Universitetet i Stavanger

MASTER THESIS
Executive MBA

STUDY PROGRAM: Executive Master of Business Administration	THESIS IS WRITTEN WITHIN THE FOLLOWING SPECIALIZATION/ MAJOR: IS THESIS CONFIDENTIAL? Thesis is confidential for 5 years

Title: HOW CAN VISIONEERING SERVICES BRING COMPETITIVE ADVANTAGE TO AKER SOLUTIONS?

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Abstract

Before reading this Master Thesis please make sure you have watched the videos attached with the USB at the end of this work.

The topic of the Thesis belongs to business and strategic management field, with focus on technology innovation and its application in oil and gas industry. Three main theories that I built the thesis on are: Theory of Competitive Advantage, Resource based View and Value Chain.

I am writing this thesis with Aker Solutions. Aker Solutions is an international provider of subsea equipment and offshore field design. Its portfolio of oilfield products, systems and services is spread from concept studies and front end engineering to subsea production systems, maintenance, modifications and operations services and solutions for extending the lifetime of oil and gas fields (www.akersolutions.com).

I belong to maintenance, modifications and operations (MMO) business stream that is located in Stavanger. Maintenance, modifications and operations represent a growing market for Aker Solutions as existing offshore and land-based installations mature. MMO's key offerings are Increased Oil Recovery/Enhanced Oil Recovery, tie- ins and other modification activities like life extension of existing fields and facilities. Aker Solutions is a global provider of products, systems and services to the oil and gas industry. Its engineering, design and technology bring discoveries into production and maximize recovery. The company employs approximately 17,000 people in about 20 countries.

Aker Solutions fast facts:

- Revenue: NOK 29.1 billion
- EBITDA: NOK 2.2 billion
- EBIT: NOK 1.7 billion
- Market Cap: NOK 18 billion (www.akersolutions.com)

My direct responsibility field in MMO is Technology and Innovation.

As a response to the industry's activity decrease and cost cut in 2014, operators required that service companies find smarter ways to work to save money and time, while mitigating HSE (Health, Safety, Environments) risks.

Aker Solutions initiated new concept that consist of innovative services and called it Visioneering.

Visioneering is a combination of engineering and visualization. The company invested into building an Iport, a facility where those services can be utilized and some of the clients started to use these services. Iport can contribute to safer offshore operations due to training and simulation of those

onshore. This is a unique way to apply technology both on land and offshore, locally and internationally. The intention of this Thesis is to look how Visioneering services can bring competitive advantage and if company's employees are able to see that.

Key findings demonstrated that Visioneering services are recognized by the majority of employees (ca 70%) as those that can bring competitive advantage to the company. Such benefits as saving time and hour's budget, mitigating HSE risk, improving communication between the parties involved are the benefits that client gets having applied Visioneering to project execution. These benefits clients get differentiate Aker Solutions from its competitors. Visioneering is an innovative concept, and the reason why it is possible to build it is, first of all, the resources that it poses. They are combined in a chain of value adding activities.

The recommendation from this thesis is to implement Visioneering in the project execution model and include it in the "business as usual" when offering services to the client. To implement Visioneering we have developed an internal project "working smarter". Working Smarter MMO has clients as main focus. Clients require better efficiency and lower cost levels in the industry to realize complex projects. As Margaret Øvrum (EVP TPD at Statoil) said: *"We need to solve the cost inflation together"* (Intranet, Internal database, Aker Solutions). "Working smarter" is a combination of activities internally that are aimed at cost reduction for our clients. It is an improvement program aimed at increasing efficiency for Engineering, Fabrication, and Installation while reducing man-hour cost and indirect spends, and optimize cost level across MMO. "Working smarter" project contains different modules. Visioneering is one of them.

Main purpose of this thesis is to explain how the new concept Visioneering will bring a competitive advantage to our company. Through this research I intend that our employees become more aware of the benefit Visioneering bring to the projects.

I used explorative design to conduct this research and made it qualitative with primary and secondary data collected.

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Preface

This Master Thesis has been written as the final project for the Executive MBA studies at the University of Stavanger.

I was combining my full time job, being a Senior Manager for Technology and Innovation for Maintenance, Modifications and Operations (MMO) in Aker Solutions and writing the thesis. Business travelling and being engaged with a wide range of company activities in various locations, both locally and internationally kept me challenged while writing this Master Thesis. However, positive outcome is that the result of this work can be implemented practically in the company.

Several persons have contributed academically, practically and with support to this Master thesis. I would, therefore, firstly like to thank the management in Aker Solutions MMO, especially Kristian Risdal, Senior Vice President, who gave me the opportunity to write this thesis with the company. I am also grateful to Ola Barkved for valuable guidance throughout this academic project.

Table of content

1.Introduction

This chapter presents the background for this topic, market and industry challenges that inspired me to choose this topic. This chapter will also present structure and scope of Thesis, nd the research questions.

1.1 MARKET

This Master Thesis is written in collaboration with Aker Solutions, global service provider of various technological services and solutions in the oil and gas industry for more than 30 countries. The company employs around 17 000 people in 20 countries.

When I choose the topic, I decided to concentrate at Innovation & Technology. The situation in the market was very special at that time. In total the market in the North Sea is 21 bn NOK, and MMO is one of the biggest players in this market, occupying about 36% of the market. The other 36% is Aibel's and the rest 28% is represented by smaller companies (Figure 1) (Rystad Energy DCube).

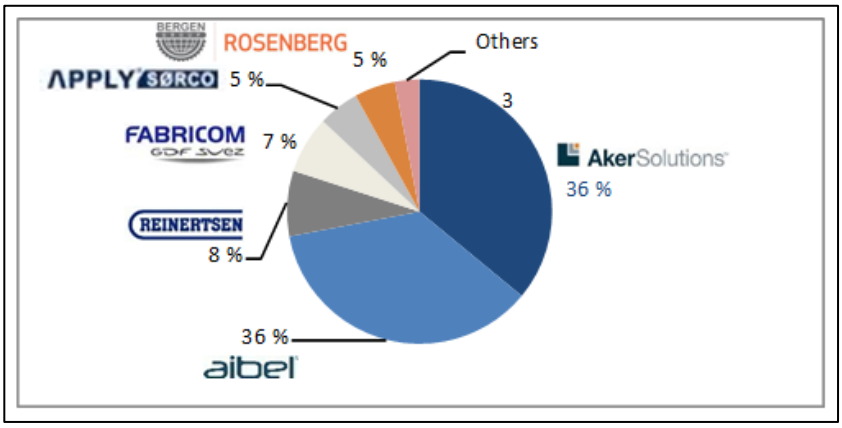

Figure 1. Key players in the market -North Sea maintenance, modifications and operations related market

Global MMO market is estimated to be approximately 150 bn nok or 120 bn nok outside Norwegian Continental Shelf and UK Continental Shelf (www.akersolutions.com). MMO market has been in a considerable change.

Shortly about how MMO market has been changing

There has been a change in MMO market (Figure2) (Rystad Energy DCube database). The figure depicts situation in the North Sea. In 2013 the total market for MMO in NCS (Norwegian Continental

Shelf) was 20-21 bn nok. In 2014 the market has gone down in 20% in MMO part, and it is suspected to go down by 10% in 2016. This brings diverse challenges to oil operators, especially cost reduction. It means that we should use this time to review execution methods and make them more effective, efficient and prepare for a greater "come back" in the near future. In this Thesis I would like to introduce a solution that can approach current challenges in the MMO market. As Figure 2 shows, there is a market growth expected in 2016 by 10% in comparison to 2015, and a further increase in the next years. However, "man- hours has always been a challenge for oil companies",- Anders Opedal, project manager, Statoil ,Modification conference (http://www.modifikasjonskonferansen.no/).

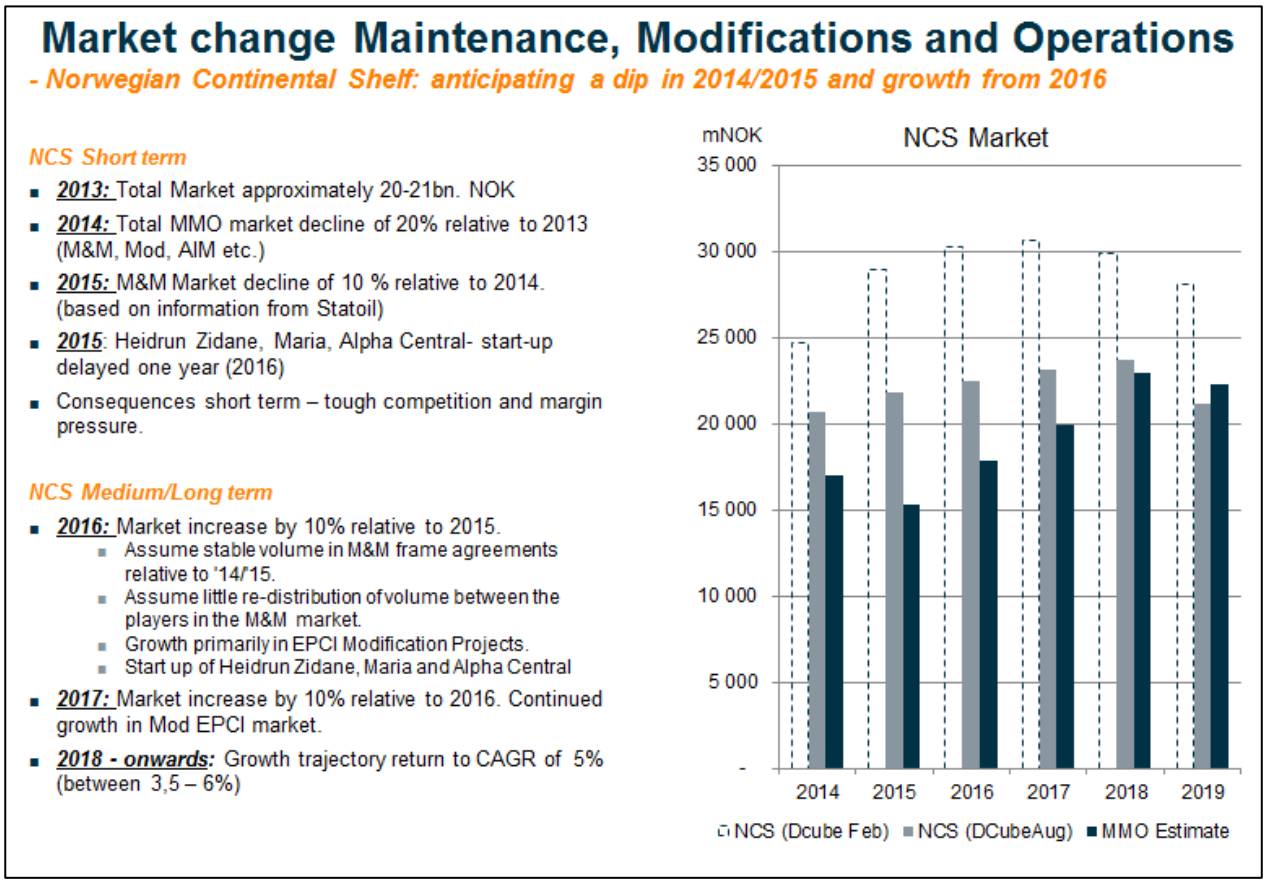

Figure 2. MMO Norwegian Continental Shelf (NCS)

Oil industry is facing challenging time with 20% of investment reduction. Oil price went down under 100 dollar per barrel. Production went down because of the cost (has been very high).

The consequence of these is that: oil operators require service companies to come with smarter ways to work that will justify the cost of the services and at the same time to come with new methods, new strategies, and new technology to execute work in a more efficient work.

Market situation is challenging and the industry requires new solutions. The solutions have to be different, innovative and differ from those of competitors'. At the moment Aker Solutions MMO has 5 main customers, which represent our market. Figure 3 (Rystad Energy DCube) shows distribution

of the revenue among them Aker Solutions MMO has as for 2015. In addition, it shows the value of future opportunities in 3-4 years ahead. These are the customers that we are focused at most of all.

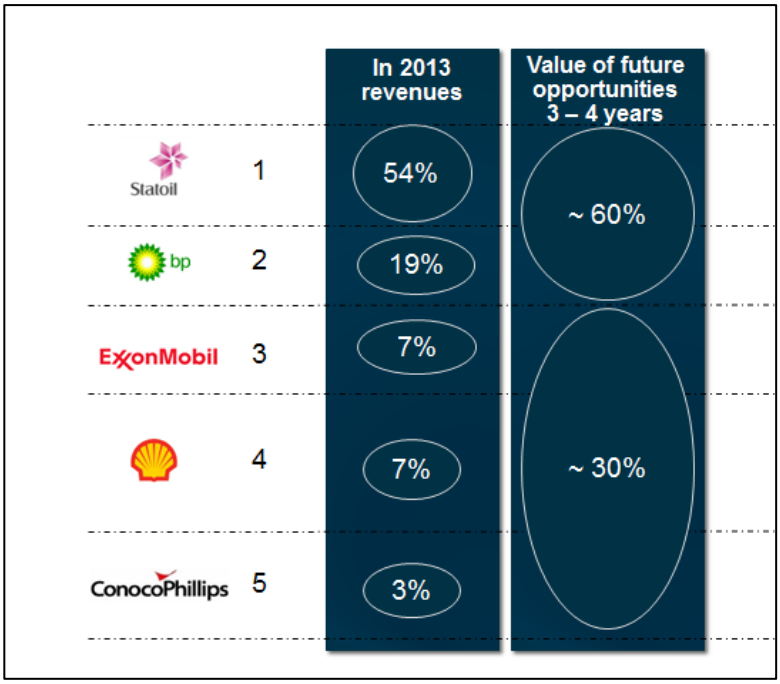

Figure 3. 5 Top customers for Aker Solutions MMO

Due to my position in the company it was natural for me to get engaged with solving the challenges named above. I am responsible for Innovation and Technology in Aker Solutions, and creating the concepts of how to apply new technologies in a new, different way. Having discussed the needs of the clients and challenges the industry is facing with several top leaders of the company, I realized that we should start thinking in a new different way.

"Doing the same thing over and over again but expecting new results is insanity"- Albert Einstein

We should differentiate the resources we already use "in house" to a new concept.
We are using our skilled engineers, and business managers to plan and execute complicated projects for platforms modifications, providing our clients with opportunity to produce oil in a longer time and with safer technologies. However, innovation is more than that. Innovation is "***new combinations***" of existing knowledge, resources and equipment (Schumpeter, 1934). For example, we should learn from the industry of Gaming technologies, use modern tools, such as visualization and 3D graphics. Gaming technology is now applying standard Windows systems, making it more compact and accessible, and more practical to use. This makes powerful graphics and rendering

computer software able to simulate the physical properties and appearance of objects (OEdigital.com, V.38, Nr 11, pp. 22-24).

Visioneering

The concept Visioneering is introduced as an innovative technological concept. It is very important that our employees understand the value it can bring, and eventually implement it and make it the "way we do business here". Visioneering can combine those services that can solve clients' challenges. ***3D animation, Laser Scanning and Iport simulations*** should be offered to the client already in the beginning of the interaction, and be included in the offer. Using Visioneering services will make projects more efficient, will improve job understanding between the parties involved and prevent incidents in critical operations' execution. These will lead to significant cost saving due to less re-do the job, less offshore travelling, less shuttling by helicopter, much better planning and staying within hours budgeted by the client, mitigating risks (that usually cause lots of cost) and providing the right quality due to better training onshore before offshore executions. By these, responding to the clients' request: to provide smarter solutions at lower cost and with higher quality

These are the research questions:

Do the employees of the company see the value that Visioneering can bring? What was their experience with Visioneering services? Have they seen clients satisfied with the services? Which services did they exactly have experience with? If so, should Visioneering be included in the project execution model of Aker Solutions?

The expectation is that those who can say whether Visioneering can bring or cannot bring Competitive Advantage to the Company and how, have actually had experience with Visioneering services being provided to the clients.

The topic is not easy to quantify, and the parameters are not included into any performance indicators in a company hence its innovative nature. However, I collected primary data and conducted a qualitative research on the topic. I decided to address those employees who have been involved with projects where Visioneering Services have already been offered to the client. I have researched how they perceived Visioneering services' contribution to the company's Competitive Advantage.

The title of the thesis is:

How can Visioneering Services bring competitive advantage to Aker Solutions?

1.2 WHO CAN HAVE VALUE FROM THIS RESEARCH?

- Our clients
  - internal projects;
  - oil companies- operators local and
  - international companies

- Aker Solutions MMO
  - Top Management
  - Visioneering Management
  - Project management
  - Employees directly involved with Visioneering services and providing them to the clients

1.3 STRUCTURE OF THIS THESIS

Structure of this thesis is the following

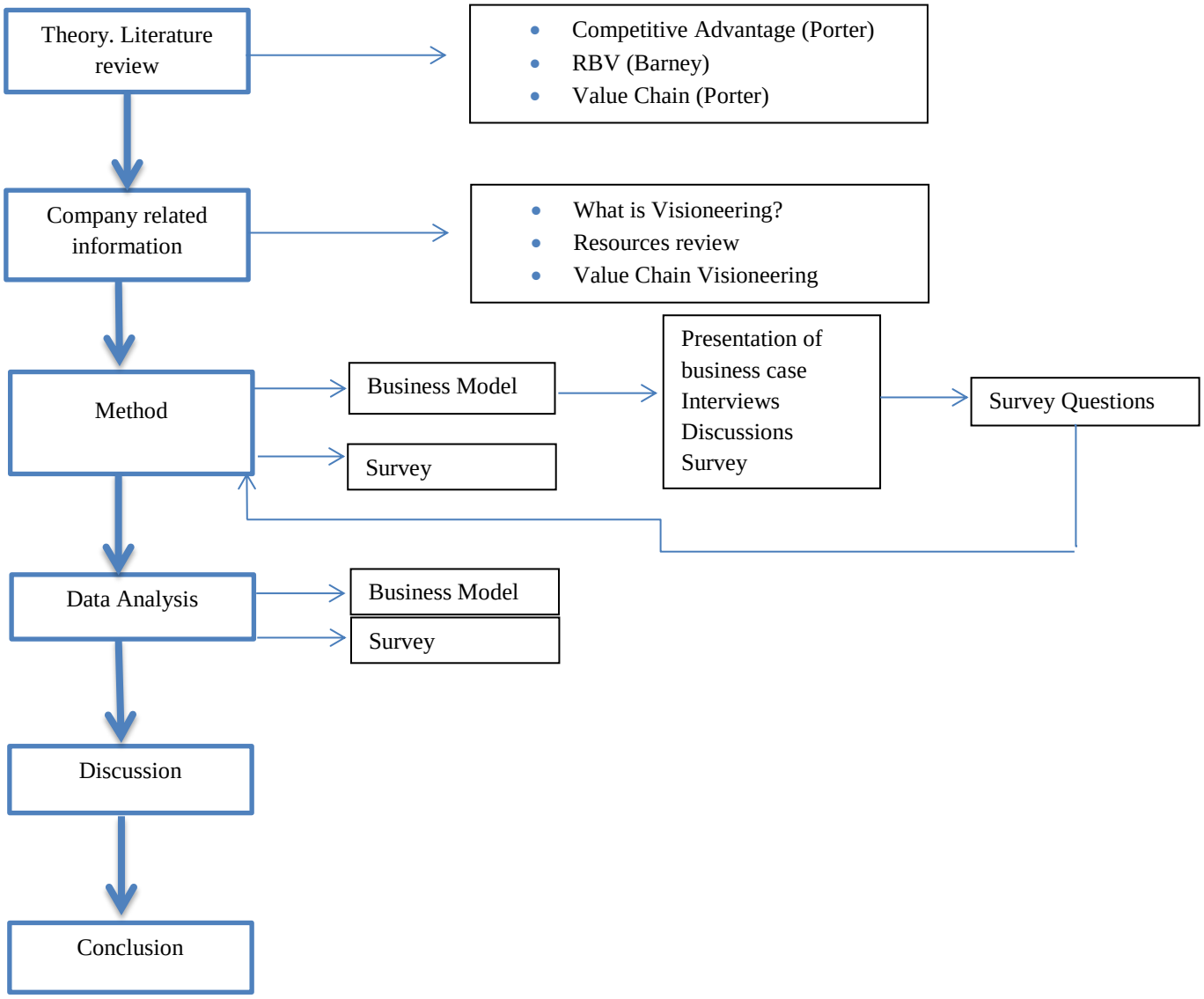

Figure 4. Structure of the Master Thesis

1.4 SCOPE OF THESIS

Our research is focused on Visioneering. Visioneering is an innovative concept that consists of engineering + visualization. Scope of this Thesis is limited down to main services: 3D animation, Laser Scanning and Iport Training and Simulation. Even though Aker Solutions has a project portfolio presented by 23 MMO projects. The scope is framed around the following 5 projects: Gina Krogh (operator Statoil), Sleipner (operator Statoil), BP V&M (British Petroleum), Zidane, SPORT (Statoil). Further on it will be referred to “projects” as the informants have been employed with those just listed.

