

Excellent After-sales Service Processes

Utilising the business possibilities through Business Process Management

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Title: **Excellent After-sales Service Processes -**Utilising the business possiblities through Business Process Mangement 3 and 4 semester Semester: **Project periode:** 1. August - 2. July ECTS: **60 Rikke Vestergaard Matthiesen** Supervisor: Student: **Anders Hvidberg Study Number:** 20072526

SYNOPSIS:

This thesis had the initial focus of examine the two areas of Business Process Management (BPM) and After-sales Service (AS), to understand and specify their connection. AS has acquired a strategic role for organisations and BPM can help to acquire the opportunities of it. This knowledge was used in the analysis of Vestas Wind System A/S, which showed that both areas were functional on a theoretical level. To confirm this an ISO 9001 audit were used to evaluate the practical part of the setup. This showed a lack in the BPM approach handling maintenance and knowledge sharing at the operational AS processes leading to decrease in organizational transparency.

The second part of thesis, the main analysis, focused on solving the issue, through five stages: Firstly, create an understanding, through a conference and LEGO Serious Play workshop. Secondly, development of a solution, used the input from the first stage together with existing tools to create a BPM-Forum, consisting of operational service employees, associated with a team-site. Thirdly, the suggestion was send to a key user and the service management team for evaluation, whom concluded that the idea were useful at both levels. Fourthly, based on additional feedback the concept of building business cases as a motivating factor was created together with suggestion to an implementation plan. Fifthly, four guidelines for global use were developed.

Anders Hvidberg

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By signing this document, each member of the group confirms participation on equal terms in the process of writing the thesis. Thus, each member of the group is responsible for all contents in the thesis.

Preface

This thesis is developed on the 3th and 4th semester of the master program International Technology Management, Centre for Industrial Production at Aalborg University.

The theme of the thesis is highly influenced by the work areas presented and worked upon under a fourmonth internship at the service department at Vestas Australia. Here a variety of subjects were included in the daily work, where especially, After-Sales Service and Business Process Management had a huge impact. Based here on, the purpose of the conducted project is to analyse a practical problem and develop an integrated solution according to.

I would like to thank the employees at Vestas service department in Australia for their openness, cooperation and willingness to teach, share data, information and knowledge. Especially, I would like to direct my most sincere gratitude to Thomas Murray and Danny Nielsen for letting me join their business department, answering my questions and helping gathering the requested data.

Also I would like to thank my supervisor Rikke V. Matthiesen for her support and guidance in the process of conducting this research.

Through the thesis, several references will be made to figures, tables and appendixes. References to figures and tables are denoted by numbers, whereas references concerning appendixes are made by using letters. The figures and tables are fabricated by the student if nothing else is written. Information, data and facts regarding Vestas are gather through a four month internship.

Resumé

Dette speciale tog sit udgangspunkt i hvorledes produktion virksomhedernes fokus, siden start af 1980'er og til nu, i henholdt til service delen af deres forretning, har flyttet sig. Nu om dage er dette vægtet næsten på lige fod som produktion, i det det har vidst sig at give kundeværdi og hjulpet til at skabe en konkurrencemæssig fordel, samtidig med det er profitable. Dette har ændret krævene i forhold til hvorledes organisation tilgå service. Det er ikke længere et sekundært, men snare et primært element i en organisationers port folio. Dette har medført at service og dets forretning processer skal styres og kontrolleres på samme vis som resten af organisations områder. Til det formål har grundlæggende proces management vidst sig nyttig indenfor andre forretningsområde, og især den relative nye tilgang Business Process Management har vidst sig brugbar til at skabe en grundlæggende forståelse for forretningsfunktioner og deres sammenhæng, men ligeledes optimal udnyttelse af disse.

Baseret på dette blev der opstillet et initierende problemstilling, fokuserende på hvorledes Business Process Management kunne hjælpe organisation og i dette tilfælde Vestas, til at sikre og forbedre dets service processer og derved dets eftersalgs service forretning. Hvilket var start skuddet til den først del af specialet, som blev klassificeret som *foranalysen* med fokus på at besvare dette problem. Til formålet blev først teori omkring eftersalgs service præsenteret som efterfølgende blev brugt til en analyse af Vestas eftersalg service business. Dernæst blev teori vedrørende Business Process Management fremlagt og ligeledes brugt til at evaluere og analyse Vestas nuværende koncept i forhold til dette. Det vidst sig at Vestas i henhold til begge områder havde et fornuftig formaliseret og struktureret tilgang som har og er brugbar i deres måde at håndtere deres forretning på. Det vidste sig dog igennem et ISO 9001 audit, at Vestas eftersalgs service processer på det operationelle niveau i Australien og New Zealand ikke var opdateret eller fungerende i forhold til Vestas BPM tilgang. Grundene til dette var mange, men i mest i øjenfaldende var deres manglende forståelse for det at videns dele og dets betydning i henhold til det overordnet niveau af Vestas. Dette medførte mangelende gennemsigtighed gennem organisation og primært af deres service processer.

Dette førte til den anden del af projektet som blev betegnet *hovedanalysen*, som blev opstartet af en problem formulering som stillede spørgsmålet: *Hvorledes kan Vestas forbedre deres BPM tilgang i relation til de operationelle service forretning processers gennemsigtighed*? Da dette spørgsmål var ret omfangsrigt blev underspørgsmål opstillet som var med til at forme indholdet af *hovedanaylsen*. Denne startede med en undersøgelse og indsamling af data fra en konference og en LEGO Serious Play workshop, hvor de deltagende var ansatte fra de operationelle niveau. Her fremkom der nyttigt og relaterende data i forhold til det overordnet problem, såsom problem og muligheder i henhold til daglige arbejdsopgaver.

Næste skridt i hovedanalysen var at påbegynde udvikling af et muligt løsnings tiltag. For at kunne gøre dette blev der opstillet noget krav til løsningen, såsom at denne skulle være indenfor virksomheder muligheder, minimum investering var påkrævet og desuden skulle være håndgribelig og brugbar. Baseret på tidligere tiltag, blev ideen vedrørende at oprette et lokalt BPM Forum fremstillet. Dette skulle indeholde de samme bruger som fra konferencen og workshoppen, da disse som sagt var blevet identificeret som vigtig i henhold til problem formulering. Forummet skulle støttes af en medie platform hvor viden kunne deles på et formaliseret niveau uden at andre deltagene behøvede at være tilgængelig. Til dette formål blev der skabt et team-site som støttende funktion, baseret på inputtene fra konferencen og workshoppen, men ligeledes kriterier fra BATOFF metoden. For at sikre at tiltaget var brugbart, blev dette evalueret: først af en identificeret nøgle person og dernæst service management teamet. Disse fik gennemgået først BPM-forummet ideen og dernæst team-sitet. Begge var yderest tilfreds med tiltaget, og havde kun små ændringer til selve indholdet. Dog belyste begge parter at det ville være nødvendigt at fange de kommende bruger, ved at sælge ideen og motivere disse, da den ellers ville ende med ikke at blive brugt.

Dette ledte over til næste del af hovedanalysen som fokuserede på implementering initiativer. Her blev først motivation teori kort præsenteret, som belyste at mennesker bliver motiveret af forskellige gevinster, nogle håndgribelig andre ikke. For at afhjælpe dette problem, blev ideen vedrørende at benytte Business Cases til at fange de kommende brugers interesse fremlagt. Ingen decideret case blev opbygget, da det var bestemt at dette var Vestas ansvar. Dog blev der fremhævet områder der var anset som vigtige, sammen med en kort beskrivelse af disse. Med motivation og business cases på plads, var det næste skridt var at fremlægge en implementerings plan.

