the sales department. We can say that the solution supplier operates closer to the customer than the basic supplier (Hyötyläinen & Nuutinen, 2010).

What is common between these two is that they do not lead to long-term relationships with the customers. In turn, knowledge of the customer and its processes stays narrow. The next three phases, as shown in Figure 9, are focused more on organizations providing services. In these steps, the organization is taking more responsibility for promoting the customer's business. This is the moment when the supplier might have to change its business model, organization chart, management and culture. As a summary, the transition to a successful service business requires much from the organization.

The joint supplier takes care of the customer's processes and, by doing that, it has a fixed relationship with the customer. This kind of approach aims at enhancing the customer's processes and thereby the customer's business. In the joint supplier model, the supplier also has access to the customer's knowledge, some of which can be tacit. Relations are usually based in the long term when development and experiment can be seen between the supplier and the customer.

The value network supplier has responsibility for some of the customer's operation. This may also include the planning and development of future activities of that operation. Knowledge is key to success here. The supplier must have enough information from the customer. This requires openness between both parties. They must be willing to share explicit and tacit knowledge. This also requires the supplier and the customer to unify their operation processes and business models.

The last step involves the value partner. In this step, the supplier's and the customer 's operations are based on common development. Trust is the key in this step. Open knowledge transfer is part of everyday activities and based on common trust.

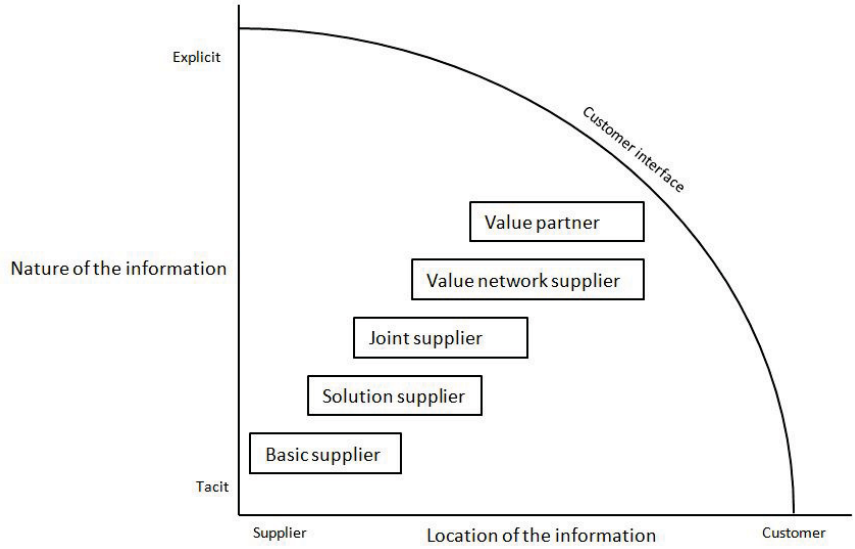

Figure 9. Stages of the service business and their relationship with information (Hyötyläinen & Nuutinen, 2010)

Long-term relationships between supplier and customer are the main goal of partnership. Outsourcing of operations is usually part of long-term partnerships. This is why the partnership-based business model must be part of organizations' strategic decisions (Kämäri, 2010). Ståhl and Laento (2000) define partnership as a way of using, managing and maximizing knowledge capital. This definition highlights the role of knowledge transfer between both parties in a partnership.

Ståhl and Laento (2000) also recognize three basic elements for partnership. These elements are intellectual capital, trust and added value, which enable the partnership to exist. Bontis (1998), on the other hand, divides intellectual capital

into smaller sections, which are human capital, structural capital and customer capital. This breakdown is shown in Figure 10.

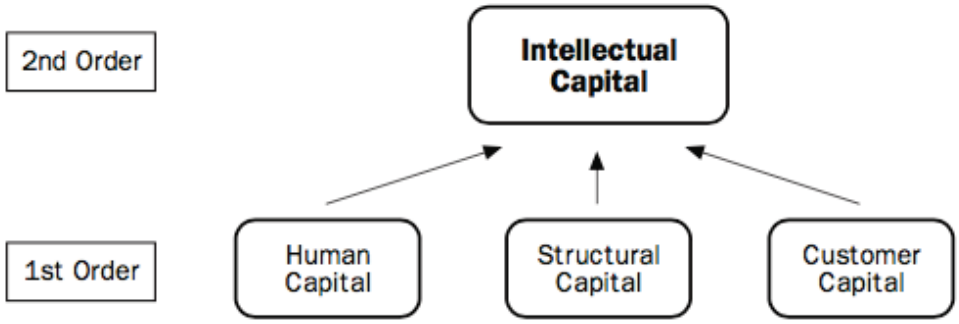

Figure 10. Conceptualization of intellectual capital (Bontis, 1998)

Organizations' resources, workforces and their knowledge and competences are part of human capital. Human capital also includes the training of individuals, their experiences and personal values. The experiences of individuals about life and the business environment affect their personal values (Hudson, 1993). Human capital can be seen as the closest dimension to the organizational core. Human capital is seen as the easiest part to develop in the intellectual capital framework (Bontis, 1998).

Structural capital includes organizations' processes, structures, culture and practices. If organizations have strong structural capital, this can support the culture, which allows for experiment and development to take place at the individual level (Bontis, 1998). This kind of culture can be referred to as a culture of developing by experiment. Organizations with strong structural capital are able to utilize and collect tacit knowledge and competences from individuals.

Customer capital includes organizations' relationships. These are, for example, supplier relationships, customer relationships, and organizations' image and brand. Customer capital can also be seen as part of organizations' external structures (Sveiby, 2001). If organizations have good customer capital, they are able to recognize customer needs much earlier and effectively than competitors.

Structural and customer capital is always built on human capital. In other words, organizations' individuals are building structural and customer capital. They also build their organizations' value, which is usually considered as a value produced for the customer. However, it can be also an internal value when, for example, it concerns developing processes and operations (Sveiby, 1997).

3.2 Dynamic capabilities

Through the ages, achieving and maintaining competitive advantage have been among the basic themes of strategic management. In the last decade, globalization and fierce competition have shown that old traditional strategic management themes no longer work in dynamic environments. The theory of dynamic capabilities refers to building and maintaining competitive advantage in turbulent environments. This is one of the newest strategic frameworks from the field of strategic management. The pace of renewal of industries and the requirements for organizational development can be seen as a basis for dynamic capabilities (Oiva, 2007). This means that the drivers and the effects related to dynamic capabilities are industry-dependent. Organizations' requirements also have an effect on dynamic capabilities.

Managing and controlling dynamic capabilities are especially relevant for multinational organizations whose market segment is open for competition. These market segments have several characteristics. Teece (2007) identifies four main characteristics from these market segments. The first is that the market segment is open to international commerce and that rapid technological change occurs. Second, in maintaining competitive advantage, organizations must be able to combine innovations and inventions while technology changes. Third, the market is global and well developed for the exchange of goods and services. Fourth, the market itself is poorly developed in terms of exchanging technological and managerial know-how.

Before getting deep into the world of dynamic capabilities, it is better to unpack the terms 'dynamic' and 'capabilities' to understand what they mean in this context. Dynamic refers to organizations' ability to renew their resource base or knowledge in a changing environment. Dynamic is not about organizations' ability to deliver every internal change in an ad hoc way. Being timely is a term related to dynamic. It means that organizations are able to react in a prompt manner. This might include the launch of new innovations or acquisitions.

Capability evolves from the resource-based theory of the firm (Penrose, 1995). As a term, capability refers to organizations' ability to exploit their knowledge and competences. Organizations' management team plays a huge role when talking about dynamic capabilities. Based on this role, they are able to manage their organizations' resources and also allocate them. Studies on dynamic capabilities often come across the view that dynamic capabilities are related to the actions and decisions of organizations' management team. Capability also has a strong relation with strategic management. From that perspective, it refers to the ability of

organizations' strategic management to adapt, integrate and reorganize the organizations' internal and external capabilities and operational competences (Teece, Pisano & Shuen, 1997a).

Figure 11 shows the number of studies related to dynamic capabilities on a time scale. The overall trend has been increasing since 1998. Here, we have to remember that Teece et al.'s (1997a) study published was the first opening shot prompting interest in dynamic capabilities. However, Teece and Pisano (1994) were the first to study and develop a basic concept for dynamic capabilities.

Arguably, the two most-cited articles in the field of dynamic capabilities are the previously mentioned study from Teece et al. (1997a) and that by Eisenhardt and Martin (2000). It can be said that these articles have had the biggest influence in the field of dynamic capabilities (Peteraf, Di Stefano & Verona, 2013).

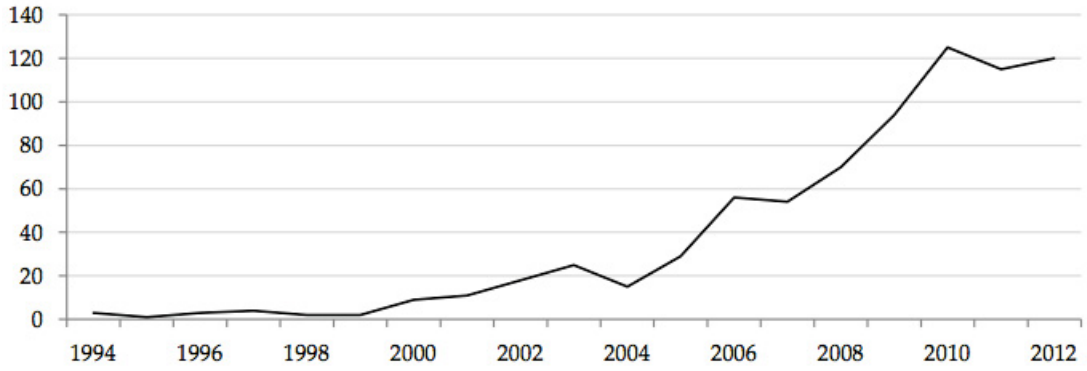

Figure 11. Number of studies related to dynamic capabilities from the Scopus database (Ranta, 2014)

Usually, organizations with strong dynamic capabilities consider initiative and entrepreneurs in their actions. These kinds of organizations do not only adapt to changes in the environment. They also change the environment via innovations, collaborations and entrepreneurial actions (Teece, 2009).

There are many different definitions for dynamic capabilities. The main reason for this is that there are different scholars with their own definitions. Teece, Pisano and Shuen (1997b) define dynamic capabilities as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments".

Dynamic capabilities, along with their role and needs, do not exclusively belong in turbulent and rapidly changing markets. Moderately dynamic markets also offer a

role to dynamic capabilities. Dynamic capabilities seem to be traditional routines in moderately dynamic markets. They are reproducible, static, strategic and operational processes whose outcome can be predicted. When stepping inside a rapidly changing environment, the role and appearance of dynamic capabilities change. In these environments, dynamic capabilities are simple, experimental and fragile. Organizations' learning mechanisms drive the development of dynamic capabilities. It can be said that dynamic capabilities are path-dependent. In moderately dynamic markets, the driver for the learning mechanism is variability, while, in a rapidly changing environment, it is selection (Eisenhardt & Martin, 2000).

Dynamic capabilities must not be confused with organizations' normal capabilities, such as recruitment. Normal capabilities, best practices or competences are limited to a specific task or operation. These do not, by themselves, generate value for organizations. Value can only be generated when the best-motivated people are put in the right positions and make sure they are doing the right things for their organization. Dynamic capabilities, on the other hand, do not evolve out of the organization itself. Generating dynamic capabilities requires much more from the organization and its management team (Feiler & Teece, 2014).

Dynamic capabilities are path-dependent (Teece et al., 1997a; Zollo & Winter, 2002). This means that organizations' past has a big influence on the future. Organizations will not generate dynamic capabilities quickly if they did not have them in the past. Breaking the path-dependent cycle takes a lot of time and effort from organizations. Being path-dependent can be seen as a challenge for organizations when faced with change. Development and changing the path-dependent cycle can also be seen as changing organization culture.

Zahra, Sapienza and Davidsson (2006) highlight the role of management and decision-making in building and maintaining dynamic capabilities. It is important to focus dynamic capabilities on the desired goals of the organization. This is why the owners of dynamic capabilities and organizations' management play a huge role. Maintaining and building dynamic capabilities are not cheap, which highlights the importance of focusing them on the right goals. When the environment turns more dynamic, organizations are not able to drive their actions and operations with processes and instructions alone. They must be able to critically evaluate their operations (March, 1991). For Zahra, Sapienza and Davidsson (2006), organizations' normal capabilities are substantive capabilities, while organizations modify substantive capabilities via dynamic capabilities.

Wang and Ahmed (2007) define dynamic capabilities as a firm's behavioral orientation to constantly integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment in order to attain and sustain competitive advantage. According to this definition, dynamic capabilities are not only processes; they are also embedded in organizations' everyday actions.

Processes can be described explicitly and are easy to transfer from one organization to another. Capabilities, on the other hand, are company-specific and have evolved over time. Capabilities also have the element of tacit knowledge, which makes them hard to transfer. Wang uses a practical example of total quality management (TQM) thinking about dynamic capabilities. Some organizations implement TQM in accordance with standards. These organizations have no dynamic capabilities in their quality management and thinking. Organizations with dynamic capabilities have built up management intelligence inside their culture and as part of everyday actions without the actions being described or instructed.

Wang and Ahmed (2007) link three mechanisms to dynamic capabilities, which are adaptive, absorbing and innovative capabilities. Adaptive capability includes recognizing and reacting to opportunities offered by markets (Chakravarthy, 1982). The roots of adaptive capabilities lie in adaptation, where adaptive refers to survival and adaptation, on the one hand, while, on the other, it denotes the continuous search for opportunities without struggling for survival. This definition of dynamic capabilities is very close to Teece's sensing, seizing and reconfiguring (Teece et al., 1997a).

The definition of absorbing capabilities is borrowed from Cohen and Levinthal's (1990) study. Absorbing capability refers to an organization's ability to recognize and embrace external information and use it commercially. This definition shows that an organization must be able to integrate external knowledge inside itself. It also shows that sensing for external happenings is kept inside the meaning of commercial growth. Organizations with strong absorbing capabilities are able to learn effectively from partners and competitors. Last but not least is innovative capability. This refers to organizations' ability to produce new products or renew markets using innovative behavior and processes (Wang & Ahmed, 2004).

Teece et al.'s (1997a) definition of dynamic capabilities fails to describe how dynamic capabilities are born. The definition is also focused on dynamic markets while organizations are developing, building and renewing their capabilities in the stable market as well. Zollo and Winter (2002) propose that dynamic capabilities evolve out of learning mechanisms. In this way, organizations are able to develop

their operational and dynamic capabilities. If organizations do not change their processes, operations and learning methods, old strengths could become risks. Dynamic capabilities are structured and continuous according to Zollo and Winter's definition. When the environment turns truly dynamic, there is no time for single-loop learning.

Individuals from organizations play a strong role in the learning mechanism. They have ideas, thoughts and tacit knowledge, which the learning mechanisms must be able to catch. Organizations must have this kind of learning mechanism in their operations if they want to use tacit knowledge. Tacit knowledge must be turned into explicit knowledge; Zollo and Winter (2002) refer to this operation as knowledge codification. Figure 12 shows the relations between learning mechanisms, dynamic capabilities and operational routines.

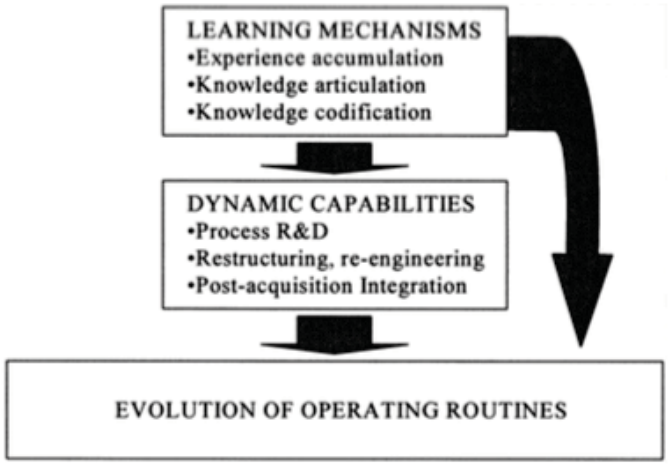

Figure 12. Learning, dynamic capabilities and operating routines (Zollo & Winter, 2002)

Eisenhardt and Martin (2000) see dynamic capabilities as processes such as R&D, partnership formation and decision-making. Through these processes, the organization is able to renew and develop its resource base. Eisenhardt and Martin define dynamic capabilities as the firm's processes that use resources (specifically, the processes to integrate, reconfigure, gain and release resources) in order to match and even create market change. Dynamic capabilities are thus the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die.

Table 4 summarizes different definitions of dynamic capabilities from different researchers. It also shows the mechanisms and processes by which these

researcher divide dynamic capabilities. These processes indicate how organizations are able to generate dynamic capabilities in their actions.

Table 4. Definitions of dynamic capabilities

Author	Definition	Mechanisms and processes
Zahra et al. (2006)	*The abilities to reconfigure a firm's resources and routines in the manner envisioned and deemed appropriate by its principal decision maker(s).*	- Substantive capabilities, organizational knowledge and learning processes
Wang & Ahmed (2007)	*A firm's behavioral orientation to constantly integrate, reconfigure, renew and recreate its resources and capabilities and, most importantly, upgrade and reconstruct its core capabilities in response to the changing environment to attain and sustain competitive advantage.*	- Adaptive capability, absorptive capability, innovative capability
Zollo & Winter (2002)	*A dynamic capability is a learned and stable pattern of collective activity through which the organization systematically generates and modifies its operating routines in pursuit of improved effectiveness.*	- Learning mechanisms: experience accumulation, knowledge articulation, knowledge codification
Teece et al. (1997a)	*The firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments.*	- Sensing, seizing, reconfiguring
Eisenhardt & Martin (2000)	*The firm's processes that use resources (specifically, the processes to integrate, reconfigure, gain and release resources) to match and even create market change. Dynamic capabilities are thus the organizational and strategic routines by which firms achieve new resource configurations as markets emerge, collide, split, evolve and die.*	- Learning mechanisms
Helfat et al. (2007)	*The capacity of an organization to purposefully create, extend and modify its resource base.*	Organizational knowledge and learning processes

As a summary, many different definitions of dynamic capabilities have been presented by researchers. These definitions are not homogeneous with each other. Some definitions suggest that dynamic capabilities are responses to changes in the markets, while others stress the role of sustaining competitive advantage (Zahra et al., 2006). Among the various definitions, changes can be also found from the value generation mechanisms. Some studies define dynamic capabilities as generating immediate value, while others regard value mechanisms as indirect.

There are also similarities between different definitions. Every definition recognizes the link between dynamic capabilities and sustainable competitive advantage. It can be said that, if an organization does not have dynamic capabilities when facing competition, it is more likely to lose than an organization with dynamic capabilities.

3.2.1 Division of dynamic capabilities

Ambrosini, Bowman and Collier (2009) divide dynamic capabilities into three sections: incremental dynamic capabilities, renewing dynamic capabilities and regenerative dynamic capabilities. These sections can be seen in Figure 13. Incremental dynamic capabilities are processes such as continuous improvement, which do not renew the organization's resource base. Value mechanisms of existing resources are ensured with continuous improvement. These are usually small changes in organizational operations. In a highly stable environment, organizations are able to sustain competitive advantage with incremental dynamic capabilities. This highlights the fact that dynamic capabilities can be found in stagnant and stable markets. Their characters change when moving into rapidly changing environments.

Renewing dynamic capabilities are usually those that other scholars identify as dynamic capabilities. The basic idea behind renewing dynamic capabilities is securing cash flow in organizations in turbulent environments. These dynamic capabilities renew organizations' resource base.

When organizations' current capabilities cannot guarantee competitive advantage, dynamic capabilities must be renewed. Ambrosini refers to capabilities that renew dynamic capabilities as regenerative dynamic capabilities. In practice, this means that organizations must renew the practices that reform, expand or modify existing ones (Helfat et al., 2007).

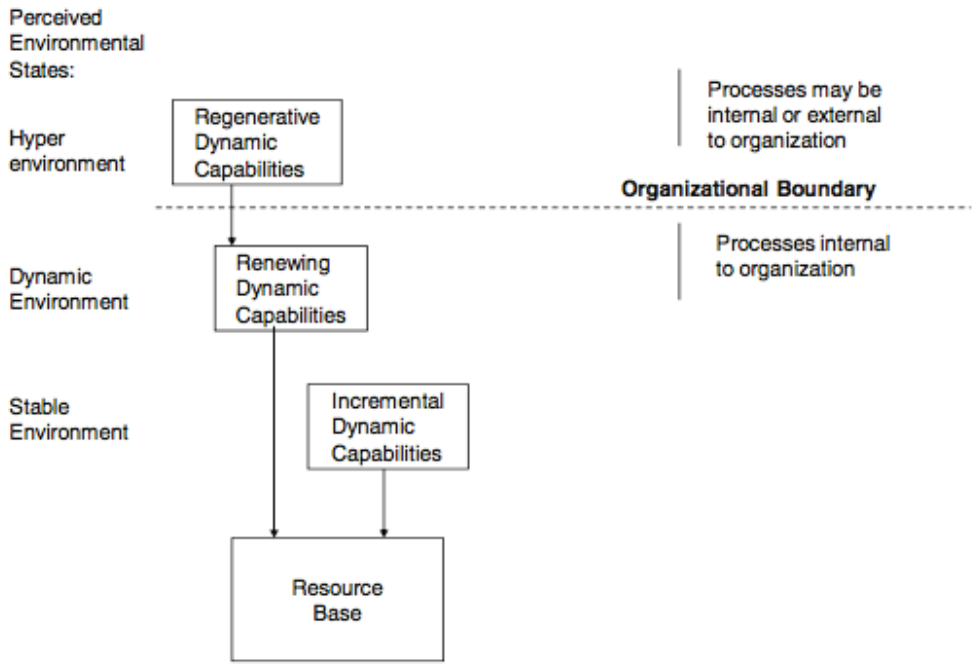

Figure 13. Three levels of dynamic capabilities (Ambrosini et al., 2009)

Every action and decision related to change are not dynamic capabilities. As mentioned earlier, there are also so-called normal capabilities. Winter (2003) calls these capabilities zero-level capabilities. With these capabilities, an organization earns its living in a short time window. For Winter, an organization that has no customers is without zero-level capabilities.