2. Theory

This chapter starts with definition of the key terms used in this research in order to avoid any misunderstandings. What is a Competitive advantage, what is meant by resources and what is Value Chain?

Theory chapter is built on three main theories: Competitive Advantage, Resource Based View and Value Chain, where each chapter represents these theories one by one.

2.1 COMPETITIVE ADVANTAGE

One of the most central tasks for many scientific researchers in strategic management is to explain the difference between various organizations and how they function. The differences are mainly caused by the key resources organizations pursue, and what advantages they can give to the firm.

Competitive advantage theory has become known with the help of Michael Porter and his work (1980). Further it has been presented by a strong theory flow in scientific work of Penrose (1992), Lippman og Rumelt (1982), Teece (1980, 1982), Nelson og Winter (1982), Barney (1986, 1991), Conner (1991) etc. All of them have, of course, their unique theoretical approach, however there are several overlapping ideas. In the table below several definitions of competitive advantage are presented. They are gathered from the authors' works mentioned and a business dictionary in the internet. The definitions of Competitive advantage are presented below (Table 1).

A superiority gained by an organization when it can provide the same value as its competitors but at a lower price, or can charge higher prices by providing greater value through differentiation. Competitive advantage results from matching core competencies to the opportunities
A competitive advantage is an advantage over competitors gained by offering consumers greater value, either by means of lower prices or by providing greater benefits and service that justifies higher prices
Value created by a strategy that is not simultaneously implemented by other existing or potential competitors
An advantage that a firm has over its competitors, allowing it to generate greater sales or margins and/or retain more customers than its competition. There can be many types of competitive advantages including the firm's cost structure, product offerings, distribution network and customer support.
Competitive advantages give a company an edge over its rivals and an ability to

generate greater value for the firm and its shareholders. The more sustainable the competitive advantage, the more difficult it is for competitors to neutralize the advantage.
Is advantage that can be of two types: *comparative advantage* and *differential advantage*. Comparative advantage, or cost advantage, is a firm's ability to produce a good or service at a lower cost than its competitors, which gives the firm the ability sell its goods or services at a lower price than its competition or To generate a larger margin on sales. A differential advantage is created when a firm's products or services differ from its competitors and are seen as better than a competitor's products by customers.
Competitive advantage means superior performance relative to other competitors in the same industry or superior performance relative to the industry average.

Table 1. Definitions of competitive advantage

According to Porter (1980) there are two main types of competitive advantage: comparative and differential (Figure 5).

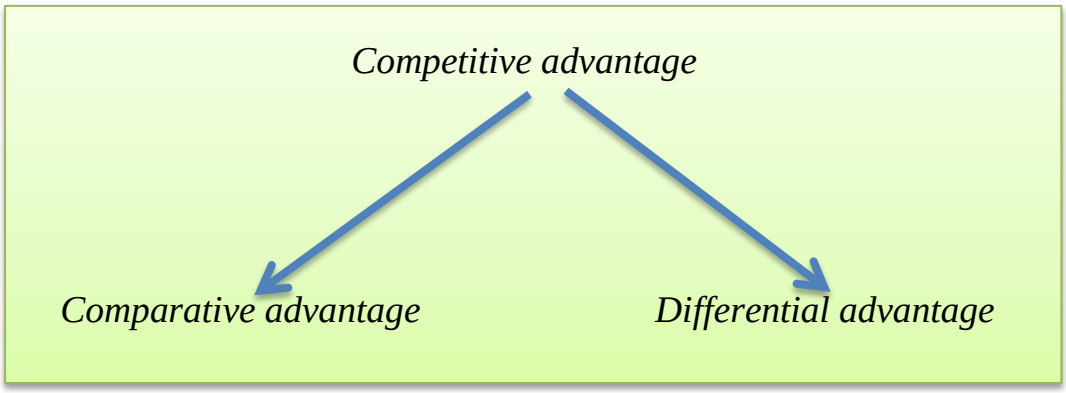

Figure 5. Types of competitive advantage

Main focus in this Thesis is a *differential advantage*. It is very important to check with the employees if they themselves "see" the differential advantage that Visioneering brings to Aker Solutions. And if they do, how does Visioneering bring a Competitive Advantage. To answer these questions is the intention of this Thesis.

An organization can get a competitive advantage when it implements valuable strategy that is not simultaneously implemented by neither existing nor potential competitors. By competitors they mean

not only existing ones, but also potential, which can enter market in the future (Barney, McWilliams & Turk, 1989). If I find out that Aker Solutions has a competitive advantage due to unique service it can provide like no one else at the market, I will ask the next question: how long can a competitive advantage remain a competitive advantage? Can a competitive advantage become sustained?

When the strategy that company implements is not being able to be imitated at all neither now nor in the future, then it is a *sustained* competitive advantage (Barney, 1991). According to Barney *sustained* competitive advantage is being created by implementing strategies that utilize its strong internal forces in order to react on those opportunities that exist in the surrounding. At the same time neutralizing the external threats and avoid internal weaknesses. However, a sustained competitive advantage is not within scope of this work, but rather a potential prolongation of this topic, and an eventual further research. The focus of this research is a Competitive Advantage.

2.2 RESOURCES

What do we mean by "resources"? Barney (2002) explains that all the assets, abilities, organizational processes, information, and knowledge that organization has under its control and can be used to create and implement strategies that can strengthen and improve organization's affectivity. However, it is not enough just to obtain resources, but it is important *to know how* to use them in such a way so this will bring a competitive advantage, because not all the resources can do that and not under any circumstances (Barney, 1991). To "know how" I refer back to "valuable strategies that is not simultaneously implemented by neither existing nor potential competitors".

Below 3 classifications of resources will be presented.

2.2.1 Classification Nr. 1: Resource Based View

Barney (1991) claims that resources firm has are to be heterogeneous and immobile.

- Heterogeneity

When a firm has certain resources that are unique in comparison to other firms mean that resources are heterogeneous. That's why heterogeneity is considered to maintain competitive advantage. A competitive advantage appears when the resource a firm has is perceived as of a rare value or the firm can produce it on a lower cost than competitors (Hunt & Morgan, 1995). Otherwise, if several competitors have or can produce same resources, the heterogeneity condition is not satisfied therefore cannot contribute to competitive advantage (Rivard and others, 2006).

- Immobility

In order to meet the requirement that the resources contributes to competitive advantage they have to be immobile. It means that the resources cannot be transferred to other organizations or that other organizations cannot produce or create this type of resources for themselves (Hunt & Morgan, 1995). In opposition a mobile resource is the one that is easily available in the market, which means it can be created or produced by other firms or/and competitors also.

- Ex-ante competitive advantage

A firm can get ex ante competitive advantage if already beforehand through the usage of its resources or establishing of its position, it has developed a particular resource that bring rare competitive advantage (Peteraf, 1993).

2.2.2 Classification Nr.2 in RBV

To be able to bring competitive advantage the resources have to meet the following requirements: to be rare, valuable, not imitable, and non- substitutable (Barney, 1991). Barney (2002) suggests the following questions in order to consider whether the resource a firm has contributes to competitive advantage.

- Valuable: do the resources contribute to the ability for a firm to react on threats and opportunities from the surrounding? Resources that are considered to be valuable are those that participate directly in effectivity improvement through the company's strategy (Barney 1991), or those that will reduce netto costs and increase netto income in comparison to firm's performance without these resources (Barney 2002). Hunt and Morgen (1995) point out those resources can contribute to competitive advantage.

- Rare: do only few competitors control the resource? In case if the resources are considered to be rare among other companies, or competitors, will those resources contribute to competitive advantage? This resource or resources will rarely among competitors create a sustainable competitive advantage (Hunt & Morgan, 1995). An ordinary, not rare resource will not by itself contribute to competitive advantage (Barney, 2002).

- Not imitable: would the firm have a financial disadvantage without this resource or when it has to create the same resource from scratch again? Barney (1991) defines not imitable resources if they satisfy the following criteria:

Creation of the resources has historic appearance

There is a casual ambiguity between resources and the firm or the firm and its competitive advantage

Resources are socially complicated

It's about costs when it comes to imitating or copying of the resources of a particular firm. If that is demanding for competitors to copy the resources that the firm has than it would have been to develop them, will this mean that the firm has gained a sustainable competitive advantage.

If the cost to develop the resource is not bigger than for the original resource will this only bring a short lasting competitive advantage. In this case a competitor is developing a substitute to the resource, and by those riches the same competitive advantage as an initial resource contributes to (Barney 2002).

Historical appearance means that a firm can have an advantage if it is early out or the first one to be out and offer this product or service to the market. In addition to the historical reasons may the firm have built up a certain concept, and the firm experiences the competitive advantage due to the earlier period (Barney 2002).

Casual ambiguity is about the difficulty for competitors to understand the link between the firm and its resources and the competitive advantage they cause. There can be uncertainty around how the resources contribute to the competitive advantage, but also can be that its not clear which resources actually contribute to the competitive advantage (Dierickx & Cool, 1989).

Culture in an organization and the relationship between its suppliers, clients and other stakeholders can create a so called "social complexity". This is something that exists in every organization and will be not so easy to identify. Due to that the competitors cannot imitate, copy or find substitute to that (Barney 2002).

- Non substitutable: Even if a resource is rare, potentially value-creating and imperfectly imitable, an equally important aspect is lack of substitutability (Dierickx and Cool, 1989). If competitors are able to counter the firm's value-creating strategy with a substitute, prices are driven down to the point that the price equals the discounted future rents (Barney, 1986a, p1233; Sheikh, 1991, p137), resulting in zero economic profits.

Even if a resource is rare, potentially value-creating and imperfectly imitable, an equally important aspect is lack of substitutability (Dierickx and Cool, 1989). If competitors are able to counter the firm's value-creating strategy with a substitute, prices are driven down to the point that the price equals the discounted future rents (Barney, 1986a, p1233; Sheikh, 1991, p137), resulting in zero economic profits. Resources should not be able to be replaced by any other strategically equivalent valuable resources. If two resources can be utilized separately to implement the same strategy then they are strategically equivalent. Such resources are substitutable and so are not sources of sustained competitive advantage.

2.2.3 Classification Nr. 3 in RBV

Resources can be of three types: physical capital, human capital and organizational resources.
Physical resources are represented by technology that is used in the firm, plants, tools and equipment, raw materials and geographical location (Williamson, 1975).
Human capital resources are the training, experience and knowledge, intelligence, relationship between managers and other employees (Becker, 1964).
Organizational capital resources include firm's reporting system, organizational structure, planning, control systems, and informal relationship between groups in the firm, and between the firm and other firms (network), and the firm and surrounding (Tomer, 1988).
When we combine resources and activities that need to be done to provide services for the client, it builds a chain of activities with its main purpose to bring value to the organisation.

2.3 VALUE CHAIN and BUSINESS MODEL

The resources create an opportunity for an organization to execute certain activities that lead to margins for the company. All the activities are classified in Primary Activities and Secondary Activities, and will be included into a value chain that I am going to design for Visioneering later. Porter (1985) explains value chain of an organization with the typical activities that a firm/ a company or an organization can have to create value for itself. He describes value chain as a raw of connected activities an organization executes in order "to design, produce, market, deliver and support its product". He claims that through these activities strategy, values and history are being expressed.
Primary activities such as "inbound logistics, operations, outbound logistics, marketing and sales, service" are those that are directly involved into the process of input transformation into output and deliver after sales service, support and maintenance.
Supportive activities support main primary activities, and are executed like functions in an organisation: procurement, technology development, human resource, organisational management (Porter, 1985).
All these activities, both primary and secondary, that are presented by value chain, demonstrate cost drivers of the firm while in the process to produce a product or a service (Reve & Stokke), 1996). Porter (1980) means that cost optimization is a critical success factor. Value chain helps to map the main activities in order to analyse the cost they are causing, at the same time to identify the competitive strengths that make it possible for an organization to have a sustainable competitive advantage (Porter, 1980).

"A value chain is a sequence of value creating activities that starts with the purchase of raw materials and lasts until the final delivery to the client" (Shank & Govindarajan, 1993).

The most important in the value chain model is the error to the right, which is a client's pay moment to the company after it had received the deliverables. Margin is situated between the pay moment and the cost. To increase the margin is the main purpose of most organizations. To fulfil this it can help to increase the payment from the client or to reduce the costs (Porter 1980).

Below there is a typical value chain model presented (Figure 6a).

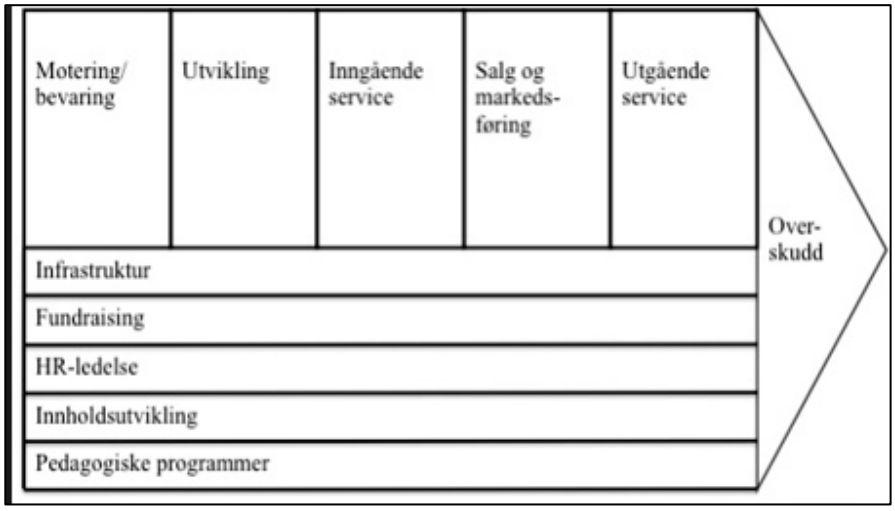

Figure 6a. Value chain: Porter, M. E. (1985)

In addition to Value Chain for Visioneering I will build a Business Model. To do that I will apply Framework given by Osterwalder & Pigneur, 2010 (Figure 6b). Every part of the framework will be explained in Chapter 5 Results, 5.1 Business model.

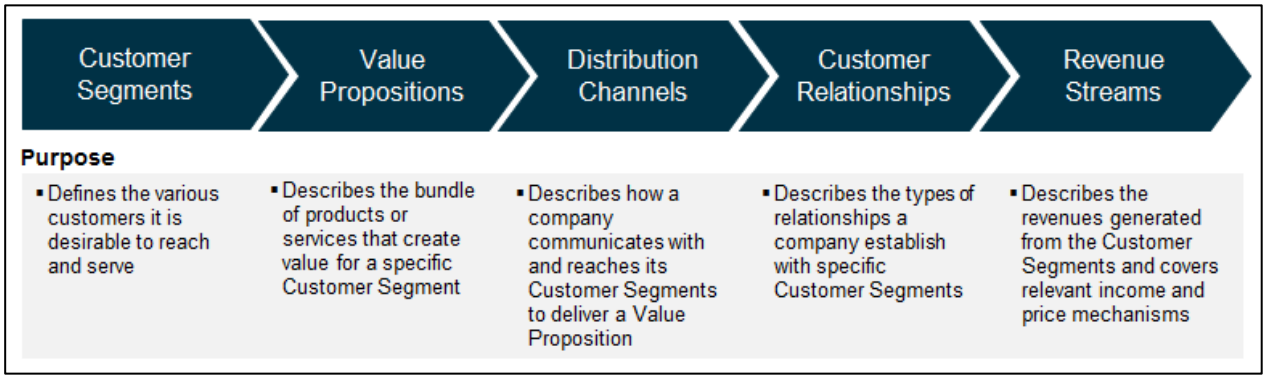

Figure 6b. Framework for creating Business Model

3.Company related information

3.1 VISIONEERING PHYSICAL CAPITAL RESOURCES

Visioneering is a concept combining visualization and engineering. Interactive presentations and 3D animation are designed to meet specific tasks client has. Real time simulations 1:1 together with client will enable the team to find optimal solutions faster through common understanding. This reduces engineering and installation time, as well as man hours. It may also contribute to reduced or avoided shutdown and other costly mistakes. It enables the user to take control of the operations through test scenarios, training of operators and perform simulations of critical operations in Iport facility.

IPort Facility

IPort consists of a Main Visioneering Arena, a Creative Room, two Visioneering Suites and the Dome. Each room is equipped to meet the project's specific needs for interaction, ideas sharing and troubleshooting. The IPort is designed to meet advanced work processes, virtualization and training by combining the use of cutting edge technology and our in-depth knowledge within offshore modification industry (Figure 7).