Denne belyste at tiltagene skulle implementeres på engang, hvilket vil sige at ingen roll periode var nødvendig. Dog skulle der i starten af først periode afholdes ugentlige møder for at sikre at forummet og team-sitet bliver benyttet og opdateret.

Baseret på elementer fra hovedanalysen blev der kort fremlagt fire retningslinjer i henhold til det at forbedre vidensdeling af forretning processerne på det operationelle niveau og derved forbedre gennemsigtigheden af disse. 1. Opret operationelle BPM-Forums 2. Skab et team-site 3. Inkorporere og motivere de deltagende til at blive en aktiv del 4. Udpeg en nøgle bruger som kan indgå i et global forum.

Selve tiltaget er kun set som et startskud på et forsøg på at forbedre vidensdeling på de operationelle niveauer i deres service forretning og derved skabe organisatorisk gennemsigtighed.

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Introduction

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Main Analysis

Problem Formulation Creating an understanding Development of a solution Pilot Evaluation of BPM-initiative Implementations initiatives Extracting a guideline for a global use solution

Discussion

Conclusion

Conclusion Further Research Reflection

1. Introduction

Since the late 1980's and start 1990's, organisations within the manufactory industry started to view service as an important and profitable part of their business. This is also seen within the amount of research paper written from that time. ((Grönross, 1990), (Johnston, 1994, 1998), (Doorley & Quinn, 1998))

Before this period the focus were mostly aimed at production, marketing and management of physical goods (Johnston,1998), but in the 1970's Johnston (1972) and Buffa (1976) each published books regarding operation management were the subject, service, was viewed differently and as separately area. Previously it was viewed as a supportive element and not a specific business area, but as the market changed, mainly because of globalisation, manufactures had the possibility to produce and deliver, faster, at a better quality, and at cheaper price, because of the new production possibilities (technology, outsourcing etc.).

As highlighted by Davis and Heineke in their book, Managing Services, there are three major elements or forces that managers need to recognize in this rapidly changing environment. These are; (a) speed or quick delivery, (b) intangibility or less focus on goods and (c) connectivity or electronic communications between organisations and individuals and even within organisations. Here service appears to be the common factor that links all three elements, as illustrated in Figure 1.



Figure 1 - Forces Increasing the Emphasis on Services (Davis and Heinke, 2003)

This is something customers are getting more used to, which has made them demand extra from the organisations, and can be classified as the order winning criteria and competitive advantages. This is where service had got its new and deserved focus ((Barker & Gimpl, 1982), (Kowalski, et al. 2011), (Sawhney et. al, 2004), (Gordon, et al., 1993), (Gummesson, 1994)).

As illustrated by Gopalan, 2010, Figure 2, service is no longer just a supportive function but rather an aligned business area.



Figure 2 - Traditional versus revenue-generating service organizational structure (Gopalani, 2010)

Even though the figure illustrated service as separate business area, it will still have the supportive function of the products, and function as a service layer on top of the existing and upcoming products is kept.

The business importance of service can be illustrated in the financial numbers from the American economy in the period of 1980's to 1990's, here service related business accounted for 70-75 % of the total gross national product.((Canton, 1988), (Gordon, et. al, 1993), (Doorley & Quinn, 1998)). These numbers was believed to become even higher in the future and as indicated by Sawhney, Balasubramanian and Krishnan (2004) within the period of 1996 to 2002 the revenue from service climbed from \$500 million to about 1.5 billion. In Figure 3, the growth of service inudstrialised countries is shown.



Figure 3 - The Growth in the Services in Industrialised Countries (Davis & Heinke, 2003)

Mainly After-sales Service (AS), within the service area, has been acquiring a strategic role for mainly manufacturing organisations, and is seen as a source of differentiation and revenue generation (Asugman, Johnson, & McCullough, 1997). An example is the car industry, who for decades has been profiting from AS; parts, accessories and service mostly technical (Ehinlanwo & Zairi, 1996), as the profit margin is often higher than those gained with the acutal product sales, and will generate at least three times the turnover of the original purchase during a given product life cycle in some cases (Legnani, et. al, 2009).

Organisation therefore has started to treat AS as any other business function, and tried to create a stable and well-function foundation to gain the maximal profit. As highlighted by Legnani, Cavalieri and Ierace (2009) it is crucial for organisations to have a consolidated understanding on the importance of processes as basic units to perform services. Acur and Bititci (2003) put it as; *value is created and strategies are realised at the business level*.

Unfortunately, some organisations are still using a 'hit-and-miss' approach to handle their service business, neglecting how the strategic objectives should be implemented through appropriate business processes, with its generalisation and standardisation (De Brentani, 1989). This will have diverse implications for the organisations, such as none value-adding and redundant processes, missing overview, inefficient use of resources, lacking knowledge sharing and in the long run customer dissatisfaction and lost business.

Here the area of Business Process Management (BPM), the new and next concept of Process Management, has been said to a useful approach utilising, formalising and manage these business processes in general, to secure that the output is reached in a efficient^{*} and effective^{**} manner, as any other business area of an organisation. (Snabe, Rosenberg, Møller, & Scavillo, 2009)

Next chapter will describe the case company

** Effectiveness – the degree to which an organisation achieves its goals (Daft, 2007)

^{*} Efficiency – the amount of resources used to produce a unit of output (Daft, 2007)

Company Description - Vestas Wind System A/S

The following chapter will have the purpose of describing Vestas globally. It will give the reader a quick overview of Vestas organisations and its functions. The reader should be aware, that Vestas currently is undertaking a restructuring of the organisation, which means that facts and numbers can vary and not be up-to-date.

Vestas Wind System A/S has since the first turbine was installed in 1979 been an active player in the fastmoving wind power industry. Vestas core activities is the development, manufacture, sales, marketing and maintenance of system that use wind energy to generate electricity, but their core product is wind turbines (Vestas, 2010), which has been the foundation for their growth and current market position.

Vestas is with a market share of 12,7 %, see Table 1, with more than 46,000 turbines installed in 69 countries, the world's leading supplier of wind power solutions. In 2010, Vestas had the highest accumulated installed level of MW, in the entire wind turbines industry, as illustrated in Figure 4



Figure 4 - Accumulated installed MW level in 2010 (Vestas, 2011)

This number climbed in the end of first quarter 2012, to 50.000 MW installed capacity (Vestas,Reaches 50GW, 2012). Alone in 2011 Vestas installed 5,217 MW and had 3,7% more market share than their closest competitor, Chines, Sinovel. In Table 1, an overview of 2011's top 10 manufacturers by market share and delivered capacity is placed.

The current market position is caused by the fact that Vestas has been in the wind energy business for years, which has helped to create a high accumulated MW level, where some of its competitiors has reached an impressive level of installed MW in a shorter time.

Producer	Market share	Capacity installed
Vestas	12,7 %	5,217MW
Sinovel	9.0%	3,700MW
Goldwind	8.7%	3,600MW
Gamesa	8.0%	3,308MW
Enercon	7.8%	3,203MW
GE Energy	7.7%	3,170MW
Suzlon Group	7.6%	3,116MW
Guodian United Power	7.4%	3,042MW
Siemens	6.3%	2,591MW
Mingyang	3.6%	1,500MW

Table 1 - 2011's top 10 manufactures (Backwell, 2012)

Vestas total revenue for 2011 was 5,836 mEur divided approximately: 50% Europe and Africa, 34% America and 16% Asia/Pacific, which is divided on 14 business unit, with manufacturing plants in China, Denmark, Germany, India, Italy, Norway, Spain, Sweden and US, and a total of under 18.000 employees. (Vestas, Annual report 2011, 2012). Their global presence is shown in Figure 5.