Zero-level capabilities can be found in everyday operations in the organization. Organizations receives earnings from selling the same services and products to the same customers at the same volume again and again. Capabilities that reform products, services, production processes, production volumes or customers are no longer zero-level capabilities. These capabilities are recognized as dynamic capabilities (Winter, 2003).

Wang and Ahmed (2007) use a similar breakdown for dynamic capabilities to Winter, but the contents are different, that is, zero-order, first-order, second-order and third-order levels. Organizations' resources can be found at the zero-order level. These resources can fulfill the valuable, rare, imperfectly imitable and non-substitutable (VRIN) definition from the RBV about competitive advantage. But, sustaining competitive advantage cannot be maintained with those in the long run. Capabilities can be found at the first-order level. Usually an organization achieves its goals through capabilities, while its core capabilities are at the second-order

level. These can sustain competitive advantage for a short time period. Dynamic capabilities are at the third-order level; with them, the organization can sustain its competitive advantage throughout the life cycle.

Organizations can change without dynamic capabilities. Force majeure is usually the driver for change in those situations. These kinds of changes are usually ad hoc changes or firefighting (Winter, 2003).

3.2.2 Resource-based view: roots of dynamic capabilities

Many dynamic capability definitions are based on the theory of the RBV (Davies & Brady, 2015). This theory can be seen as the roots for theory of dynamic capability (Wang & Ahmed, 2007). Some scholars see dynamic capabilities as a branch (Barney, Ketchen & Wright, 2011) or complement (Ambrosini & Bowman, 2009; Söderman, 2014) to the RBV theory, which claims that competitive advantage can be achieved using organizations' internal resources (Penrose, 1959). Every resource cannot be the source of competitive advantage, so some definitions must be determined. Wernerfelt (1984) defines organizations' resources as heterogenic. He also mentioned that incomplete competition in the resource markets leads to Ricardian rents. Based on this, there are definitions of resources for competitive advantage. These kinds of resources must be VRIN (Barney, 1991). Resources can be referred to as core capabilities or strategic capabilities in different contexts (Hitt, Ireland & Hoskisson, 2012).

Many markets experienced a change towards a dynamic environment in the early 1990s. This was also the time when organizations and scholars saw that the ideas behind the RBV were not working. It was clear that the RBV was developed in static markets (Priem & Butler, 2001). The theory of dynamic capabilities is trying to reduce the gap between dynamic markets and the theory of the RBV (Landroguez, Castro & Cepeda-Carrión, 2011).

The real problem with the RBV is its static nature (Teece, 2007). It fails to explain why some organizations are able to achieve competitive advantage in situations of rapid change (Eisenhardt & Martin, 2000). In dynamic markets, organizations have to adapt their resource base, rather than relying on the fact that competitive advantage from current resources will last into the future (Grant, 1996).

The RBV speaks volumes about processes, capabilities and core competences. However, there is no clear definition of what those mean in the context of the RBV (Thomas & Pollock, 1999). This has also brought problems when putting the theory into practice.

3.2.3 Elements of dynamic capabilities: sensing, seizing and reconfiguring

Teece divides the elements of dynamic capabilities into three sections: sensing, seizing and reconfiguring. Behind these sections, there are so-called microfoundations, from which dynamic capabilities are generated. Microfoundations include distinct skills, processes, procedures, organizational structures, decision rules and disciplines (Teece, 2007).

This study is going to apply Teece's sensing, seizing and reconfiguring model as a framework for dynamic capabilities. These sections are used to identify the dynamic capabilities in the organizations in the case study. They are also used as a framework for the interviews.

Sensing

In this study, sensing capabilities are defined as organizations' ability to recognize threats and opportunities inside and outside the organization. In order to talk about capability, these must always be linked to some logical actions, for example, the process. Sensing cannot happen at the individual level on its own, where heroic performances take place. Even when sensing happens at the individual level, it must be linked and managed via a formal process.

Changes in the environment generate opportunities. To survive competitive and rapidly changing environments, organizations must be able to sense these changes and opportunities. In practice, sensing (as well as shaping) means scanning, creating, learning and entrepreneurial activity. Investment in R&D and the actions just mentioned are prerequisites for the realization of good sensing ability (Teece, 2007).

Organizations must be able to understand and scan what is happening in relation to the market environment and technology development. These actions must be fully addressed from the organization's perspective. This is not simply about recognizing customer needs, but the organization must be able to identify latent requirements and structural changes in the market, and predict how suppliers and competitors may react to them. This also includes how the ideas and thoughts of organizations' individuals are collected (Kindström, Kowalkowski & Sandberg, 2012). When opportunities arise, the management must decide about how to react. Organizations' management must also be able to predict how markets and technology evolve alongside the opportunities (Teece, 2009).

The focus of sensing must be on the current market area, as well as go beyond that. The future is not as unknown as is claimed. The vision of the future is reduced by the management's view when opportunities are sought only from the current market areas (Hamel & Prahalad, 2007). Organizations' management must also not be too far from the actual operations because this isolation has negative effects on sensing capabilities. Concerning this problem, research has shown that decentralized decision-making improves sensing capabilities, while reducing the risk of isolation (Koskinen, 2014; Teece, 2007). The basic idea behind decentralized decision-making is to reduce blind spots related to technology and market changes.

Organizations' sensing can happen in two ways. The first is through official processes for collecting findings. One example of this is the strategy process. The second way is through organizations' individuals. On an individual level, personal capabilities and knowledge play a huge role in sensing (Teece, 2009).

Teece (2007) also points out that organizations' sensing is based on current and new knowledge and also know-how (Schumpeter, 1934). Figure 14 shows the element related to sensing.

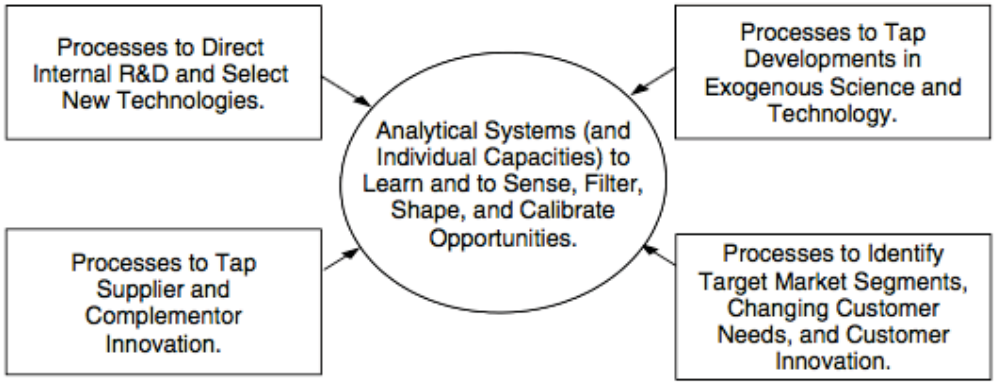

Figure 14. Elements of an ecosystem framework for sensing market and technological opportunities (Teece, 2007)

Seizing

Sensing capabilities alone are not enough for achieving sustainable competitive advantage. After sensing comes action. The next phase in Teece's framework is seizing. Seizing capabilities adopt a stance in terms of how the organization is exploiting opportunities and findings from the sensing phase. It can be said that,

at this stage, innovation is linked to products, services and markets (Jantunen, Ellonen & Johansson, 2012). Seizing is about new products, new services and new business models, which can transform opportunity into profitable business (Harreld, O'Reilly III & Tushman, 2007). Figure 15 shows the elements of seizing capabilities.

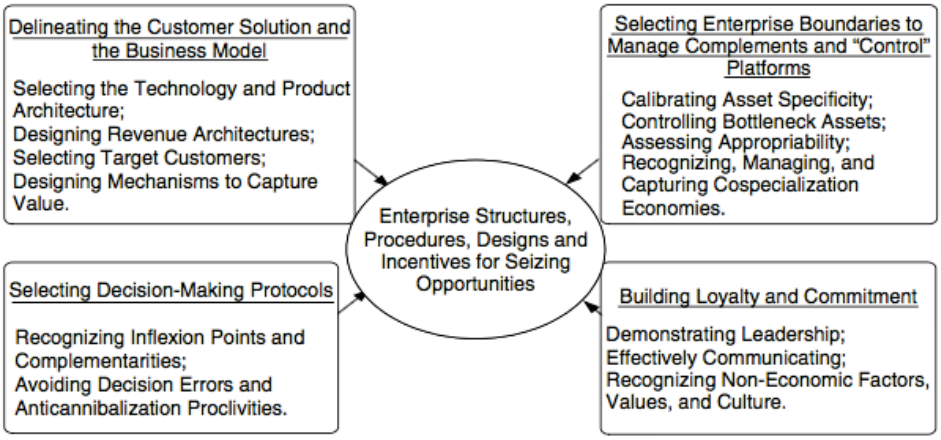

Figure 15. Strategic decisions skills and execution (Teece, 2007)

The biggest role and responsibility in seizing relate to organizations' management. It is said that seizing refers to managerial actions. Managerial actions take place at organizations' executive level (Helfat et al., 2007).

It is crucial to make decisions about when, where, how much and in what organization is investing. Investment alone is not enough. Organizations must also choose or generate a business model to determine marketing and investment priorities. The business model must be connected with opportunities and react to them (Kindström, Kowalkowski & Sandberg, 2013). It is important to understand that the business model itself can and should be modified if necessary.

In the service industry, organizations usually have a service strategy, which gives guidelines for sensing and seizing (Fischer, Gebauer, Gregory, Ren & Fleisch, 2010). A service strategy is also developed inside the organization itself. Usually, the service strategy includes target markets, customers and services through which the organization seeks growth. However, the biggest change driver for the service strategy is the customer (Zitkiene, Kazlauskiené & Deksnys, 2015).

As the organization remains agile, it can observe changes and opportunities in the environment. Whenever a certain dominant change is detected, it is important for the organization to react and invest heavily. This is also the moment when agility may suffer for a while; but, when the recipe for success is found, the organization must allocate resources and focus on success. At first, there are many possibilities

and scenarios; but, when the dominant path is found, strategic options become more and more limited. This moment in technology and market development is called the infection point (Teece, 2007)

The same kind of finding was reported in Collins' (2001) study. In that study, the aforementioned moment is referred to as 'shooting with bullets'. This means that the organization is experimenting with small bets and small risk options. When a potential path, the next step is called 'shooting with cannons'. That is the moment when organizations focus on that goal while investing much more with greater risk.

"One secret to maintaining a thriving business is recognizing when it needs a fundamental change." (Johnson, Clayton & Henning, 2008)

The business model is very important and one of the key themes for sustaining competitive advantage. It must be understood inside the organization, but there are times when it must be changed to sustain competitive advantage. The development of a business model is one element in seizing capabilities.

There is much debate about the business model nowadays but its meaning and definition are seldom described (Chesbrough & Rosenbloom, 2002). In short, products, services and technologies are commercialized for customers. Usually, organizations put much effort into developing processes and operations related to products and services, while the renewal and development of business models remain unknown. Two organizations selling the same product or service can receive totally different financial results out of their respective processes. One reason for this is the business model. The development of a business model requires business instincts in the organization (Chesbrough, 2010).

The renewal and development of a business model can be seen as a task for the management and CEO of the organization. That is not an easy task; many organizations fail on this development path. The reason for failing is not that the organization is doing something wrong or mediocre; rather, the main reason is that the organization has been carrying out operations in the same way for too long, which means that the current business model has becomes rigid and changing it has become almost impossible (Doz & Kosonen, 2010).

Changing the business model is considered as a difficult task. One reason for this is that few organizations understand their current business model so well that they are able to change it (Johnson et al., 2008). In fact, the starting point for business model renewal is to understand the current model before starting the development or renewal process (Chesbrough, 2007).

Johnson et al. (2008) connect four elements in the business model. These are customer value proposition, profit formula, key resources and key processes. Together, these elements generate value for customers. The customer value proposition is the entity that the customer is willing to pay. Development of the business model is impossible if the organization cannot clearly see customer value from its products or services. The most important attribute in customer value is accuracy. The more the service or product produces value for customer, the better.

Reconfiguring

When the organization has achieved competitive advantage, then it must be maintained. For Teece (2007), reconfiguring capabilities are the ones that organizations use to maintain competitive edge. There are several internal and external approaches of doing this, as well as several factors that can lead an organization to lose its competitive advantage. Figure 16 shows Teece's framework for reconfiguring capabilities.

As the company grows, and the market changes and technology evolves, the organization itself must also change. While change is not self-evident, but there are many reasons for change. Teece (2007) offers some examples in his study. One reason is protecting the organization from bad management. When a company grows, it may introduce more management layers into the organization. If management is not awake, they may have to withdraw from daily operations. That means that they may lose their grip on customers, technology and the market as well.

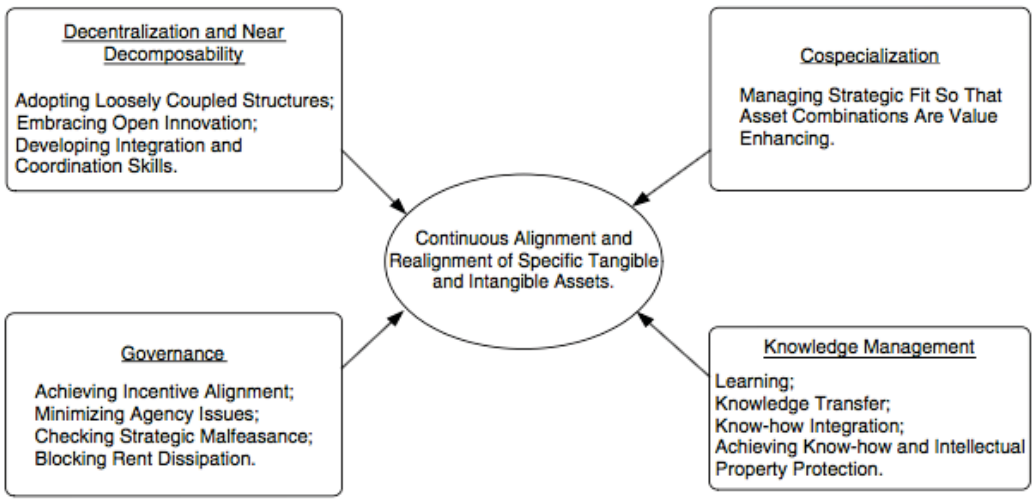

Figure 16. Combination, reconfiguration and asset protection skills (Teece, 2007)

4 CASE STUDY INTRODUCTION AND INTERVIEW FINDINGS

4.1 Case organization

The case organization operates in the aviation industry. Its products and services are based on life cycle support services and training, which include MRO and design activities. The organization's customer base is wide. There are customers from huge global organizations (B2B) to single individuals (B2C). Its life cycle provides services from the design phase to the shutdown or obsolete stage, so it can be said that their current service portfolio covers the whole life cycle of products. The case organization sees itself as operating in the service industry.

The case organization has some long-lasting relationships with customers. Some of these partnerships have been built around official strategic partnership agreements. The customer base is also very diverse. Governments own some customer organizations and some are privately owned. Both of these examples have their own distinctiveness, which must be considered.

The case organization recognizes that understanding the life cycle and knowledge are among the main themes in its market segment. Product life cycle management and services related to it are key to being successful in maintaining competitive advantage in long-term relationships. Basic MRO business can be seen as opposite to what product organizations offer. While product organizations are trying to sell the next product to customers, an MRO organization is doing everything to maintain the current one. The case organization recognizes that major MRO organizations are able to extend product life cycles compared to the original ones.

Sensing

"Most of our findings come from the strategic partnership. This includes many different forms of cooperation with the customer."

From the first interview, it is clear that strategic partnership plays a huge role in the case organization. Most of its operations are built around the concept of strategic partnership. The role of trust is a key theme in successful strategic partnership. Partnership-based cooperation involves a great deal of collaborative development between the supplier and the customer. This is one reason why sensing comes easily in strategic partnerships. For the case organization, sensing does not require much organization in a strategic partnership. Sensing can be seen as an element of good strategic partnerships.

"It must be remembered that the individual does the actual sensing and produces findings, not the organization. Then the individual and his experience, know-how and understanding will play an important role in sensing capabilities."

Many interviewees say that sensing is more of an individual than organizational matter. This emphasizes the role of the individuals in sensing capabilities. Individuals' vision, experience and know-how determine whether they are able to spot findings, understand them and raise them with the organization. The organization has also a role in sensing from the process point of view. For example, the organization could have processes for collecting findings. One must also remember that an individual cannot react to findings if they do not want to.

There are many people operating at the customer interface in the case organization. Those kinds of activities are typical actions in long-term relationships, for example, a strategic partnership. When the operating model and partnership are based on trust, sensing becomes easy, with explicit and tacit information effectively flowing from the customer. The organization must be able to capture it. There is also one challenge: how can the right customer needs be spotted from that flow? The huge information flow usually generates more irrelevant findings.

"We are providing life cycle services for our customers. It is important to understand the relationship between the stages of the life cycle of the customer's products and our product and service offerings."

Being a successful MRO service provider, the organization must understand the relationship between the customer's products and the life cycle related to them. Life cycle service providers must have an understanding about the services they provide now and for the future. In the early stage of the life cycle, the customer might consider or start to buy a product. The last stage can be the point where actual product is made obsolete. The time between these phases in the aviation industry can be almost 100 years.

"Usually, for new customers, we offer services that we have already learned to deliver in a strategic partnership."

Even the strategic partnership team assumes a key role in the case organization. It also has more customers and is trying to expand the current customer base. New customers are mapped from the segments where services that are already implemented through partnerships can be offered. This kind of approach is based on the fact that testing new ideas is much easier in strategic partnerships than in new customer relationships. This testing of new ideas in strategic partnerships

requires acceptance of failure. On the other hand, innovations and development cannot happen without testing and piloting.

The case organization has also used official market research and reports for scanning new potential customers. Here, elements of blue ocean strategy can be found. The organization is trying to find customers and offer them products and services that are new in the market. On the other hand, this kind of blue ocean strategy has some risks. If a new customer strategy is based on blue ocean strategy, the number and probability of finding new customers will be very low.

"Being part of and influencing networks are all part of everyday activities in the markets. Being alone and innovating alone are not how business is done nowadays."

The organization's participation and learning in networks are seen as important activities in terms of sensing capabilities. The organization has created strong links and partnerships, which can be called networks. The main reason for operating in networks is learning from others. These kinds of actions can be also called benchmarking. Being successful in networks requires the ability to operate and manage networks. Mere participation is not enough. Organizations must be able to generate value for others partners in the network as well. This kind of network-based operating model is common in the military segment, where cooperation, knowledge and learning are critical factors for success.

Networks are also seen as a productive way to follow the organization's external changes. Through external networks, the organization is able to obtain information about competitors and overall market development. Networks in which the case organization is participating include many different organizations in various market segments, as well as those beyond its current markets.

Networks are also effective in sensing technology development. There is much technology development related to the MRO business, which can be described as incremental development. This means that systems and technologies are being updated gradually. One good example of this concerns midlife upgrades related to products. Radical developments will emerge when the MRO business is focused on totally new products. New products come with new technologies, which is also something new for MRO service providers. The case organization highlights that, at present, the latest fighters in the aviation industry are fifth-generation fighters. Technology development is the biggest change driver when moving from generation to another. From the MRO business point of view, these moments are crucial. Staying in business at these turning points requires strong technology knowledge and management from within the MRO organization.

The understanding of the service concept arises when talking about sensing capabilities. The service concept, in this context, refers to the organization's service portfolio, which includes the offered services and also products for current and new customers. Technology also has a role in the service portfolio. The case organization sees that it has technology know-how, but, alone, thus is not enough. Technology must be built as part of the service portfolio. Then, it can generate true value for customers.

The case organization also highlights the role of PBL contracts in the MRO market segment. These kinds of contracts and business models will increase in the future in both civilian and military industries. One reason for this is that organizations are concentrating on their core competences while others are being outsourced. External drivers, such as competition, are forcing organizations to redefine and organize operations.

"The organization must have two kinds of sensing methods: complementary and disruptive."

The organization's observations should be linked to two sensing methods: complementary, which is strengthening the current situation, and disruptive, which is about future creation. The organization's investments highlight how these two sides are understood. If the organization's investments are only generated on the complementary side, then innovations will not be made. This has a direct effect on the organization's risk-taking capacity and ability.

Seizing

"Individuals and their views have a strong influence on seizing, while the role of the organization's structure only plays a small role in seizing. In short, individuals do the seizing, not the organization. Every individual has their own interest and changing these takes time and good communication skills."