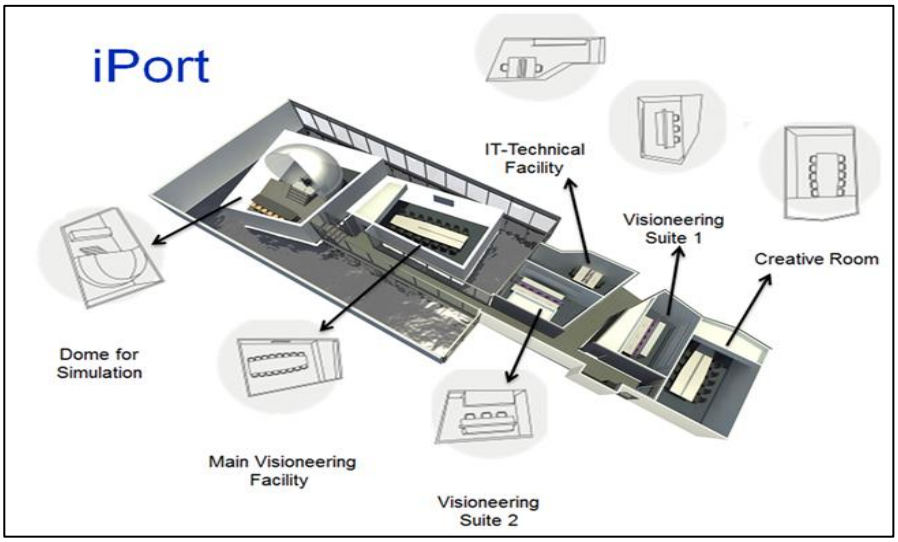

Figure 7. Iport Facility structure

Figure 8. Iport Facility rooms (Visioneering Marketing Materials, Intranet)

Main Visioneering Arena

Main Visioneering Arena (Figure 10) works as head quarter under training sessions, where operational manager can supervise, control and monitor the different activities. Totally, this room is suitable for 16 attendees. In this room there is integrated 7 PiPs (Picture in Picture). Which means you can view seven self-selected screens, from other IPort rooms, at the same time. This can be very useful during reviews, if e.g. a small group draw up a proposal for a new solution in one of the Visioneering Suites.

The Dome

Figure 9. The Dome in MMO

Figure 10. Main Visioneering Arena

The Dome (Figure 9) is set up with a crane simulator and has an actual crane cabin and operator chair is installed. By using the dome as a projection surface the crane operator has a full view of the scene. Using a real crane cabin greatly enhances the experience due to the parallax effect when looking out of the cabin windows into the 'outside world'. Visioneering provides a dynamic software toolkit for real-time scalable crane, generic winch and realistic cables with adopted physics to fit with project requirements. Employing real-time physics libraries that deliver high fidelity, dynamics, and

collision detection response to simulations enhances the virtual experience. In MMO we use this type of crane. There are several types of the cranes, and other business units are able to offer different type of services. Figure 11 below, for example, shows crane simulators that are used in Drilling Technologies (Visioneering Marketing Materials, Intranet)

Figure 11. Dome in Drilling Technologies, Aker Solutions

However, it is important *to know how* to use these resources in order to provide services for our client.

3.2 HUMAN CAPITAL RESOURCES

Resource based view (Barney, 1991) contributed to the development of strategic human resources management. What it did is shifting the focus in the literature from such external factors as, for instance, industry position on the market to internal factors such as sources of competitive advantage. M. Wright, Scott A. Snell and Benjamin B. Dunford (2001) referred to Boxall (1996) who suggested that human resources advantage consists of two parts. First of all, it refers to the ability to capture a stock of unique human talents that are being uncovered in a socially complex, historically evolved process, where the main task of management in an organisation is aligning the interests to create a committed workforce. The other task is development of employees to contribute to organisation's capability for learning across industry cycles which can create a process advantage within this organisation.

Visioneering employees have unique skills that form human capital pool. In addition the alignment of the organisation's opportunities technology-wise and the client's need are aligned with the skills employees obtain and therefore can deliver according to the client's needs. So the resources and strategic needs of the organization match together. Organisations may have access to valuable human capital but either through poor work organisation or mismanagement of the employees, may not adequately utilize it.

Human capital theory means that knowledge that individuals have increases their cognitive abilities and lead to more efficient potential activity. This theory assumes that the more human capital the better, however any organisation may bias individuals either to over invest or underestimate and not fully utilize their investment. Knowledge can be tacit and explicit. Tacit knowledge can be called "know- how" (Wright M. et al., 2001). This can contribute to creation of competitive, hard to imitate strategies and consequently lead to a competitive advantage (Barney, 1969).

3.3 ORGANISATIONAL RESOURCES

Organisation's culture, structure, procedures, the way of thinking, management style, and other conditions that can play a role of facilitator for the processes going on in the company are organizational resources (Barney, 1991). Culture Aker Solutions that is being developed over years, with vision, mission, values, network, learning plans, reporting system and execution system (PEM) are part of organisational resources.

3.3.1 Innovation culture

Aker Solutions has focused on the development of innovation culture. Innovation culture and innovative solutions together with continuous technological development are main areas for Aker Solutions that makes it a competitive actor on the oil and gas industry.

The company, like many others, performs in the condition of strong competition. Clients become more demanding. Information about the products and services, and range of choice has become more available. Aker Solutions with its vision "to be a preferred partner in oil and gas industry" has been focusing on the development of innovative culture and encourages organization to think more innovative than earlier (from experience). So, what is Innovation?

Innovation is considered to be one of the most important factors that contribute to creation of competitive advantage. Succeeded innovation gives to the firm something that its competitors do not have. If the firm succeeds with the innovation, will competitors also probably try to imitate or copy innovation. For a competitive advantage to succeed, to last, to be sustained, it is very important that innovation processes are continuous.

Innovation is something that is completely new. From Latin "nova" means new. But in addition that it will be new, it will also be attractive and different (Smith, 2010). Innovation is important for business, and that it is about new ideas and how they will be used. Also new ideas need commercialisation so the idea or finding is ready to go out to the market (Smith, 2010).

There are many different types of innovation. David Smith (2010) presents 3 different forms for innovations. Product innovation is a new product that often targets a public consumer market.
Service innovation is a new Innovation that makes it possible to offer a new service to the client. Process innovation is a new process that makes production more efficient than earlier due to new techniques and methods are found out, created and applied while executing the job. In Aker Solutions MMO Service innovation is the most popular. The company is constantly looking for new ideas and encourages employees to create. In fact, it has developed a model that can capture new ideas and through research and development process move it further towards a commercialization. This process is called "innovation process".
Main objective of Innovation Process is to bring valuable ideas/concepts into commercial products that add value to our clients and shareholders. The framework is based on standardized terminology, decision gates and formalized governance. This process includes key activities for optimizing and safeguarding the technology investments. It sets clear go/no-go gate reviews and it drives timely deliverables such as the Business Model and the Commercialization Plan.
The main phases of the Innovation Process are (Figure 12).

- The ideas generation
- The Idea project phase (asses & evaluate ideas and concepts)
- The Pre-project phase (includes completing the Technology Investment Business Plan)
- The Main project phase (includes completing the Technology Commercialization Plan)
- The Launch & Commercial phase

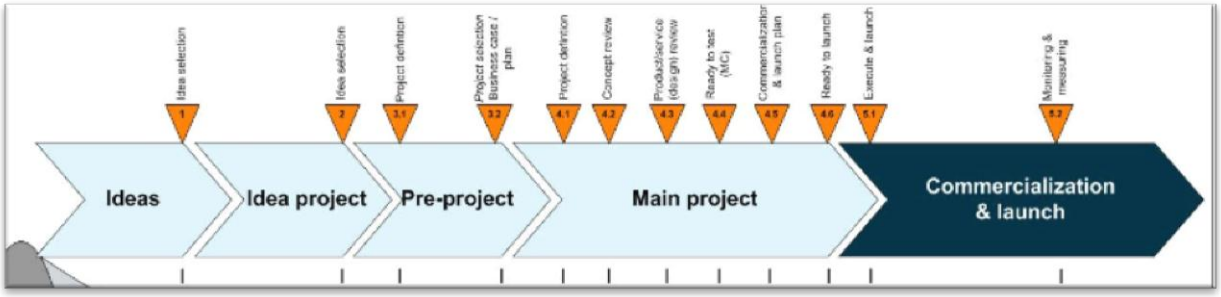

Figure 12. Main phases of Innovation Process (Intranet, internal database Aker Solutions)

Concept Visioneering was developed with the help of this process. It started like an Idea, later it went through Idea project phase all the way to Commercialization & Launch. Every phase had a stakeholders' decision. When the Idea project is presented, the business model has to be in place. Business Model of Visioneering is a part of this Thesis and is presented in Chapter 5, Results.

New services that Aker Solutions comes with to the market, is important to sell as a package, an innovative concept, that can be offered to both international and local market, and of course contributes to the company's spread in the market as well as entering new markets.
In this case concept Visioneering is new not only for the company itself, but also to the other companies and those abroad.

3.3.2 Organization of working processes- PEM

Organisation of all working processes in Aker Solutions is facilitated by Project Execution Model, PEM. This is a model that has been created and developed by the company and consists of various phases building scope of work. Of course, the model varies from project to project and depends on the scope of work of the particular project. We can see an example of PEM, demonstrated by Figure 13 (www.akersolutions.com). This is applicable for a general modification task model. PEM shows the phases of the project from tender phase to system completion. The model (if go inside each blue box when on the internal website) explains how to execute each particular phase of the process in order to rich the milestone in time.
In this thesis I wanted to find out if the respondents think that making Visioneering services a part of our execution model (PEM) can bring a competitive advantage to Aker Solutions MMO?

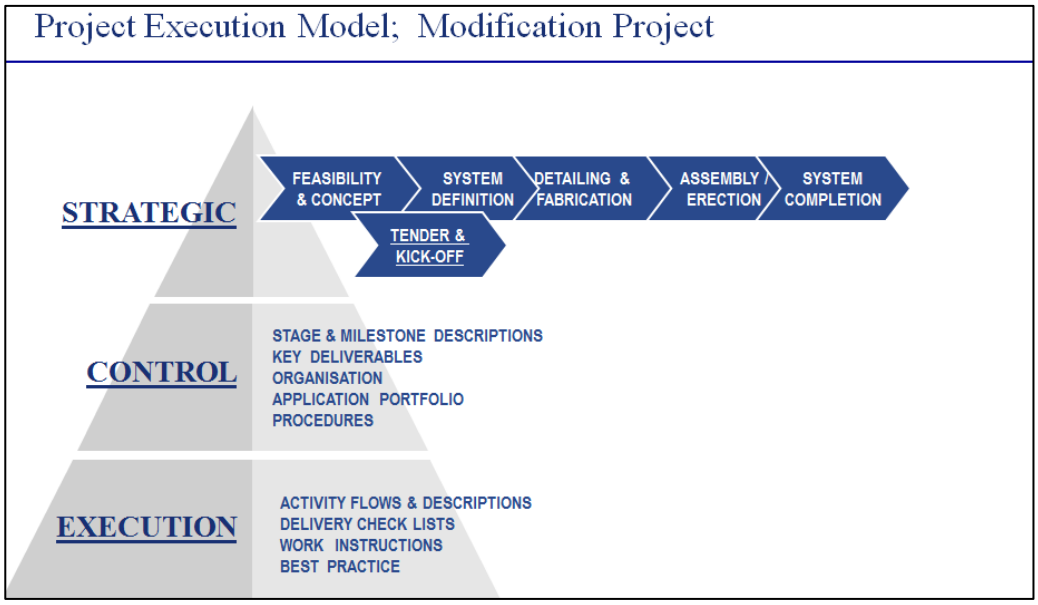

Figure 13. PEM Overview; Phases, Stages and Milestones (Source: Intranet, Aker

3.4 VISIONEERING VALUE CHAIN

Referring to Porter's value chain (2008) and based on the reality in the company, I have designed Value chain for Visioneering (Figure 14), that presents what activities are going on in the department. These are activities that only Visioneering can perform, and no other departments in Aker Solutions

MMO. These activities together make Aker Solutions able to provide Visioneering services as a unique concept, and rich margins. General explanation of primary and secondary activities is provided in further subchapters.

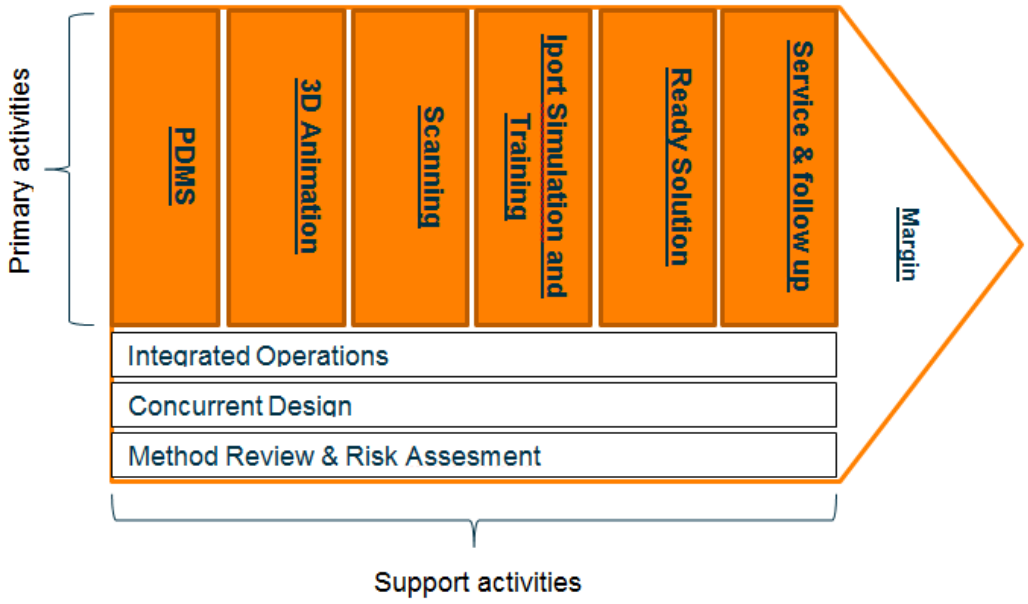

Figure 14. Value Chain Visioneering

3.4.1 Primary activities

3D animation

An early presentation of the project content can be visualized in a 3D animation, where challenges in design, fabrication and installation are shown in a format that is easy to communicate. This animation is supposed to be used in all reviews related to safety, risk and installation method. It can provide a good understanding and contribute to efficient meetings. The model will be further developed through the project phases. Risks will be identified and challenges visualized. Risky installation sequences can be visualized and if the complexity and risk require, the sequence can be established as a simulated reality where all participants in the installation can be trained onshore in our Simulation Centre. The format and resolution for these animations can be further improved if requested by the client.

3D illustrations, animations, interactive presentations and 3D applications are made by our multi-discipline team with technical hands-on industrial experience and creative directors, visual artists, programmers and communication specialists.

By utilizing high-end 3D technology we aim to maximize the understanding and facilitate collaboration in an intuitive and engaging manner.

The unique competence lies in bringing the different drawing formats into one single 3D environment according to customer's needs, eliminating the problem with different tag structures between contractors and operators (Visioneering Marketing Materials, Figure 15).

Figure 15. 3D Animation of a project

Laser Scanning

The model used in the design can be initiated and developed by scanning the platform in question. This is done to ensure that the latest changes to the installation offshore are updated in the model. Easy transfer of point clouds from scanning to the 3D model ensures updated information to the engineers. One can move through the model and evaluate the quality of the design and installation method. Sizes and distances can be measured in the model.

The benefit to use scanning is that it gives much more data for a short time, therefore saves offshore time, travelling and climbing up like several disciplines do. This minimizes HSE risks that are relevant to those activities. The client can get a real offshore picture while in the office, onshore. In addition, all the disciplines have opportunity to start their work with the right model. To export the "as it is" picture from offshore to onshore only few people is needed than it does when we send people offshore. The scanning point cloud or 3D model can be re-used whenever a new job is coming up in the same area. Whatever scanned can be 3D modelled.

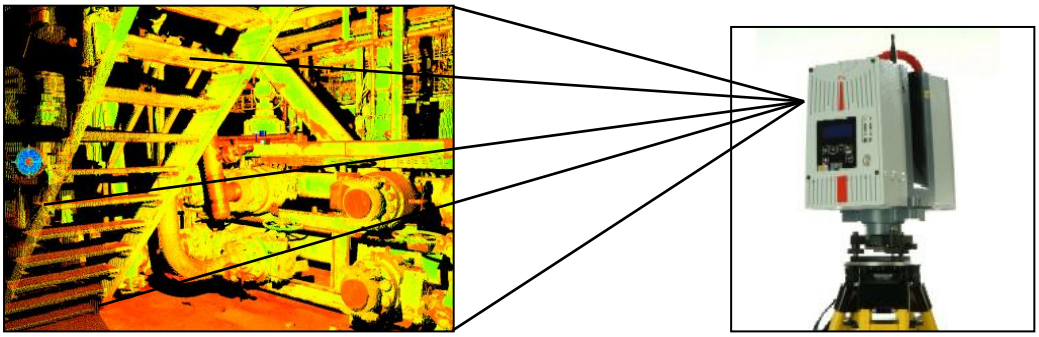

Figure 16. Laser scanning Service

I port Training & Simulation

For complex installations, the whole operation can be simulated in Iport Simulation Centre, where the current platform model is installed as a scene, and the structure to be handled will be modelled with physics as the weight and centre of gravity. The whole installation sequence is reviewed in an environment that represents the reality offshore. Crane operators, winch operators, rope-men and flag men participate in the operations as if they were offshore. A separate 180° dome is in place for the crane operator, and each of the other operators / helpers have their own stations where they can see and operate the installation in accordance with what they will experience offshore. This training provides a safe and efficient installation phase, and can be made available on client's request. Virtual environments allow for a more effective and structured way of training all sorts of complex operations. If time is money then this is especially true for offshore operations. To prepare crane operators, riggers, and banks men in a cost effective way, they need to spend quite some time in training. Normally this is done on the real platform which introduces risks and is also expensive. This is where simulation comes in and immediately reduces risk and increases efficiency. Specialists can exercise various hazardous scenarios from extreme weather to equipment fault situations. Not only are the members trained in their individual task, the IPort facilities also supports training of teams where they need to co-operate in order to complete the different cases and missions presented in the simulators.

The crane simulator is highly flexible allowing rig-to-vessel lifting operations but also vessel-to-vessel. The simulator can also be adapted relatively easy for special training needs and customer specific lifting operations.

Figure 17. Simulating offshore lifting operations

For complex installations, the whole operation can be simulated in our Simulation Centre, where the current platform model is installed as a scene, and the structure to be handled will be modelled with

physics as the weight and centre of gravity. The whole installation sequence is reviewed in an environment that represents the reality offshore. Crane operators, winch operators, rope-men and flag men participate in the operations as if they were offshore. A separate 180° dome is in place for the crane operator, and each of the other operators / helpers have their own stations where they can see and operate the installation in accordance with what they will experience offshore. This training will provide a safe and efficient installation phase, and can be made available on client's request (Visioneering Marketing Materials).