Figure 5 - Vestas global presence (Vestas, 2010)

2.1. Vestas customers

Vestas customers are mainly energy and utility firms, and can be characterised as being a Business-to-Business relation. This customer segments and their importance can be seen in the percentage of the revenue through the years. In 2009, 58 % of the revenue was associated with energy and utility clients, in 2010, 46 % and 2011, 43 %. These clients are ranging from small to big, but the top 10 clients accounted for 33 percent of Vestas revenue 2011 and 26 % in 2010. The single biggest client order was 267 MW, smallest 1 MW and in average 22 MW (Vestas, Annual report 2011, 2012).

But through the last couple of years, Vestas customer segment has spread to conglomerates, cities, real

estate owners and financial investors and banks, who sees wind turbines and wind farms as a potential and profitable investments. This has put new requirements forth, as this segement do not have the same basic understanding and knowledge of the wind sector, and Vestas do not have the same experience in handling and working with these kind of clients (Vestas, 2011), (Vestas, Annual report 2011, 2012).

2.2. Vestas competitors

As indicated earlier, Vestas is the market leader in the wind energy sector, at this point, but as the wind energy sector has become profitable and attractive, competitors has quickly raised and gained huge portion of the wind market in a very short time, e.g. Chinese Sinovel who is quite new within the wind energy sector, founded 2005, and has already, according to Table 1, gained the role of the second biggest provider of wind turbines. It should be notice that their biggest market is China, which also has a saying in their success, based on China focus on green and independent energy sources. The main issue is that established companies with or without, connection to the wind energy sector, e.g. Siemens, are putting money and effort into gaining market share of the wind energy sector, based on it attractiveness, which has lead to intense competition and loss of contracts for Vestas.

Beside other wind energy companies, Vestas also has to struggle with companies' delivering other and cheaper energy sources, such as: oil, coal and nuclear. These are characterised as raw sources of energy, and is normally associated with cheaper solution, bigger volume, more mature usage, but also being a pollution factor.

Alternative to wind and raw energy source, sun and wave energy has been mentioned to become an important energy soruce in the near future. Sun energy through its panel's technology is very cheap to produce and setup for the consumer and wave energy is said to have huge potential, but is still in the development stage.

Vestas is constantly under competitor pressure, whether it is wind energy or other energy sources.

2.3. Vestas 2011

The year 2011 was a difficult year for the wind energy sector (GWEC, 2012), which forced, mainly Vestas, but also most of its competitors to lower their expectation, e.g. Sinovel had a net income fall of 87 % in 2011 (Bloomberg, 2012). Vestas alone had a drop in revenue from 2010 to 2011 of 15,6%, one of the biggest drops in the companies' history, illustrated in Figure 6.



Figure 6 - Vestas Revenue and EBIT 2007-2012 and Reason for revenue adjustment (mEur)

This gave a negative EBIT margin of (0,7)% for 2012 where the expectation had been 7% EBIT.

2.4. Vestas Strategy

Until the 9th of November 2011 Vestas was working under a strategy plan, introduced in 2009, called Triple 15. Under this strategy, Vestas should within 2015 have an EBIT-margin of 15 % and a turnover of 15 mEUR, but as the market uncertainty rose, the finance crises, legislation and the factors, this plan was abandoned.

As a consequence, a new strategy has been introduced, which is aiming at putting the customer in focus, understanding them and their businesses. A central question has been created, which clearly illustrates Vestas newfound focus: *What can Vestas do to help improve their customers business?* The main idea behind this focus is to create a knowledge base regarding the customers and their needs, but just as well be capable of identifying new trends and opportunities, which could have the interest of Vestas. This has lead to four strategic focus areas, identified as key areas by Vestas: People, Customer focus, Competitiveness and Effectiveness. In Figure 7 the areas and their connection is illustrated, as planned and developed by Vestas.



Figure 7 - Vestas new strategy focus (Vestas Strategy, Vestas, 2012)

Each of the areas will be described in the following sections, to give a quick overview of their role in the overall strategy map.

2.4.1. Customer focus - win key growth markets and key customers

The present customer segments has to be nurtured and maintained, so the satisfaction level will be kept at the current, but hopefully also be raised, so that follow-up sales will occur. Vestas has through the last couple of years identified that their customers segment has begun to expand beyond their traditional customer segment (power providers, developers and utilities), as mentioned above. Therefore knowledge has to be acquired, both new and old, so that Vestas can be capable of handling any kind of customer requisition, big as small, in an effective and satisfying manner. This is believed to help create a closer and strong bond with present, but also new customers of Vestas.

2.4.2. Competitiveness – deliver Business Case Certainty and lower Cost of Energy

Through the last decade, the wind and especially green energy industry has become attractive, meaning the competition has become fiercer. As a respond, Vestas has decided to focus on becoming the attractive business partner for their customers; by delivering power generation as promised, on time and to the agreed budgeted. Through the concept of Business Case Certainty^{*}, Vestas promises to deliver efficient and well functioning turbines together with a special focus on lowering the overall cost of energy^{**}, through e.g.

^{*} Vestas will fulfil the performance requirements stated at contract agreement. Minimise the uncertainty in customer return on investment

^{**} Cost of energy formula: Capital cost of new power plant + operation and maintenance cost / sum MWh produced over the plant's lifetime.

continues optimisation and innovative solution.

This should benefit both the customer, by increasing profit margins, and Vestas, by making turbines more competitive.

2.4.3. Effectiveness – gain organisational and operational excellence

Vestas has a special focus on constantly being effective, through various initiatives. Firstly having a focus on the quality of the turbines will help to secure the performance of the turbines and lowering the measure, Lost Production Factor (LPF)^{*}. This will be done through careful design, production and effective construction and service of Vestas wind farms.

Secondly lowering cost, without affecting the quality of the products is in focus. This will be done by having a well-functioning supply chain, which can deliver, cheaper, better, quicker and as promised, without having capital tied up in inventory.

Thirdly, effectiveness is also concerned with daily work tasks and how Vestas generally organise and their aim is to create a flexible setup that is ready to scale up and down according to the demand of the customers.

2.4.4. People – improve people performance, behaviour and Vestas knowhow

Vestas views their people and their knowledge as crucial assets as their knowledge and skills helps Vestas to stay in their competitive position, now and in the future. Through the employees, the customer's needs are fulfilled, based on the employees' professional and social knowledge. Vestas believes that with the right mix of people, different nationalities and cultures, young and experience talent, the effectiveness and performance is secured. As stated by Service Director, Australia: "Each employee employed is not just hired to be part of one department or team, but a part of the entire Vestas organisations".

2.4.5. Wind, Oil and Gas – the vision

As illustrated in Producer, these four strategic areas are believed to help reach the vision of Vestas; Wind, Oil and Gas, which is an expression regarding the ambition to make wind an energy source as equal to that of fossil fuels, oil and gas and the choice of consumers.

To realise this new strategy, requires an organisational structure that can support and perform the action needs to fulfil the customer requirement in efficient and effective manner.