There is one major finding, as raised by every interviewee, about the organization's seizing capabilities: the role of individuals in terms of seizing capabilities. Knowledge, know-how and competences of individuals have effects in this regard. It is very important to understand that the organization might fail to make changes because of a lack of individuals competences.

"Too often, we write instructions or draw the processes. But, that is not the way to achieve competitive advantage. It requires something else."

Based on the interviews it can be said that, even if the organization has the best processes, such as a project management process, innovation process or strategy

process, this will not guarantee top results. The role of individuals is perceived to be important. If the organization has positive individuals, who also have a positive impact on business success, then the role of processes from the competitive advantage point of view is very small. On the other hand, individuals might have a negative impact on the organization's success.

The case organization's position in the business environment assume a role for seizing capabilities. This means that it has decided through its business model in which markets it operates. Strategic partnerships also play a key role in what to react to. In practice, the organization will not react in the hope that individuals will deliver new contracts; rather, the idea behind seizing is based on building new partnerships or deepening existing ones.

Investment decisions are based on decision-making power. In that case, the decision maker is the individual. Individual decision makers can use different groups such as executive teams or experts for helping with decision-making. The main reason for these group conversations is to reduce uncertainty and also gain an overall understanding. However, it must be remembered that the number of people involved will not be correlated with the quality of the decisions. Personal business know-how and the views of individuals are the keys for successful group conversations.

"Successful seizing in partnerships also requires changes from the customer. When service concepts or partnerships are changed, both of the parties, the customer and the supplier, must change their business models."

If the organization is operating in the service industry and its business model is based around service concepts and partnerships, then the seizing capabilities require actions from the both sides, from the customer and from the supplier. It is important to understand that service concepts and partnerships differ from mass customization, where many customers are buying the same product or service. In strategic partnerships, actions related to seizing can be planned and implemented together.

The interviews show that the case organization has the ability to influence the customer's operations and thereby change its business model. This, however, requires a lot of time and effort to succeed. The case organization's retrospective study also shows that in action. Usually, in strategic partnerships, seizing happens all at once. Interviewees also highlight the role of trust in strategic partnerships. Without trust, real and successful seizing will not happen.

There is much discussion in the case organization about creating business models through acquisitions while seeking growth. This is the moment when two different business models meet; it is also the point for seizing. The organization must be able to make decisions about current and future states of the business models. The case organization also shows that the focus of business models is usually on costs. However, processes, competences and customer value also have roles in the business model, which could be left in the shadows. In strategic partnerships, customer value is of the utmost importance, which in turn keeps the conversation about business models much healthier.

Defining the boundaries for the organization is also centered on seizing capabilities. Two different segments can be found in the case organization. These segments are military and civilian segments. These segments differ from the dynamic capabilities point of view. Competition has been much longer and more furious in the civilian segment. The biggest strategic driver in the civilian market is cost-effectiveness; but, on the military side, the driver is maintaining defense capabilities. The differences between these two can also found in the funding models. In the military segment, the funding comes from governments, unlike in civilian markets. This also affects how business and customer relationships are handled. The pressure from cost-effectiveness has appeared in the military segment in recent years because of decreasing military budgets. The case organization has understand that what it has done in the civilian segment can also be implemented in the military segment as well. A good example here would be PBL contracts.

"The significance of the management model is very high when talking about what to react to."

The management model offers a framework for the organization's general management, as well as providing guidelines for overall development. The management model and the single elements related to it include seizing capabilities. The case organization's definition of the business model is shown in Figure 17. This model summarizes the findings from the case organization interviews. The business model is divided into four separate sections, which are results, sales, management and development. Through the management model and seizing capabilities, the organization is focused on these separate sections where they are trying to identify necessary changes. This phase is critical and requires management decisions. Successful seizing capabilities demand open and trustful dialogue among management if necessary changes are to be implemented, which includes resources allocations. Management must be able to orchestrate these changes from within the organization.

Figure 17. Basic elements of the management model

The elements of the management model act as guidelines for the organization's individuals. These elements define where to focus and how to determine time usage. All of those elements must be defined and implemented at the individual level of the organization if effective seizing capabilities are to be fostered. The elements and the overall business model must be questioned constantly in relation to the data from the sensing phase. If some element is missing, it will weaken the seizing capabilities and, in turn, weaken the overall dynamic capabilities of the organization.

The management model, innovation activity and strategy work have a strong effect on what is done in the organization. If these are not understood correctly, then the resource allocations will not achieve competitive advantage. The case organization also highlights that resource allocations require visibility in terms of where current resources are allocated at the moment.

The organization's findings resulting from the sensing capabilities can be directed through the business model. A well-described and communicated business model can show individuals where the organization wants to move and its goals and targets. As a summary, the business model is the foundation for dynamic capabilities, which must be maintained and developed continuously because it is the pathway for dynamic capabilities.

Reconfiguring

The case organization recognizes that sustaining competitive advantage in dynamic markets cannot be achieved via the thinking processes associated with a traditional organizational structure. The organization must have dynamic teams, which are tailored to the current competition situation. These teams must consist of different combinations of competences. This is a point when the business model is not based on the organizational structure; rather, it is based on temporary teams and competences. However, a traditional organization's structural thinking brings challenges when the structure takes the form of a line organization, project organization or matrix. This dynamic approach to business team thinking also brings challenges for traditional budgeting.

Multi-talent is a widely understood term related to an organization's individuals, as well as refers to the basics for dynamic markets, where individuals must have different competences and know-how. The interviews confirmed that what is more important is that individuals are able to understand their contribution in relation to a larger entity such as the supply chain or customer value. Individuals with this ability are able to support development areas through their input. In short, mastering different competences is not enough from individuals. They also have to be able to understand the organization's business logic.

"People are our business" is a conspicuous slogan throughout the organization. This is very important to understand because, due to bad management or wrong actions, people and, by extension, knowledge can disappear from the organization. Multi-talent and different kind of competences can be positive motivational factors for individuals. They are also values, which can be treasured by individuals. Versatile work assignments and variability can encourage people inside the organization. These are tools and actions for developing and keeping individuals inside the organization.

The case organization recognizes the importance of knowledge in the service industry. The role of knowledge is bigger when organizations' core competences are based on individual experts and their knowledge. This is why knowledge transfer is crucial for organizational success. The case organization recognizes that most of its core competences are based on individual expertise. Knowledge transfer is done by working in teams or in pairs. When a new person comes into the case organization, the work induction is done by an experienced person.

When talking about knowledge, the case organization highlights its cumulative knowledge. Cumulative knowledge means that knowledge comes into the organization through individual people. This knowledge is better refined by a

group of individuals. This has much the same characteristics as the SECI model from Nonaka, Toyama and Konno (2000).

Dynamics, dynamic capabilities and change are central to values from the individual point of view. This means that not all individuals will respect change, job rotation, and knowledge transfer or multi-talents. From the dynamic capabilities point of view, it can be said that every organization might have people who do not represent the values that can sustain competitive advantage. While not all individuals in the organization have the required values, it is enough to know how to identify the right resources for dynamic capabilities. This task for identifying the right resources belongs to management. This is a competence known as orchestration.

The case organization sees that strategic and other partnerships involve reconfiguring capabilities. These partnerships bring continuity to the organization. Through these partnerships, this continuity is maintained and developed, while the organization's vision will be kept clear. Sustaining competitive advantage through strategic partnerships also demands dynamic capabilities from the customer. If the customer lacks dynamic capabilities in strategic partnerships, it has direct effects for the case organization.

One difference between organizations in the service industry and the product industry concern intellectual property rights (IPRs). In the service industry, IPRs cannot protect organizations from competition. In addition, patents cannot be used in this industry. For the case organization, the difference between service and product industries concerns reconfiguring capabilities. The case organization also highlights that the theories of dynamic capabilities are concentrated on the product industry.

"Decentralized decision-making is good but it cannot be taken too low down in the organization."

Decentralized decision-making is seen as a good thing from the case organization's point of you. There is much discussion about the occasions when decision-making is taken too low down in the organization. In such cases, the organization can no longer be managed as one, while management is mannered. The second problem is that management does not happen at the level it should. The case organization sees that it is trying to locate decision-making and management at the right level. It is striking a balance between two sides: the whole organization must be managed, while the management cannot be isolated from customers and daily operations.

Strategic partnerships offer reconfiguring capabilities to the case organization. When strategic partnerships are a long-term bond between customer and supplier, this gives a competitive edge to the competition. However, there are moments when these relationships have turning points. In the MRO business, these points are the moments when the focus of the service changes to something else, for example, when an aircraft is replaced with another.

Organizational knowledge has a critical role in competitive advantage and must be maintained and developed all the time. The case organization uses job rotation for keeping knowledge inside the organization. It is also putting tacit knowledge into explicit form. It is important that job rotation is done in a proactive manner. When the organization realizes it has lost critical competences, then job rotation will not help.

Specialization is how the organization can stand out from competitors. Service productization is a way for specialization in the MRO industry. Through productization, the organization is trying to find and generate a combination of competences, which competitors cannot copy. The case organization sees that a competitive edge from technology is shorter than from service productization. Productization is also different to traditional cost competition. Being successful at that requires a good understanding of customer value, which is seen as a key for service productization.

4.1.1 The case organization's longitudinal study

This chapter is going to go deeper into the case organization. This longitudinal study is focused on what has happened in the organization's history. The time frame that is used is a decade. The goal is to find actions related to dynamic capabilities and understand what has happened and why. The findings refer to this study's research questions.

From the dynamic capabilities point of view, the organization's history has a huge influence on the future. This is also called path dependence. The future can be changed; but, because of path dependence, it might require radical changes inside the organization.

The first major finding from the case organization's history concerns partnership. It has been involved in different kinds of partnerships, both normal and strategic between different customers. These have included building new partnerships and maintaining, strengthening and expanding existing ones. Life cycle thinking and service solutions have also always been the key to the case organization's offerings.

New customer bases are usually built around current services or current competences. Current customers are expanded through product or service development. These actions follow Ansoff's matrix, which is shown in Figure 18. Current customers are developed by product development and new customers relationships are built through market development.

When comparing the number of new contracts against new customers, one remarkable finding is revealed. New contracts have been made while the customer base has remained almost the same. This means that most of the contracts are based on existing customers and that these contracts are made for expanding current customerships. Two findings can be pointed out here. First, the case organization's strategic decisions may be focused on developing the current customer base. Second, it is much easier to develop and expand current customer relations than finding and making new ones.

Current customers, and especially strategic partnerships, create a strong competence base, which the case organization has expanded over time. In strategic partnerships, new knowledge and competences have been developed together with the partner. This knowledge and competences are put into practice in new customer relationships. It can be said that strategic partnerships represent a breeding ground for expanding current customerships and finding new ones.

Any diversification or radical change cannot be found from the longitudinal study. It is also true that the case organization has not even tried or been thinking about this matter. This finding shows that long contracts related to partnerships are not forcing the organization to pursue diversification, which is the only option to survive the competition. However, diversification includes many risks. If the organization does not need to move to another market or product segment, it is because it wants to stay involved in current ones.

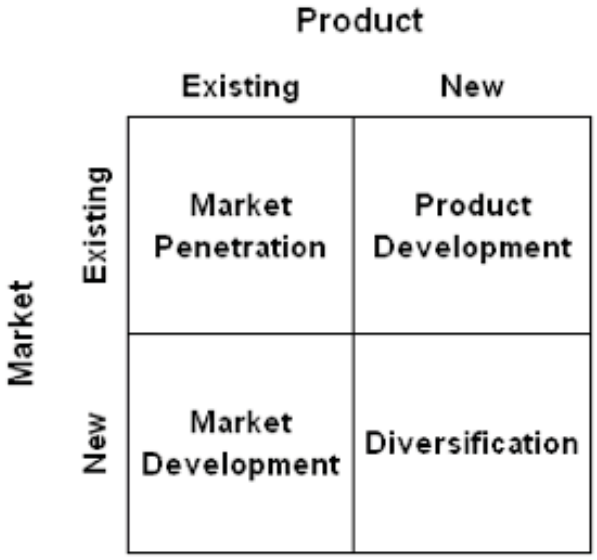

Figure 18. Ansoff's matrix (Ansoff, 1957)

The case organization's networks have always played a big role. For the whole longitudinal period, the case organization has been taking part in networks as its businesses require. In the networks, it acts in leading capacity or as a member. There are many reasons for being in the networks. Knowledge development, knowledge sharing and benchmarking are the main reasons for the case organization. There are also marketing reasons for taking part in the networks. The organization is able to strengthen its brands when operating with other organizations.

Path dependence highlights the roles in the case organization from a dynamic capabilities point of view. Strategic partnerships and development are concrete actions for path dependence. Development takes a lot of time in long-term partnerships; on the other hand, that journey has been successful to date for the case organization. It can be said that strategic partnerships have given competitive advantage to the case organization, as confirmed by the longitudinal study.

Some global change drivers have affected the case organization's operations. One good example is the finance crisis, which started in 2007. This had an instant effect on its customer base. There have also been decisions and actions made to reduce the impact of the financial crisis. This shows that the organization is able to sense and seize global trends and changes.

4.2 A-organization interview findings

4.2.1 A1 organization: a service and product provider

The A1 organization operates in the service and product business. Its service business is mainly built around long-term partnerships, while its product business is seen as a way to capture new customers. This organization sees that jumping straight into the service business without any knowledge about the products is hard. On the other hand, this involves many IPRs for products on the market. The organization cannot service a product if it does not own the IPRs. Obtaining IPRs requires partners and the A1 organization to recognize that being involved in networks is a must in their market segments. The organization also sees that service productization helps it to remain in the service business.

When talking about success factors in the service industry, the A1 organization emphasizes the role of flexibility towards customers. The main reason for that is its services are built for customers with different requirements. It can be said that services are highly 'editable' for customers. A1 organization sees that their customers are not buying just products or services; the main goal is for strengthening customers' current performance with products or services. This leaves the service provider a much bigger scope as to how to satisfy customer needs.

Being successful requires a customer-oriented approach. The A1 organization sees that means prioritization about what must be done, including resource allocations. It also believes that the key to the customer-oriented approach is trust. Trust is built in long-term relationships. Risk-taking is also much easier in long-term relationships where both parties trust each other. This also makes the A1 organization better equipped to tolerate risk. However, there is also a dark side to long-term relationships. The A1 organization highlights that it must try not to be blind to opportunities and customers outside the current partnerships.

In a customer-oriented partnership, the customer takes part in the organization's core processes. To do this requires trust and transparency between supplier and customer. The organization must be able to recognize customer value from its own processes and, by extension, its structures and management. The A1 organization sees that, without recognizing customer value, it is very hard to operate in a customer-oriented way.

The best and fastest way for sensing can be found in people who work close to the customer. The A1 organization has a process for individuals to easily report every instance of sensing at the customer interface. By that, the organization gets a lot of

information and signals about how customer needs are changing and how to react to those changes. This is a good way for developing customer relations and in turn, the organization may be able to achieve strategic partnerships. This kind of sensing can be called bottom-up.

The A1 organization has productized some of its services. By service productization, the organization is trying to make selling services easier for customers. However, it is important to remember that the A1 organization's services are tailor-made for customers. The organization has named product managers for every product segment, who are responsible for sensing signals from their own product segment. This is also the way for bringing sensing capabilities closer to customers. At the same time, a considerably larger number of people are involved in sensing compared to traditional management-level sensing.

Seizing

Seizing and investment proposals are escalated to the A1 organization's management. That is the level at which the organization makes decision on how to react. It has seen that decision-making involves personal dependences. The significance of comfort zones rises when actions, knowledge and customers are analyzed beyond the existing boundaries. The organization considers that investments, including financial and resource-based, are much easier to allocate to existing areas than supporting the future. This finding shows that the A1 organization practices so-called traditional thinking about seizing, where its management makes the decisions. The management role is seen as an executor of seizing.

In deep partnerships, the customer has role in organizational sensing. The customer can be part of the decision-making about how to invest and react. This includes taking part in resource allocations. This is one consequence from deep partnerships between the A1 organization and the customers.

After hard and furious competition, the A1 organization started continuous conversations about business models. It has faced the need to change the current model. The business model had been changed more than once, but the power and force always came from external competition. It has understood that the need for the business model to change must be proactive and the power to change it must be internal. This is a must if the organization wants to stay ahead of the competition. It has also recognized which competitors have changed their business model before others. In such cases, those who watch and wait before acting have much more to do in order to survive the competition.

The courage and willingness to experiment are factors that organizations with dynamic capabilities must have. The A1 organization sees that a lack of those abilities will have a negative effect on sensing and seizing. It could reach the point where it does not wish to react to clear signals from the sensing phase. The willingness to experiment and pursue entrepreneurial actions are mentioned in the A1 organization interviews. Interviewees indicated that the organization must have innovative individuals with entrepreneurial capabilities. The organization, on the other hand, must be able to offer opportunities to carry out those entrepreneurial actions. This includes risk-taking abilities for the organization. The A1 organization says that if it does not take risks, it cannot succeed in the long run.

Reconfiguring

The A1 organization sees that its competitive advantage is based on knowledge and competences. It must be able to secure and keep them inside the organization. Critical knowledge cannot be saved only through individuals' tacit knowledge. They use much job rotation to put these competences and knowledge into an explicit form.

4.2.2 A2 organization: part of the customer supply chain

The A2 organization operates in the aviation industry and offers products to customers. It sees itself as a product provider. The number of customers in its portfolio is quite low, but all of these customers are huge global companies. Some of these customerships have lasted more than a few decades.

When talking about success factors, the A2 organization highlights the role of reputation. In practice, this means that the products are delivered in the right quality and on time to customers. The organization wants to create an image for customers that it is a reliable partner to do business within. This talk about reputation can be labeled in the same way as brand.

Sensing

The A2 organization operates in a close relationship with customers. It is one part of the customer total supply chain. This offers great opportunities, on a day-to-day basis, for sensing at the customer interface. Promoting partnership-based relationships with the customer is how the A2 organization sees its current position. Partnership is also something it wants to achieve with future customers as well.

Actual operations and actions have been decentralized near to the customer. This has had a positive effect on sensing capabilities. This means that the A2 organization has actually moved physically nearer to customer premises, even in the same department or factory. Through this, the organization has strived to create a broader perspective for thinking and avoid management's withdrawal from the customer. Being close to the customer also allows sales to be linked more closely with the customer. When a problem arises, actions can be made immediately. This also requires decision-making to be executed at lower levels in the organization.

The A2 organization says that it involves the customer in part of its strategy process. There are some reasons behind that. First, it provides it with the opportunity to identify customer needs and requirements for the future. Second, the organization is trying to show the customer that the partnership they have together is good for the customer. The A2 organization sees that, when the customer is taking part in the strategy process, it generates a strong external force for making even big changes in the organization in order to achieve better customer value.

Technology development takes place at the customer interface. Technology development in the aviation industry involves huge risks and remarkable financial investments if the organization wants to take on overall responsibility. The A2 organization recognizes that some technological investments are too risky for it to make.

When looking back at the history of the A2 organization, it can be seen that its market segment has moved from traditional handicraft activities to machines. Keeping in business requires investment in technology. The A2 organization has put much effort into sensing opportunities and scenarios in the field of technology development. Some technology investments have been made, which have so far been successful.

Seizing

Cost-competitiveness has been the biggest change driver in the A2 organization's market segment. In reacting to that, the A2 organization has moved some of its operations to countries where labor costs are low. This has been one way of sustaining competitive advantage. Cost-competitiveness has also forced the organization to change its business model. Nowadays, it scans on an ongoing basis if its needs to develop or change the current business model. The A2 organization also views the business model as the driver for sensing. It defines whether it is going to derive findings from the sensing phase.

Reconfiguring

When focusing on sustaining competitive advantage, the A2 organization stresses the role of knowledge and core competences. These cannot be lost from the organization, so it has to be able to duplicate critical knowledge. This knowledge is crucial for the organization's success. Knowledge is duplicated through training where individuals are working in teams, sharing knowledge, such that tacit information becomes explicit. The organization also emphasizes that this critical knowledge cannot stay at an individual level, but has to be shared and documented within the organization. This kind of operating model requires a culture where people are changing their positions. It also requires an open atmosphere where individuals share knowledge.

4.2.3 A3 organization: the rookie in strategic partnership

The A3 organization is the youngest in this study. During its building phase it was clear that its earning logic and business model were going to be built around the service business. From the start, the A3 organization was established on strong partnerships, which have grown into strategic partnerships, including long-term contracts and strict cooperation with the customer. It wanted to generate a business model that would differentiate itself from its competitors. This shows that, while it was on its building phase, it already had a concept about dynamic capabilities and competitive advantage in mind even, even though it was not mature enough at that stage.

"You have to find the right people, in the right positions."

It is critical to recognize individuals who are committed, competent and able to build a successful organization. This includes strong networks and the ability to operate in them. The organization recognized that it was not doing business alone, but doing it with partners. It also needed people who could understand the business logic of the service industry and the partnership-based business model. Getting the right people in the right positions was the A3 organization's first big challenge.

Sensing

"It's not about organizations, it's about individuals."

Strong partnerships require constant cooperation with the customer. This cooperation provides a great opportunity for sensing customer needs. Sensing

capabilities are related to the strength of individuals. This means that deep and confidential trust is built between individuals while they operate and work together. It is not about the organizations involved, it is about individuals. The A3 organization sees partnership as being synonymous with trust and trust is built between individuals. Trust cannot be built between organizations. However, there is one critical task for the organization in terms of sensing capabilities. It must recognize individuals at the customer interface who are influential and positive concerning change. These are the key players for change in a strategic partnership-based business model.