3.4.2 Secondary activities

Concurrent Design

Through all phases of the project, participants gather in concurrent meetings when appropriate. To simplify and solve complex problems through teams a working arena gathering all involved that can/will have influence on the solution. Sequential processing changed to discussion and production of common product. Basis for the method is the link between People - processes – tools.

Premises for the method:

- Predefined team
- Established work processes
- Knowledge of governing documentation
- Defined tools

Examples of meetings are design and methodology reviews, as well as safety oriented meetings. Here we seek to involve both onshore and offshore personnel. It is essential that these meetings are facilitated so that it is clear what needs to be prepared, what is the agenda, as well as what we expect to come out of the meetings, and what needs to be done afterwards. This will reduce errors and rework. Example is shown at Figure 18.

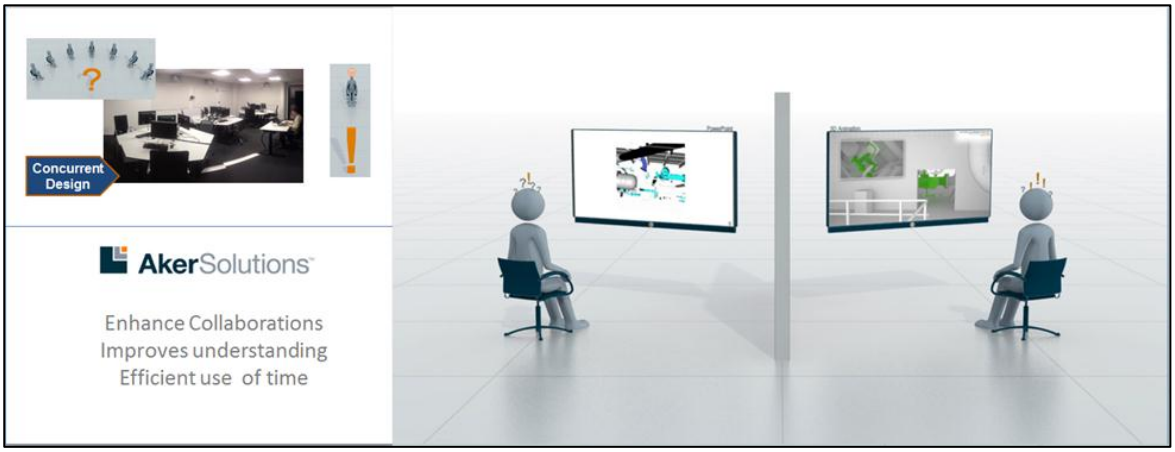

Figure 18. Concurrent Design Example

IO – Integrated operations

It is important to involve the offshore or yard organization through the early phases of the project. They will be providing us with installation experience, and those who will lead and carry out the operations are involved to set the conditions for an optimal installation. Using video conference directly linked to the Simulation Centre from fabrication yard and offshore site, enables the operating organization to be involved. In the installation phase, the offshore personnel can be utilized for video survey so that we can check the quality of the model and assess the need for updates using scanning. All phases of the project are carried out using integrated operations from engineering through the early assembly at fabrication yard, method description and installation offshore. All MMO projects utilize Onshore Operation Centres to secure offshore readiness. This ensures controlled communication and efficient installation. All possible challenges that occur offshore will be communicated and processed by the onshore organization. The onshore organisation is also responsible for securing that material, job cards and plans are reviewed and in place before installation commences. Example is shown at Figure 19.

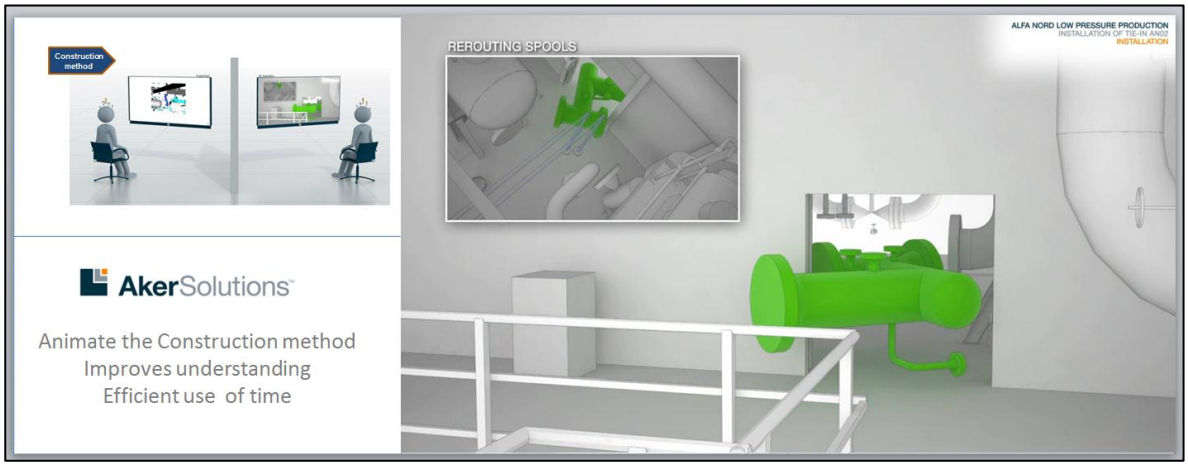

Figure 19. Example of integrated Operation

4. Methodology

In this thesis there are several choices a student must take: theory choice, choice of research design, choice of data collection, and choice how to analyse it. From Greek "Methodos" word "Method" means a decided way towards a goal (Johannesen, Tufte & Christoffersen, 2010). Method will explain how to create this way, to gather relevant information about the reality, how to analyse it and what does it say about the reality. This is in order to check whether my perception and problem understanding matches with the reality. Three important characteristics of the methodology are thoroughness, openness and systematics.

4.1 METHODOLOGICAL APPROACH

Methodology gives a foundation for systematic work. It structures what, why, who and how are connected to thesis problem (Holme & Solvang, 1996).

While conducting a research one can use explorative, explanatory and descriptive designs (Hellevik, 2002). According to Johannessen, Tufte & Christensen (2010) explorative design can be applied when one needs to come to a better problem understanding, and there are some unclear or even not existing knowledge about this problem.

Descriptive research design according to Hellevik (2002) is applied to give the most accurate description of the problem. Johannessen (2010) means that descriptive design can describe the individuals, situations, incidents or accidents that have already happened, or are happening. The key question in this design is what are the factors that are causing this or that phenomenon, or what other phenomena have caused this particular phenomenon.

There are qualitative and quantitative methods of the research. Even though both of them have advantages and disadvantages, in the literature it is said that both methods can provide for a thorough knowledge creation. Johannessen (2010) explains that a qualitative method is for looking at a certain number of respondents for gathering information about the problem. Qualitative method will say something about characteristics or qualities of the phenomenon that is being researched on.

This method is often applied when there is a lack of knowledge about a problem, and it is needed to gather more information, to explore the issue. Usual way to collect the data in qualitative research is interviews, discussion with groups, observations. Quantitative method is transforming data into numbers; map the spread and deviations (Johannessen, 2010).

Having taken the research question into account I have chosen an explorative design and qualitative method. The research problem covers some unknown areas, and I will be able to obtain more knowledge with the help of interviews, discussion, observations and feedback that is collected with the help of survey. These can help me to find necessary information and to uncover something that is not explicitly described or known yet.

The main goal of this thesis is to understand employees' perception of innovative services Visioneering offers and how these services contribute to competitive advantage of the Company.

Choice of the time perspective has its influence too. Data can be collected in several time perspectives, especially if it is necessary to research on the phenomenon that has changed over time. In this research data has been collected once only, before the crises hit the company at its strongest point. If the research had been conducted after Aker Solutions have cut a large amount of employees, the answers, most likely, would have been different.

The qualitative method in this research is using a survey to collect the feedback of the employees in the company as for the Visioneering services and their ability to bring a competitive advantage to the company. Questions for the survey are formed as a result of discussions with colleagues and top managers followed after a business case presentation to the management had been presented and approved.

4.2 WAY FORWARD TO ANSWER THE RESEARCH QUESTION

To answer thesis question "How can Visioneering bring Competitive Advantage to Aker Solutions?" I made a plan for myself which I believed would help me to come with results.

- Literature review

a) Competitive Advantage

b) Resource Based View

c) Value Chain Theory

Then I planned to collect information about Visioneering with the help of internal documents.

- Data Collection. Company related information

a) What is Visioneering? What services do the offer?

b) Resources Visioneering has

c) Main activities Visioneering does

The next step of my plan was to draft a business model for Visioneering. To do that I had to interview top managers in the company, as they were key decision makers when earlier invested in Visioneering.

With the help of interviews I planned to find out what they think about the following:

- Business Model

a) Who are the customers of Visioneering: segments?

b) What are channels of communication with them?

c) What kind of relationship does Aker Solutions have with them?

d) What is the value customer segments get from using Visioneering?

e) Revenue streams for Aker Solutions from each segment

The research was explorative, and I wanted to find out how the employees perceive Visioneering. I planned to arrange a survey to be sent electronically to all the projects that used Visioneering service, that I estimated roughly, was about 200 people. I planned to base questions in this survey on the benefits Visioneering has to offer to our clients. I wondered if these benefits are considered by our employees as they can bring competitive advantage to the company. After I interviewed top management (Chapter 4.3, Table 2), I believed, I will have understanding regarding what questions to ask in this survey).

After that I planned to analyse the results I receive and check back with this plan whether it worked for me.

4.3 DATA COLLECTION

In qualitative research it is important to consider who or what it is to be observed or be evaluated. It is not the main purpose to have a large number of populations, but rather that they have necessary knowledge or meet special requirements for providing the information that is needed to explore the problem. It is important to explain who the respondents are and why they are chosen. Below there is a list of the top managers who were the population for data collection (Table 2. Top management). I held a number of interviews and discussions with them (APPENDIX C) and found out what were main benefits, according to their opinion, that Visioneering can bring to our clients.

Chief Executive Officer, Aker Solutions
Executive Vice President, MMO
Senior Vice President, Technology
Vice President Technology Development
VP Technology Strategy, Technology
Senior Vice President, Process Systems
Senior Vice President Innovation & Technology
Senior Vice President Sales & BD
Research and Innovation Project Manager
Senior Vice President, Finance & Legal

Table 2. Top management

As mentioned before, I concentrated on 3D animation, Laser Scanning and Iport Training & Simulation. Main benefits these services can bring are listed in Table 3.

Save time for the project	Projects always estimate the amount of time that is going to be needed for execution of certain types of work. These estimated hours are being sold to the client. The more hours estimated for the job, the more cost it brings for the client. Top managers believed, by applying Visioneering in projects, clients have opportunity to save the hours.
Save hours budget	Being able to stay with the budgeted hours is a challenge in reality of projects' execution. Visioneering offers services that can help to plan better and increase possibility to stay within the budgeted hours.
Made understanding of the jobs easier	To make sure both client and supplier (here Aker Solutions) are on the same page as for the scope of work and how to execute this job, Visioneering with its services can simulate execution process before it's start.
	It is extremely important that client and supplier are completely clear on expectations. For preventing communication misunderstandings it is important

Prevented communication issues	to assure clear communication and such methods as iport simulation, 3d animation can clarify scope of work and contribute to improved communication, consequently prevent communication issues.
Prevented potential incidents/ accidents	Visioneering Services offer job simulation, where mistakes are possible to be "played around", consequently prevent potential incidents or accidents.
Reduced HSE risk	Having tried to fail in Iport centre, crane operators feel more confident to execute critical operations offshore mitigating risks, meant managers.
Bring competitive advantage to the company	Visioneering being able to provide unique services can add value to the client's project by making it more efficient, improve communication, improve job understanding, prevent hse incidents, mitigate risks, save hours for the project. These are the benefits that make client satisfied and loyal. This combination gives Aker Solutions competitive advantage in front of its competitors.

Table 3. Choice of statements used for evaluating the variables

These benefits I used further as a background for the survey questions.

All 3 services: 3D Animation, Laser Scanning and Iport Training were evaluated according to named benefits. This is how it looked like (Table 4).

3D animation *saved time* for the project
3D animation *saved hours budget* for the project
3D animation made common *understanding of the job* easier
3D animation improved *communication*
3D animation *prevented* potential *incidents/ accidents*
3D animation *decreased the HSE risk* in the project
Offering the client 3D animation gives Aker Solutions MMO a *competitive advantage*

Table 4. Statements used for evaluation. Example.

Mentioned approach has been used in the survey. Each statement for each service was getting a score from 1 to 7, where 1 means "strongly disagree" and 7 "strongly agree".

I consider this to be a good way to measure the variables as the respondents answer about several aspects regarding the same service. However, to catch more important details I added a couple of open, follow up questions:

"*In your opinion what was the most valuable contribution of using Visioneering services in your project?"*

"Where do you see potential for improvement in application of Visioneering services in your project?"

Also I included 3 yes/no questions.

- Do you think that making Visioneering services a part of our execution model can bring a competitive advantage to Aker Solutions MMO?
- Do you think client will recognise these new services as a competitive advantage?
- Do you think Visioneering gave "value for money" for the project

However, I saw later on that I should have asked them in a different way (more open or give more Alternative answers than just yes and no) in order to get more value from the answers.

4.4 SURVEY

According to W. Lawrence Neuman (2010) survey as a method is used when you can formulate the question or issue and variables you want to learn about, and ask people who are willing or can give you the information about those variables. Surveys are more effective when the respondents are aware of what is researched on and they can "self-report" without any difficulty.

I planned my survey according to three stages: start up stage, when I prepared the questions (how- I explained earlier in 4.3 Data Collection), and selected who will be the informants. Execution stage, when I sent it out by email to all the informants and gave a deadline, providing them with a short background information and guidance on how to complete it. I had to remind them one more time by sending the same email with the link. Data analysis was the third stage of the survey. The survey was sent to120 respondents, which was less than what I planned due to the cuts of employees that happened in the company (http://www.dn.no/nyheter/energi/2015/02/18/1259/Oljeservice/aker-solutions-kutter-inntil-300-stillinger-i-norge).

The questionnaire consisted of 15 questions. 2 introduction questions, 7 statements to be evaluated on the scale devoted to each of 3 selected services types (3 questions). Also, 2 open questions regarding the most valuable contribution of using Visioneering services, and one for giving an opportunity to write a feedback on what's the potential improvement aspect for the services provided; and 3 finalizing questions to understand how large is the percentage of those who mean that Visioneering services are "value for the money", and can bring a competitive advantage to the company, that had "yes/no" options. Please find the questionnaire in **Appendix A**. The respondents of the survey were involved in the 5 projects: Gina Krogh (operator Statoil), Sleipner (operator Statoil), BP V&M (British Petroleum), Zidane, SPORT (Statoil). They represented various disciplines and positions in Aker Solutions which are listed in Table 5. Survey Respondents (Employees who were directly involved in providing Visioneering Services to the client).

18	Piping Engineers
20	Piping support engineers
8	Piping Discipline Leads
28	Special Engineers
11	Structure engineers
5	Architect Engineers
7	Study Discipline Leads
5	Project Leads
5	Instrument Engineers
7	Telecom Engineers
6	Laser Scanning Electronic Measurements

Table 5. Survey Respondents

5. Results

The chapter is organized in line with the methodological framework presented in Chapter 4. Results consist of two main parts: business model and survey results. Business model was drafted after the interviews I have conducted with the informants – top management (Table 6). Survey results were based on the answers given by informants (Table 9), ref. Chapter 4 Methodology.

To draft business model I used a framework provided by Osterwalder and Pigneur (2010) "Business Model Generation" presented earlier by Figure 6. Chapter 2.3 VALUE CHAIN and BUSINESS MODEL.

5.1 BUSINESS MODEL

Results step 1

Step one is to define Customer Segment (Figure 20) - who are the customers for Visioneering services?

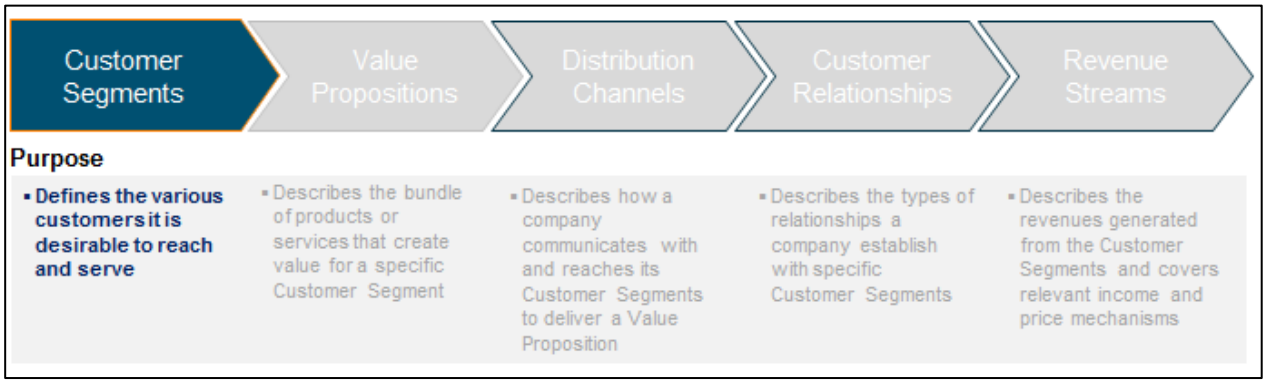

Figure 20. Business Model. Customer segments

"*The customer Segments define the different groups of people or organization an enterprise aims to reach and serve. Customer comprises the heart of any business model*" (Osterwalder and Pigneur, 2010).

In order to understand the customers better we divide them into the segments: Internal Projects and External Oil companies both local and international (Table 6).

Who does Visioneering create value for?	Internal Execution Projects; Oil companies; International companies
Who are the most important clients for Visioneering?	Oil companies, Execution Projects, International companies
Choice is the following:	Execution Projects, International Companies

Table 6. Customer segments for Visioneering Services

Oil companies are the main customer segment for Visioneering. Aker Solutions is a service company providing technical assistance to oil operators, and aim to be "the proffered partner". Visioneering with its solutions answer to the challenging request oil companies came up with: to reduce cost and increase quality, and find smarter ways to work. MMO nature of project work is to upgrade platforms. This often challenges our installation methods and related layout and design. Optimised installation methods are key issues in reducing risk and improving productivity. Visioneering is a combination of simultaneously engineering and using of visualisation tools. Visioneering enables optimised methods and design up-front. Therefore Execution projects are another customer segment.

We see that the challenge that international companies face is quiet similar to the one we experience in Norway: cost reduction, quality increase to optimise installation methods, to reduce engineering and installation time.