2.5. Vestas' new organisational structure

*

Within the year of 2012, the numbers of employees will be reduced by about 10% as Vestas are in the phase of restructuring the entire organisation, as a consequence of too high expenses, competition, finance crises, uncertainty in the market, but just as well a wish to become more efficient by working better across the entire organisation (CEO, 2012).

One of the key aspects of the restructuring is to lower the fixed costs, by more than EUR 150 millions. This will primarily be done through streamlining of support functions and closing factories to align capacity with market demand. As a consequence of this is that a total of 2,335 employees have been laid off. As the restructuring is presently being rollout, the consequence are still not being seen, which mean that this company description will not give a fully picture of the new structure but just the first draft, which is still believe to be a good indication. In Producer8 an overview of Vestas new organisation is present.

The expectation of reorganisation is that it will make Vestas an even more inclusive organisation than

The LPF is the share of the potential energy from the wind not harvested by the turbines

previously. Executive Management is extended to six members from two, to allow greater functional focus on all key parts of the value chain and to drive a stronger performance management. Illustrated in Figure 8.



Figure 8 - Vestas new organisational structure

Previously, the organisation was divided into units as in a diversified organisation, mainly Sales Business Units (SBU), divided by region, and Production Business Units (PBU), divided by Blade, Nacelle, Towers. This is illustrated in Figure 9.



Figure 9 - Vestas organisation chart until Feb 2012

From the 8th of February this organisation structure was removed and the new organisation introduced at a press conference on the 12th of January was put in to action.

2.5.1. The effect and consequence

The changed will have different effect through the organisations, division will be merge, and communication channel will change, just to name a few. The main idea behind the new structure is to make the decision-making faster and more direct, and by this more effective and efficient. (CEO, 2012)

Especially the PBU and the supportive functions as IT, business support and finance will be affected the most. Here more centralisation of decision-making will be done, in hopes of making it more effective, to capture cost synergies and reduce capital required for future growth as well as to increase flexibility in case of a prolonged industry slowdown. (CEO, 2012)

The less effected area of the organisation is the SBU's, which will function more or less as they presently do. All the SBU's is now placed under a parent division called Sales. The biggest change will be in the new communication channels they have to go through, but their daily tasks will still be the same. Each region will still have its own SBU, containing the supportive functions, sales, finance, project management and more.

Even though the organisational structure will change, the offerings of Vestas will still be kept, but new and improved solutions will be offered through a new division called, Global Solution and Service. This will function as a contributor to improving performance of the service and solution business.

2.6. Vestas Australia

Vestas Australia functions as a SBU, with a main focus on the markets in Australia and New Zealand. The head office is located in Melbourne, where all supportive functions are located, Finance, Project management, Site and Planning, P&C (HR), Sales, Technical support and Service.

The division in Australia has nothing to do with the physical production of the Wind Turbine or spare parts, as these are shipped from other continents, mainly Denmark. Because of the geographical placement of Australia, Vestas has a warehouse in Scoresby, together with the Melbourne office, that is responsible for getting and securing the spare parts, big as small, needed for all of Australia/New Zealand. All of the functions are working within the area of mainly sales of turbines to the Australia/New Zealand market, but just as well servicing the existing wind farm/projects spread through the two countries.

In Australia there are presently installed a total of 896 turbines, varying from small V66 to V112 turbines, spread over 10 managed Wind sites/farms. The locations of the sites are illustrated on the map, Figure 10, together with all previously installed, sites/farms, which Vestas is not servicing anymore.

As it can be seen, most of the turbines are installed in the south of Australia, as the wind activity is highest and most stable in the region of the country. The numbers of turbines are going to rise within the next couple of years as new projects has been sold, both to existing wind site, but also new, which will increase the number turbines by 15 %, and the total of MW installed (Vestas, Annual report 2011, 2012).

In New Zealand the total amount of turbines 231, which is divided between five wind sites, as shown of the map in Figure 10.

Even though New Zealand is an independent nation and has its own service director it still operates under the office in Melbourne, which means they report and are a part of the overall financial numbers of the Australian business. The main advantage is they can utilise the resource of each other on a daily basis and share knowledge of customer requirements and demands.

Vestas Australia is the biggest and most dominant player in the Australia/New Zealand onshore market, which is following the trend of the global market. Alone in this division, Vestas is currently, February 2012, employing plus 200 employees in total, where 80-90 are working at the office in Melbourne in administrative tasks, and the rest and the biggest share are located in the field, at the different wind site, as mainly technicians or warehouse employees.



Figure 10 - Wind site location Australia and New Zealand (Internal Source)

2.6.1. Asia Pacific

Vestas Australia is placed under the parent division called, Asia Pacific (ASP), which is controlling the entire market of Asia, Australia/New Zealand, India, Japan, Korea, Vietnam and more, see Producer3. The headquarter is placed in Singapore, which main responsibility is to transfer the centralised decision made in Denmark, to strategic goal for the rest of the division, but just as well secure and continues develop the business according to the requirement and environment of the Asian market.

This division consist of 5,181 employees and as stated earlier, 16 %, EUR 1,132m, of the revenue is created here, which is quite a small per cent share when measuring it with the number of countries and markets within this division. The reason for this is that the division is relatively new and not fully developed as the European and American market, but has proven to be an area of the Vestas business with most growth potential, based on the last couple of year's order-intake, mainly in Australia and China. (Vestas, Annual report 2011, 2012)

Also the importance of being present in the Asian market is crucial for Vestas, as new competitors are rising in this region, offerings cheaper and alternative solutions to the same segment as Vestas.

Vestas has been present in these markets, even before green energy was considered to be a serious source of energy and an alternative to coal, oil and nuclear energy and according to Vestas it has helped to strengthen their position and reputation, and also made Vestas an active player and an important part of formulating and setting the standards of the green energy section in these markets.

In the following chapter the initiating problem will be presented

Preliminary analysis

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3. Initiating problem

In this chapter, the initiating research area will be introduced, which will shape the content of the preliminary analysis of this thesis.

In the introduction, it was highlighted that service has become a serious part of organisations business, and mainly the area of AS has acquired a strategic role for industrial organisations, as the possibility for differentiation and revenue generation is present.

As a consequence, organisation has started to treat AS, in line with its existing business area, as a serious and important part of their business. This has forced organisation to become aware of the processes connected to the AS business and be capable of managing these, with the goal of utilising the resources as efficient and effective as possible.

This can help to secure the quality of the output of the service processes, which is normally associated with costumer's satisfaction. Through different studies, it has shown that consumers often downgrade high-quality products because of poor customer service and unresolved post-purchase customer complaints. (Asugman, et. al, 1997). As Takeuchi and Quelch puts in their article from 1983 "*The outcome is dissatisfaction, and loss of repeat sales follows*" (Takeuchi & Ouelch, 1985).

The focus on service and AS can also be traced in the newly presented strategy from Vestas. Here the customers' and their service needs have been identified as a key element, and a possible source for securing future business. As CEO, Ditlev Engel, puts it, *"It's about servicing our customers and their needs and not just the turbines"*.

This statement was put forth, as Vestas had a terrible 2011 financial year, together with disappointing results through the last years, as a consequence of technical problems, uncertainty in the market and rising competitive pressure.

As a consequence, Vestas has determined they need to emphasis the four following areas in the new strategy: Customer focus (higher the satisfaction level), Competitiveness (deliver as promise) effectiveness (ensure quality, bring cost down and optimise daily tasks) and people (Having right and qualified people).