Deep partnership can be referred to as strategic partnership. When the organization achieves strategic partnership status with the customer, the customer needs flow almost automatically towards the organization. Strategic partnership differs from other partnership forms. One difference is that the customer is outsourcing some of its critical core functions to the partner. The A3 organization sees this as one way for securing competitive advantage.

"Innovative ideas require innovative people."

Innovative ideas require innovative people in the organization. The A3 organization stresses that innovations and ideas do not evolve out of formal processes, but happen whenever and wherever. The organization's role is to create an environment where innovations can happen. It can be said that the organization's role is more like leading and managing opportunities and people.

The strategy process has a role in sensing capabilities. The A3 organization describes its strategy process as a continuing process where sensing happens all the time. It collects data from the sensing phase and, if something interesting is revealed, it is able to change its current strategy. Strategy is the baseline, which shows the current direction of the organization; but, it must be able to change if external or internal signals provide the right reasons for doing so.

The interviews show that, when talking about sensing and individuals, the A3 organization sees that its people are thinking via their personal strategic framework. This finding indicates that every individual has a slightly different strategic framework. Training is a good way for gaining knowledge and widening an individual's strategic framework. The A3 organization sees that building a successful organization and sustaining competitive advantage are not every individual's cup of tea. However, it is important to provide opportunities to people who can do that task.

The A3 organization wants to give its people enthusiasm for work, freedom and the ability to find and test out new things. It sees this as one way for sustaining competitive advantage. It also wants to involve as many individuals as possible in the strategic process. Having people's commitment to strategy is much easier than just informing them about it. These findings highlight the important role played by individuals in pursuing competitive advantage. Passion and excitement are part of individuals' feelings but the organization can support those.

Seizing

"Seizing is easy, but how do you find the best added value for the organization?"

That is the question that A3 organization raises when talking about seizing capabilities. This means that its management must be thinking about different scenarios and their input and return ratio. What is the best solution for the future? How much does it cost? What are the expected returns? Those are typical questions at the management level about seizing. The A3 organization's decisions about seizing are done at the management level.

This organization sees the same problem-related decisions driven by top management as highlighted in theories of dynamic capabilities. When decision-making is taken away from the middle management or lower level, then the responsible mindset is diminished. The organization has decentralized decision-making at the lower level. At first, when it did so, people made mistakes; but, most importantly, they learned from them.

Individuals' own views and understanding play a huge role in sensing. The organization must keep in mind that knowledge, experience and business understanding are at a good level. This can have an immediate effect on investment decisions and resource allocations. Training and talented individuals in the right positions are a productive way to handle that challenge.

The seizing phase is a good meter for measuring how much the organization is able to change or whether it even wants to change. If the organization has a stagnant value base, seizing can be impossible, even the though signals for change might be clear. This stagnant stage must be avoided. The A3 organization recognizes that it must make small changes from time to time, such that, when bigger changes come along, it is ready. This also keep individuals away from stagnant thinking.

In the sensing phase, the customer has major role in the strategic partnership. In the seizing phase, the customer needs to be involved. Again, trust between both parties in vital. If the organization has trust from the customer, when it is time for

seizing to be done, even the customer can make changes on its side as well. This can also be a measure of a successful strategic partnership. The stronger the customer reacts to the proposed changes without questioning the organization, the stronger the trust inside the strategic partnership.

"The business model must be changed if the future requires that."

The current business model must, at all times, hold a mirror to the opportunities. If investments and decisions require changing the business model, then it must be done. Re-evaluation of the business model must be a continuous action if the organization wants to maintain a competitive advantage in the long run. This includes a review of the internal strategy, with the focus on customer value.

The A3 organization believes that it seeks opportunities in a proactive way. The first reason for this is that it is quite a young organization. But, when the conversation goes deeper, it seems that the right reason comes from the individuals. The organization has individuals with passion for their work. They are the ones who constantly seek opportunities. The organization's role or more specifically the management's role is developing the resource base continually in order to avoid a stagnant mindset. The organization also sees that resource base development is part of learning about and developing the strategic framework of itself and the individuals within it.

In the seizing phase, individuals must know the boundaries within which they can apply, develop and test their schemes. Outside of these boundaries are the areas where they cannot go to develop and test out their novel ideas. This kind of bounded thinking is typical in safety-critical organizations. Through strategy, the organization develops and defines these boundaries. When new investments come, its management must frame these ideas in relation to its strategy framework and boundaries. Then, the needed resource allocations can be implemented. When doing so, the organization is trying to develop resources more effectively, rather than hire more people.

Reconfiguring

Every organization reaches a point where new business opportunities are identified in the sensing phase, which are not suitable for the current setup or its business model. When the A3 organization faces these moments, it sees that there are two ways to move forward. First, the current business model can be modified or, second, the organization needs to build a new organization for that opportunity. The second approach means that there are two separate business models and also

two separate organization segments. These actions can be referred to as business model re-engineering.

The A3 organization has convincing real-life evidence that it can modify its resource base and incorporate functions based on sensing. Critical changes must be implemented before the external environment shows strong signals. The organization must be able to carry out the necessary actions when it sees weak signals. Otherwise, it will stay in furious competition without any competitive advantage.

Individuals' knowledge is critical to the A3 organization's success. It has to be able to secure that knowledge from flowing away from the company. It tries to duplicate the knowledge via job rotation and promoting actual work in pairs or teams. This is also a way to transform tacit knowledge into explicit knowledge, from individuals to the organization.

4.2.4 A4 organization: value-driven culture

Organizations can develop in many different ways in their operations, for example, in terms of activities, processes and know-how. But which aspects of development can achieve the best-possible results? That is the first question asked during the A4 organization interviews. The initial response is that the organization and its culture must be value-driven.

The basis for dynamic capabilities can be found in organizational values. Leadership and management practices must be managed with reference to those values. In this case, the basis means the foundation for building up dynamic capabilities. A value-driven organization's basic elements are individuals, their personal values and the organization's values. The A4 organization regards resource recruitment as the first step where individuals' values are tested. Passion, initiative and creativity are the characteristics that the organization is looking for in individuals.

"Investing heavily in norm control can give the organization, at its best, only mediocre results."

The opposite of organizational values are organizational norms. The A4 organization uses the term 'norm control', whose development includes instructions and process descriptions. Strong norm-driven management can, at its best, deliver only mediocre results. But, by investing in value-driven management, the organization can achieve the best results. Value-driven means much more that

writing the organization's values on a board. A bad example of value-driven is when the CEO writes these values down. Behind the real organizational values are everyday actions. What happens when nobody is watching shows the real value culture of the organization. The best organizations are able to develop and balance both of these sides.

The A4 organizations states that its management must do more than follow the instructions. They must be able to manage and create possibilities. In practice, this means that the organization's value base must support dynamic capabilities. For example, if development of technology is considered important, the organization must give individuals the possibilities to pursue that. This requires time, training and encouragement of individuals.

No official innovation process can be found in the A4 organization. However, it is said that, if the organization has an innovative culture and its individuals are passionate about generating new ideas, it does not need an official innovation process.

Sensing

The A4 organization sees itself as an expert organization where knowledge has huge role in success. This includes the importance of knowledge-sharing. When talking about expert organizations, it is important to involve as many individuals as possible in the sensing phase. The A4 organization uses the Delphi method for sensing and tries to capture weak signals with it. It starts with forming conversation groups from among the organization's individuals. These groups are focused on the future and what can be achieved. The emphasis must be on customers, both current and new ones. This method is about sharing knowledge and ideas about weak signals.

The organization's people understand the meaning of weak signals. At first, new ideas might sound crazy and a waste of time. However, the organization subjects every idea to a deeper review. Rapid testing and innovation are used for evaluating these ideas. If any of them include seeds for success, they move onto the piloting stage. It is important that bad ideas are shelved after testing and piloting, not before. The A4 organization interviews show that its individuals respect others' ideas and thoughts, even if they seem wrong at the first sight.

The organization also uses official benchmarks in sensing. Over time, it has become part of many global networks where it operates with other different organizations. Benchmarking capabilities need an open mindset between both organizations to succeed. Benchmarking capabilities have been evolving for

centuries and now include partner networks. The best benchmark experiences come from the best organizations in the world. They are usually in a totally different market segment or industry than the A4 organization. That said, usually, the recipe for success is not industry-dependent.

Seizing

Ideas from the sensing phase are passed over to larger treatment groups where findings are applied to development programs. Usually, in a strategic period, the A4 organization will have nine development programs running. The goal of these programs is sustaining competitive advantage. There is also a role for the organization's management in the seizing phase but it is slightly different from that of typical management. As mentioned earlier, the expert groups form these development programs while management's role is to accept or reject their launch.

The A4 organization's management makes the decisions but the actual solutions come from the lower levels of the organization. This kind of approach is seen as beneficial to success, while competitive advantage is built on individual knowledge and expertise. Resource allocations are identified as difficult. When transferring great experts to another project, this contains risks. Existing knowledge cannot be lost, while knowledge must be learned and passed on. These risks can happen if the resource allocations are made in a hurry.

Reconfiguring

Innovations and competitive advantage are built around knowledge, which has been recognized as a critical success factor in the organization. The development, renewal and sharing of knowledge center on the global expert network. Building and maintaining these networks and relationships are ways of sustaining competitive advantage. The organization uses benchmarking in these networks, insisting that benchmarks are among the most powerful tools for gaining new knowledge.

These networks are also used for scanning technology development, as they give strong signals about investing to the right technologies. Through these networks, the A4 organization has developed the ability to outsource operations to partners. This, on the other hand, requires long-lasting networks where knowledge and actions are based on the same kinds of values.

4.2.5 A5 organization: master of project management

The A5 organization works on projects and has positioned itself in the project business. Its general customer projects are huge and global, while its customer

solutions, in financial, time and complexity terms, the most significant in this thesis. When a project becomes global, the number of organizations related to it grows.

Technology development and different technologies are important for the A5 organization's success. It divides technology development into two sections: technology leader and technology follower. Technology leaders carry out a lot of basic research and develop new technological innovations. Usually, these organizations have made significant financial investments in R&D activities.

Technology followers, on the other hand, are the ones that adopt, as soon as possible, new innovations from technology leaders. These innovations are applied to their products or services. The A5 organization regards itself as a technology follower. Being a successful follower requires sensitivity and an active grip on scanning technology leaders.

Staying in the market after competition requires more than just product. In the A5 organization, the market is highly customer-oriented where every solution is tailored for the customers. Conversations with the customer have turned from selling products to selling solutions or even selling capability. This finding has a strong link to the PBL concept. This organization believes that competitive advantage can be achieved if it is able to capture the right competences and technologies for meeting customer requirements. What must be taken into account is that there are things that customers do not know they will need in the future.

Sensing

The organization must be close to technology leaders. One way of ensuring this is by building networks and partnerships where those leaders operate. Sensing must be done continuously; and, when potential innovation occurs, the organization must act and build it into its current service portfolio faster than its competitors. The A5 organization has also taken advantage of open innovation-based R&D, which has brought it more partners.

The organization also facilitates innovation activities but they are mainly focused around current products and services. Every individual from the organization can take part in these innovation activities if they want to. The organization's management provides an annual budget for this purpose, which must be used. This means that innovation is part of everyday action.

The strategy process has a significant role in the sensing phase. The A5 organization uses the strategy process for scanning findings from competitors,

customers and also from new potential customers. Its marketing and sales department is generating findings all the time for management.

Seizing

The organization has an innovation process where every individual can take part. The basic idea of this process is to collect ideas for current services or products. The basic principle is that, when an idea comes about, it must be tested as fast as possible. This avoids too much detailed planning. Another reason is that the organization does not want to use resources, time and money on failing ideas; rather, it wishes to encourage a culture of experimentation by piloting.

Reconfiguring

Knowledge development and continuous learning are a must for staying competitive. The organization uses job rotation on work groups for that. When operating in the project business, one of the A5 organization's key processes is the project process. This includes the lessons learned phase whose goal is to recognize knowledge and use it in the next project.

The organization also recognizes the role of values that are critical when focusing on success, innovation or agility. It takes individuals' passion into account in job interviews. If somebody has passion for work, this will deliver the best results. Passion about values must be maintained, which is a task for the organization's management. The organization must be able to offer individuals the tasks they feel passion about.

4.3 Case study summary

Table 5 summarizes the findings from the interviews including the most relevant observations. These observations are used for providing the answers to the research questions. The findings are divided into three sections: sensing, seizing and reconfiguring. The table also shows which organization the observations are related to.

Table 5. Study summary

	Case	A1	A2	A3	A4	A5
Sensing						
- Weak signals					X	
- Benchmarking					X	
- Strategy process	X	X	X			X
- Networks and open innovation			X		X	X
- Partnership	X	X	X	X	X	
- Role of the individuals	X	X		X	X	X
- Following technology development and technology leaders						X
- Service productization	X	X		X		X
Seizing						
- Strategy process				X		
- Strategic framework: individual and organization		X	X	X		X
- Organizational values				X	X	
- Management group	X	X	X	X	X	X
- Sales are connected to the customer interface			X			
- Role of the customer		X		X		
- Official analysis of the markets and competitors			X			X
- Decentralized decision-making				X		
- Resource allocations				X		X
- Piloting and testing						X
Reconfiguring						
- Intellectual property rights		X				
- Duplication of critical competences	X					X
- Transforming tacit knowledge into explicit knowledge		X				X

4.3.1 Sensing capabilities

Partnership is one of the biggest findings that can be found between organizations. Partnerships differ between organizations but one thing is common: sensing can be done much more easily from the customer if the organization and the customer are engaged in partnership-based cooperation. Partnerships, especially strategic partnerships, have built-in sensing mechanisms, which make perception almost automatic from the customer. Usually, in partnership-based business models, the organization has many individuals operating at the customer interface. When there are many different interfaces and connections, the number of findings is large. In this study, the A5 organization's business model is not based on partnership. The interviews also show that it has fewer connection points with customers than partnership-based organizations.

When talking about official tools for sensing, the A4 organization seems to be the only one with the official tools and process for collecting findings. It is using Delphi tools for collecting and analyzing the findings from the organization. It is also the only organization with official tools for sensing and collecting the findings from individuals.

The organization does not do the sensing, its individuals do, or at least these individuals can do the sensing if they are able and want to do it. The role of individuals in sensing is raised in every organization's interviews in this study. But, what is the role of the organization in sensing? The organization must enable sensing for individuals. Some of the organizations in this study have a budget for sensing and seizing. Some organizations offer rewards to individuals for good sensing and findings. Organizations can involve individuals in processes, which support sensing. One example of this is the strategy process. The case organization has involved many individuals in its strategy work and given the opportunity for every individual to take part in the process. This kind of approach quantitatively generates a lot of findings compared to traditional strategy work where the management team is only involved.

The importance of networks is seen to be part of building and maintaining competitive advantage nowadays. Every organization in this study says that it does not operate alone but in its networks. Being part of networks is a great opportunity for sensing. It also allows for a better understanding of the overall value chain. Organizations are able to view their own position and the bigger picture. There are different kinds of benefits for being part of networks. The A4 organization gains knowledge and learning from its networks, but they are not critical for their core operations. On the other hand, the A5 organization's business model is built around its networks and can be counted as critical to their success. The biggest

reason for developing networks is based on knowledge. Organizations see that they can access new knowledge from others in their networks. There are also many different ways of sharing knowledge. The A2 organization cooperates with other organizations in its operations while the A4 organization is benchmarking other organizations in its networks, which have no connection to its core operations.

The strategy process has a role in the sensing phase. In general, every organization in this study has some sort of strategy process and one key theme in this context is sensing. It can be broadly seen that sensing is a part of the strategy process, one way or another. There can also be differences between organizations in terms of how they operate and implement their strategy process.

Firstly, there is a difference in how people are involved in the strategy process. People's location within the organization differs between organizations, as well as the number of people taking part in the strategy process. When knowledge and know-how are critical for the organization's success, it can be better for sensing if it is involving more individuals in the strategy process. If the organization has many points of contact with the customer, then involving these individuals in the strategy process is critical for sensing customer needs. This is typical if the organization is a so-called expert organization. No reason was found to explain why organizations should not involve many people in the strategy process.

The opportunity to participate and contribute in the strategy process is a necessity if the organization wants to respect and maintain an innovative culture and innovators. That is one way in which innovative innovators can contribute to the organization's future. Of course, all ideas cannot be realized, but that is not the point. Ideas and thoughts must be harvested from individuals; some of them can go further in the process, while others stay on hold. This kind of approach can make innovative individuals commit themselves to the organization. It is enough for them that there are ways to express and put forward their ideas. If organizations do not have these kinds of processes or support innovative individuals, then, as time goes on, innovators will disappear from the organization. Usually, the sensing phase is the least expensive for comparing seizing and reconfiguring. Great ideas must be recognized from the mass and supported in the seizing phase. Other ideas still remain in the organization but they will not be invested in.

Through a good strategy process, the framework is generated for the organization's future. This is one part of the organization's strategic framework whose goal is to maintain and develop its competitive advantage. This also provides guidelines for the organization's individuals. However, it must be kept in mind that organizations

with dynamic capabilities are able to change their strategy when an emergent signal gives strong reasons for that.

Last but not least is service productization. This is the theme that goes beyond every phase, from sensing to reconfiguring. This concept is one of the biggest findings in this study, which will be discussed in more detail in the results chapter. Service productization is recognized as a process, which starts from the sensing phase.

4.3.2 Seizing capabilities

When it comes to seizing, the focus is on individuals. The critical role is for the organization's management team. As it is usually responsible for making investment decisions and resource allocations, its role is significant from a dynamic capabilities point of view. The role of the management team was raised in every organization's interviews in this study. The strategic framework, organizations and individuals also have strong effects during the sensing phase.

The A4 organization involved more people in the seizing phase than just the management team. Scenarios and options are built at the lower level of the organization. The reason for that is that it is an expert organization where the business is based on individuals' know-how and expertise. Other organizations have experts in their organization, but the A4 organization is the only one that appears to involve individuals significantly in the seizing phase.

When the organization's business model is based on partnership, especially strategic partnership, the customer has role in seizing. In such a case, the organization and the customer decide together how to react to the signals and findings from the sensing phase. This approach seems logical when the organization has strong contracts with the customer. The length of these contracts can cover decades. One interesting finding is that, when the organization has such long contracts in strategic partnerships, it may pay less attention to the external world, such as in terms of competitors and changes in the market. The A1 and A5 organizations operate in rapidly changing markets compared to the others. This effect is reflected in their responses. In their operations, market and competitor analysis is part of their everyday activities, while others do this much less frequently.

The so-called strategic framework has a major role in the seizing phase. This brings together the organization and its individuals in decision-making processes. This

framework is one of the most important findings and its content is explained in more detail in the results chapter.

4.3.4 Reconfiguring capabilities

When knowledge and know-how are the keys to an organization's success, they must be maintained in the organization by any means. Organizations in this study employ the same kinds of methods for securing critical knowledge within their business. The first step is to transform tacit knowledge into its explicit form. Job rotation and working in pairs or teams creates effective information flows between individuals.

A general discussion about innovation can refer to reconfiguring capabilities. Innovation plays a strong role in an organization's success, as well as in the theory of dynamic capabilities and in this research. In this study, innovation is divided into two sections: innovation that happens inside strategic framework and innovation that happens outside the strategic framework. Innovation inside the strategic framework has the same kinds of characteristics as incremental innovation. This reflects the definition of innovation from Tushman and Romanelli (1985).

The people both inside and outside the organization typically generate its innovations. Innovators from inside the organization are called entrepreneurs and innovators from outside are called extrepreneurs. Innovators can be found at every level of the organization from the top management team to the shop floor workers. It can be said that an organization's ability to use internal and external innovators is one kind of dynamic capability. Innovative individuals alone do not create innovations for organizations but organizations must be able to create a growth platform for ideas and the potential of individuals. Organizations' role here is more akin to managing opportunities.

Some of the organizations in this study seek innovations from the external environment. This can be done by using external individuals or networks. Organizations are looking for diversity from these external factors. This diversity usually means different kinds of strategic framework. The aim is to find ideas and thoughts, which can be radical. Such actions need out-of-the-box thinking from the organization.

Technology development, technological changes and technology leadership

Technology and its development have changed service businesses and will bring about changes in the future. The range of technologies is also increasing. Nowadays, technology has reached such a significant level that, in almost every industry, every organization can be called a technology company. This means that being able to orchestrate its resource base, an organization must have competences and knowledge, which are usually recognized as part of a technology organization's know-how. In the service industry, technology has reached the point where the weakest link is not missing technologies but the organizational ability to exploit the technologies that are available. In short, it can be said that the speed of technology development has surpassed the speed of organizational development.

There are also some organizations involved in the product business in this study. The role of technology is much bigger in those than in service businesses. Product organizations are selling customer value directly via technologies, while, in service businesses, customer value is generated via service design where technology has a smaller role. It can be said that role of technology in service businesses is more to support service design, but, in product businesses, the role of technology has a direct link with customer value.

When talking about the elements of competitive advantage, it is hard for organizations to actually know why they have succeeded. This comes up in the interviews when talking about elements of reconfiguring. In summary, it can be stated that concrete elements for competitive advantage are rarely known. When focusing on the past, no action can be found, in which a competitive edge was found, while the future remained fuzzy.

5 RESULTS

This chapter summarizes the case study results. There is a great deal of individual observations and this chapter is going to bring them together in order to answer the research questions. A market test from the case organization is also included, which will confirm or reject the findings from this study.