Summary step 1

3 main customer segments have been identified. The reason that these segments are selected is due to the different needs they have; different channels for communicating to them; and the messages that need to reach the segments. Visioneering can offer its services with adjusted offering according to each segment. From the interviews I understood that communication channels can be technically the same, but there will be some differences in approach. Main customer segments are presented in the Table 10. The next sub-chapter will present value proposition for each of the named segments.

Results step 2. Value Proposition

To understand which value proposition can be brought to the customers; I map the needs of each segment first (Figure 21).

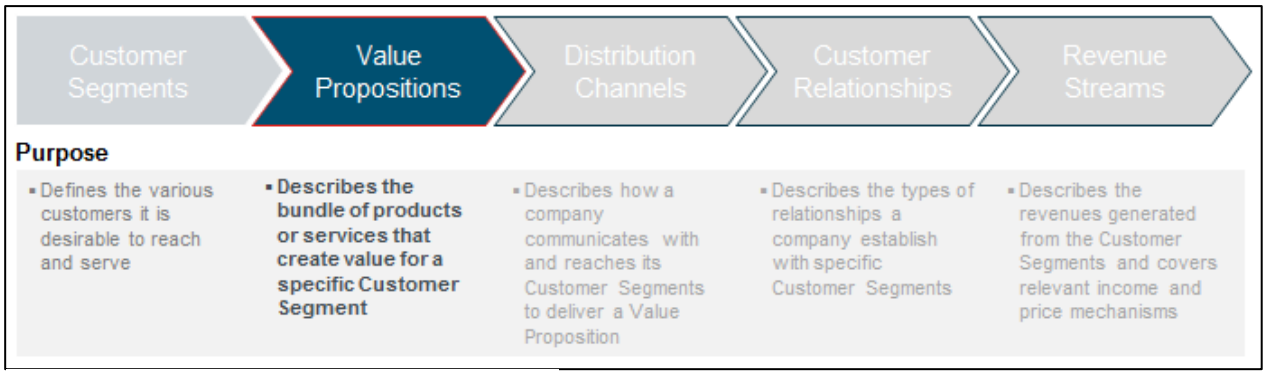

Figure 21. Business Model, Value Proposition

Later I will name the benefits, advantages that Visioneering can bring to satisfy those needs. Value can be quantitative or qualitative, and it is the reason why clients turn to one company or another (Osterwalder & Pigneur, 2010). In addition to creating margin, for Execution projects the most

important need is to deliver at the right time with the right quality to be able to meet client's needs. High HSE standards and HSE mindset is in the focus in every project, and there is a need to deliver in a safe way where the accidents = 0, and the risk is at its minimum. The other need is to build and maintain healthy relationship with the client, and also inside of the project teams. One more need for projects is to stay within the budget, money-wise and time- wise. For local oil companies like Statoil, BP, Conoco Phillips, Total etc the main need is "to produce more oil, increase oil exploration and drilling to replenish reserves",- Oil Directory (http://www.modifikasjonskonferansen.no/).

Taking into account the current market situation the biggest need for local oil companies is to be able to produce in a new, better and smarter way, reducing the costs and hse risks. Performance of oil companies have to be environment friendly, which qualify them to be socially responsible. And of course their need is to maintain shareholders' motivation to invest into the company by creating financial benefits.

As for international companies Innovation and Technology is the key to succeed in different environments due to harsh conditions, artic climates, deep waters etc. Needs mentioned earlier that execution projects and local oil companies have, do also exist for international oil companies. But in addition, they lack the experience and competence Norwegian specialists have, and the advanced technology we use in Norway. That is why we intend to bring Visioneering as innovative concept abroad to help them improve their deliveries.

The key question to be answered here is which of the clients' needs Visioneering Services can contribute to? Based on the interviews I had with informants, I explored the value proposition that Visioneering can bring to the clients (Table 7).

Save time for the project
Save hours budget
Made understanding of the jobs easier
Prevented communication issues
Prevented potential incidents/ accidents
Reduced HSE risk

Table7. Value proposition

These benefits listed in the table 7 will be taken further for creating a survey. This is to explore whether the employees (Table 3 and 4) in Aker Solutions see that Visioneering can bring competitive advantage to the company by bringing this value proposition to its customers.

Summary step 2.

Having identified the needs of three segments I present them in the table 8 below.

Execution projects	Right quality
	Right time
	HSE mindset (0 accidents)
	Relationship with the clients Good team relationships
	Stay within budget
Local oil companies	Produce more oil
	Extend life of fields
	Cost reduction
	Smarter way to produce
	Reduce HSE risks
	Environment friendly operations
	Financial benefits for shareholders
International companies	Innovation & technology
	Right quality
	Right time
	HSE mindset (0 accidents)
	Relationship with the clients Good team relationships
	Stay within budget
	Produce more oil
	Become more competitive

Table 8. Needs of the three customer segments

Results step 3. Distribution Channels

The Channels is about how Visioneering can reach the customer segments to deliver value proposition. According to Osterwalder A. & Pigneur Y. (2010) "there are three main elements: communication, distribution and sales".

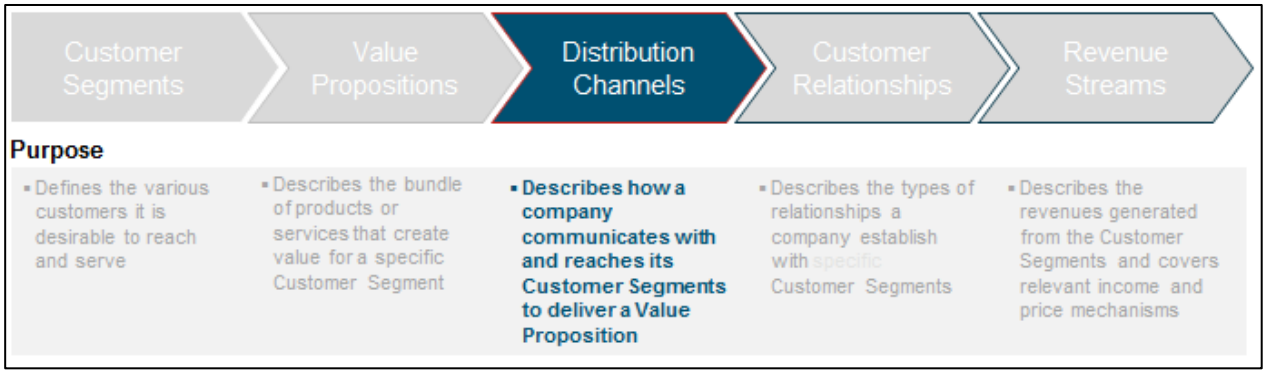

Figure 22. Business Model. Distribution channels

The 5 projects that I researched on, have been reached via project managers. I invited them to visit Iport facility and presented the benefits it can bring to their project. But there are more channels that can be used.

Internal communication to the existing execution projects

E-net is internal webpages where we post the sales information. We made a video to present Visioneering as a new concept. We prepared a strategy how to reach the target segment with all the different disciplines focusing on the project's needs. When we invite employees from the projects to visit Iport, they get a chance to test the tools and simulate critical offshore operations here and now.

Oil companies are reached through our key account managers who approach them directly with presentation of the innovative concept. We invite them to visit our facility and show the examples of how Visioneering can be used. We send sales materials and arrange a follow up sales- meeting with them.

As for International oil companies, they visit our stand at such conferences as ONS, and delegate groups of key decision makers to visit us. We meet customer at the international forums, and tell about our services. The main distribution channel is the existing networking platforms that have been built through the years that Aker Solutions have been in the oil industry.

Summary step 3.

To summarize the main distribution channels for the customer segments I drafted Table 9.

Segments	**Distribution channels**
Execution projects	E-net, internal web, presentations
	Video
	Strategy
	Visits & meetings in Iport
Local Oil companies	Key Account Manager
	Presentations
	External web page
	Invite them for a visit
	Sales materials, sales meetings
International Oil Companies	International Conferences
	Invite international delegations to visit the facility
	International forums
	Networking

Table 9. Distribution Channels for customer segments

The most common way to communicate information inside the company is with the help of e-net (internal internet pages) and holding presentations about the concept, so this is the preferred channel to be used when approaching existing execution projects. I found out that inviting project leaders and key team to visit Iport facility, where they can test the simulator is a very good selling channel. For the Local Oil Companies except for using the marketing materials and the website, sales meetings is the most popular distribution channel. At these meetings Key Account Managers can offer the services and explain what is the value that this service can bring to the client. These types of meetings can be arranged both in Aker Solutions' premises as well as at the clients' facilities.

As for the International Oil Companies, networking during conferences, forums and guest visits are the channels that have been working for us so far.

Results step 4. Customer Relationships

In this step I would like to identify the relationship Aker Solutions has with the customer segments identified earlier. Customer relationship is defined according to each segment.

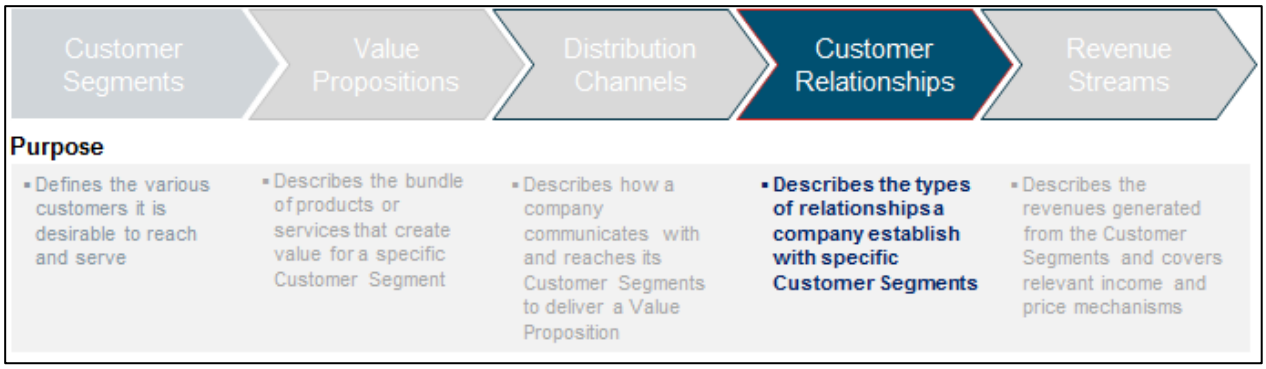

Figure 23. Business Model. Customer Relationships

Aker Solutions wants to establish solid and stable relationship with all customer segments, and to make customers loyal. What type of relationship does each of our customer segments expect us to establish and maintain with them? "We can distinguish between several categories of customer relationship, which may co- exist in a company relationship with a particular customer segment" (Osterwalder A. & Pigneur Y., 2010).

Execution projects

Personal Assistance is when we assist the projects with right competence. Project employees can receive personal assistance during sales phase and/ or after when including Visioneering Services in the project execution. We also want to establish *dedicated personal assistance*,- Visioneering Key Account Manager who will maintain good relationship with the project.

Local Oil Companies

For this segment Aker Solutions establish dedicated personal assistance executed by Key Account Manager. We, as a supplier, want to understand the needs oil companies have, and there expectations. And we would like our clients, oil companies, to have a good understanding of how the services we provide can solve their challenges. This can happen with the help of regular dialogue between Key Account Manager and customers' key representatives. This type of relationship we call *support and assistance*.

International Oil companies

With this segment we would like to establish relationship that can trigger our cooperation, and help us to maintain our position in the international market. To do this we find it very important to be familiar with constant changes in the market and to learn how we can meet the clients' needs.

In addition, we are developing collaboration and co – creation, when we develop a solution together, where we combine their needs and local market knowledge, and our competence and technology. This type of cooperation is called "*R&D" (Research and Development*).

It is also obvious that we want to provide *personal assistance* to our customers on the international level as well. Below there is a summary of step 4 where main types of relationship are presented (Table 10).

Summary to step 4

Segment type	**Customer Relationship**
Execution projects	*Personal Assistance; Key Account Manager*
Local Oil Companies	*Support and assistance*
International Oil Companies	*Research & Development collaboration*

Table 10. Customer Relationship

Results step 5. Revenue Streams

"The revenue streams represent cash company generates from each customer segment" (Osterwalder A. & Pigneur Y., 2010).

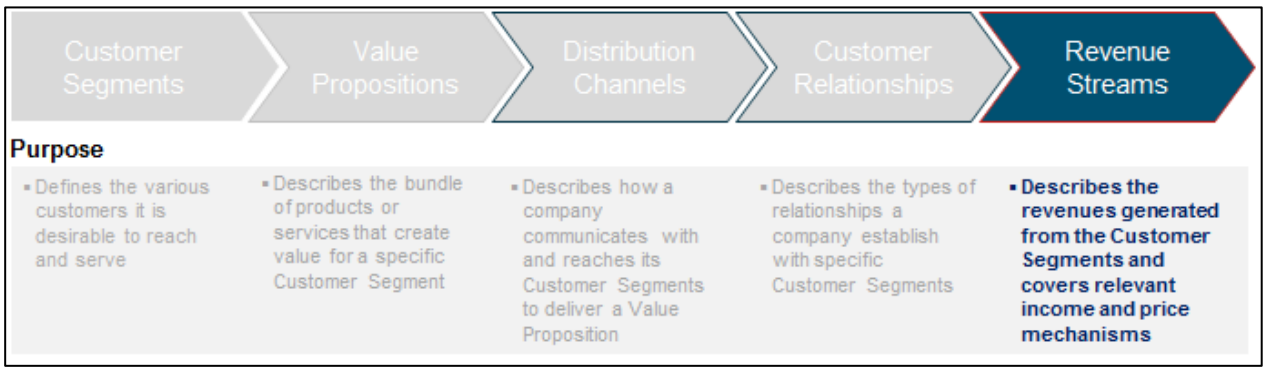

Figure 24. Business Model. Revenue Streams

Key question **is how** the company generates cash from it's customers. To answer that I will explain how Visioneering provides the services, 3D Animation, Laser Scanning and Iport Training & Simulation, to the identified customer segments.

For providing these to oil companies and execution projects Visioneering executes following job activities:

- Produce, Install and upgrade Crane simulator software
- Integrating the software according to specific platforms and projects requirements for simulations
- Delivery and installation of cables connecting projectors in domes and server room
- Assist the client to choose the appropriate hardware
- Training companies' personnel for operating the simulation centre
- Project management for Visioneering services to be executed in projects
- Follow up and support during the project execution
- Maintenance and support agreement 12 months from installation of software (Visioneering Marketing Materials).

The nature of MMO is projects. Through execution of projects customer has to pay for our services. Visioneering Services, if included in the project, will be paid by the client as a part of the project. The revenue comes from service sales, which generates one-time payment.

When it comes to the local oil companies, Visioneering is offered to them as an innovative concept that can solve the challenges for their installations. This segment will have to pay for buying the solution (combination of all 3 types of services adjusted to client's need and platform specifications, managed and incorporated in a "know how" way from Aker Solutions) from us, and for support and maintenance of both the software and hardware, for training their own personnel, and for the project management to assure the deliveries in the clients' projects.

The revenue stream here can be one- time payment when the customer is buying the solution. At the same time there will be re- occurring payments that have to happen after certain amount of hours is delivered and certain defined amount of job is finished. This is agreed in the contract beforehand.

As for the International Oil Companies, we have similar approach as to local oil companies. However, the concept that the client is buying has to be adjusted significantly as for the market peculiarities, local laws and regulations, and take into consideration the distances, especially when it comes to delivery, logistics for the hardware. Training of the personnel should also be agreed about as for whether we do it ourselves, and get paid for this as the part of the offer, or not. If we do, do our people have to travel to their location or can they send their personnel to Norway. These and other decisions will also influence the price of the offer.

In addition, here is one more type of revenue stream. Projects in both local and international companies are getting paid by hours. When Visioneering services are included in the project this creates an opportunity to save time for the project, and save the budgeted hours. That will satisfy the client, and eventually bring financial bonuses, bringing additional revenues to Visioneering, called bonus.

To summarise I combine revenue streams according to customer segments in the table below

Summary step 5

Customer segment	***Revenue stream***
Execution projects	One-time payment for services purchase
Local Oil companies	One- time payment for buying the solution; re-occurring payment for support and maintenance; training of the personnel; project management etc
International Oil Companies	One- time payment for buying the solution; re-occurring payment for support and maintenance; training of the personnel; project management and eventual local requirements etc

Table 11. Revenue streams

Having done this data collection, I am able to put information into a Business Model (Figure 25).

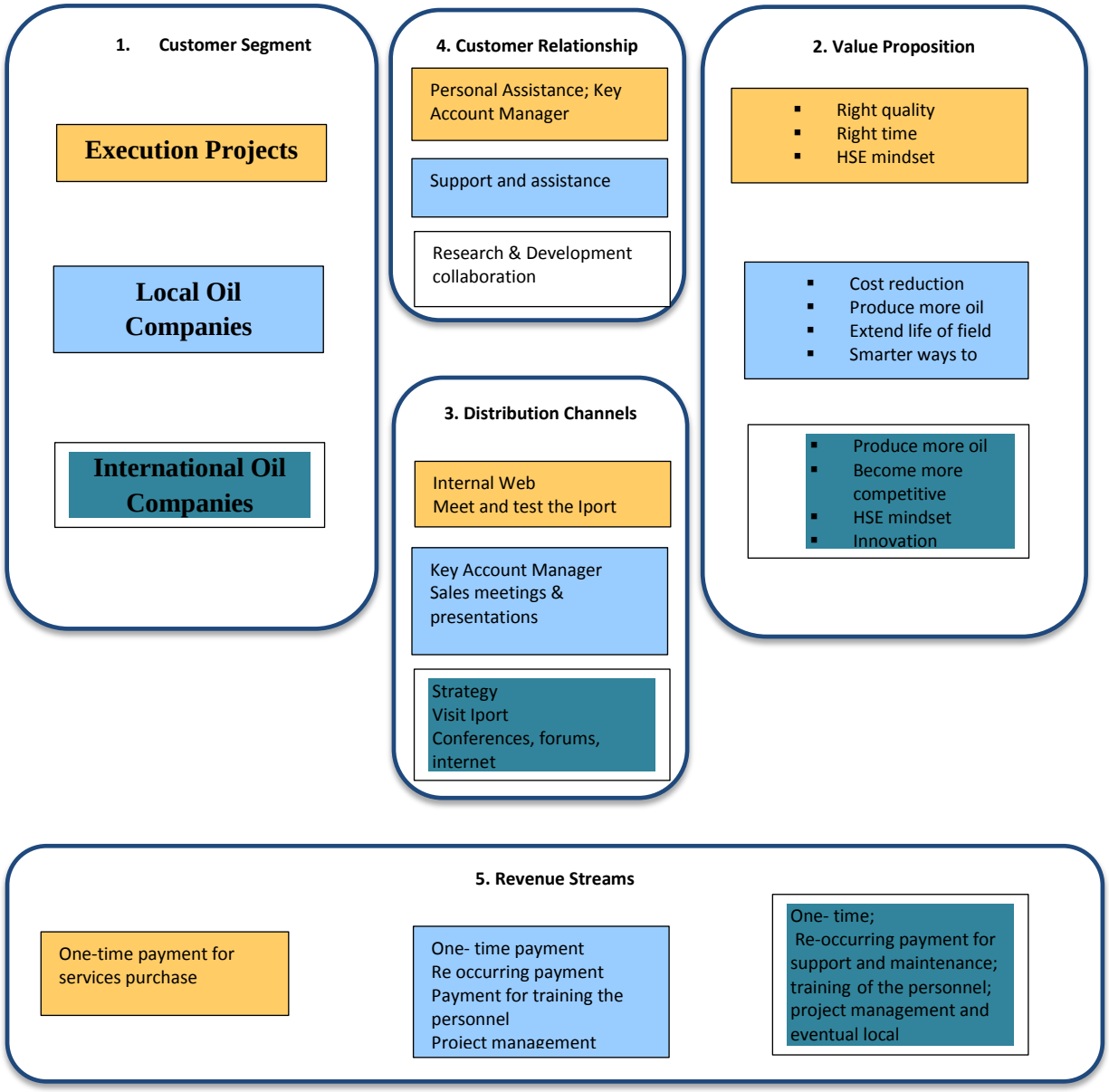

Figure 25. Business Model Visioneering

5.2 SURVEY RESULTS

Since Visioneering services is a new concept, I wanted to understand how many of the respondents were familiar with these services. There were 120 respondents for this survey.