Heightened the satisfaction is achieved by deliver as promised, which is believed, by the researcher, to be achieved through Vestas service business and mainly after-sales service process, as this area as a basic helps to secure, the performance of the turbines for the customer and in some cases enables a repurchase from this client. Addtionally, it secures the image of Vestas, helping Vestas to become attractive and competitive.

To ensure the continuously quality of the produced turbines, together with lowering the cost of the turbines. This should be achieved by making the daily task more efficient and effective, through different initiatives; TQM, Six Sigma and LEAN (Excellence, 2008). To utilise this in a useful and structured manner, BPM is seen fitted for this purpose.

Combining the above descriptions indicates it could be of interest to investigate how organisations, as Vestas, actually uses its after-sales service business to secure its present and future business, by becoming competitive, together with the aspect of performing their operations in an efficient and effective manner. This should be achieved by having structured and formalised AS processes, which is utilised through BPM. Based hereon, the following question is formulated:

"How can Organisations, as Vestas, use Business Process Management to secure and improve its After-Sales Service processes?"

As this question is currently covering two areas within the research literature, it would be preferable to have supportive questions that will help to form the overall answer.

Firstly the area of AS has to be investigated, as it could be of interest to understand what it as a basic is about, how organisation utilise it and how this can help organisations to secure future business. This leads to the following three questions.

" What is AS generally about?"

"How is it utilised by organisation?"

"How can it help to secure future business?"

As indicated BPM is believed to have an important role and be a enabling factor for utilising the resources of AS, but just as well other processes existing in a organisation.

This leads to the following questions, which will help to undercover and create an understanding of the area.

" What is BPM?"

"How can BPM be used to improve and secures an organisation business processes?"

The knowledge gather from the supportive questions will be used to analyse Vestas according to the respective areas. This will on an overall basis help to shape and answer the initiating problem of this thesis

In the following chapter present the approach of the preliminary

4. Approach to the preliminary analysis

This chapter will have the purpose of presenting the reader with the approach for the preliminary analysis. The different areas are highlighted and their connection.

It is essential to establish a common understanding of the terminologies applied, in order to ensure that no misunderstandings arise between the researcher and the readers. Therefore, the following chapters will be divided according to the two areas, where a common understanding of the key concepts, as they are viewed and applied in the thesis as hand.

The main purpose is to use this as a foundation when analysing Vestas, but just as well for the further work of uncovering the relation between BPM and AS and how these together can help be utilised by Vestas.

Based on the supportive questions, the following approach for the preliminary analysis i reached, Figure 11.



Figure 11 - Approach for the preliminary analysis

Firstly a description of Vestas current service business and Business process management setup is needed, before going to the areas of AS and BPM. These will be investigate through a deductive theory approach, where theory from different sources and researchers will be combined to create a theoretical foundation of each. This will be used in the analysis of Vestas in accordance to the two areas.

Before answering the initiating problem, an ISO 9001 review performed at Vestas ASP, focusing on their BPM system handling service processes will be presented and used for an evaluation of the current setup.

The areas above will be summaries and used to answer the initiating problem, based on their connection and dependency. Supported by how Vestas is seen use BPM in their effort to support AS and make it a competitive factor.

Firstly the methodology of the thesis at hand will be presented.

5. Methodology

This chapter will address the methodology of the thesis at hand. Here the research design will be presented, followed by the data selection and collection, the validity and reliability of this.

The thesis at hand will be working with two main researcher approaches, Deductive^{*} and Inductive^{**}. In the in deductive phase theory is exanimated and seen how it can be related to Vestas. In the inductive phase, empirical data will be collected to help create a foundation of Vestas, to draw laws about the entire organisation. The two phases will been combined to use in the development of the solutions for improvements. This is illustrated in Figure 12.





The reason for having this deviation is to secure that theory and real life is measured at all time. Theory gives a deduction approach; not saying that this is the only and synonymous reality, but has to be weight according to life, in this cases Vestas. Theory is seen as a best practice but not the sole truth.

5.1. Methodology

In the following the subject of qualitative and quantitative data collection methods is addressed. Hereafter the research design of the empirical data collection is described.

5.1.1. Qualitative or quantitative

Traditionally, it has been accepted that qualitative^{***} are linked to more subjectivist positions whereas objectivism and quantitative^{****} data collection has been linked together. However, Morgan and Smircich, 1980, argues that viewing different positions as a continuum, results in a situation where qualitative as well as quantitative approaches can be adopted by scientists spread all over the spectrum. The *"Qualitative research stands for an approach rather than a particular set of techniques, and its appropriateness – like that of quantitative research – is contingent on the nature of the phenomena to be studied"* (Morgan & Smircich, 1980)

In regards to the thesis at hand, it is assessed that a qualitative approach to data collection is the most <u>appropriate. The</u> empirical data collection will through field research (dialogue, meetings, emails,

** the process of reasoning from one or more general statements regarding what is known to reach a logically certain conclusion (All men are mortal \rightarrow Socrates is a man \rightarrow Therefore, Socrates is mortal)

*** Method: Interviews, Focus groups, Observation groups, Shadowing

^{*} a kind of reasoning that constructs or evaluates propositions that are abstractions of observations of individual instances (All of the swans we have seen are white \rightarrow All swans are white)

^{****} Methods: Mail surveys, Street surveys, Telephone surveys, Internet surveys

workshops and interviews) as it is assessed that the daily work with After-sales Service and Business Process Management at Vestas is best described by the employees and first hand experience. Thus, it is evaluated that the current situation at Vestas is best assessed through qualitative interviews, dialogue, meetings and shadowing, as a quantitative questionnaire would not allow for elaborating questions. Qualitative field work enable the researcher to shortly define the AS and BPM for the employees in the relevant context in order to create a common understanding. Thus, it is believed that the level of user participation in a questionnaire is too uncertain to rely on. By conducting face-to-face fieldwork, it is certain that the answers are collected.

5.2. Research design

The objective of this thesis is to address the areas of After-sales service and Business Process Management. This is done through the collaborative company, Vestas.

The approach towards conducting this thesis can be illustrated through Figure 13. Thus, the process can be broken down into the stages defined in the model. As seen, the model contains relationships between all stages, this correlates with the fact that movements back and forth between stages characteristic the conduction of this thesis.



Figure 13 - The work Process Model (Sun & Hansen, 1992)

The project originated in focus of service growing business importance and how this should be managed, and especially how business process management could help to support After-sales service processes is considered of interest to investigate. The main interest took its starting point in own interest, but also based on work areas performed under an internship at the company. The following step was to search for definitions of the constructs constituting the research intent. Hereafter, an inductive approach towards collecting empirical data related to the current situation at Vestas was taken. Based hereon, a specific problem formulation was constructed. Hereafter, the theoretical and empirical insights were applied in the development of a solution fitted to the context of Vestas. Additional theory will be applied, in order to support the investigation of the research objective.

5.2.1. Verification

Before the approaches, respectively the deductive and inductive, are described, it will be quickly denoted how the data collection is verified. Verification consists of the three concepts of generalisability, reliability and validity, see Table 2. Despite of the three concepts originating from a positivistic view – establishing if the objective, universal truth is obtained - Kvale (1997) argues that their essence is still relevant for a more specific local, personal and social form of truth.

Concept	Short Description	Adoption to Qualitative Research
Generalisability	The degree to which the results can be used in another context.	Every situation is unique. Three types of generalisability exists: Naturalistic – based on personal experience. Statistical – respondents are randomly chosen as representative of all possible respondents. Though, the result of the interview must be quantified. Analytical – One makes an analysis of the situation in which the interviews where performed and compare with an analysis of the situation, one would like to generalise the results to apply to.
Reliability	The degree to which another researcher, conducting the same investigation, would get the same result.	The reliability is ensured by asking non-guiding and open-ended questions. Thus, a consistent result as possible is wanted.
Validity	The degree to which one investigate the wanted phenomenon.	Should be ensured throughout the entire process that the interview investigates what it is supposed to.