From the start, dynamic capabilities in this study are built around Teece's model and definition of dynamic capabilities. The model is divided into three separate sections, which are sensing, seizing and reconfiguring. The results of the study, which will cut through all of those phases, represent the real dynamic capabilities, which gives the organizations a competitive advantage. The results are shown in Figure 19.

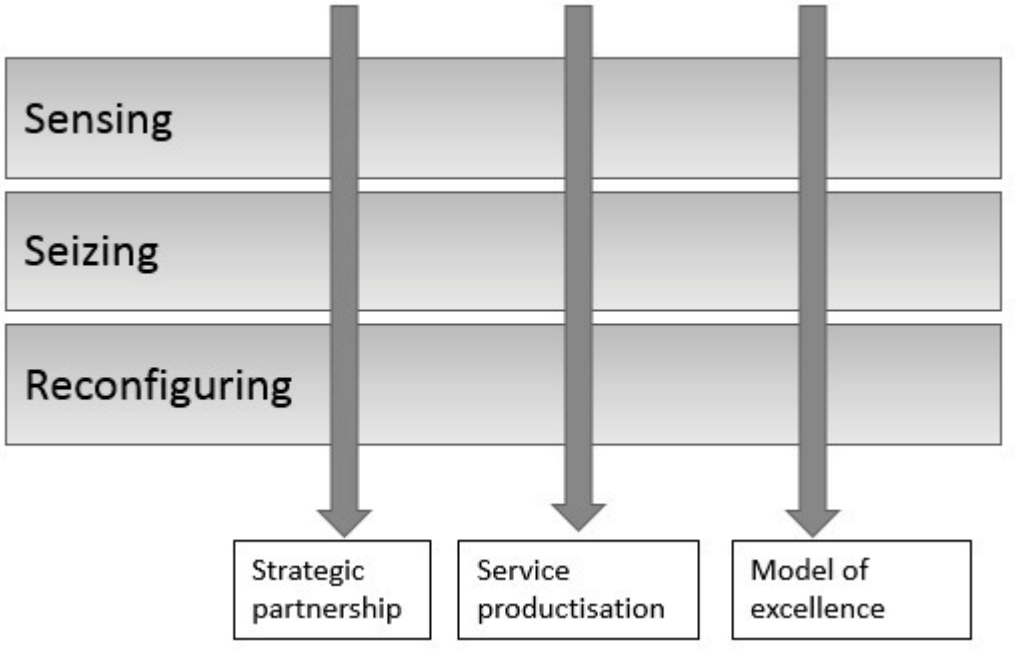

Figure 19. Dynamic capabilities and the results related to the research question

5.1 The role, meaning and need for dynamic capabilities

The first research question of this study is focused on the role, meaning and need for dynamic capabilities from the case organization's point of view. Even though the theory of dynamic capabilities is not new in terms of research, it is new in the

case of the case organization. There is also limited research from the MRO field related to dynamic capabilities.

In general, it can be said that none of the organizations in this study recognized the theory of dynamic capabilities. On the other hand, when the theory was taught to them, they said that it seemed logical and could recognize similarities between the theory and their operations. The interviews also show that the theory of dynamic capabilities can be used in real-life actions.

The case organization's industry is facing big changes and the overall market seems to be in a transition state. This means that the case organization is also facing big changes in its internal and external environment. The message is clear from the interviews: for organizations focusing on the MRO industry, the need for dynamic capabilities is obvious. The same finding is true for the A-organizations in this study. By extension, it can be argued that the need for dynamic capabilities is a global phenomenon.

One good example of the changes in the aviation industry is modern pilot training. In the past, pilot training has faced huge changes as well as included technology change drivers. The use of simulators and virtual training environments is increasing, while actual airplanes are used less and less for training. This has a direct effect on MRO operations. The less an airplane is used, the less it needs maintenance. The role of aircraft and helicopters has been transformed by almost 100% in terms of operating. This is a good example of how technology development has changed the aviation industry.

The scale of international consolidation is also increasing in the aviation industry. This shows that organizations are trying to optimize their resources and processes. This is something that theories of core competences talk about. Consolidation has existed throughout history but now the pace is accelerating. One driver for this has been the dynamics in the market, posing challenges in the markets for organizations operating in the aviation industry. Long-term partnerships may be threatened by the competition.

In civil industry, the pressure comes directly from competition. Low-cost airlines have changed the traditional business logic and everybody who wants to be in business has had to change their business model. The military industry has had different change driver and that is money. Governments have a huge role in the military industry, but are forced to decrease their budgets. This has put pressure on organizations' cost structure in the military industry. The slogan, 'The more you break it, the more I make it' slogan no longer works in the MRO business.

There are also direct effects from the technology development related to MRO organizations. The biggest technological changes occur when an aircraft model is replaced with another. This is the point where every aircraft's systems changes. This is a major leap forward, related to incremental technology change. From the maintenance point of view, aircraft are using more and more complex systems than traditional platforms. They are nowadays more like modern computers, which have many different kinds of systems built into them. This means that MRO is focusing more on system maintenance. This does not mean that traditional platform maintenance is going away. It just means that there is more maintenance work to do on aircraft systems.

Global technological change drivers and trends have affected the studied organizations. The Internet of Things and digitalization are familiar to these organizations. Technology development is seen as something that must be part of everyday actions. This does not mean that dynamic capabilities come automatically, but, if organizations neglect technology development, then the end is near.

Technology development and new business models also bring new competitors onto the market. New competitors may offer totally new solutions, which can turn the current market logic upside down. The studied organizations recognize that they must be aware of new competitors. Figure 20 shows the biggest drivers for organizations in the MRO business or the general aviation business, which need dynamic capabilities for sustaining competitive advantage now and in the future.

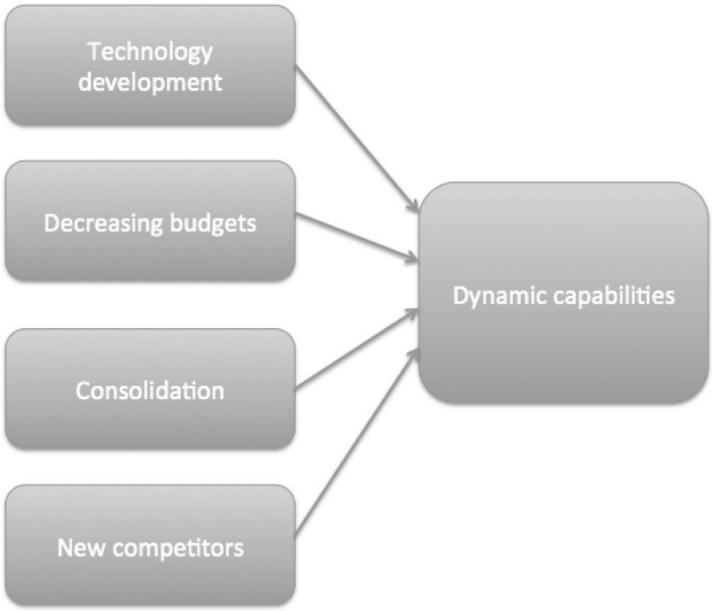

Figure 20. Drivers for dynamic capabilities

There is clear need for dynamic capabilities in the organizations in this study. There is also clear evidence that organizations must have dynamic capabilities if they want to stay competitive and not reliant on the development of the industry. Within the short time window, organizations do not necessarily need dynamic capabilities; but, when there is a clear breaking point, these capabilities will be tested.

The identified drivers for dynamic capabilities are not industry-dependent. But how these effects are observed in organizations is industry-dependent. For example, technology development can be seen as a global phenomenon, which is forcing organizations to gain dynamic capabilities for keeping ahead of the competition. But the actual effects are different when focusing on specific industries or market segments. That is one of the reasons why building and maintaining competitive advantage is hard, even when the change drivers are fully known.

5.2 Service productization as a foundation for dynamic capabilities

Service productization is one form of dynamic capability, which this study recognizes. Service productization is not a new phenomenon in the field of research. There are many articles and studies related to service productization. This study is going to offer a new perspective for service productization and the model by which organizations can actually implement the productization of their services.

There are different attributes behind service productization in terms of affecting the customer. These include scope, time frame and risk mitigation. On the other hand, the longer and wider the service productization, the more requirements are imposed on the organization. The more complex the service productization, the more it imposes costs on the organization.

The case organization recognizes that productization and service portfolio development require strong customer intimacy and customer-oriented approaches. It must be close to the customer to be able to react and even anticipate customer needs. This could require the customer to even take part in the organization's strategy work.

Organizations are trying to differentiate themselves from competitors via service productization. They also feel that it is easier for customers to buy services when

those are productized. Productized services are also easier to commercialize for new customers.

Strong life-cycle management must be combined with service productization in order to achieve dynamic capabilities. Life cycle management plays a significant role in the MRO business. Products from the aviation industry could operate for almost a century. This emphasizes the importance of the life cycle. Understanding life-cycle management in depth requires much time, effort and resources in order to achieve competitive advantage. It can be said that successful service productization requires an understanding of life cycle management.

Recognizing and understanding customer value, which must be combined with life cycle thinking, are critical. Organizations must be able to understand how their competences connection with product life cycles, as well as build new customer solutions through whole product or service life cycles. On the other hand, they must be able to give up those competences that they no longer need. This is linked to managing resource allocations. Usually, organizations are good at spotting they need to do in a change situation. Successful changes in resource-based needs also highlight those competences that must be abandoned. Figure 21 shows the elements that organizations must define in the change situation.

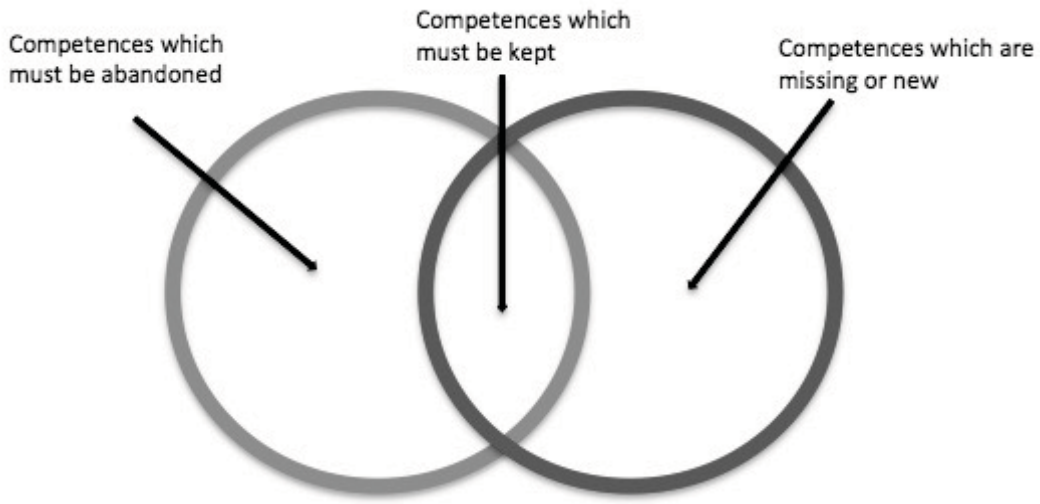

Figure 21. Decisions about competences in the change situation

Figure 22 shows the process for service productization, bringing the management elements and success factors together. This process is divided into three sections in this study: learning phase, productization phase and PBL phase. Organizations must follow every step in order to succeed at productization. Even though one of the steps is called the productization phase, productization can also be understood

as a unity that bundles these three steps together. Starting with service productization can be seen as a first step towards achieving dynamic capabilities.

Management element and success factor	**Learning phase**	**Productisation phase**	**PBL Phase**
Risk management	Mitigate	Control	Buy these from customer
Customer encounter	One-time	Continuous	Long-term contracts
Business model	Selling what customer orders	Selling solutions to customer problems	Selling availability, capability and reliability
Trust between provider and customer	Narrow	Wide	Key element
Knowledge transfer from customer	Tacit	Explicit	Open knowledge transfer between supplier and customer
Suppliers role from customer poin of view	Service provider	Partner	Strategic partner
Protection against competition	Poor	Moderate, Building VRIN elements	VRIN elements can be found

Figure 22. Management elements and success factors and their role in different phases of the product life cycle (Sivusuo & Takala, 2016)

When focusing on services and their productization in the MRO business, the first finding is that objects are variable. This variability can be explained according to levels shown in Figure 23. On the top level is the so-called system level, which includes whole systems, for example, aircraft. The second level is called the sub-system level, which can be, for example, an engine or some other sub-system. On the third level can be found a component, for example, tires. This level is called the component level. This variability adds pressure and complexity to the organization when starting service productization. Organizations must, from the start, have an understanding about what and why they are trying to introduce productization process.

Figure 23. Different levels of PBL focus (Gansler & Lucyshyn, 2006; Gourley, 2014)

The idea of productization can be developed when combining it with an integration strategy. Figure 24 shows a matrix for decision-making, which also contains examples from the US Department of Defense. Operations can be outsourced to industry (industry capabilities) or built around deeper partnerships (partnerships) or organizations can keep hold of the operations themselves (organic capabilities). Without going deeper into the figure, there is one point that must be raised. When, in the MRO industry, the customer is thinking about outsourcing, it must focus on two questions. First, it must decide the level of outsourcing (outsourcing levels are shown in Figure 24). Second, it must decide what kind of relationship it wants to build with its suppliers.

These questions are also important for MRO providers, which must be able to put themselves into the matrix before building a successful path for deeper customer relationships if organizational goals are to be achieved. This also combines life cycle thinking and organizations' current and future competences. This is the way in which MRO organizations can build a roadmap for development in the future.

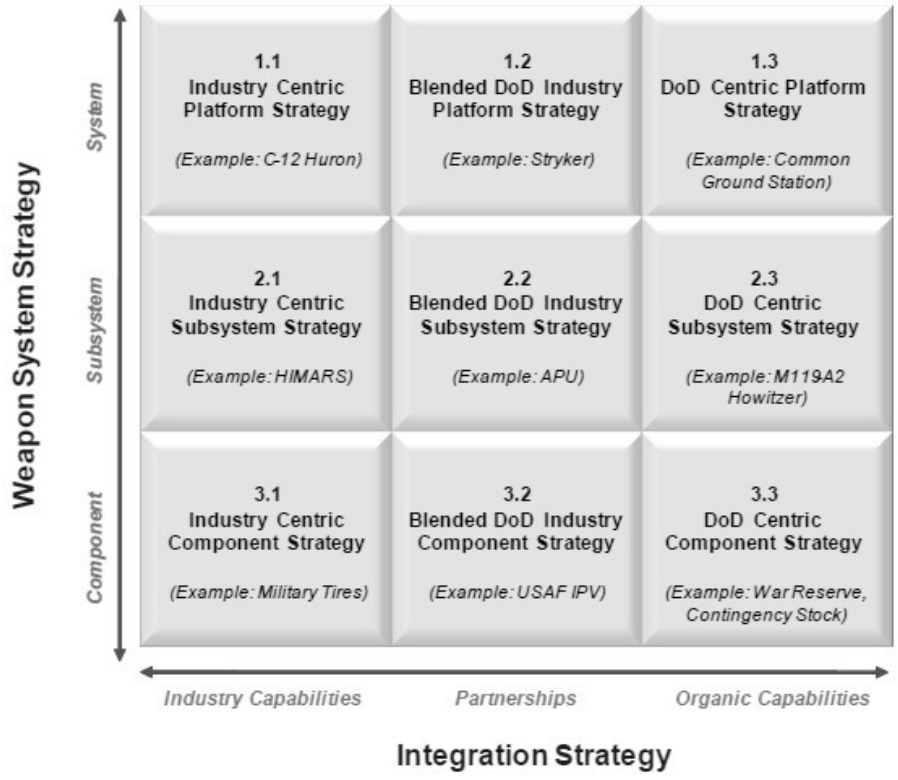

Figure 24. Decision matrix for product support (Estevez, 2011)

5.2.1 Learning phase

The learning phase can be seen as a first step in service productization. There are also organizations going through this phase, which have not started building a roadmap for productization. It can be said that this phase involves the largest number of organizations.

Risk management, risk-taking and handling risks are recognized as one entity in service productization processes. This is also one finding from the interviews in this study of relevance here: if either the organization is unable to take on and carry risks or individuals involved in decision-making are afraid to accept risks, then the odds for growth and surviving the competition are low. Elements related to risk management can be divided into two section: individuals and organization. The role of the individual that of a decision maker, who shows the ability to take risks when the opportunity arises. The organization's role includes how much the organization can take risks from a financial perspective.

The organization in the learning phase feels that risks are negative phenomena, which it wants to get rid of. One real-life example is the contract. The organization is able to get rid of risks via contracts, with opportunities left for others to explore. This kind of organization also sees risks as being much bigger than opportunities.

The business model shows the concept of how the organization is generating customer value. In the learning phase, the organization is usually selling customers what they want and wish to order. Usually, the order is exactly the same as the delivered service or product. At the customer interface, contracts, orders and deliveries are single encounters, with the customer making the order and the supplier delivering it. This kind of operating model can be part of a partnership but it will not guarantee competitive advantage. Supplier and customer may have some trust between them, but this is not a critical success factor in the learning phase.

It is possible to build a successful business operation only in learning phase. But, when the competition comes, this phase does not provide the elements for winning in a competitive race. Customers can easily change supplier in this phase too. It can be said that the learning phase is not suitable to long-term partnerships.

In this study, none of the organizations has made a conscious decision to be left in the learning phase. Every organization wants to go onto the next phase because it wants to develop its competitive advantage. Organizations also highlight the role of data collection from the learning phase. Even the collected data could be useless in that moment, but could be useful in future phases.

The clues from the learning phase are the data. Organizations must be able to collect data as much as possible. Without data, organizations will not be able to go onto the next phase. Data must be collected from two directions, from the customer and also from the services, which have already been delivered.

5.2.2 Productization phase and life cycle management

A successful productization phase needs data from the learning phase. Organizations must be able to build better solutions for using the collected data. Collecting data without a goal or vision is a waste of time. There must be some kind of goal that organizations want to achieve through data collecting. Usually, the goal is informed by the sensing and needs identified at the customer interface.

Risks also play a role in the productization phase, when the organization has to change its attitude from avoiding risks towards managing risks. This requires a change in mindset as well. Risks are not seen as negative phenomena for the organization because it is able to manage them. Examples can be found again from the contracts. In this phase, the organization can take or leave risks in the contracts because it knows it can manage the risks.

The relationship between supplier and customer goes deeper in this phase. The relationship may have the characteristics of a partnership. At the same time, the number of interactions increases when compared to the learning phase. This is one enabler for building a partnership between both parties. Through trust and information, the supplier does not sell exactly what the customer orders, but something more. In this phase, productized services are solutions to customer problems. The supplier cannot understand the real problems without forging trust with the customer. This includes an open information flow between both parties. Trust is critical for success in this phase.

The role of life cycle management is foregrounded in this phase. One driver for this is the contract, or more specifically the length of the contract. In this phase, the length of the contract is much longer than in learning phase. This forces the customer and the supplier to focus on the life cycle level.

Elements of competitive advantage can be seen from the productization phase. Elements of VRIN can be found, which have a connection with sustaining competitive advantage.

5.2.3 Performance-based logistics phase

PBL in the defense industry refer not only to outsourcing operations but to maximizing the performance, capability and value of weapons systems (Kobren, 2009). Even though this definition has a strong focus on the defense industry, there is also an idea that the PBL concept can be used in other industries as well.

The PBL phase is the most advanced stage of the productization process. The relationship between the supplier and the customer is very deep. This relationship can be referred to as a strategic partnership. This kind of partnership is enduring. Strategic partnership-based relationships cannot happen without deep trust between two parties. For achieving deep trust, both parties must have common past that has lasted a long time in which they have done business together. This trust can be earned in the learning and productization phase. Trust can be seen as the most critical success factor in the PBL phase. Without trust, this phase cannot be achieved.

This is the phase where the earning logic usually turns upside down when comparing it to the learning and productization phase. The customer pays for availability and capability, not for one-off maintenance or repairs. This can be seen as a very complex issue from the business model point of view. Jumping into a performance-based model firstly requires walking through the learning and productization phases.

Risks and risk management face changes in this phase, with the supplier transferring all the risks from the customer to itself. For being successful, this means that the supplier can master risk management. It can be said that the supplier is taking care of every risk, which is related to the PBL phase services and products.

The business model built around PBL brings about strong elements of competitive advantage. Long contracts and integrated business models bring about a temporary position, which looks like a monopoly. This is the time frame where the organization is fully protected from the competition. Usually, stepping into the PBL concept requires building a new business model because the change is so dramatic.

The content of the PBL contract is not standard, but tailored on a case-by-case basis. Tailoring is usually centered on modular thinking, where the organization offers many different kinds of solutions to the customers. The basic idea behind this is service productization. What has to be remembered is that ideology can be copied from one PBL contract to another.

The content of PBL is built around the organization's competences and capabilities. The must be fostered in good faith before stepping into a PBL contract. It must be recognized that some competence building can take time almost half a decade, for example, in the MRO business. This means that the organization must have processes, competences and an operational model, which can carry the risks related to the PBL phase. It has to bear the risks so that the customer does not suffer.

This change also has effects on the organization culture. Traditional aviation and the defense industry have been built to favor safety-critical individuals. In practice, this means that the recruiting process has weighted features related to the safety-critical context. Understanding safety is vital in the aviation industry. Employees in critical operations must operate under instructions and regulations. There is no room for testing and neglecting these instructions because the consequences can be catastrophic. Unfortunately, this same way of thinking can be rooted in the organization's management structure and whole culture. This could have negative effects on dynamic capabilities and also achieving competitive advantage. The PBL concept requires huge risk-taking ability, which is in conflict with the idea of safety-critical thinking.