It started with a question: are you familiar with Visioneering services? 82, 5% of respondents (99 people) answered that they were. The rest 17, 5% (21 people) answered “no” (Figure 26).

The reason for that can be that these people were not directly involved in the process of applying the concept; or were not involved through the whole process, so that they did not familiarize themselves with it properly.

100 % = 120 People
82 % = 99 People
18 % = 21 People

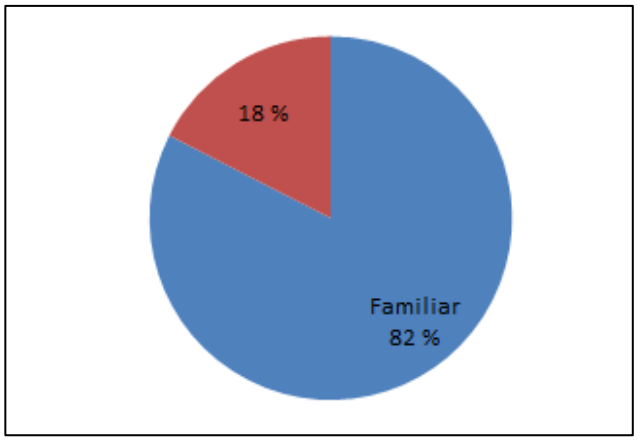

Figure 26. Amount of employees familiar or not familiar with Visioneering Services

According to the results there were 18% of the respondents who answered "they were **not** familiar with the Visioneering Services". However, I did not exclude them out of the rest of the questions in the survey. Even though they answer they were not familiar, they can still have their opinion as for what benefits Visioneering can bring, as all of the informants have experience in working with projects. On the other hand, I ended up with the results which include respondents who were both familiar and not familiar at the same time. But it would be very interesting to extract out those who answered "NOT familiar", and analyze separately the answers given by those who answered "ARE familiar".

The research I conducted cannot identify the names of the employees who answered the questions. Even they were asked to give their names, it was optional, and most of them chose to be anonymous. So in this research it would be very difficult to see who of those answered "no" (I am not familiar), and to extract them out of the rest of the answers.

I suggest that this can be a potential direction for further research, and this will be included into Chapter 8, Suggestions for further research.

Visioneering Services gave "Value for the money"

It was interesting to uncover the employees' perceptions about the possibility of bringing competitive advantage to the company. 92, 5 % (111 people) think client will recognize these new services as bringing competitive advantage to them. And 90% (108 people) of participants are positive and think that making Visioneering services a part of our execution model can bring a competitive advantage to Aker Solutions MMO.

75% (90 people) of the respondents think that Visioneering gave "value for the money" to their project. However, there were 25% (30 people) who did not see the value (Figure 27).

100 % = 120 People
75 % = 90 People
25% = 30 People

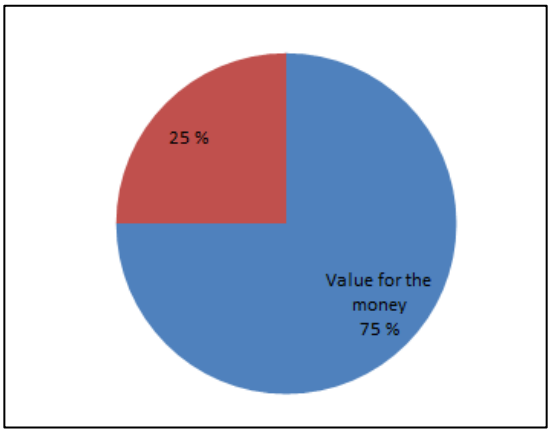

Figure 27. Amount of employees who thought that Visioneering Services gave "Value for the money"

I will include some comments given by those who did not see the value. These comments are very important and can be a direct feedback to the management where the corrective actions are needed either to explain better and make everybody understand how Visioneering can bring value for the money.

- *"As long as the Client pays for the work it gives Money for value - but it costs. Making it mandatory in PEM will, at least on short term, increase our project cost. The next "generation" of the SW (Scope of Work) must have integration between the project PDMS and i-port animation and simulations. Then extra/double work will be avoided, and the real cost savings can be seen"*

- *"Visioneering should be an option and not a part of our standard execution model, because the latter may increase study / execution cost when compared to competitors"*

To summarize this sub- chapter:

- *82, 5% of respondents (99 people) answered that they were familiar with Visioneering. 17, 5% (21 people) answered "no"*

- *75% (90 people) of the respondents think that Visioneering gave "value for the money" to their project. However, there were 25% (30 people) who did not see the value*

5.3 RESEARCH QUESTION: HOW CAN VISIONEERING BRING COMPETITIVE ADVANTAGE TO AKER SOLUTIONS?

As mentioned before Visioneering Services I chose to focus on in this research are 3D animation, Laser Scanning and Iport Training. There were 7 statements for each type of service, and each statement was evaluated on a scale from 1 to 7 by 120 respondents. The scale is explained in Table 12.

1	strongly disagree
2	disagree
3	more disagree than agree
4	neither agree nor disagree
5	more agree than disagree
6	agree
7	strongly agree

Table 12. Scale explanation

Scores from 5 to 7 were of interest; but scores below 5 gave us opportunity to understand where management should take actions

The statements, as I explained earlier, are main advantages that Visioneering Services can bring to Aker Solutions according to the key stakeholders' experience. Results (Table 13) demonstrates that majority of informants sees the benefits from using Visioneering Services and agree that bringing these benefits can contribute to Competitive Advantage of the company. I will analyse each of the mentioned benefits in pairs.

	3D Animation	Laser Scanning	Iport Training & Simulation
Save time for the project	**72 %**	**90 %**	**60 %**
Save hours budget	**63 %**	**90 %**	**55 %**
Made understanding of the jobs easier	**91 %**	**56 %**	**69 %**
Prevented communication issues	**78 %**	**47 %**	**62 %**
Prevented potential incidents/ accidents	**71 %**	**47 %**	**56 %**
Reduced HSE risk	**74 %**	**43 %**	**59 %**
Bring competitive advantage to Aker Solutions	**71 %**	**55 %**	**68 %**

Table 13. Survey Results (Total is 120 informants)

So where are these results situated on the scale from 1 to 7? The results presented in Table 13 are located between scores 5 and 7. This means that the rest of the respondents who did not agree, scored below 5 and their answers could be located on the left hand side of the scale. This applies to all the results in the table.

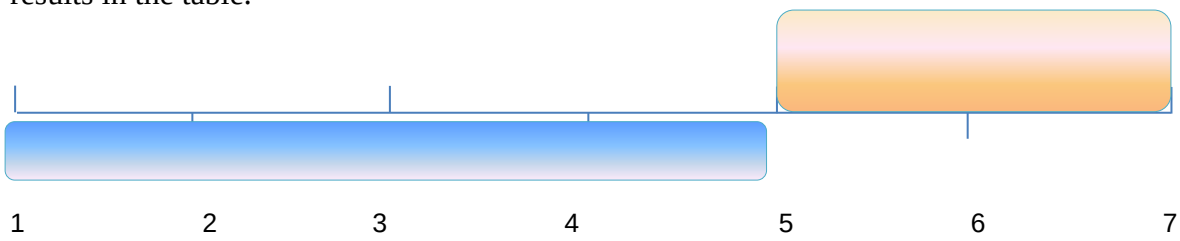

Figure 28. Scale showing Location of the results from 1 to 7.

5.3.1 Saving time and hours budget

Hours are main cost drivers for our clients as mentioned earlier in Chapter 1.1, Market. The more hours our engineers use for the job the more expensive it becomes for the client. However, in the beginning of the project economists estimate amount of hours for each job and make hours budget. This budget after being approved by the client is important to follow during the project. If there are changes to the project scope, it will bring changes to the hour's budget, this can either be paid by the client if agreed in the contract, or have to be paid by the supplier, which is Aker Solutions. In case if Aker Solutions pays for overrunning the hours it will decrease the margins for us, or lead to loss of management bonuses. Usage of Visioneering Services while executing the projects can save time due to better understanding of the job, better planning through visualization, and mitigation of HSE risks. These can help for the project to stay within the hour estimated (Budget hours).

The respondents of the survey mean that Visioneering services contribute to saving time and saving budget hours (Table 14).

	3D Animation	Laser Scanning	Iport Training & Simulation
Save time for the project	72 %	90 %	60 %
Save hours budget	63 %	90 %	55 %

Table 14. Survey Results: Visioneering Services & Saving time (Total is 120 informants)

To summarize this sub- chapter:

- ✓ *72 % agreed that **3D Animation** services can contribute to saving time for the project. 63 % agreed that this type of service to contribute to saving budget hours.*
- ✓ *90% of respondents agreed that executing **Laser Scanning** in the project can contribute to saving time and budgeted hours for the client.*
- ✓ *60% of the informants agreed that **Iport Training and Simulation** can contribute to saving time and 55% agreed that this service can help to stay within budgeted hours.*

5.3.2 Communication

Regarding Communication there were two statements to be evaluated: making common understanding of the job easier and saving for potential communication issues.

There are several parties involved in the project execution on all the phases. Communication between the client and the supplier who is actually doing the job is extremely important as it influences the outcome of the delivery and client's satisfaction.

To understand the task and how to solve customer's challenge Visioneering services can be used in the early phase. Simulation of critical operations in Iport training centre can align all the parties' perceptions. This reduces time for solving potential miscommunications; prevent potential disagreements, and makes understanding of each other easier (Table 15).

	3D Animation	Laser Scanning	Iport Training & Simulation
Made understanding of the jobs easier	91 %	56 %	69 %
Prevented communication issues	78 %	47 %	62 %

Table 15. Survey Results: Visioneering Services & Communication (Total is 120 informants)

To summarise this sub- chapter:

- ✓ *91% agree that **3D Animation** services contribute to making common understanding of the job easier and 78% agreed that this type of service contribute to saving for potential communication issues while project execution.*
- ✓ *56% or respondents agree that **Laser Scanning Service** contribute to making common understanding of the job easier and 47% agreed that this type of service contribute to saving for potential communication issues.*
- ✓ *69% agreed that **Iport Training and Simulation** contribute to making common understanding of the job easier and 62% of the respondents population agreed that this type of service contribute to saving for potential communication issues.*

5.3.3 Incident prevention and Risk mitigation

To prevent incidents is always on the agenda for a project manager in Aker Solutions, according to my observation. HSE managers initiate various programs and conduct special measures to prevent potential incidents or accidents. An incident is an unplanned event which (depending on the circumstances) may lead to a damage, disaster, or loss. Incident can have a potential to lead to more serious consequences and even to an accident. An accident is an unplanned, unexpected, and undesigned (not purposefully caused) event which occurs suddenly and causes injury or loss, a decrease in value of the resources, or an increase in liabilities (Business Dictionary online, http://www.businessdictionary.com/definition/accident.html).

When it comes to risk mitigation, we are talking about conducting measures for reducing existing risks, or/ and potential risks.

	3D Animation	Laser Scanning	Iport Training & Simulation
Prevented potential incidents/ accidents	71 %	47 %	56 %
Reduced HSE risk	74 %	43 %	59 %

Table 16. Survey Results: Visioneering & HSE. (Total is 120 informants)

To summarize this sub- chapter (Table 16):

- ✓ *71% agreed that using **3D Animation** prevent potential incidents/ accidents; 74% of respondents mean that 3D animation contribute to risk mitigation;*
- ✓ *47% agreed that using **Laser Scanning** in the project contributes to potential incidents/ accidents prevention; and 43% meant that it helps to reduce risk.*
- ✓ *56% agreed that **Iport Training and Simulation** services contribute to prevention of accidents; and 59% think that this type of service mitigates risks for the client.*

5.3.4 Competitive Advantage

Benefits mentioned before (the 6 statements) are advantages that Visioneering Services bring to the client's project. Let us have a look at the numbers the survey gives, whether Visioneering Services bring competitive advantage to the company according to employees' perception. Table 17 shows the following:

- ✓ *71% of the respondents agreed that **3D Animation** brings Competitive Advantage*
- ✓ *55% agreed that **Laser Scanning** brings Competitive Advantage*
- ✓ *68% agreed that **Iport Training & Simulation** contributes to Competitive Advantage*

	3D Animation	Laser Scanning	Iport Training & Simulation
Bring competitive advantage to the company	71 %	55 %	68 %

Table 17. Survey Results: Visioneering & Competitive Advantage. (Total is 120 informants)

3D Animation and Competitive Advantage Average

Another way to understand these numbers is to compare average percentage of the results received from all the 6 statements (Average is marked with yellow) for each service to the last statement: "Bring competitive advantage to the company?" which is marked with green (Table 18). If the difference between the two compared is less than 10%, then I consider results to be supportive to each other and confirming each other.

	3D Animation	Laser Scanning	Iport Training & Simulation
Save time for the project	72 %	90 %	60 %
Save hours budget	63 %	90 %	55 %
Made understanding of the jobs easier	91 %	56 %	69 %
Prevented communication issues	78 %	47 %	62 %
Prevented potential incidents/ accidents	71 %	47 %	56 %
Reduced HSE risk	74 %	43 %	59 %
Average	75%		
Bring competitive advantage to the company	71 %	55 %	68 %

Table 18. Survey Results: Vertical Comparison of the results (3D Animation). (Total is 120 informants)

Summarizing yellow marked numbers and divided them by 6, the average equals 75%.

The difference between 71% and 75% is not a big issue; therefore these two numbers confirm and support each other. This gives an indication that over 70% have a very positive experience and perception of this type of services when it comes to its contribution to Competitive advantage.

- ✓ *70% agree that 3D Animation contributes to Competitive advantage*

Laser Scanning and Competitive Advantage

Looking at the results Laser Scanning has given (Table 19), the average is 62%. Comparing 62% (yellow) and 55% (green) in the same table, I see that there is 7% difference, that represent 8 people from 120. I admit this deviation is due to a considerable difference we can see from the table. 90% of the respondents agreed that Laser scanning save time and hours budget.

I consider the result to be over 50% is a positive result, and 7% is not a very large difference, so 62% and 55% support each other.

	3D Animation	Laser Scanning	Iport Training & Simulation
Save time for the project	72 %	90 %	60 %
Save hours budget	63 %	90 %	55 %
Made understanding of the jobs easier	91 %	56 %	69 %
Prevented communication issues	78 %	47 %	62 %
Prevented potential incidents/ accidents	71 %	47 %	56 %
Reduced HSE risk	74 %	43 %	59 %
Average		62%	
Bring competitive advantage to the company	71 %	55 %	68 %

Table 19. Survey Results: Vertical Comparison of the results (Laser Scanning). (Total is 120 informants)

- ✓ *62% of the respondents agreed that Laser Scanning contributed to competitive advantage*

Iport Training & Simulation

When it comes to Iport Training & Simulation for the project execution, all the results shown in the Table 20 are over 50%. The average is 60%, while the amount of respondents who agreed on the statement "Iport Training & Simulation Brings competitive advantage to the company" is 68%. It gives an indication that Iport Training & Simulation is perceived in a very positive way when it comes to bringing competitive advantage. 60% and 68% confirm each other.

	3D Animation	Laser Scanning	Iport Training & Simulation
Save time for the project	72 %	90 %	60 %
Save hours budget	63 %	90 %	55 %
Made understanding of the jobs easier	91 %	56 %	69 %
Prevented communication issues	78 %	47 %	62 %
Prevented potential incidents/ accidents	71 %	47 %	56 %
Reduced HSE risk	74 %	43 %	59 %
Average			60%
Bring competitive advantage to the company	71 %	55 %	68 %

Table 20. Survey Results: Vertical Comparison of the results (Iport Training & Simulation). Total is 120.

✓ *60% of respondents perceive that Iport Training and Simulation Services contribute to Competitive Advantage in Aker Solutions*

Open questions

Open questions were mostly used for double checking the perceptions respondents expressed before by evaluating the scales.

- **In your opinion what was the most valuable contribution of using Visioneering services in your project?**

  The informants gave various answers and comments (APPENDIX B) that I grouped in several categories: answers or comments related to communication and better understanding; comments related to better planning, which is relevant to saving time and/ or hour's budget; comments related to hse improvement; and answers mentioned "Iport" in general. I suppose all the known benefits that they have experienced in their project were meant by "Iport".

  These answers confirm those ones I received from questions presented earlier in this chapter. This demonstrates reliability of the results.

- **Do you think client will recognise these new services as a competitive advantage?**

There was only 1 answer with “no”, while the rest was “yes.

- **Where do you see potential for improvement in application of Visioneering services in your project?**

  There were some comments that have been brought further to the management to see what work can be done to improve services delivery. Some of them were as follows:

  “Input to Visioneering was very time consuming. Visioneering needs to be able to work more independent with less input from the project”

  “Material Handling, study and detail design”

  “Risks/problems are only deleted in simulations if all the necessary structures are inserted in the system. That means those risks have to be recognised before by a "human" (offshore surveys, etc), so that later they can be part of the simulation process.”

  “Must be integrated with the PDMS development in the project. Currently it is lagging one step behind, meaning that personnel doing the 3D design must in detail inform what to include in the animations and simulations.”

- **Do you think making Visioneering services mandatory requirement in our PEM system will lead to that every project will use it?**

  This question is very interesting to look at. Having answered such a great amount of “yes” to all the previous questions, around 50% of respondents answered “no” to this particular question. The reason could be various challenges that rise up when trying to implement Visioneering in the execution model. These challenges are discussed in a Discussion chapter “Implementation of Visioneering in Aker Solutions”.