Table 2 - Concepts of Verification

In this case, the generalisability of the results from the field work will be evaluated based on the naturalistic generalisability. The reason is that the respondents are not chosen randomly, but on the basis of criteria; thus, the statistical approach is unsuitable. Regarding the analytical approach to generalisability, it is not the intention of the researchers to provide data that will apply outside Vestas. The focus is to investigate the routines of the employees, and therefore, it is not within the aim to create results directly applicable in other organisations. Instead, the method of collecting the data should be transferable rather than the empirical data itself.

Just as the generalisability should be evaluated based on a personal perception, the reliability is also dependent on how questions are perceived by the respondents. Under the inductive data collection a thorough examination of the means taken to ensure the reliability is provided. The same accounts for the validity, it should be in focus not just under the conduction of the field work but especially during the preparation.

5.2.2. Deductive Theory Collection

The deductive examination of theory is based on the construct of the research intent. Thus, the constructs extracted from, After-sales service and Business Process Management and how these can support each other, is:

- After-sales service
- Business Process Management

The constructs are formulated based the research intent; therefore the content of the research intent will guide which type of approach to be taken.

5.2.3. Inductive Data Selection

A qualitative approach is chosen, as it is evaluated that it is of importance to get the subjective opinion of employees at Vestas, as AS and BPM is considered to impact and to be impacted by the corporate culture.

It is also believed that interaction with the employees is needed in order to gain an understanding of their work life. Due to busyness at the service division, it is believed that short dialogues, interviews and meetings were preferred. It is considered that this would encourage more to participate. As it was difficult to get employees from the all department at the sales office to participate, it was a criteria that the participants

had different levels of experience as it is assessed of interest to investigate the depth of embeddedness related to routines.

For the analysis various sources of data will been used: Observation, interviews, workshops, conference and background material.

During workshops, meeting and interviews the collaborative participation between Vestas, Australia's service management team and the researcher will be a central element, the purpose of this is to try to break down the separation between the researcher and the participants, in that way to participants becomes co-researchers collaborating in the action research. This is in line with (Penman, 1994) and his three principles of how the research should participate which has been adapted into the researchers working behaviour:

- 1. The first principle concerns respect for all participants in the research process. It is believed by the researcher that oriented to practice and change, acting in a respectful manner with the participants is an essential component of the research.
- The second principle concerns inspiration meaning that the interaction made as a researcher should inspire both the continuance and the direction of conversations during workshop, meeting and interviews.
- 3. The third principles concerns mutuality where all participants must be able to contribute in the development of the methods by which new understandings and changes are brought about.

By doing so the research aims for both better cooperation but also acquiring as valid data as possible to secure the best possible output.

5.2.4. Inductive Data Collection

Initially the data will be collected through a meeting with the Service Director of Vestas and New Zealand, since AS and BPM are within or related to his divisions scope. It is believed that the repondantents will provide a sound foundation for the further investigation. In this cases, validity is considered high as the participant will become engaged in the process. Also, Service Director and the research will be in constant dialogue regarding the scope of the thesis and securing that it is in line with Vestas way of thinking. The generalisability is believed to be high because of circumstances of the data collection have been clarified. The service director is responsible together with a world network, for the service business and the maintenaince and development of this for Vestas. The service director is also knowledgeable regarding AS and to large extent also BPM, and the issues connected to these matters. Regarding reliability, the vice president, key employees within Service excellence, will be consultant, regarding the issues. Additionally, the questions given will be unfolded and open, whereas guiding questions can affect the answers.

It was decided to support the claims put forth by the Service Director, by asking other employees at Vestas. This is done in order to ensure reliability – thus, the researcher needed to investigate whether the employees, not consciously working with AS and BPM, would agree with the observations made by the Service Director.

Interviews

Through the four-month of internship, several formal and informal interviews will be conducted, mainly with the service director of Vestas Australia, but also with other personal with knowledge related to after-sales service processes and business process management. The interviews will follow a main frame consisting of the three question formulate by Kvale,1997, "what", "why" and "how". In Table 3, these are applied to Vestas.

Main frame	Elaboration	Interview conducted at Vestas
What	Collect prior knowledge concerning the subject	The examination of theory regarding and definition of After-sales service and Business Process Management
Why	Determine a purpose for the inter- view	The purpose is to investigate how Vestas is current using BPM in their after-sales service business process
How	Have a understanding of interview techniques and determine which to use	The use of open interviews were used, with some guiding questions to make sure that the interview is kept within the 'what' and 'why'

Table 3 - Main Frame For Performing the Interview (Kvale, 1997)

The structure of the interviews will be a mix of exploratory and in-depth subject oriented types where few pre-prepared questions will be made to secure a guideline but not to have a strict structure, only to secure certain subjects of interest is discussed. These interviews is conducted according to the structure of having open dialogue according to interview technique of Kvale, 1997.

The reason for applying this structure, is to allow the employee to elaborate further based on own observation. In addition, it is not indicated from the researcher that the current BPM system handling after-sales service process might propose an area of improvement. For the same reason, the researcher will not enlighten the respondents too much about the research objective. The interviewed is encouraged to express their 'unpolluted' opinion.

The following methods were found under the research of this paper and were not planed in advance. Under the section, data collection method used in the main analysis is placed. The reason for having them present before the start of the main analysis, is to keep the methodology sections into one chapter.

Meetings

Several meeting were held, were information and data of present situation (AS-IS) to future situation (TO-BE) was achived, as new initiatives and improvements, were discussed and presented. Service management team at Australia office held most of these meetings, and the researcher role were mostly to be an observant, but ended up being an active part, coming with inputs and comments on the different areas. This gave intangible and normally not achievable empirical knowledge, from a primary source, which showed to be quite useful for the overall project.

Beside participating in a numerous of meeting, the researcher held and arranged meetings with the service management team, were initiative created and thoughts were presented, mainly work tasks, with the purpose of getting feedback and let the participants freely evaluated the initiatives and thoughts, as it was deemed affecting their work. This is seeing as being an important step of continuously having the work evaluated, going from AS-IS to TO-BE, securing the work is not just a new description of an already developed idea/problem.

5.2.5. Suggestion

The following inductive data collection methods were used for developing a solution to the main analysis problem and are therefore separated from the above.

Conference

The participants of the conference held involved; Service management team Australia, service technicians, site planners and site managers, from wind farms all over Australia. The reason for focusing on these specific participants was to get as much diversity and by this access multiple sources of information and data. The employees were chosen based on their respective work area and seen as a primary source of information, data and knowledge. This is deemed to help to enhance the credibility and make them co-developers with their experience and in-depth understanding of Vestas and its business.

For gathering the information, the open ground discussion were chosen, as it allowed the participants to discuss and gave the researcher the oppertunity to obtaining knowledge through observation. The reason for using this kind of method for the qualitative data collection, were to get all possible daily problem and ideas at the operational level enlighten, allowing other participants to elaborate or add to the areas of interest. The employees were the active parts of these, and the researcher was mainly an observant.