"An integrated acquisition and sustainment strategy for enhancing weapon system capability and readiness, where the contractual mechanisms will include long-term relationships and appropriately structured incentives with service providers, both organic and non-organic, to support the end user's (warfighter's) objectives."

Availability-based service is one source of dynamic capabilities. Known as PBH in the private sector, this new approach is already reshaping customer-supplier relationships in defense and aerospace contracting under the PBL name. The strategy behind PBL thinking is that the customer has the equipment and products when needed. According to the literature, well-constructed PBL improve reliability by 20-40% while decreasing the costs by 15-20% (Miller, 2008). PBL cost savings are based on the fact that the supplier is not paid for spare parts or single services but on reliability (Randall, Nowicki & Hawkins, 2011). This means that the true customer value in the PBL phase comes from availability, reliability or capability.

One of the biggest drivers for the PBL concept is a long-term partnership with the customer, which provides deep knowledge about customer-value and needs. A strategic partnership provides the possibility to fully understand the customer's core competences. Usually, in this concept, the customer outsources some of its core operations to the supplier, while PBL contacts are long term because that offers a better platform for achieving cost savings.

Boyce and Banghart's (2012) study also emphasizes the long-term partnership and its cost-savings. Usually, the long-term partnership means at least three-year contracts in the PBL world. That can be seen as a minimum length for delivering cost savings from the contract. It must be remembered that stepping into the PBL world is not just a single decision in the midst of daily operations. It is a strategic decision and requires the organization to build a platform and enablers for a successful PBL business model.

5.3 Individuals, organization and the model of excellence

The role of the organization's individuals has strong effects at every level of the dynamic capabilities in this study. When talking about sensing, seizing and reconfiguring in every phase, the input by individuals is emphasized. The main finding is that organizations' individuals have a significant impact on achieving success in building and maintaining dynamic capabilities.

The model of excellence is informed by the findings of this study. The basic idea of the model is to bring the organization and its individuals together as a success factor from the dynamic capabilities perspective. This is the factor by which dynamic capabilities are developed and maintained. The model of excellence has two sides: value- and norm-driven sides. The model of excellence is shown in Figure 25.

The norm-driven side includes elements by which the organization can achieve mediocre results, even though they are linked to delivering competitiveness to the organization. Management practices and organizational charts and structures belong to the norm-driven side. The value-driven side includes elements by which the organization can achieve excellence and competitive advantage.

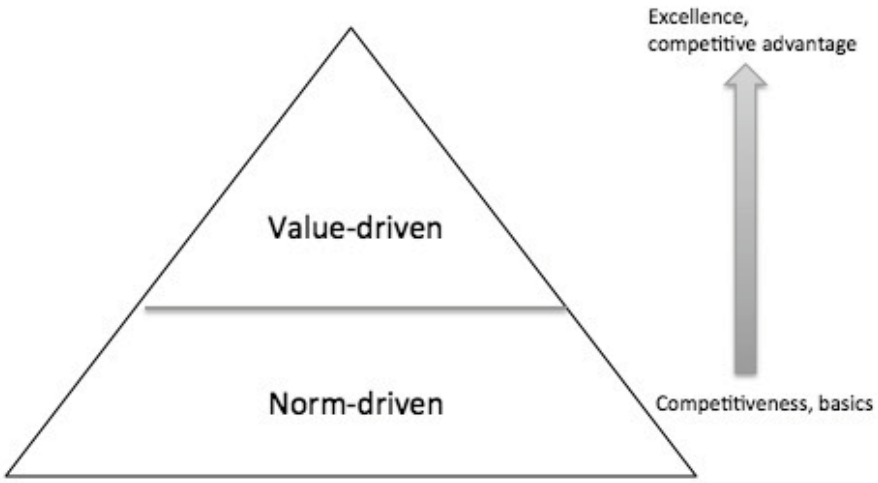

Figure 25. Model of excellence

The idea of the model is to highlight the elements of organizations' competitiveness, competitive advantage and building and maintaining excellence. Excellence in this context means the same as sustaining competitive advantage. For achieving excellence, the organization must be able to master value-driven elements. Concentrating only on the value-driven side will not deliver the desired results. It must be understood that a good value-driven side is always founded on the norm-driven side. In short, if the organization wants to be the best in its industry, it must support and develop both sides in the model of excellence.

5.3.1 Value- and norm-driven capabilities

Before getting deeper into value- and norm-driven capabilities, basic definitions are required. The norm-driven side of the model includes instructions, orders, process charts and organizational structure, which can be drawn or written down, so that norm-driven capabilities are explicit. The organization has a major role and influence on this side. From the dynamic capabilities point of view, the norm-driven side is trying to keep the organization in static mode.

When the organization is operating at 100% on the norm-driven side, it is seeking to control and manage operations via instructions. This has a negative effect in terms of innovative thinking, such that the organization may lack innovative and entrepreneurial actions. It may fall into the trap of over-introduction where every action is shown in the form of instructions. Worse still, individuals may stop making use of their own thinking. The organization where strong norm-driven

thinking can be easily spotted from the management system reflects a culture where most activities are underpinned by careful instruction.

There is room for innovation on the norm-driven side but it mainly focuses on continuous improvement. Some incremental innovations can be captured but radical innovations are not permitted. Decision-making is based on written decision-making powers, with decisions usually based on written or calculated facts.

Knowledge and competences have a role in competitive advantage; on the norm-driven side, knowledge management is based on training. People are trained about how things get done in the organization. The norm-driven side also includes actions that ensure the legality and safety of operations. These can refer to laws, quality standards and also different sector-specific regulations. It must be noted that the customer can also demand that the organization operates according to in a specific standard.

The value-driven side includes the tacit elements in the organization. These can include the organization's values, individuals' values and also practices and routines based on those values, in other words, elements of excellence. Theories of dynamic capabilities emphasize the role of entrepreneurial actions and innovations for achieving competitive advantage. The value-driven side can respond to that need. The focus of the value-driven side is on the individual.

Management practices represent a leadership-based style where transparency, freedom and experimenting are present. This kind of management style requires that the organizational culture does not fear failure or mistakes being made. 'Learning by doing' is one motto on this side of the model. When failure and mistakes occur, individuals learn from them. This is also how learning knowledge management is done on the value-driven side. It has similarities with double-loop learning. Table 6 summarizes the comparison between the norm- and value-driven sides.

Table 6. Norm- and value-driven comparison

Theme	**Norm-driven**	**Value-driven**
Competitive advantage	Short term	Long term
VRIN elements	Short term	Long term
Decision making	Traditional, based on facts	Emotional, based on facts and feelings
Knowledge management	Training	Learning
Management/leadership	Based on written models and decision-making powers	Leadership-based style
Innovation	Discouraging	Constructive
Learning	Single-loop learning	Double-loop learning

The role and the meaning of individuals are critical in a service business where the current business model is based on partnership. Trust is key to a successful partnership and trust is always built between individuals. Interaction between people is highlighted in the service industry because both are taking part in the value-generating process.

The role of values is especially important in the building of a new organization. For example, when Nokia was built, operations and management were founded on the company's values. The management team saw that uniform values were critical for the successful management of the organization. The purpose of the organization's processes is to support and implement operations, which are based on values (Ollila & Saukkomaa, 2013).

This emphasizes the importance of organizational culture and values. These are the elements located on the norm-driven side of the model of excellence. Value-driven organizations can ensure as well as create the conditions and possibilities they need to create sustainable competitive advantage through dynamic capabilities.

The value-driven side is seen as critical for building and maintaining dynamic capabilities. Organizations that understand both the norm- and the value-driven

sides are able to secure and build the conditions for dynamic capabilities and competitive advantage. Dynamic capabilities at the individual level alone are not enough. One example here concerns benchmark capabilities. Organizations must appreciate benchmarking and give individuals the opportunities to pursue this. This means time, tools and opportunities being passed from the organization to the individual. In such cases, this benchmarking ability will not be left to the individual; rather, the conditions for success are created by the organization, which understands the norm- and value-driven sides.

Values can divided into sections: there are individuals' personal values, organizational values and values that can be seen in everyday operations. A real value-driven side can be achieved when all those elements meet. When focusing on personal values, this concerns the individuals of the organization. What kinds of individuals are recruited and what kinds of values do they prefer? These are important questions when organizations are expanding their resource base.

Many organizations say that they want to grow and be dynamic and innovative in their markets. But, when focusing deeper on the values of these organizations, it can be typically observed that the current state is enough. In the worst-case scenario, organizations can secure the current state, while the growth and dynamic capabilities cannot be achieved. It is important to understand whether the organization is unable to make investments or even sacrifices for success. If this is the case, sustaining competitive advantage is impossible. It is also very important for the organization to avoid too much stability or stagnancy.

Hamel 's (2007) pyramid of human capital is used as a basis for the model of excellence. This takes the individual's perspective more fully into account. The model comprises six different types or features found in individuals. These are obedience, diligence, intellect, initiative, creativity and passion. The first three can be placed on the norm-driven side of the model, while the last three belong to the value-driven side. By developing obedience, diligence and intellect, the organization can reach the mediocre level. Every organization needs these types of people but they alone will not deliver the best results. Hamel also shows that these characteristics can be bought by the organization, as they are becoming standard global commodities in every organization.

People with initiative, creativity and passion can build an organization that is the number one in its branch. Such people cannot be bought by the organization; they must be created. The characteristic of such individuals are the most complex and difficult to manage. An organization's management cannot tell someone to be passionate about their work, for example. The organization's role is more supportive towards these individuals. Organizations must give opportunities to

people to be initiative, creative and passionate. This means that individuals must be able to articulate their thoughts and be able to act in an innovative way. On the other hand, organizations have the power to destroy and suppress these characteristics if they are not desirable.

It must also be recognized that the values of a single individual and the organization have a strong influence on each other. Both sets of values show what kind of value base is going to be built in the organization. Hamel's model of human capabilities is used in the model of excellence to describe individuals and their characteristics. Sivusuo (Jaakko Sivusuo, Sivusuo, & Takala, 2018), in his article, places the characteristics of an organization's individuals into six segments.

1. Obedience: Obedience means the ability to receive instructions and comply with the rules. In practice, these kinds of individuals come to work and perform the same routine maneuvers they are expected (they show up and do the job).

2. Diligence: Diligent and hard-working individuals are trustworthy. They can take responsibility and stay organized. They also work a lot while focusing on work. Working long hours is characteristic of these individuals.

3. Intellect: Intelligent individuals are responsible for their work and bring out the best practices in organizations. In other words, they transform tacit knowledge into explicit knowledge for the benefit of their organization.

4. Initiative: Individuals with initiative do not wait for instructions before they act. They are able to take actions on their own. They take ownership of a problem and indulge in opportunities before being asked to. They are not bound by the definition of their job.

5. Creativity: Creative individuals are indomitable in their work. Innovative thinking can be found in creative individuals. They scan the environment outside the organization, finding innovations and solutions. After that, they try to implement what they have learned. They are able to question current processes and ways of working. They also constantly seek to do things in a more productive manner. Normal is not enough for them.

6. Zeal/passion: On top of the pyramid is passion. Passion is needed if intentions and goals are to be achieved. At this stage, individuals feel their job is not only intellectually meaningful, it offers spiritual meaning to them.

5.3.2 Individuals' and organizations' strategic framework

When going deeper into dynamic capabilities, it is easy to recognize that individuals and organizations are the two main themes when talking about competitive advantage. Their respective strategic framework shows how dynamic capabilities can be connected to both of them. Both of those strategic frameworks are needed for building and maintaining dynamic capabilities.

In this study, the strategic framework is closely related to decision-making. Indeed, it defines the drivers behind actual decision-making and plays role in every step in the dynamic capabilities building process. Sensing, seizing and reconfiguring capabilities are related to strategic frameworks.

In this study, the strategic framework refers to the entity in which individuals or the organization make decisions. The organization's strategic framework is usually the output from the strategic process. This can be expressed in explicit form, for example, it can be something that is written down or drawn on paper. The organization's strategic framework also defines the ability to make investments and decisions. There are also different factors that have effects on the organization's strategic framework.

Elements of the organization's strategic framework:

- Organization values
- Organization culture
- Owners
- Partners
- Networks
- Competitors
- Resources
- Management and business models
- Organizational goals
- Time horizon

Usually, organizational values are those that are written on the walls. They represent the desired actions and mindset of the organization. That is also how the organization wants to see itself. However, the most important thing is that organizational values and individual values should be similar to each other. Prevailing values can be seen in everyday operations and actions. A good way to understand and recognize the organization's prevailing values is by asking the question, what happens in the organization when nobody's watching?

Organizational owners, partners and networks are entities, which are located in the organization's strategic framework. Even though individuals come and go in

the organization, owners, partners and networks will stay. The same goes for competitors, some of the resources and the management model. The organization has its goals, which are usually determined in the strategy process. Goals have a connection with the time horizon, which, in this context, is a temporal entity, offering guidelines for organizational and individual development. That gives a direction for leadership as well as individuals' actions.

Usually, the organization has only one strategic framework, but there are different kinds of individual strategic frameworks, in turn reflecting the complexity of decision-making. Every individual has their own strategic framework and, through that, decisions are made on the individual level.

Elements of individuals' strategic framework:

- Innovative
- Knowledge
- Experience
- Trust
- Individual values
- Individual goals
- Time horizon

Theories of dynamic capabilities stress the role of innovation and entrepreneurial action. These are characteristics that can be seen as individual-driven. The organization's role is more about being an enabler of those. It must be able to create conditions and opportunities where innovations and entrepreneurial action can happen. Innovations and innovative thinking are important for competitive advantage. They cannot be bought inside the organization. Real innovativeness comes through individuals, which the organization must foster.

Trust must be included in the strategic framework because it has huge role in building and maintaining dynamic capabilities, especially in the partnership-based business model. Trust always occurs between individuals, never between organizations. So, the right place for trust is inside individuals' strategic framework.

Every individual in the organization has their own goals and objects, which derive from their personal values. These have effects on their decision-making. Although the organization tries to standardize decision-making and related risks through guidance and instructions, it cannot avoid the impact of individuals' goals and personal values on decision-making. One example here concerns respect for stability. If respect for stability is high in an individual's personal values, then they

will not take risks on behalf of the company, even if the company's future depends on it.

The time horizon has an effect on individuals' decision-making too. The time horizon, in this context, means the individual's ability to think and make decisions at both long and short range. This ability is crucial because building certain elements of dynamic capabilities can take a great deal of time. This means that the individual must be able to envision and think about the future. At the same time, there can be ad hoc actions, which need decision-making to occur in an instant. Being successful requires managing the time horizon, both in the long and the short term, at once.

If the organization's time horizon is short, then individuals may generate ideas and visions about what must be done in the future. But, in practice, they will not be able to implement those because the organization's resource allocations and management models are built in order to achieve short-term goals. It can be said that the more an organization's actions, management, decisions and resource allocations are dealt with on ad hoc level, the shorter its time horizon will be.

Figure 26 shows the correlation between individuals' and the organization's strategic frameworks in terms of sustainable competitive advantage. A genuine competitive advantage can be achieved when these strategic frameworks collide. From the dynamic capabilities point of view, the most critical individual strategic frameworks are located in the organization's management team. These frameworks must be as close as possible to that of the organization. The reason is that the management team is the key player in building and sustaining competitive advantage.

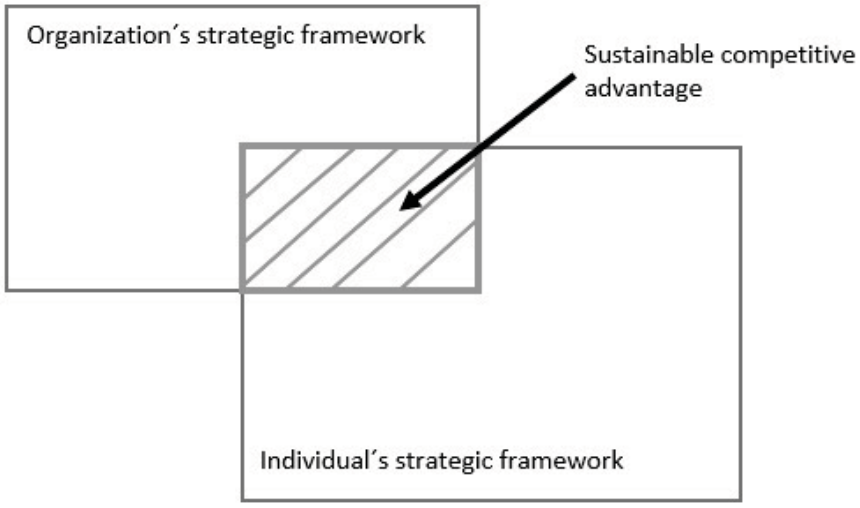

Figure 26. Sustainable competitive advantage from the organization's and the individual's strategic framework

5.4 Strategic partnership as a dynamic capability

Strategic partnership as a part of an organization's business model is well known in the studied organizations. Some of them have stronger partnerships than others. Sustaining and building competitive advantage in real life are also visible in various examples, which are linked to strategic partnership. These findings show that strategic partnership must play some kind of role in dynamic capabilities. In the organizations, there are official strategic partnerships, where the cooperation between both parties has been written down in official agreements. There can also be found unofficial strategic partnerships, with the official part only occurring in talks between both parties. Both of these partnership forms are included in the section on strategic partnerships in this study.

First, the strategic partnership must be defined, as well as establishing how it differs from other forms of partnership. At the same time, the critical factor for enabling the building and maintaining of dynamic capabilities must be found.

Strategic partnership, as mentioned earlier, is one form of cooperation. In this study, strategic partnership is compared with other cooperation forms in order to identify the differences between them. Other cooperation levels are normal partnerships and customer-supplier relationships. These different cooperation levels are shown in Figure 27.

The second partnership form is the so-called normal partnership, which differs from strategic partnership in terms of length and depth. Usually, normal partnerships are concentrated on a specific project or customer delivery where organizations are doing business together. If cooperation does not include anything related to partnership, then we are talking about a customer-supplier relationship, which is the third form of partnership in this study.

Figure 27. Cooperation levels between the customer and the supplier (J. Sivusuo & Takala, 2018)

The biggest enabler for a successful strategic partnership is trust. Some of the organizations say that partnership is synonymous with trust, while others say that partnership is built on trust. However, the unity of both is that, without trust, there cannot be real partnership. When talking about trust, it is crucial to understand the relation between the organization and individuals. Trust is built between individuals, never between organizations. This highlights the role of individuals if strategic partnership is used as a dynamic capability.

The term 'securing', in terms of strategic partnership, refers to seeking reasons why organizations want to pursue that kind of relationship with the customer. Securing means that the organization is securing some critical function, know-how or competence. That is usually critical for both parties in strategic partnership. That kind of driver cannot be found from partnership or supplier forms.

For example, the A1 organization in this study has many different partnerships with customers. These are usually temporary and their duration usually lasts over a few projects. It can be said that partnerships are built around a project or delivery. Partnership is a temporary way to secure some function, knowledge or competence for one project or delivery. The main reason for partnership is that the customer organization does not need to build or create its own needed competences. This, on the other hand, requires a partner, a dedicated supplier, with the needed competences. Partnership requires both parties to want to do business together and seek some benefits from doing so. Without a win-win situation, partnership cannot happen.

While partnerships are temporary and focused on a single project, strategic partnerships last much longer. It can be said that strategic partnerships are almost continuous and not limited to a specific project or delivery. Strategic partnerships keep inside different kinds of projects, deliveries and development. All of those are pursued together with the customer in a strategic partnership. Development involving the customer can be seen as a characteristic of strategic partnership, where development includes process, culture and competence development.

From the service business perspective, strategic partnership is the only form of partnership that can genuinely deliver life cycle services to the customer for improving availability and capability. Other forms, such as the partnership and supplier form, are project-based entities, which will improve a particular entity in the short term. These can be sub-systems or single parts related to life cycle services. These however will not deliver system-level capability or availability. This is something that MRO organizations must understand in their daily operations, as many of them insist that they are producing capability and availability for customers. Achieving this requires a business model, which is based on strategic partnership.

Strategic partnership is a very powerful tool for the sensing phase. Sensing happens almost automatically in strategic partnership. The reason is that both organizations in a strategic partnership will benefit from dynamic capabilities. The cooperation between the two can be so deep that they even carry out strategy work together.

Investments in product and technology development are made together in a strategic partnership. This gives opportunities to share risks and responsibilities. Risks related to R&D are smaller in strategic partnerships than in normal or customer-supplier relationships. Critical knowledge and competences can be commonplace, because, in a strategic partnership, both organizations are able to use the same resource base.

In partnership cooperation, R&D activities are carried out, but they are only focused on a single project or delivery. In strategic partnerships, these developments go through every project and delivery, thereby also focusing on the future. In supplier cooperation, the organization takes on everything related to R&D.

In strategic partnership, the level of dynamic capabilities is the sum of its entities. This means that the level of dynamic capabilities is as strong as the weakest partner or element in the partnership. If the other partner does not have the capability to build and maintain dynamic capabilities, then the strategic partnership cannot

serve as a building platform for their construction and maintenance. This emphasizes the critical role of careful partner selection. Strategic partnerships are long-term contracts, which are not easily discontinued or aborted. This is one reason why organizations must spend time on partner selection and cooperate without any official strategic partnership status. This determines whether strategic partnership is the best way to continue in the future.