6.0 Discussion

In this chapter I will start with considering strengths and weaknesses with the theoretical approach I have selected. Then I will discuss advantages and disadvantages of method I have used. And will be critical to myself as for how I have done this work, reflecting on what could have been done differently. At the end I will discuss the results and their reliability.

Through the chapter I will be suggesting how the results of this research can be applied in the practical reality of Aker Solutions' business, and what can be topics for eventual further research.

6.1 THEORETICAL APPROACH

I started with the theory of Competitive advantage. I mean that it was absolutely necessary to start with, because with the help of several sources I defined what a competitive advantage is and made a choice to concentrate with differential advantage, excluding a comparative advantage. However, the weakness is that I did not distinguish the competitive advantage and the sustained competitive advantage I details. How to reach and maintain sustained competitive advantage could be a potential subject of further research. Sustained competitive advantage could be a potential direction for further research. How long can competitive advantage remain a competitive advantage? And what is in that gap between a competitive advantage and sustained competitive advantage for Aker Solutions in case with Visioneering? This can be questions to answer by that eventual research work.

To continue to answer the main question "How can Visioneering bring a competitive advantage to Aker Solutions", I looked at the activities Visioneering performs to create the margins. Here I decided to use the theory of Value Chain (Porter), and projected Visioneering's activities in to it. This is a model I have built myself (Figure 5) and it did not exist before, so it is as a contribution to the department as well as to the theory of Value Chain.

However, the weakness with this model is that it contains much more elements than what I have explained in this work. The scope of this work has its limitations. I decided to concentrate on the 3 (three) main services: 3D Animation, Laser Scanning and Iport Training & Simulation. I did not explain in details about the support activities and did not include them into the survey neither. If I decided to do that, it could have given a broader overview to the reader who is not familiar with Visioneering as the employees of the company are. On the other hand, it could have been the overflow with information about the company, and could have provoked "red thread" of the thesis to disappear in this amount of information. That is why I chose to limit the scope.

One of the main theories I took this Thesis from is Resource- Based View by Barney. According to his classifications, an organization has organisational resources. As I mentioned Aker Solutions has its working process called PEM, Project Execution Model.
The intention to include PEM in thesis was to explain that there is a working structure in Aker Solutions where Visioneering can eventually fit to. Visioneering could fit to the tender phase, when the offer is being created for a client, even before signing a contract. However, not all of the respondents thought it would be a good idea:

"Visioneering should be an option and not a part of our standard execution model, because the latter may increase study / execution cost when compared to competitors" (one of informants)

Visioneering with all the benefits it brings is supposed to help cost reduction, which is opposite from what the comment showed. The respondent thinks that it is going to be more expensive if including Visioneering services as an innovative concept, but instead this concept is going to bring something new to reduce cost.
This comment gives an indication to me, as a manager, that there is a work to do to change people's way of thinking. In fact, having reviewed the internal documents of the company, these are some of the areas where the cost will be reduced:

- Installations and critical lifting operations
- Hook-ups
- Shutdown logistics
- Material handling
- Layout challenges
- Removal and decommissioning

These reduce engineering and installation time, as well as man hours. It may also contribute to reduced or avoided shutdown (www.akersolutions.com).

This comment is given by one of the informants: *"Waste of time and money. There are still many factors which are not in place yet in the beginning phase»*

This person might have not understood the meaning of Visioneering services yet. The whole point with offering Visioneering services to the client is to understand what their challenge is, and offer a solution to overcome that challenge. There are not all things in place as the respondent meant, but with the help of Visioneering it can change if including it at an early/ beginning phase.

One of the benefits Visioneering can offer is to make a better plan and help to understand the job easier, so there can be many reasons for answering negatively to "Visioneering gives value for the money", and one of them may be due to a wrong understanding of when Visioneering services should be used and how to bring the value for our clients, and consequently competitive advantage to the company.

For the management this kind of answer gives an indication that there are some employees who do not have a clear understanding of the value of this innovative concept. What could be the reasons for this? Lack of awareness, lack of information, knowledge? This can be a topic for further research.

"As long as the Client pays for the work it gives Money for value - but it costs. Making it mandatory in PEM will, at least on short term, increase our project cost. The next "generation" of the SW must have integration between the project PDMS and i-port animation and simulations. Then extra/double work will be avoided, and the real cost savings can be seen"

If the research was on going for a longer period of time, it could have been possible to check if these statements are true or not after having implemented Visioneering into PEM. This could have been the only way to check this in order to be able to conclude with 100% reliability.

I chose to explain PEM in a short way; however, I did not go to the details of this model. If I did, I could have written another Master Thesis just about PEM. The disadvantage is that this model is very complex and there are many people, who are working on its constant improvement, which can require a very long time to make a decision for such a big change: include Visioneering in PEM.

6.2 STRUCTURE OF THESIS

When it comes to Structure of this Thesis (Figure 4), there is a model I drafted that I believed would help me to find the results I was looking for, and answer the question "How can Visioneering bring Competitive Advantage to Aker Solutions".

However when I did what I intended to, I realized that there is a deviation from that model.

In reality the way method was is presented by Figure 28.

Figure 28. Structure of Thesis reviewed

There were two rounds of interviews with two different groups. The outcome of the first round was data for building Business Model. The outcome from round two was the input for survey.

Below (Figure 29) is the initial way of thinking I planned to collect data when the work was started. I see now that Figure 28 shows a better and a more structured way of collecting the data. Instead of numerous presentations, interviews and discussions I have conducted to rounds of interviews with certain groups of people. That gave me an input for Business model and the questions I should include into the survey. Also I see that in the beginning I did not have a very clear picture of whether I will do survey at the same time with drafting business model or not. Because how can one run a survey earlier than Survey questions are in place? So the model has its deviation. And it is for the better.

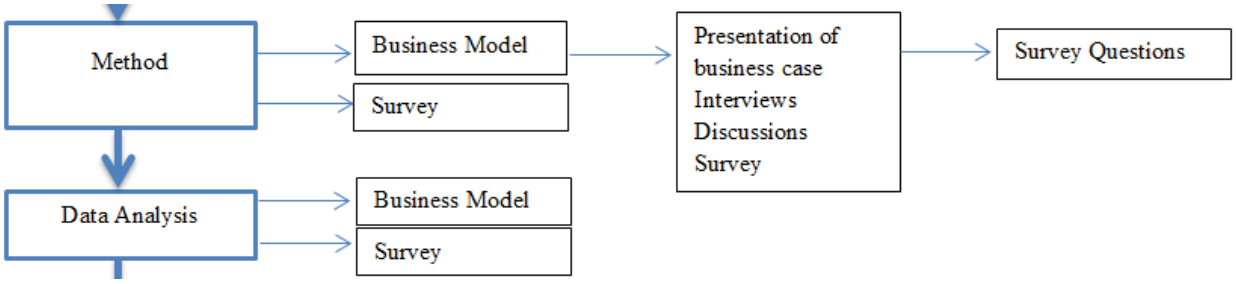

Figure 29. Copy Structure of thesis (planned)

6.3 BUSINESS MODEL

The Business model theory is built with five main blocks as presented by Osterwalder and Pigneur (2010), and I added that with output collected from the interviews with the informants who are employees in the company. Business model gave me a better overview of Visioneering Concept, and served as a platform to proceed with the survey. Survey gave me a picture of how the Visioneering Services has to offer is perceived by the employees, and whether they are recognized to give competitive advantage to Aker Solutions. Totally this approach, where theory and technique are combined, is "tailor- made", therefore is not applicable for other research works.

The way I built up the "red thread" of thesis: from theory of competitive advantage- value chain – business model- and the survey is developed for this work, and this combination has not been used or presented anywhere else before. This can be considered as a contribution to the discipline of strategic management.

Business model framework from Osterwalder and Pigneur (2010), I think, has the advantage of being simple to understand and practical to apply. It was a helping tool for me to map the main elements of Visioneering Services as a concept.

The five steps I used from this framework turned out to be a success as they helped me to collect valuable data to proceed further to the survey. It was an advantage of this method to start with identification of customer segments. It guided me to a decision to do segmentation, and this was used through steps 2 to 5, to map value proposition according to each segment, distribution channels, types of customer relationship, and the revenue streams.

However, in step 2 the approach was "one-sided". I mean, that Value proposition for each segment was evaluated from the side of Aker Solutions' opinion, and not from the clients' opinion. Had I asked the clients' companies, may the result have been different?..

The channels of distribution were also analysed from the point of view of the employees, according to what they perceive to be the most "effective" or be "best practise" for Aker Solutions.

However, I did not divide the distribution process into more detailed parts like: providing information, (marketing), building customer awareness and understanding, giving first impression, providing the services and following up & support delivery. Each of the phases within distribution could have had its channel to reach the different segments. This could have been an alternative way to collect data.

6.4 DATA COLLECTION

Speaking about data collection, I cannot avoid mentioning special times oil and gas industry is going through at the moment when data was collected.

At the time when I was planning this research the market was in a prosperous condition. I collected the data and run survey before anybody was affected by the crises.

After the survey was done, Aker Solutions lost several contracts and had to lay down hundreds of its employees. Unemployment in the market considerably increased, and oil companies- operators stopped investing their money, so service companies did not have enough jobs to do. This would have influenced the results of my research, no doubt, if I was running the survey during the crises.

The results might have been completely different, if timing was different.

The survey has proven that Visioneering services are perceived by the informants as being able to bring competitive advantage to the company. How? By bringing such benefits like saving time for the project, helping to stay within hours' budget, improve communication by reducing potential misunderstandings and helping to agree on the job; reducing HSE risks, and preventing accidents. Thus, I could argue that I answered the research question: How can Visioneering bring competitive advantage to Aker Solutions. Yet, to consider the main definition of a competitive advantage given by Barney (1989) "a company generates competitive advantage when it implements valuable strategy that is not simultaneously implemented by neither existing nor potential competitors, by minimizing or avoiding the weaknesses and utilizing the strengths",

I would like to take Business Model for Visioneering into account too. The reason for that is that I mapped customers' needs according to segments and combined value proposition for each of them. In addition, I realized how to make the winning strategy that leads my company to a competitive advantage. However, it would not be enough just to have a business model without unique resources Visioneering (as a concept) has. Therefore, the resources enabled us to perform the activities building the Value Chain. To underline, the question of this Thesis was answered with the help of Business Model + Value Chain of Visioneering+ Survey.

For the survey, I could have chosen a larger population but I decided not to do that. I rather wanted to concentrate on the informants who obtained specific knowledge. I could have chosen to go directly to oil companies who are the main clients instead of researching internally on Aker Solutions' employees. The solution to invest into Visioneering concept was taken internally as an initiative to solve the industry challenge. We could have spoken to the main companies- operators, who are our clients, before taking this decision, but their answer might have been that they were not willing to pay for this kind of solution due to a very high cost.

Alternative way to collect the data instead of survey is to arrange a brainstorming session with the oil companies- customers, together with our project managers. During this session they could express their feedback regarding Visioneering services' impact on the projects. The survey saved me some time and effort just being sent via email to all the 120 informants. If I decided to go for a brainstorming session, I would need to split the respondents in 3 -4 groups to make sure I catch what everybody said. In addition, due to current situation in the market and cost saving measures I took a management decision to conduct a survey.

There was one comment doubting clients' will to pay for expensive services.

"Too much work for the project compared to the gain. Most likely very expensive for our customer, I'm not convinced they are willing to pay for this service in the future. Product is nice to have for presentations, but requires a lot of time and money…"

However, there were several clients who were paying for Visioneering services already and they were satisfied, having achieved the desired results.

The research in this work was qualitative. It was a preferred method due to the need to obtain a better understanding of the research problem and also due to a limited number of respondents. This method worked well, and I doubt whether usage of a quantitative method would have functioned in the same way. Visioneering is an innovative concept, so the number of those who were familiar with it was not so large; therefore I doubt the quantitative method. The most interesting experience I received was when I was talking to the top managers to understand how they perceive Visioneering as a concept which can bring competitive advantage. Also, the feedback that the respondents gave in the survey gave me the picture of different opinions regarding Visioneering and values it can bring to the company.

As for the results presentation, I wanted to make it simple, and chose to use a table. However, I could have used some more advanced software to analyse the results and present various graphics.

6.5 WAY FORWARD TO ANSWER THE RESEARCH QUESTION

As was mentioned in the beginning I was going to send survey to 200 employees, however I estimated it wrong. In reality, there were 120 respondents participating in the survey. Due to the market reduction for Maintenance, Modifications and Operations, Aker Solutions had to reduce it's employees(http://www.dn.no/nyheter/energi/2015/02/18/1259/Oljeservice/aker-solutions-kutter-inntil-300-stillinger-i-norge). In Stavanger there were 175 people who left the company (http://www.offshore.no/jobbsak/62229_beerenberg_og_aker_kutter_325) in 2014. There were around 80 people who were supposed to be in the group of respondents for my survey.

6.6 GAMING TECHNOLOGY

In my thesis I mentioned that gaming technology is the industry "we should learn from". I did not describe in the details about what kind of technology it is, and what it consists of. Instead I found it relevant to mention that oil industry should look at gaming technology when searching for "*new combinations*" as part of innovation. For me it was an inspiration, and I mentioned it as the inspiration source, but I did not describe in details of what exactly it consists of and how to integrate this technology in our business. I just mentioned that Gaming technology is where we should learn

from. Visualisation tools are widely used in computer games to make it an experience rather than just a game for those who play. OE magazine (Nov 2013, OE) tells that the way Gaming technology is running today is more practical and economical to use, in addition "the powerful graphics is able to simulate the physical properties and appearance of objects". As example, AVEVA has recently started its Aveva Activity Visualisation Platform (AVP). The system used by this company combines laser scanning and 3D animations to create a virtual reality.
AVP is a training environment where the objects display all the characteristics they would have in the real world. However, that this kind of change can take some time to implement in Aker Solutions today. There are many things that must happen for this to be realized, for example, the customers should be willing to pay for this solution, the culture should be "open" to include Visioneering as a part of our delivery, eventually make it a part of PEM to be an obligatory step in our relationship with clients.

The advantages are that gaming technology has several years for developing games, and hundreds of specialists working on the design, physics, texture, lightening, geometry etc. However, games have simple way of control with the help of a joystick or a keyboard. In the oil industry the demands and requirements are much higher. We have to use 3D models engineers apply, we have to use real geometry, accurate physics and real control systems as input. And even though "you can try and die, and start over again", it is important to remember that the more scenarios you try out the better results can be achieved.

"One day in a simulator such as Iport Training Facility saves one day of non-productive rig time" (Key- architect and founder of Visioneering in Aker Solutions).

As one of the respondents from top management said:

"Serious games are simulations of real-world events or processes designed for the purpose of solving a problem. Although serious games can be entertaining, their main purpose is to train and to educate" (Key- architect and founder of Visioneering in Aker Solutions).

Based on the survey results, I see that top management should support and encourage the process to push the change through and make our employees to be willing to embrace the innovative solution. Change always needs a "push" in the beginning. I have experienced that myself in my professional career. According to my opinion, oil and gas industry is very conservative. It may take up to 2 years

to accept the changes in this innovative technology. However, this is the matter of discussion for such disciplines as “fremsynsledelse” and change management.

6.7 DISCUSSION OF RESULTS

Introduction questions were asked to understand how large that part of respondents who were actually familiar with Visioneering Services is. Even though I expected 100% of them to respond positively, there were 18% who said they were not familiar. How can that be possible I wondered?.. I can make an assumption that not all the respondents were involved in a process from the very beginning and until the end. Those who joined parts of the process could have been not familiar with all the details of the concept.

Implementing this concept is something new, and I assume that there are many employees who are not ready for embracing the change, which builds part of a culture in the company. This may be a reason of why some of the employees choose not to get involved into all the details of Visoneering. In addition, it is more difficult for older people with long work experience in our system to learn about gaming technology. These reasons can lead to negative answers. 75% (90 people) of the respondents think that Visioneering gave "value for the money" to their project. However, there were 25% (30 people) who did not see the value (Figure 27, Chapter 5.2 Survey Results).

- *The 3D animation was done after the study was developed. The client did not continue to execution which made the 3D Animation more of a marketing tool rather than useful”*

- *“Too much work for the project compared to the gain. Most likely very expensive for our customer, I'm not convinced they are willing to pay for this service in the future. Product is nice to have for presentations, but requires a lot of time and money. To defend Visioneering, they were involved late in the project. The method for installation was mostly finished prior to their involvement.”*

- *«Bruk av tid og penger, sluttproduktet er ferdig når balkongene er installert, kan ikke brukes i forkant. mange faktorer som ikke er på plass i startfasen»*

- *“As long as the Client pays for the work it gives Money for value - but it costs. Making it mandatory in PEM will, at least on short term, increase our project cost. The next "generation" of the SW must have integration between the project PDMS and i-port animation and simulations. Then extra/double work will be avoided, and the real cost savings can be seen”*

However, the percentage of the respondents who answered in a positive way was very high. We want our customers to see that applying Visioneering Services will bring "value for the money", therefore it is important internally we see that too. So those 25% who answered "no" is where our management needs to do a job to investigate the reasons and make a strategy to show the real value.

Validity and reliability

Due to the fact that me myself was collecting primary data with the help of survey, and I was also creating the survey questions, and interviewing the respondents, the data is quiet valid. Validity is defined as "the extent to which an account accurately represents the social phenomena to which it refers" (Silverman, 2011). I discussed the results received from the survey with employees directly involved in providing Visioneering Services, and assured the quality of these.

Reliability is defined as "refers to the degree of consistency with which instances are assigned to the same category by different observers or by the same observer on different occasions" (Silverman, 2011). The respondents group has to be representative for the population, and there should be a certain degree of a match between the answers respondents give. To ensure good reliability were two rounds of interviews and a survey conducted. Over 85% of 120 employees answered the survey. To create questions for the survey I interviewed the employees to see what they meant could be benefits Visioneering can bring. These assumptions were evaluated in the survey, and I got confirmation the results I have got when collecting input for survey questions, I can say the answers were quiet reliable.

However, there is some potential for the results to be unreliable. The data collected could have been not reliable enough when it comes to drafting business model. I have spoken to top management (Table 2) when building the business model, and not to those of segment representatives. There is no guarantee that the top management's opinions are the same/ similar to those of each segment representatives. Also, I cannot be so sure that I have identified all the segments for Aker Solutions that Visioneering can bring value to. There is a risk that there are other segments

Response bias can also influence the information given by survey respondents, and can have considerable effect to the validity of the research (Newman W. L., 2009)

To strengthen the validity I have presented business model to management and received positive confirmative feedback. Survey questions were built on the opinions of the top management, and the results of the survey confirmed the assumptions that have been made in the beginning (Table 3). Therefore I consider the results of this research to be valid.

This research has an explorative design, and did not have an aim to generalize its results.