The conference were mainly not aimed at the research area of this thesis, but the problems and areas of discussion showed to be useful, for creating a foundation for the development of ideas and concrete solution initiatives to the problem statement

LEGO Serious Play

The concept is, in this thesis, seen as qualitative method for gathering and creating in-depth data, as employees are given an overall topic for discussion and based hereon, has to build and create their concerns or ideas and put concrete words to thoughts regarding the topic. This is seen as a free and creative process, where not specific result can be put forth pre-handed, but is investigated and developed through a innovative processes, were inputs from each participants are shaping the finale output.

The participants required are, Site Supervisor, Planners and Managers as they are seen as needed and the primary sources of data, as they possess the required knowledge for being capable of forming the solution.

The methods is deemed of high usefulness and credibility, as raw data and information is presented within a overall topic, in this cases creating a room for knowledge sharing, concerning best practice and problems, which is within the scope of the main analysis of this thesis, trying to improve BPM according to AS. This ensures the validity of the data collected, but the reliability can be discussed, as another researcher would probably not gain the exact same result as the researcher, but something similar.

Development of the solution

The solution created was based on solving a concrete problem of lacking knowledge sharing at the operational level at Vestas service business. The input in the development were based on quantitative and qualitative data and information from the current possibilities existing within Vestas current setup IT-system together with qualitative data from the conference and workshop conducted. This helped to secure that the solution fully incorporated aspect of the operational level problems and best practices. The final solution was also supportive with theory regarding Knowledge management and motivation to secure the usefulness. Having the use of present possibilities together with theory is believed to get a valid and useful result; the reliability is not as high as it could have been, if the solution had been based on full theoretical basis.

Evaluation

Meeting and interviews were need, here open discussion was chosen made, and with the main topic being the solution. The reason for choosing the open meetings/interviews was to allow the participants to discuss and comment without any predefined ideas, which is believed to provide additional correction and new elements to the solution. Using evalutions is deemed to help secure the validity of the result, and the reliability to

some extent. The respondents could have misunderstood the use of the solution and evaluated on a wrong basis, but this is not believed, by the researcher, to be the cases.

Implementation initiatives

This part of the solution is actually a combination of inductive and deductive collection methods, as theory have been used to create an understanding of what people are motivated by, together with the concept of creating business cases. The inputs to these two areas were mainly based on the results from the evaluation, but as the impact have not been seen the validity and reliability is not fully shown.
6. Vestas service business

This chapter will give an overall description of Vestas service business, with the purpose of getting a basic understanding of their concept and their service offerings. This will be used as input for the analyses and evaluation of their current setup, according to after-sales service in Chapter 8.

Knowledge of and the ability to plan, build, operate and service complete wind power plants for its customers is becoming increasingly important for Vestas as a supplement to developing new turbines. Customers are demanding individual solutions that provide maximum output and involve minimum risk: Vestas must deliver value to its customers, before, during and after the customer has invested in a wind power plant. As the service business comes to represent an ever-growing share of Vestas' combined revenue, its earnings will become more robust to short-term fluctuations in wind turbine sales. (Vestas, Annual report 2011, 2012)

Vestas sells turbines, which are owned by the customer/clients who in many cases delivery or sells their energy to end users of power utilities. Vestas do not own any of their turbines, but owns the servicing crew performing service on these.

Service has always played a strategic role in Vestas business, based on possibility the after-sales service business has financially, but just as well because the customers of Vestas are depended on the service offering, as these helps to ensure well-functioning turbines that can deliver at the required level and give the customer full value of their purchase.

As stated by the finance director of Australia, 2011, (reformulated into one sentence):

"If we did not have the service part of our business, we would not be capable of differentiate us from our competitors, and be the preferred supplier of wind turbines and by this sell turbines." (Finance Director Australia, 2011)

This statement is supported by the facts that 97 per cent of the turbines sold in 2011 included service contracts and together with the prediction, presented in their service strategy from 2012 and forth, the service business of Vestas will rise 10% yearly. (Service Excellence, 2011)





At the end of 2011, Vestas had service contracts totalling 35,206 MW, corresponding to just under three-fourths of the total number of MW installed by Vestas. Compared with total service revenue of EUR 298m in

2007, service revenue climbed to EUR 705m in 2011. In 2011 more or less every MW sold and announced in connection with orders concluded was accompanied by a service contract. Vestas offers servicing of the wind turbine through its lifetime, which is estimated to be around 20 years in average, if planned and unplanned services are performed on it (Vestas, Annual report 2011, 2012). This of cause varies from turbine to turbine, based on type, material construction etc.

As part of the reorganisation, on 1st February 2012 Vestas launched a Global Solutions and Services (GSS) unit for developing and supporting advanced pre-sales and after-market services, SCADA systems^{*}, wind & site services and spare parts. The Global Solutions and Services unit, also develops new solutions and offerings supporting further integration of wind power with the grid^{**} (Vestas, Annual report 2011, 2012). With the purpose of enhancing and improving the service business, make it the best in class and give a strong competitive position.

The statement presented by CEO Ditlev Engel in an internal interview, after the announcement on the 1st of February 2012, supports this.

" Vestas has two business legs, which is the foundation of our business and the key to the future success, our turbines and our service business." (CEO, 2012)

It is believed that these two will help to make the organisations more stable, as Vestas can offer the full package and give something extra than its competitors. Vestas will focus even more than earlier on this part of their business, as it is seen as value adding and profitable.

Going forward, as part of its service growth strategy, Vestas aims – on a limited scale – to render service on non-Vestas turbines for key account customers requesting it, in an attempt to enhance their business but just as well for keep key accounts in-house and build strong relationships/partnerships.(Vestas, 2012)

6.1. Service offerings and resources

Whenever Vestas sells a turbine, an after-sales service contract is normally including in the sales, depending on the requirements and wishes from the customers. The reason for this is that the turbines need to be continually serviced, to make sure that they are performing at their best at any given time, to ensure high customer value. The turbines will normally run 20 years plus, if the services are maintained.

Vestas offers different service contracts, called Active Output Management (AOM), varying in service period and responsibility. The AOM is the customer security to achieve return on their investments. Depending of the type of project sold, one turbine to 300 turbines, the customer can choose between five contracts and determine which contract that fits their need. In Table 4, the different service contracts are presented, and characteristic of each are given.

When nearing the end of a service contract period, it is normal procedure, that Vestas will contact the customer, to renegotiate the possibility for a signing a new contract. This process is normally not done in a couple of hours or days, but is an ongoing process, under the current contract. The customer and Vestas will be in constant dialogue regarding the content of existing contract and how this could be change and transferred into a new contract. Service contracts are normally extented, if the performance of their turbines has been satisfying. In some cases customer goes a step up according to the AOM's, to ensure that continually performance are obtained.

**

^{*} SCADA system: Supervisory Control And Data Acquisition - computer systems that monitor and control industrial, infrastructure, or facility-based processes. In this cases technical processes concerning Wind Turbines.

Also know as the power grid. Storage and exporting obtained energy.

Contracts	Characteristic
AOM 1000	Flexibility, service pay-as-you-go basic
AOM 2000	Low-cost to remove risk of downtime, Regular
	maintenance + option for additional maintenance
AOM 3000	Shared risk, complete field service package, Expert
	scheduled and unscheduled maintenance
AOM 4000	Complete package to maximise uptime and
	performance. Covers Periods up to 10 years contract
AOM 5000	Full scope solution to ensure minimised lost production.
	Energy based availability guarantee.

Table 4 - Service contracts of Vestas

6.1.1. Supportive service resources

Besides the contracts, Vestas has a wide range of other service resources, which are given to the customer from the negotiating of the project starts and till the finale product/project is installed and running.