The seizing phase requires good reacting ability from both organizations in a strategic partnership. This is a must for achieving and sustaining competitive advantage. One good example of this is a unified strategy process between both organizations. This forces the organizations to achieve and build a common future, which is the basis for successful strategic partnership. Outputs of a common strategy process can be development projects, which will maintain and strengthen competitive advantage. These projects are implemented together while using a common resource pool. Strategic partnership is the only form of partnership where both parties participate fully in a common strategy process. This also highlights the role of trust.

There are times when the business model must be changed or developed in a strategic partnership. This requires change from both organizations. When the need for change arises, both organizations must have the willingness, ability and need for change, as well as have the same kind of strategic framework to be successful in the strategic partnership. Table 7 compares strategic partnership with partnership and supplier forms from the dynamic capabilities point of view.

Table 7. Dynamic capabilities and partnerships comparison

	Strategic partnership	Partnership	Supplier
Sensing			
R&D and new technology scanning	Together with long-range development	Together based on a single project	Are made as individuals
Supplier and complementor innovation	Active/inactive with partner	Are made as individuals	Are made as individuals
Identifying target market segments, changing customer needs and customer innovation	Risk of decreasing	Customer need scanning based on a single project	Are made as individuals
Seizing			
Business model development	Must be done with a strategic partner	Based on a single project	Are made as individuals
Decision-making protocols	Must be done with a strategic partner	Based on a single project	Are made as individuals
Building loyalty and commitment	Build together, critical for success	Built on a single project	Some elements can be found
Reconfiguring			
Decentralization and quasi-decomposability	Must be done with a strategic partner	Are made as individuals	Are made as individuals
Co-specialization	Decisions are made together with a strategic partner	Co-specialization can be found inside the project	Are made as individuals
Governance	Both parties take part in governance	Are made as individuals	Are made as individuals
Knowledge management	Shared core competences	Shared competences and resources based on a single project	No shared competences nor resources

Pitfalls of strategic partnership

Strategic partnerships do not automatically guarantee dynamic capabilities inside the organization. There are some pitfalls recognized in this study related to

strategic partnerships. Organizations that are planning to build a business model around strategic partnership must be aware of the following pitfalls:

Fat and lazy syndrome

Strategic partnership is usually a long-term contract between organizations and, by that contract, they are seeking to secure competitive advantage. Strategic partnership also gives promotes overwhelming change concerning sensing capabilities at the customer interface. This kind of setup may worsen the organization's ability for sensing issues outside the strategic partnership. The same problem affects both parties in a strategic partnership. When an organization or business environment encounters changes, problems can escalate. The organization may find that it has lost competitive advantage in the course of its long-term strategic partnership. Worse still, it may have lost its dynamic capabilities.

The fat and lazy syndrome means that the organization is only focused on strategic partnerships, while, at the same time, failing to pay attention to what is happening outside in the market, beyond the strategic partnership. This does not mean that the organization cannot understand the sensing; rather, the organization makes a conscious choice that it does not want to sense actions outside the strategic partnership. Long-term contracts give momentary competitive advantage, but some organizations interpret 'momentary' as 'eternal'.

Unbalanced equilibrium

For a strategic partnership and its development, it is very important that both parties understand each other's roles, tasks, goals and position in the partnership. Both must understand these entities in the same way. Only then can both partners be in an equal position with each other. If they do not achieve this, then the strategic partnership is beset by an unbalanced equilibrium. A successful long-term strategic partnership requires a uniform vision, that is, the goal and the purpose of the strategic partnership. If the parties to the strategic partnership differ from this, they will be faced with multiple problems as time goes by.

Development is usually done together in a strategic partnership. When radical change occurs, organizations are faced with the need to change the current business model. This needs change from both parties because that is the only way for a business model to change in a strategic partnership. If organizations' strategic frameworks differ from each other, then changing the business model can be very difficult or even impossible.

Strategic partnership and multi-customer strategy

Strategic partnership can be described as a symbiosis where both organizations need another. Transparency, unified strategy, unified processes and business models are examples of strategic partnership. Some or all of the core competences and resources can also be common. They face a challenge when searching for new customers or a growth strategy outside of the strategic partnership, with different needs and characteristics.

One main reason for the challenge is the common business model, which is built for a strategic partnership. It must be noted that organizations' operations and whole business model are deficient without a strategic partner. In this case, obtaining new customers may be fatal if organizations do not acknowledge this in advance.

One scenario is that organizations cannot expand their customer base without the strategic partner also taking a part in that action. This is not an impossible task even if it might be very hard. A good example of this concerns the case organization in this study, which has managed to expand its customer base with its strategic partner. However, success requires a common organizational strategic framework where one element is focused on expanding the customer base.

5.5 Implementation of the market tests

The results for the study must be reviewed and validated using different methods to make the findings real. One commonly used tool for this purpose is the market test. Kasanen and Lukka (1993) divided the market test into three sections: weak, semi-strong and strong market tests. The results are subject to these market tests; however, passing them is not a matter of course. Even the passage of a weak market test can be challenging (Aho, 2011).

Passing the weak market test means that some director from the organization is willing to use the results to inform decision-making (Kasanen & Lukka, 1993). It should be noted that the weak market test does not take financial benefits and results into account. The weak market test is focused on the interest of the business environment and its practical implementation without further analysis of the economic impacts. It is claimed that, in the case of the weak market test, a mere leader's intention is not enough; rather, the results must actually be tested (Lukka & Granlund, 2002; Labro & Tuomela, 2003).

The semi-strong market test requires much more piloting and testing than the weak market test. A single comment from a director is not enough. This is also the phase where testing and piloting must be done between different organizations. Deep testing inside one organization is not enough for passing the semi-strong market test. When running a strong market test, the results requires much more systematic evidence from the actual findings. Labro and Tuomela (2003), in their research, state that semi-strong and strong market tests also require a lot of time. For passing these two types of tests, a great deal of testing needs to take place between different organizations, which means that the time frame is long. Furthermore, semi-strong and strong market tests have elements of longitudinal studies (Aho, 2011).

Labro and Tuomela (2003) have developed evaluation criteria for the weak market test, which is shown in Figure 28. These evaluation criteria can be used as a tool to validate the weak market test in a short time frame. The findings from this study are evaluated in accordance with this model. An actual weak market test is implemented in the case organization where the results are subject to pilots, which are tested. This also includes conversations with managers about actual findings and results.

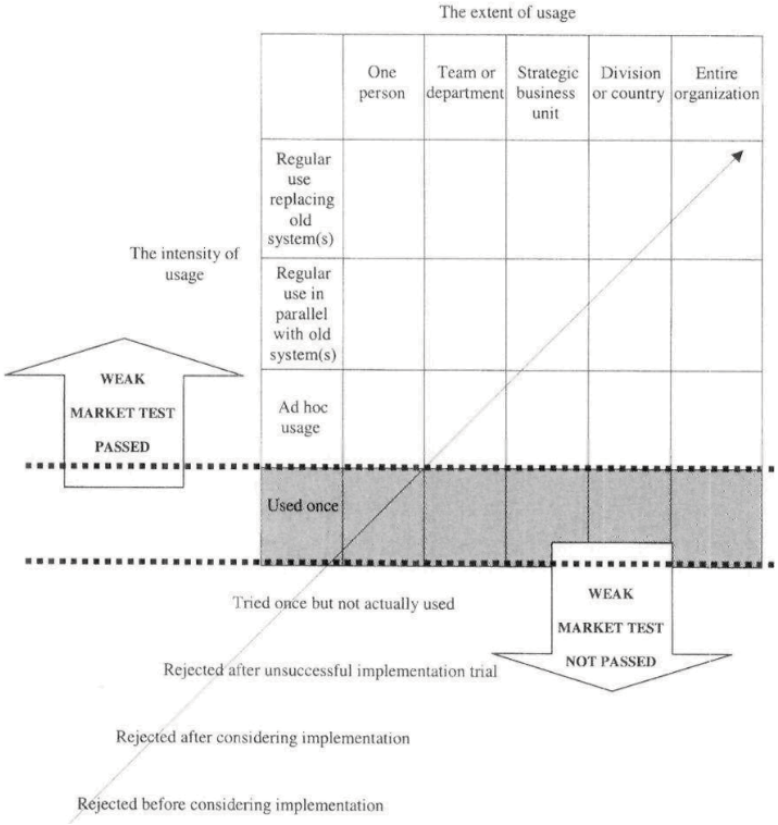

Figure 28. Different dimensions of the weak market test (Labro & Tuomela, 2003)

5.5.1 Service productization

Service productization has been built at the component, sub-system and system level in the case organization. This covers every element of the PBL focus. There is also concrete evidence that leaders are ready and willing to pursue service productization. There are also concrete pilots and actions for that purpose. When operating in a strategic partnership, the customer must be involved in the development.

Before the case organization considers producing services for customers, it regards data collection during the learning phase to be critical. The organization must collect data about current performance and efficiency. Understanding the current state is seen as a critical step. The organization must have a common understanding of its vision and goal for productization. It is also critical to understand which entities are not productized. When the vision is clear, or in other words the organization's strategic framework is clear, then it is ready to move onto the next phase. This is also the moment when it starts performing concrete actions with the strategic partner.

Table 8 shows six separate projects, which are used for the market test for the service productization process. The goal of these projects is to improve internal profitability, while external benefits for customers include reduced costs and shorter lead times. More benefits will be given in a more detailed presentation of each project. The level of productization is going to determine the focus of the project. There are three levels in terms of where to focus: component, sub-system and system level. The extent and intensity of usage come from the assessment model for the weak market test. Current status reveals the phase of the productization process, which comprises three phases: learning phase, productization phase and PBL phase. Benefits for customers underline the aim of the project from their point of view.

Table 8. Project definition in the market test

	Level of productization	**Extent of usage**	**Intensity of usage**	**Current status**	**Benefits for customer**
Project 1	Component level	Depart-ment	Regular use replacing old system	Producti-zation → PBL	Turnaround time decreased
Project 2	Component level → sub-system level	Depart-ment	Regular use in parallel with old system	Producti-zation	Cost efficiency
Project 3	Sub-system level	Strategic business unit	Ad hoc usage (Piloting)	Producti-zation phase → PBL phase	Turnaround time decreased
Project 4	System level	Entire organiza-tion	Ad hoc usage	Learning phase	Customer can focus on its' core operations
Project 5	Component level (professional services)	Depart-ment	Regular use replacing old system	Producti-zation	Decreasing the costs, faster turnaround time
Project 6	System level	Entire organiza-tion	Ad hoc usage (piloting)	Producti-zation phase → PBL	Increasing reliability

Project 1, which is focused on the component level, aims to capture greater responsibility from the customer. Before the project, the customer was taking care of it alone. Through productization and piloting, the case organization was able to convince the customer to outsource the project. This customer is now able to concentrate on its core operations more, while service level and cost structure are better than ever. The next step is the PBL phase and some pilots have been conducted for that. The biggest change comes from the cost structure, where the customer is paying for capability. Data collection has been done, but the PBL phase will be completed later in the future.

Project 2 is also focused on the component level. The case organization is trying to move the focus onto the sub-system level. This means that it must be able to collect many different component-level entities under one sub-system level. It must also be able to productize many component-level services at the same time for achieving the sub-system level. The case organization has created an official process for doing this in its operations, the keys to which are learning and data collecting. For achieving the sub-system level, the case organization and also the

customer must be able to change their business models. Without this, this extension will not succeed.

Project 3 is on the sub-system level and the content is productized. The next step will be the PBL level. The organization sees that being successful in productization requires resource allocations and reorganization. Continuous improvement has also helped the organization move towards the PBL phase. Project 3 also indicates that moving onto the PBL phase requires a business model change by the customer, as well as shows that the sub-system level is the first level at which the organization is able to influence availability.

Project 4 is focused on the system level, while also being the biggest project in the market test of this study. The case organization has identified that the system-level entity includes uncertainties and gaps in know-how, which the entity is forced to split into smaller sections. This means that the system level can only be reached by first building the sub-system and component levels. The project's first goal was reaching the system level immediately, but the organization was forced to take back the actual goal and proceed with smaller steps.

Projects 5 and 6 are focused on intangible services. Project 5 is focused on producing expert services for the customer. Operationalizing the productization phase needed changes to be made to the original basic business model. This included changes for measuring the process and also the billing practices of the customer. The project was a success and customer expectations were exceeded. The main key for the success was deep cooperation from the start between the case organization and the customer. Rapid piloting also generated quick results, which provided the opportunity to manage the project in reaching its goal.

Project 6 is the youngest and also the widest, as it covers the entire organization. This project is focused on building dynamic teams. These teams include experts who can be sent to the customer when a problem arises. The biggest change is also in the earning logic between the case organization and the customer. This project aims to achieve PBL status and has shown that achieving this requires deep trust to be forged with the customer. It also requires risk-taking ability from the case organization. PBL status has not been achieved during this research but the direction seems good. Both Projects 5 and 6 show that service productization can be implemented in intangible services as well. Figure 29 summarizes all of the projects from the market test.

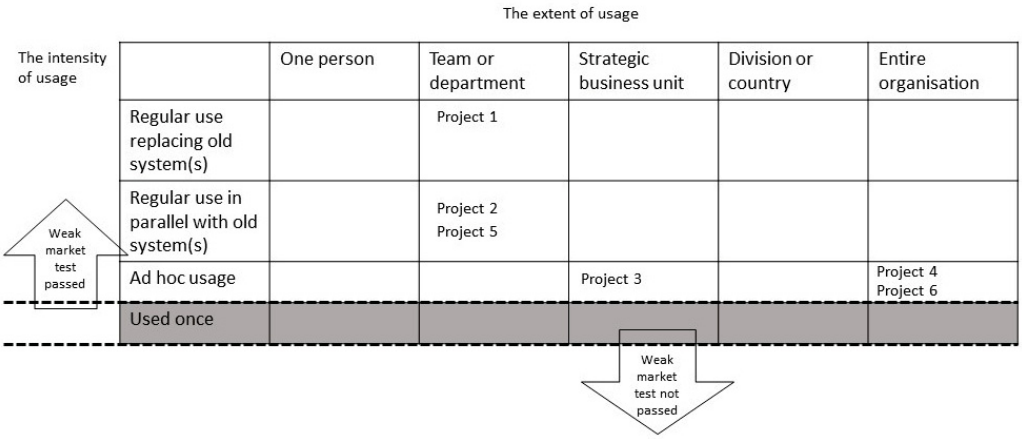

Figure 29. Validating criteria for the projects in the market test

The case organization's market test shows that service productization proceeds in the same logical order as that presented by Sivusuo and Takala (2016). The learning phase seems to be the critical one where the organization's ability to change is assessed. This particular phase is the platform where every single project collects data for further decisions about needed changes. The smallest projects are the ones that passed the learning phase the fastest. The reason for this is that a small number of resources was required, which made resource allocation easy. Changing activities, practices and habits was also faster when the change focused on a smaller area in the organization.

In the learning phase, the organization's focus is on developing the internal operations. This includes process-building, best-practice development and continuous improvement. Development during this phase does not immediately generate customer value. This phase is the enabler of that in the next phases. Project 4 shows that the organization must go through every single phase of this model without skipping any.

When moving onto the productization phase, the focus on internal development turns towards business development. In other words, the focus changes from organization to customer. Projects from the market test reveal that there are two ways to produce real productized services. The first concerns customer needs and problems. By sensing the customer interface, the organization is able to obtain information about what kinds of services the customer needs. Hearing about the problems faced by the customer faces also provides valuable data to the organization. The second way involves the organization's internal data, which enables it to pursue internal development and produce services that the customer does not know its needs to be performed.

The market test projects show that, in strategic partnership, the customer should be involved in the development if at all possible. That is the way in which the real voice of the customer can be heard, while mutual commitment to strategic partnership is maximized. For Projects 1, 2 and 5, the productization phase has been done with the customer. The case organization sees that this is the easiest method for testing new ideas fast. Good ideas go forward, while bad ones are put to one side.

Project 4 is a good example of the organization's internal R&D activities. The organization was collecting significant data and had implemented productization by itself. The ultimate solution was introduced to the customer, which required risk-taking ability from the organization. The project organization involved individuals with a high entrepreneurial mindset, resulting in success.

For the organization's internal development and R&D to be effective, transparency and honesty are required. It is also possible to hide and manipulate data, which can prevent full service productization to be implemented. The worst-case scenario is that the organization will produce services, which cannot be actually fulfilled for the customer. Behind the success of Project 2 is determined and transparent data collecting, which began as soon as service productization started.

Through service productization, the organization can build a product portfolio, which can be used as a tool for selling services and products to customers. The case organization sees that selling vague services is really difficult if the entity is complex. The more the organization goes for the PBL phase, the more the level of complexity increases. It is easier to sell services to customers if they are productized. Productized services give a better insight to the customer about what it is actually buying. From the market test, the case organization confirms that its customers have said that the content of its productized services is clearly visible.

The importance of life cycle management grows in the productization phase. The organization must be able to understand the stage of the life cycle. The market test's projects reveal that the component, sub-system and system levels have their own life cycles. Let us look at some examples. At the component level is an aircraft tire. This is one component from Project 1. The tire's life cycle can be between 150 and 200 landings, after which the tire is replaced. At the sub-system level is the landing gear, whose life cycle can last many years (if the MRO is done properly, it can be more than a decade). There can be times when R&D create new landing gear while the old type becomes obsolete. Project 3 is an example of the sub-system level. Finally, there is the system level, which can be the aircraft. Its life cycle can even last a century if the MRO and necessary upgrades at the component level and sub-system level are done correctly. It must be noted that building new

competences in MRO organizations can take years. This needs good life cycle management from the organization, while the business potential, customers and practices must be clear before the start of the productization phase, whose aim is to generate new competences related to the service.

Generally speaking, life cycle management has a role in both service and product businesses. An MRO organization's goal is to extend the life cycle by maintenance, repair and development. In product businesses, organizations are trying to sell new products in a cycle as soon as possible to the customers. This can lead to conflicts between MRO organizations and OEMs. This finding is evident from the market test.

In the early stage of each phase of the service productization process, the organization must change its business model. Projects 3 and 4 show the importance of that. Project 4 was taken back because the organization was not ready for the respective change. This scenario will always test the organization's dynamic capabilities. In strategic partnership, it will also test the customer's dynamic capabilities.

Projects 1, 3 and 6 are the closest to a real PBL phase. These projects show that changes are the biggest challenge when stepping into this phase. The whole business model and earning logic are turned upside down. The PBL concept requires a really deep relationship with the customer. The case organization regards PBL contracting as the only approach to forming a strategic partnership. Successful PBL contracts must be long-term contracts with partners. This is no other way to achieve cost savings in the long run.

5.5.2 Model of excellence

The focus of the model of excellence is on individuals. A semi-strong and strong market test would have needed a much more developed model for testing. However, the weak market test can be implemented through the projects in the market test. The case organization has built a competence-based model for its project management, which is implemented alongside the model of excellence. The comments of its management are considered in the weak market test.

For being successful on the projects, resource allocation must pay attention to the value- and norm-driven sides of the model of excellence. The project's resource allocation must address the necessary competences and know-how as widely as possible. The case organization has developed competences related to the roles on

the project. These competence groups are shown in Figure 30. Resource groups from the project can be divided into four sections: steering group, owner, project manager and project group.

Figure 30. Skills and competences related to project management

Strong business competence is emphasized on the steering group. Business competence includes knowledge about the organization's strategy and long- and mid-term vision, in turn representing the goal for the organization. Individuals on the steering group must have a strong strategic vision of the organization's future direction. From the model of excellence point of view, these individuals' strategic frameworks should be as close as possible to that of the organization.

People on the steering group are expected to have strong decision-making ability, since they must be able to make decisions in response to escalated problems from the lower level. Creativity and passion are desirable characteristics from among the individuals on the steering group. These include innovative thinking and passion to drive the project towards its goal. These can be seen as examples of leadership competences. Competences and their weighting for the steering group are shown in Figure 31.

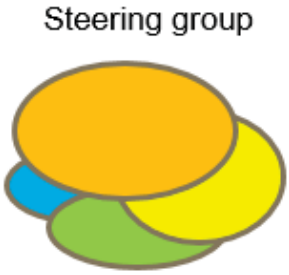

Figure 31. Steering group competences

When focusing on the owner of the project, skills and competences in leadership are the most-wanted characters. It must be noted that, on the steering group, there can be many individuals, while the role of the owner can only be given to one

individual. Passion is the most important characteristic for the owner according to the model of excellence. It can be said that the owner must have so much passion for the project that they are willing to make the success of the project a personal goal. The owner must be hungry for achieving the goals of the project and the organization's job is to find this kind of individual. Passion is on the top level of the model of excellence, which is the characteristic that can deliver the best results for the organization. The owner should also have some business competences but not as many those individuals on the steering group. The owner's competences are shown in Figure 32.

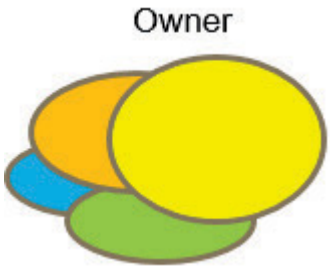

Figure 32. Owner competences

Competence requirements related to the project manager focus strongly on project management competences. These include understanding project management methods and know-how, as well as the ability to implement them in practice. The main task of the project manager is to drive the project towards its goal with the given resources. They are also required to be able to detect possibilities and risks and highlight those in a proactive manner to the steering group and the owner. Good project managers set examples to their project team. Successful projects in the market test show that the project manager must work closely with the project team. This includes demonstrating initiative and exercising an executive grip as the project manager, which can be seen as a competence related to leadership. Project manager competences can be found in Figure 33.