6.8 IMPLEMENTATION OF VISIONEERING IN AKER SOLUTIONS

Based on the results of both business model and the survey I see that the majority of the respondents perceive Visioneering services as bringing competitive advantage to Aker Solutions.

However, I observe several challenges when it comes to embracing this innovative concept, including it in PEM and incorporating into our business "as usual".

First of all, customer's fear about the cost. If customer does not understand the value of Visioneering services and does not see how applying Visioneering concept can reduce or save cost, he will be feared to embrace this technology, perceiving it as additional cost, not "add value".

And nowadays when the focus of the customer is cost reduction, this can actually be a reasonable fear.

Another challenge is timing. Visioneering as a solution can bring value to the project if included from the early phase not in the middle or the end of a project. In Aker Solutions at the moment there are several projects that already have started and are on- going. To implement Visioneering services in the middle of a project can be costly and will require time for onboarding people into it, which can bring potential risk to not be on time when it comes to delivery.

One more challenge that can be faced when including Visioneering is software. Iport and Simulator need specific software with platforms' details. There are two options of how to develop this software: either to buy this service from an external partner (outsource) or to produce it internally ourselves. I suggest that Aker Solutions develop this type of competence and produce its own software. It can be an investment related costs in the beginning but this competence can be used in future projects.

In addition, there is a challenge to introduce a new technology, an innovative concept into the way we work in Aker Solutions. Some line managers think that there is no need to invent a new method, unless the old one works, even though it is much better. And it is a paradox that even though a decision was made by top management to invest into Visioneering concept, and build the facility, there are still some leaders in the middle management level who are not open minded enough to embrace the innovative "know- how". This indicates on the perception gap between top management and middle management, and reminds me of a "theory of Agent- Principal", however this discussion I will not take now and here. This gap can be a matter of investigation for a potential further research.

However, to solve this challenge top management should actually influence middle management, using a so called "top- down" strategy. Working Smarter initiative that I mentioned in the beginning of this Thesis started to teach courses for middle management and tell them about Visioneering and how it can bring value to their projects. However, the challenge is that the organization is very large, and middle managers were not involved into decision regarding Iport facility investment.

We expected to get the return on investment very quickly by making Visioneering an extra service for the projects, and sell it in addition to standard execution, procurement, construction and engineering model. However, time showed that it is very difficult to realize and we have to include the concept into the execution model as the early stage, making it a part of the model from the beginning, not as an additional separate service.

To approach this challenge I suggest that Visioneering become part of PEM. This can give a formal reason to include Visioneering into client's offer, when participating in tender process.

In this case the price for Visioneering services will be also included into the total estimated project price, and not stand out as an additional cost.

It is also very important to make it clear and explicit for the client that Visioneering services are unique and can bring a "different" value in comparison to what companies- competitors could have brought. This requires a professional sales team to be able to communicate the right message in the right way. Suggested solutions to mentioned challenges are collected in the Table 21.

Challenges	Suggested solution
Customer's fear regarding additional cost	**Include Visioneering into client's offer from the beginning with price included into the offer**
Customer's wrong perception of Visioneering as expensive	**Assure professional communication to make sure customer understands that Visioneering is a differentiator and Not an "add cost"** **Professional sales team is required to communicate the right message**
Timing to introduce Visioneering has to be accurate	**Incorporate Visioneering into PEM, and allocate it in the tender phase for all the projects**
Software development for simulations in Iport	**Instead of outsourcing software development, produce ourselves internally. For doing that, we need to develop competence among our employees.**
Top management and middle management misperceptions	**Arrange teaching courses for line managers (middle management) to inform them about Visioneering and what value it can bring. Courses as a part of Working Smarter Initiative.**
High expectations to get paid for every service separately	**Change the approach and include Visioneering in project execution, payment for the whole concept should be included in the offer**

Table 21. Suggestions for solving the challenges

7. Conclusion

Conclusion of this Master Thesis will summarize all the results I have come up with while doing this research.

Thesis question is:

How can Visioneering Services bring Competitive Advantage to Aker Solutions- Maintenance, Modification and Operation?

I have executed a survey that helped me to find out how employees in Aker Solutions perceive the benefits Visioneering bring to the projects.

7.1 MAIN RESULTS

My conclusion is that Visioneering can bring Competitive Advantage to Aker Solutions.

It brings a competitive advantage by providing clients with the following benefits: saving time for the project, saving hour's budget; making it easier to understand a job, preventing potential communication issues; mitigating risks and preventing potential accidents and incidents. The replies given by respondents were located on the scale between scores 5 to 7.

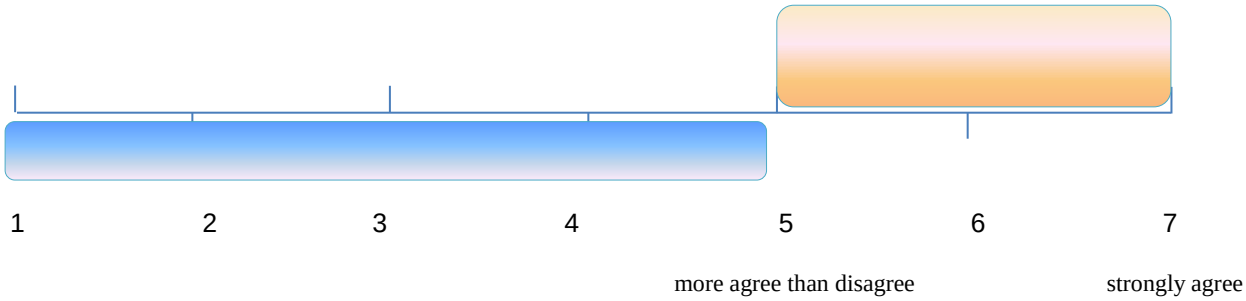

Figure 31. Scale showing location of main results

7.1.1 SAVING TIME AND HOUR'S BUDGET

✓ *72 % agreed that **3D Animation** services can contribute to saving time for the project. 63 % agreed that this type of service to contribute to saving budget hours.*

✓ *90% of respondents agreed that executing **Laser Scanning** in the project can contribute to saving time and budgeted hours for the client.*

✓ *60% of the informants agreed that **Iport Training and Simulation** can contribute to saving time and 55% agreed that this service can help to stay within budgeted hours.*

7.1.2 IMPROVE COMMUNICATION

✓ *91% agree that **3D Animation** services contribute to making common understanding of the job easier and 78% agreed that this type of service contribute to saving for potential communication issues while project execution.*

✓ *56% or respondents agree that **Laser Scanning Service** contribute to making common understanding of the job easier and 47% agreed that this type of service contribute to saving for potential communication issues.*

✓ *69% agreed that **Iport Training and Simulation** contribute to making common understanding of the job easier and 62% of the respondents population agreed that this type of service contribute to saving for potential communication issues.*

7.1.3 INCIDENT PREVENTION & RISK MITIGATION

✓ *71% agreed that using **3D Animation** prevent potential incidents/ accidents; 74% of respondents mean that 3D animation contribute to risk mitigation;*

✓ *47% agreed that using **Laser Scanning** in the project contributes to potential incidents/ accidents prevention; and 43% meant that it helps to reduce risk.*

✓ *56% agreed that **Iport Training and Simulation** services contribute to prevention of accidents; and 59% think that this type of service mitigates risks for the client.*

7.1.4 COMPETITIVE ADVANTAGE

✓ *71% of the respondents agreed that **3D Animation** brings Competitive Advantage*

✓ *55% agreed that **Laser Scanning** brings Competitive Advantage*

✓ *68% of respondents perceive that Iport Training and Simulation Services contribute to Competitive Advantage*

7.1.5 AVERAGE COMPETITIVE ADVANTAGE

✓ *70% agree that 3D Animation contributes to Competitive advantage*

✓ *62% of the respondents agreed that Laser Scanning contributed to competitive advantage*

✓ *60% of respondents perceive that Iport Training and Simulation Services contribute to Competitive Advantage in Aker Solutions*

7.2 SUPPORTIVE RESULTS

Having conducted interviews with top management I collected data that helped me to draft the business model presented below (which was already mentioned earlier in Chapter 5.2 Business Model, Table 21). This model is the result of my understanding and data analysis. My conclusion is that there are 3 main segments that Visioneering should focus on to sell its services. To do that it is important to consider such elements like channels of communication, what type of relationship should be built, what is the value proposition for each segment. This knowledge can allow us to create a unique strategy to reach better revenues.

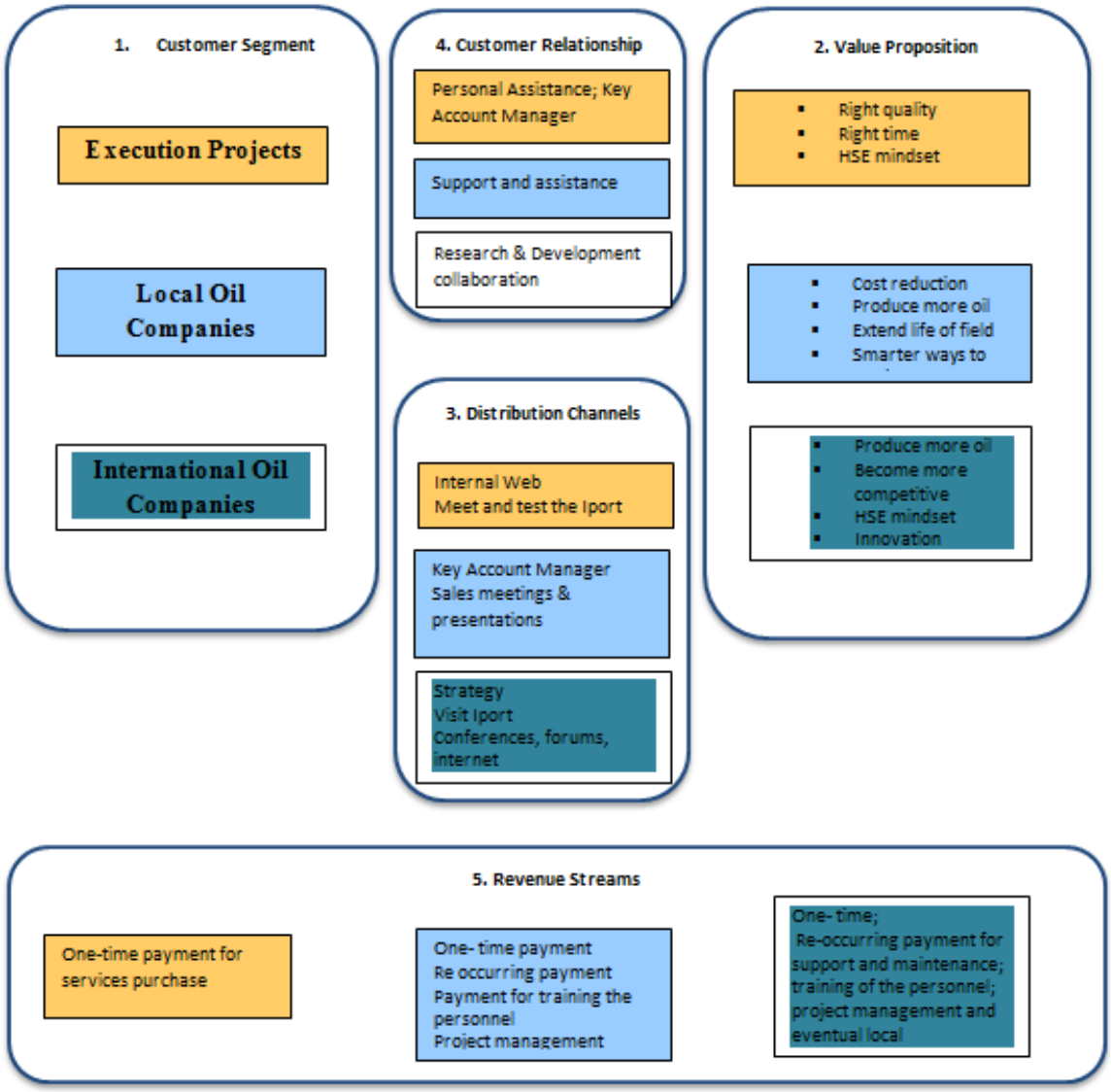

Figure 25. Business Model Visioneering

Figure 32. Copy of figure 25. Business Model Visioneering

According to the results, there were 18% who said that they were not familiar with the Visioneering; and 25% who did not see value for the money. In addition all questions regarding benefits that Visioneering services can bring to the clients resulted in lower than 100%. Therefore, I would like to suggest the following recommendations:

- ✓ To include Visioneering into our execution model and make it a common method to execute projects; and make Visioneering part of the business offer from very beginning;
- ✓ To position Visioneering it as a differentiator in the offer;
- ✓ To include price for Visioneering services into the offer;
- ✓ Not to offer Visioneering as an extra service after the project has already started;
- ✓ Arrange courses as a part of Working Smarter Initiative to teach about Visioneering;
- ✓ Use business model to understand Visioneering as a concept (Figure 32).

8. Suggestion for Further Research

- Since this research was done when oil price was under 60$ per barrel oil equivalent, will be interesting to execute similar research when oil price is up to 120$

- Could be interesting to research how Visioneering can bring competitive advantage in other parts of the world: Region Asia, North America or South America, where Aker Solutions has a strong presence

- This research's respondents were internal employees of the company. This research could give different results if the respondents were main customer segments: Oil Companies local or international

- Since scope of this research was around Competitive Advantage, it would be interesting to research on the gap between a Competitive Advantage and Sustained Competitive Advantage

- According to the survey answers, there are some employees who did not have a clear understanding of the value of Visioneering concept. What could be the reasons for this? Lack of awareness, lack of information, knowledge? This can be a topic for further research as well

- It would also be interesting to conduct exactly the same survey among our clients. The answers between clients and us could be compared and gap analysed.

- The survey conducted in this thesis cannot identify the names of the employees who answered the questions. Most of them chose to be anonymous, so in this research it was difficult to see who of those answered "no" (no, I am not familiar with Visioneering), and to extract them out of the rest of the answers. I suggest this can be done in further research.

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APPENDIX A SURVEY

Name (optional)

What project do you belong to?

Are you familiar with Visioneering services in Aker Solutions MMO? *

- Yes
- No

Which of the services named below did your project use? *

- 3Danimation
- Laser scanning
- Iport training & simulation

3D Animation: To which extent do you agree with the following statements (1=strongly disagree | 7=strongly agree)

	Low			Average			High	
	1	2	3	4	5	6	7	N/A
3D animation saved time for the project								
3D animation saved hours budget for the project								
3D animation made common understanding of the job easier								
3D animation improved communication								
3D animation prevented potential incidents/ accidents								
3D animation decreased the HSE risk in the project								
Offering the client 3D animation gives Aker Solutions MMO a competitive advantage								

APPENDIX A

Laser scanning: To which extent do you agree with the following statements *

	Low			Average			High	
	1	2	3	4	5	6	7	N/A
Laser Scanning saved time for the project	○	○	○	○	○	○	○	○
Laser Scanning saved hours budget for the project	○	○	○	○	○	○	○	○
Laser Scanning made common understanding of the job easier	○	○	○	○	○	○	○	○
Laser Scanning improved communication	○	○	○	○	○	○	○	○
Laser Scanning prevented potential incidents/ accidents	○	○	○	○	○	○	○	○
Laser Scanning decreased the HSE risk in the project	○	○	○	○	○	○	○	○
Offering the client Laser Scanning can give Aker Solutions MMO a competitive advantage	○	○	○	○	○	○	○	○

Iport training & simulation: To which extent do you agree with the following statements... *

	Low		Average		High	
	1	2	3	4	5	N/A
Iport training & simulation contributed to cost savings in the project	○	○	○	○	○	○
Iport training & simulation saved budget hours for the project	○	○	○	○	○	○
Iport training & simulation provided common understanding of the job	○	○	○	○	○	○
Iport training & simulation improved communication	○	○	○	○	○	○
Iport training & simulation contributed to risk mitigation	○	○	○	○	○	○
Iport training & simulation contributed to more optimal execution of operations	○	○	○	○	○	○
Offering the client Iport training & simulation can give Aker Solutions MMO a competitive advantage	○	○	○	○	○	○

APPENDIX A SURVEY

In your opinion what was the most valuable contribution of using Visioneering services in your project? *

Where do you see potential for improvement in application of Visioneering services in your project? *

Do you think that making Visioneering services a part of our execution model can bring a competitive advantage to Aker Solutions MMO? *

- Yes
- No

Do you think client will recognise this new services as a competitive advantage? *

- Yes
- No

Do you think Visioneering gave "value for money" for the project?

- Yes
- No

APPENDIX A SURVEY

If no, please specify:

Do you think making Visioneering services mandatory requirement in our PEM system will lead to that every project will use it? *

- Yes
- No

Other comments

APPENDIX B

ANSWERS AND COMMENTS TO AN OPEN QUESTION OF THE SURVEY

In your opinion what was the most valuable contribution of using Visioneering services in your project?

Planning
Communication between disciplines in engineering, and between engineering and prefab and installation.
Great visualisation & promotional tool
For more safety design and installation
my position do not involve Visioneering services
Visualization of the tasks at hand
Improved understanding
iport
Comunications
Simulating challenging lifting operations
Much better understanding of sow, eventually identify future problems/risks, allow for an early/preventive action, so that, globally, it is much easier to "Do it right the first time".
To get started and get experience with Visioneering. Show the client Visioneering. Limited practical benefit because of missing scanning of the area where the operatins took place
Improved and easier communication between all involved parties-
We can anticipate flaws in installation works.
Nyttig for prefab. og planlegging av offshoreoperasjoner
Communication made easier
Practical execution of how the job shall be done in situ

visual classification test of transport route

easy communication with customers

Laser scanning saved offshore hours and made design changes more rapid to execute.

Common understanding

Giving all involved offshore/onshore a godd understanding of the tasks

To see how the installation would be

Common understanding of scope from drawing / design to installation. Consider the final delivery.

Communication !

I port

EXPLANATION of COLOURS

Planning, related to saving time and hour's budget

Communication and job understanding

HSE

Other, Iport

APPENDIX C

Interviews and discussions with top managers
To collect Input to make survey questions
If you think about Visioneering as a concept, what are the benefits that it can actually bring to our clients?
Can you please name 3 most important advantages that Visioneering Services can bring to the company?
Do you think these benefits have any influence on the competitive advantage and making Aker Solutions a differentiator?

APPENDIX D

Interview questions for Top Management

Input to the Business Model

1. Are you familiar with Visioneering as an innovative concept?
2. I am trying to draft a Business Model for Visioneering to get the overview of all the most important stakeholders.

Who according to your opinion are the main segments for Visioneering Services?

3. What are, according to your opinion, the preferred channels of communication to the segments you mentioned?
4. In your opinion, what is the value proposition Visioneering can bring to each of the segment you named?
5. What is the relationship that we want to build and maintain with each of the segment? (Customer relationship)
6. Can you name the revenue streams when it comes to each of the mentioned segment?