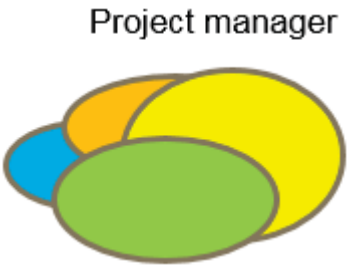

Figure 33. Project manager competences

Individuals from the project team are expected to have competences from the norm-driven side of the model of excellence. These individuals must show obedience and diligence towards the project. They must also be intelligent and understand the content of the project because the project team implements the project as well. Competences for the project team are shown in Figure 34.

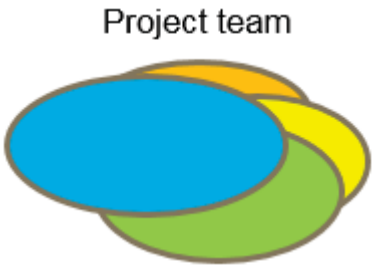

Figure 34. Project manager competences

Conversations with the management revealed that the model of excellence flags up the right things to be talked about. Balancing between norm- and value-driven sides is essential for dynamic capabilities. This is, however, a challenging task for the organization. It is clear that the organization's culture and the basic elements of the current business environment have an impact on striking this balance. Concentrating only on developing the norm-driven side is easy and some of the conversations suggested that this tends to be commonplace. In practice, this means writing instructions, drawing processes and making regulations. People and their values are forgotten if the organization is only centered on the norm-driven side. One manager said that, in a norm-driven organization, things meet each other, not people.

Building the value-driven side takes a lot of time on the part of the organization. The culture must be changed if the norm-driven side is too domineering. When talking about changing the culture, this also takes a lot of time and a deep commitment, especially from the management team, which must last as long as the cultural change requires it.

When introducing the value-driven side and innovative thinking to the organization, this comes with pressure and change drivers. For instance, the organization must tolerate and encourage diversity. In practice, this means that it must be able to address its current operations, processes and actions. This demands a great deal from the organizational culture, which must encourage different kinds of thinking, while different views must be welcomed. The organization must be able to put these opportunities and ideas into practice

because sustaining an innovative culture means that ideas and different views must be heard, as well as actively implemented. To estimate the organization's innovativeness level, it is necessary to ask two simple questions. The first is, do you think the organization is innovative and does it support innovative ideas? The second is, how can this be observed in everyday operations? Many organizations might say that they support innovative thinking. But, on close inspection of everyday operations, innovative actions cannot be found.

From the market test projects, it is clear that innovative thinking is needed when the organization is taking step away from the current way of thinking. Project 3 is a good example of that. Being successful needs innovative thinking and actions, in contrast to normal operations. The organization has had to tolerate the fact that some things have been done in a different way on this project. People involved in this project said that implementing it also changed the culture and way of operating. In other words, the value- and norm-driven sides in the model of excellence had to change.

When talking about the role of individuals, the organization sees that it must be able to spot talent from the resource pool, as well as support knowledge development, provide opportunities and leadership, listen to the sensing from individuals and also give feedback. An interesting question is, what needs to be done for those individuals whose values, actions and know-how are in conflict with the organization? This problematic is acknowledged in this study as a phenomenon when the strategic frameworks of individuals and the organization differ from each other.

Theories of dynamic capabilities stress the role of management, which is seen as an enabler of dynamic capabilities. The market test in this study confirms this observation. When talking about the organization's management, that is team that is able to make actual resource allocations. The market test also showed that dynamic capabilities need certain types of individuals for building and maintaining them in the organization. This means that the organization must understand the role of model of excellence in its operations. The test also revealed that the organization needs both sides of the model. When starting the building process for dynamic capabilities, the organization must identify those individuals who feel passionate about this building process; otherwise, there is a risk that the building process will not be carried out or will be a one-time, ad hoc activity.

5.5.3 Strategic partnership as a source of competitive advantage

From the weak market test, Projects 1, 4, 5 and 6 are focused directly on strategic partnership. Projects 2 and 3 are focused on the outside of the organization. It must be remembered that strategic partnership has a huge role in the case organization's operations. This has also an impact on the results of the weak market test.

Projects revolving around strategic partnership involve strong cooperation with the strategic partner right from the start. The case organization has a long history of strategic partnership, providing great opportunities for learning. This learning has been used as an advantage from the starting point of the projects where the customer needs are clear to the organization. This finding supports the view that strategic partnership offers advantages in terms of sensing and seizing capabilities.

According to the interviews from the weak market test, strategic partnership allows for thinking outside of the cash flow. This means that it enables long-term development, where the first driver is not centered on and analyzing the cash flow. In other partnership forms, it is normal for the focus to be more on economical thinking and maximizing short-range profits.

Open and transparent discussion and related information streams are part of cooperation in a strategic partnership. This enables the development of new services and products for the customer. Projects 1, 4, 5 and 6 are examples of where a transparent information flow has had a strong influence on project success. This requires trust between both parties. Without trust, real transparency cannot be achieved.

However, strategic partnership does not automatically guarantee dynamic capabilities. The critical factor is that strategic partnership must be built on the right principles, values and vision on which both parties can agree. It takes a lot of time to build a real strategic partnership. It can be said that doing so encompasses the element of path dependence in common with dynamic capabilities.

Projects 2 and 3 involve a different kind of approach to strategic partnership. As mentioned earlier, the customers of these projects are outside the strategic partnership. However, the necessary competences were previously built inside the strategic partnership. It can be said that this provides a good growth platform for building new solutions and services, where innovation and testing are allowed. These solutions can also be offered to other customers outside the strategic partnership. For its part, the case organization highlights that strategic partners

must be informed if some services or capabilities are sold to other customers. This is part of the transparency and trust between the parties.

Strategic partnership resembles a symbiosis relationship between the organizations. This, on the other hand, can pose challenges if one of the organizations is looking for new customers. Usually, the business model needs both parties in the strategic partnership, so that the exact same business model cannot be transferred to other customers. Projects 2 and 3 show that the current business model has to be modified from the strategic partnership model when applied to new customers.

However, new customers of the case organization can offer something to the strategic partner as well. When building competences and services for other customers, these are further developed for the original customer too. Especially when the services include high-level know-how, these continue to improve as a result of strategic partnership. The length of a strategic partnership is very long, so there could be some competences that are not used all of the time, in which case they become rusty. With other customers, these competences are used all the time and can be more effectively refined. This guarantees that, when the strategic partner needs them, these competences are in perfect condition.

When talking about strategic partnership, the case organization considers that partner selection is very important. One reason is that strategic partnership involves a long-term decision. Organizations will not drive themselves suddenly towards a strategic partnership. Long and transparent cooperation with customers strongly marks the path leading to successful strategic partnership. It is also critical that strategic frameworks between both organizations do not differ too much. This in turn limits the number of potential partners.

The longitudinal study on the case organization reveals one important finding about strategic partnership. A fully working strategic partnership and its expansion are considerably easier than building and finding new customers. One reason for this, as previously mentioned, is the business model. Changing the business model for new customers can be a difficult task.

From a broader perspective, strategic partnership is one form of networking. The case organization sees that strategic partnership is another approach to consolidation, which is a change driver for dynamic capabilities. As a result, strategic partnership does not automatically deliver dynamic capabilities to the organization. But, if the strategic partnership is built wisely, it will reflect the characteristics of dynamic capabilities. Strategic partnership has provided long-term competitive advantage to the case organization. The interviews and the

market test revealed that, without strategic partnership, it would not have gained as much competitive advantage.

6 DISCUSSION AND CONCLUSION

Building and maintaining competitive advantage are important in every industry and market nowadays. Organizations in this study have faced big changes in the past decade. To survive the competition, organizations need dynamic capabilities.

Dynamic capabilities themselves are not complicated. The real challenge comes from how organizations are able to implement them in their operations while considering the diversity and specialties of the markets. This finding confirms that organizations are not able to copy dynamic capabilities from others. Sensing markets and competitors is easy but, when something abnormal happens, that is when the hard work starts. Reacting to findings is the most difficult part. Organizations must be able to develop and reconfigure their resources, based on the findings. They must also understand what the changes in the market mean from their point of view.

Characteristics, requirements and practical examples of dynamic capabilities differ between different industries and between organizations. Basic theories of dynamic capabilities show that changes in market segments and competition are the main reasons why organizations must have dynamic capabilities if they want to survive the competition. However, this definition neither shows nor tells organizations how to react to those changes, nor how to build dynamic capabilities. It must be understood that a deep understanding of concrete dynamic capabilities requires a deep understanding of the market segment and change drivers.

Path dependence will take care of that, as dynamic capabilities cannot be copied from one organization to another. They are built into the organization over time. When talking about dynamic capabilities, the organization's role can be seen as that of an enabler. Individuals from the organization are those who can build dynamic capabilities. The findings and results of this study confirm that dynamic capabilities are path-dependent and hard to copy between organizations. It can be said that coping with them is close to impossible.

The models presented in this study offer useful practical examples of what dynamic capabilities are. Some are more industrial-dependent and others can be applied across different industries. The findings in this dissertation are appropriate to the aviation industry from the dynamic capabilities point of view.

Long-lasting extensive contracts can be seen in the aviation industry and have expanded globally during this century so far. The forerunner of PBL contracting is the US, whose Department of Defense has overseen organizations that make PBL contracts as often as possible. This strategy has been expanded to every military

branch in the US. In Sweden, FMV and Saab have entered into reliability-based contracts with JAS Gripen for maintenance, while, in the UK, BAE Systems is responsible for the reliability of the Eurofighter. It can be said that the service productization process and its ideology fit well with the aviation industry.

The service productization process offers useful guidelines for organizations to productize their services. This dissertation also shows that the customer's value is shifting from maintenance and repair to availability and capability. For satisfying this need, organizations must be able to productize their services. The service productization process also includes elements of dynamic capabilities and, in turn, elements of competitive advantage. Weak market tests also show, in practice, how organizations can build and maintain their competitive advantage via the service productization process.

The model of excellence locates individuals and their role in the context of dynamic capabilities. The interviews emphasized the role of individuals in maintaining and building competitive advantage. The model of excellence, which also brings together the organization and these individuals, consists of two basic elements: norm- and value-driven sides.

Theories of dynamic capabilities are focused on processes and organizations, while individuals play a smaller role. Management practices and the role of management are recognized, but the part played by the organization's individuals has not been extensively explored. The model of excellence should fill this knowledge gap in the field of dynamic capabilities. It represents a good example of how organizations can understand their resource base from the perspective of single individuals and their role in building competitive advantage.

The last identified dynamic capability is the strategic partnership between the supplier and the customer. Different cooperation models between organizations have been studied for a long time and there is much research available. Strategic partnership is a one form of partnership, but only limited research has been conducted in this area from a dynamic capabilities point of view. Findings from this dissertation should address this further gap.

Strategic partnership and dynamic capabilities are combined together, which emphasizes their significance. However, it must be noted that not every strategic partnership agreement guarantees dynamic capabilities between organizations. Strategic partnership, as a concept in this dissertation, also reveals what forms of this partnership can bring about dynamic capabilities, which can act as a source for competitive advantage.

However, there are some pitfalls, which organizations must be aware of when transforming their business model around strategic partnership. These pitfalls, according to the findings, indicate that every strategic partnership does not deliver competitive advantage. It can be also said that organizations will not change their business model around strategic partnership overnight. This takes time and willingness from both parties to succeed.

6.1 Analyzing the reliability of the implementation of the research

The reliability of qualitatively research is evaluated as a whole when the coherence of the research is the center of the evaluation. Evaluation is focused on research questions and how the study and used methods are able to answer them (Söderman, 2014).

There are many different kinds of evaluation criteria for assessing a study. However, this research is evaluated against Guba and Lincoln's (1989) criteria, namely, credibility, transferability, dependability and confirmability. These can also be called strategies, which include a smaller set of criteria for the actual assessment. Table 9 summarizes these criteria with the actual tools for practical implementation.

Table 9. Summary of strategies for establishing trustworthiness (Krefting, 1991)

Strategies	**Criteria**
Credibility	- Prolonged and varied field experience - Time sampling - Reflexivity - Triangulation - Member checking - Peer examination - Interview technique - Establishing authority of research - Structural coherence - Referential adequacy
Transferability	- Nominated sample - Comparison of sample to demographic data - Time sample - Dense description
Dependability	- Dependability audit - Dense description of research methods - Stepwise replication - Triangulation - Peer examination - Code-recode procedure
Confirmability	- Confirmability audit - Triangulation - Reflexivity

Credibility refers to whether the researcher's observations and interpretations correspond to the views of the interviewees. The credibility of the study is determined by those who are investigated or interviewed, not by the researcher (Sandelowski, 1986). In this study, the observations made by the researcher were discussed during the actual interviews. Conversations about the results were held throughout the whole research process, including official and unofficial discussions. This was one of the ways in which the credibility of the results was strengthened.

Official articles have been written based on the results of this research. These articles, used as references in this work, have been published in scientific journals, meaning that they have passed the official and blind review process. This fact means that readers who had no role in this research have also reviewed the results. Because this referencing the researchers own articles is quite uncommon way of strengthening the results in a monograph type of PhD thesis, it has been opened to the readers.

Triangulation also played role in this research, thereby further strengthening the credibility. The market test and the longitudinal study offer even more perspective on the results. The interview techniques used in the semi- structured interviews strengthen also the credibility by utilizing direct and authentic wording from the informants.

Transferability refers to how well research findings and results can be utilized outside the research environment. The focus of this research was not to investigate the transferability of the results, thus leaving it for lesser consideration. However, good research includes elements that can be expanded elsewhere if necessary. In this study, the research process, questions and results are arranged so that transferability can be analyzed easily. In turn, the research can be transferred to another researcher, who is able to carry out the same research question in another situation.

The organizations in this study mainly operate in the aviation or defense industry, where the coverage is on a small scale. The results and findings were validated through conversations between the organizations in this study; a market test is also included. It can be said that the results from this research have high transferability as they can applied for further research, too.

The researcher also played a major role in evaluating dependability. It should also be noted that, in the interviews, there was no indicator for dependability if the interviewees were honest in their answers. Furthermore, some of the interviewees were known to the researcher, with others met the researcher for the first time in the interviews. Individuals, who were familiar with the researcher before the interviews, gave honest answers and were also able to point out any disadvantages. Usually, if people are familiar with each other, this fosters trust and honesty in interviews. The quality of the research is determined by the research process. The reader of the research should have similar insights into the results and be able to explain, in their own words, how the researcher has come up with the findings and results. Deep analysis of the results, clear research processes and clear research questions are among the ways in which to ensure quality in this research.

It must be remembered that this work has the elements of hermeneutical and subjective action research. A bigger number of researchers could have improved the dependability and objectivity of the study.

The fourth and last element is confirmability, which determines whether or not the results can be confirmed by the same method. In this element triangulation also played a role. Subjectivity also has a role in confirmability. Researcher has shown the study process and the questions utilized, which can be used by other researchers for strengthening out confirmability.

The basic method in this research was the action-oriented approach, with structured and semi-structured interviews used in the empirical part of the research. Usually the aim of the action-oriented approach is to understand in more depth the phenomena under research, which, in this case, are dynamic capabilities. Using the case study method as a tool to pursue the action-oriented approach suited this research well. Furthermore, the quality of the results and triangulation was complemented by longitudinal research on the case organization, which ensured that the results were not random, but obtained using different methods and perspectives. The goal of triangulation was to strengthen the credibility, dependability and confirmability of the research.

Conducting structured and semi-structured interviews in this research provided a lot of material to the researcher. This gave the researcher the opportunity and obligation to extract results from the data collected during the interviews. This highlights the connection between the role of the researcher and the results. This observation makes clear that the researcher can impact the results. On the other hand, if different researchers undertake the same research process, then the outcome and the results may differ from each other. But, in the field of research, this hypothesis is nothing new. This enriches the research field, where the interpretation of the results can yield different outcomes. However, it is important to validate the results by market tests in order to check their accuracy.

It is clear that building and maintaining dynamic capabilities in the organization is a task for management. In this research, all the interviewees were members of the organization's management team, meaning that they are able, in reality, to cultivate dynamic capabilities. Indeed, one of their duties is maintain and build these capabilities in their organization. Involving management team members in the interviews was critical when talking about dynamic capabilities.

6.2 Scientific and practical contribution

Theories of dynamic capabilities highlight the role of entrepreneurial actions as well as innovations (Teece, 2007). The model of excellence highlights the same role in terms of achieving competitive advantage. Without entrepreneurial actions, innovations will not occur. However, theories of dynamic capabilities do not clearly emphasize the differences between the organization and the individual. This is the basic idea of the model of excellence. Furthermore, the role played by values and culture is not significant in the context of these theories, even though these are the cornerstones of dynamic capabilities in this research.

The roles of, and the differences between, the individual and the organization must be understood for achieving competitive advantage. The main focus in theories of dynamic capabilities is on processes and the organization, while deeper analysis is necessary if the number of individuals remains small. There are some studies that concentrate on the role of individual (Zahra et al., 2006). However, based on the results of this research, more studies are required on this topic.

The longitudinal study on the case organization confirms that dynamic capabilities are path-dependent and built inside the organization over a long period of time. These capabilities will never be unambiguous. One reason for this concerns the close relationship with competitive advantage, which is something that has been and will remain unclear. Furthermore, dynamic capabilities cannot be copied as such by another organization.

Teece's definition of dynamic capabilities, as well as sensing, seizing and reconfiguring capabilities, seems logical from the organizational point of view in this dissertation. Every person in the interviews believed that Teece's definition is easy to transform into concrete actions in their organization's operations and everyday actions. However, theories of dynamic capabilities have been criticized because they are confusing, abstract, difficult to study and tautological (Kraatz & Zajac, 2001; Williamson, 1999). But, in this study, this criticism cannot be justified by the results or the interviews.

Service productization as a dynamic capability highlights concrete processes by which the organization can actually achieve this. This process is quite unique and answers the question about how organizations can build dynamic capabilities into their operations. Service productization is focused mainly on MRO business, such that the results of this study offer a practical example from this industry of dynamic capabilities.

There are few official studies on dynamic capabilities in the aviation and MRO industries. This research thus offers new knowledge about dynamic capabilities in these industries in particular, and dynamic capabilities in general. The model of excellence underlines the role and importance of individuals in building and maintaining dynamic capabilities. Meanwhile, theories of dynamic capabilities highlight the role of processes, whereas the model of excellence is focused on the individual level. This study's finding enriches theories of dynamic capabilities from this perspective as well as reinforces the observation that single models and processes will not be enough to build up and maintain dynamic capabilities. Through these models and processes, the individuals can build and maintain these capabilities and in turn achieve the real competitive advantage.

6.3 Further studies

Service productization is nothing entirely new in the field of research. There are also productive real-life examples from the aviation industry where MRO organizations in the engine sector were the first to implement PBL/PBH contracts and ideology in their operations. However, these kinds of contracts and ideology are creeping into other industries. For example, B2B markets are becoming increasingly interested in service productization, while digitalization and artificial intelligence can collect data, which can be used for creating better solutions and services for customers.

That said, as there are few substantive examples of service productization in B2B markets, this area needs more research. One interesting topic to explore concerns how willing consumers are to move from the productization phase to PBL phase. This research field would also implicate B2B and B2M markets.

B2C markets are slightly behind with service productization, but some real-life examples can be found. For example, Osuuspankki has introduced a shared-use car service in which the customer pays a fee for the use of a car, not the car itself. This example comprehensively follows the process and ideology of service productization, as introduced in this study. The Osuuspankki model is fully based on availability-based service products.

The model of excellence is a new concept in the field of dynamic capabilities and needs more research into it. The model must be tested in different organizations and markets in order to strengthen its validity and reliability.

Strategic and others form of partnerships are well known in the field of research. There are also studies combining theories of dynamic capabilities with partnerships. However, a deep strategic partnership as a dynamic capability is an interesting topic. This is something that must be studied within different organizations and industries.

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Appendix

Appendix 1

The questions used in the interviews and their breakdown in sensing, seizing and reconfiguring are shown below.

Sensing:

- In what ways does the organization map new opportunities? What about new markets and new technologies?
- How to identify customer needs?
- How technology and market development are monitored and evaluated?
- How to track competitors' responses to market and technology changes?
- What is the role of current strategy on sensing phase?
- How the opportunities are explored outside the current market and knowledge portfolio?
- Who are taking part of the sensing phase? Can everybody take part of the sensing phase in the organization?

Seizing:

- What happens after the opportunity is discovered?
- How to make decisions about what is being developed, where to invest, what technology is acquired, what knowledge is acquired, which market segment is targeted?
- Describe the decision-making process and protocols related to? Describe the organization's decision-making ability related to the competitors?
- How opportunities from sensing phase transform the current business model? Is the current business model stabile or agile and give some example of that? Is the cost structure of the organization competitive?
- How often does the organization change structures, processes and practices because of the opportunities?
- How does the current business model generate customer value?
- How the business boundaries of the organization are defined?
- Bias, delusion, hubris and bias. How the organization is trying to prevent these in their decision-making?

Reconfiguring:

- Does the organization culture permit to try and fail?
- How entrepreneurial actions are supported in the organization?
- What is the vision and driver behind current the current organization structure? Is the current structure the best and why it is / is not?

- Describe the current decision making in the organization? Is it decentralized, centralized or something else?
- How the organization is trying to prevent the stagnate state?
- How the organization is trying to sustain competitive advantage?