- Business Case Certainty
- Largest library of wind data
- Advanced power plant controller for ensuring compliance to grid codes
- Meteorological data from 35000 stations across the globe.
- Real time monitoring of more than 21000 turbines

Through these capabilities, Vestas can deliver service and solution across the whole customer value chain together with advantage tools developed and most importantly 30 years of experience with wind turbines and wind energy utilisation (Service Excellence, 2011).

These are believed to enhance the service offerings and the general service business of Vestas as these resources are said to be the best in class and quite unique when looking at the wind energy service sector. Most importantly it helps to improve and complete the full service package solution for the customer, the idea of one-stop-shopping as known from the retailer industry.

These resources can be said to be a supportive and enhancing factors, which has helped Vestas to become the preferred provider wind energy solutions.

6.2. Service excellence and service strategy

As a consequence of the growing importance of service in the western world, a dedicated team has been assembled for securing the performance and future growth of their service business, called Service Excellence. This task team consisting of headhunted employees, operational managers to strategic planners, from different functions within Vestas, all with the same focus of maintaining and continuously improve the service business of Vestas. Their tasks vary from small operational problems (e.g. creating guidelines), to develop future strategic goals for Vestas service business.

This team plays a crucial role in the new strategy of Vestas, as they will be the acting link and the developing part of the new initiatives that will rise, as the customers are becoming more involved in the general business. It is their responsibility to create solution and predict trend rising in the market, so that Vestas always will be in the front of the service business within the wind energy sector.

The team is involved in identifying the challenges that Vestas will have to deal with in the near future. In a recent presentation, the following has been identified as challenges, which Vestas is and will face in the present and future (Service Excellence, 2012):

- Customers are shifting from having focus on maintenance of the turbines (0-5 years) to the entire lifecycle.
- Customers are getting smarter (technical and better knowledge of wind turbines and energy) and demands lowering of maintenance costs.
- Competitors' turbines are beginning to have higher technical similarity and reliability, resulting in more similar and standardised maintenance.
- Independent Service Providers are professionalising, gaining market share and starting offering performance-based contract.
- Vestas 2 per cent LPF is becoming the industry standard.

The service excellence team believes that Vestas has to move from best stand-alone product to best "Total Customer Solution", by having the concept of "one-stop-shop" as is know from other industries. Also, Vestas do not need to posses all capabilities, they should reach out for help from external parties, Multi-vendor concept. Having indebted knowledge and close relationship of and with the customer plays crucial part in the future plan for Vestas.

To handle these challenges and remember to include the facts above, the following areas has been identified as the answers by the service excellence team:

- Drive partnerships and lock in the market through framework agreements
- Strengthen value proposition by improving transparency and integration to customers
- **Cost out initiatives** including optimisation & Parts delivery and process, system and maintenance optimisation.
- Increase revenue and broaden portfolio of offerings first step towards "Total Customer Solution"

The strategic direction creates differentiation through the ability to combine standard product and service elements into a unique customer solution, rather than different the stand-alone products individually. It is also seen as being able to provide and integrate Vestas' competitors' technology or product elements, if a customer demands it or when it provides a superiors solution. This is an element in a multi-vendor concept where Vestas reach out for help from external parties if Vestas do not have all the capabilities themselves. The very first steps are now being taken by enhancing the portfolio of turbine upgrades, Power Plant Solution offerings aimed at maximising power plant output and finally adjusting the AOM service contracts to be customisable based on standard elements. (Service Excellence, 2012)

The next chapter will investigate the theory of After-sales service.

7. After-sales service

This chapter will have the purpose of investigating the area of After-sales Service, in an attempt to understand this and create a theoretical foundation, which will make it possible to analyse Vestas After-sales Service Business.

As stated in the introduction, service has through the last couple of decades achieve a huge focus from customers who are demanding package solution, which they are willing to pay for, especially within the cost heavy industries, where high-quality and performance is required (Asugman, et. al, 1997). Customers are seeking the solution, which are giving them true value. (Gaiardelli, et. al, 2012)

7.1. Value and service

The participants of the supply chain, from manufacture down to wholesaler and retailers cannot consider their business role ending up with the transactional undertaking of product sale. They must indeed strive their efforts in ensuring a long lasting and stable relationship with the final customer through the overall product life-cycle by providing a customised and value-added portfolio of connected services (Cavalieri, et. al, 2007). This has forced industrial companies to shift their traditional product-centric business perspective to a, somewhat, more profitable and sustainable customer-oriented strategy. This kind of strategy focuses on giving the products intangible values, which helps to create, some kind, of uniqueness around the product that is not easily replaceable and by this qualified for setting premium prices, but gives a competitive advantages as-well. This strategy and the focus on intangible values are changing the concept of the product, which traditionally seen as a tangible entity, tends at de-materlising and becoming a component of a more complex platform. (Rispoli and Tamma, 1992, cited in Cavalieri, Gairdelli, & Ierace, 2007)

As Grönross puts it: "..customers do not buy goods and services, they buy the benefits of goods and services provide to them ... They buy offerings consisting of goods, services, information, personal attention and other components. Such offerings render services to them, and it is this customer-perceived service of an offering that creates value for them" (Grönross, 2007). It is evident that organisations is capable of assisting and supporting the end-user at some time in order to give the customer maximum value of their purchase.

It is important to take notice of Grönross statement that value it not created by firms but by the customers in a value-generating process, which the firm can do in two ways:

- When using resources provided by the firm together with other resources and applying skills held by them, customer create value for themselves in their everyday practices
- When creating interactive contacts with customers during their use of goods and services, the firm develops opportunities to co-create value with them and for them (Grönross, 2007)

This means, that the customers needs to be participating before value can be created.

His also highlights in an earlier article, 2006, that service is a value-supporting process, whereas goods are value-supporting resources (Grönross, 2006) and firms are creators of a value foundation through a value facilitation process. In Table 5, the role of value facilitator, according to supplier and customers are illustrated.

Value facilitation	Supplier	Customer
Role	Value facilitator by providing customers with a foundation for their value creation in the form of resources (goods, services, in- formation or other resources)	Value creator during value-gen- erating processes (consump- tion) where other (necessary) resources available to customers and skills held by them (custom- er's value foundation) are added and where value fulfilment takes places



As illustrated in the table, firms' needs to take on the role of value facilitator, and create a value foundation, before the customer can get the opportunity to achieve any value.

A good represents a potential value for the consumer. So before he/she can experience the value, the good has to be purchase, on his/hers initiative and implement the activity required to transform this potential value into real value for the him/her. A service is in itself an activity with in-built ability to transform the potential value for the consumer into real value for the customer. A service has use value whereas a good has exchange value for the consumer (Grönross, 2007).

7.2. After-Sales Services

As a respond, organisations has through the years build complex services businesses, that has the purpose of covering any aspect of its business that is connected to service, spreading from fields as spare parts logistic to service marketing to secure the customer retention.

Organisations has accepted that returning customers are the most profitable ones, as they require less marketing effort and relationship building. After-sales service has acquired a critical and strategically role as a mean to achieve customer satisfaction and retention (Alexander, et. al, 2002) (Gaiardelli, et. al, 2012)

Grönross, 2007, divided an organisations service business activities into five categories, which is very useful when categorising an organisations services:

- Before manufacturing (e.g. research and development, design, financing)
- During manufacturing (e.g. financing, quality control, safety, maintenance)
- Selling (e.g. logistics, distribution networks, information)
- *During consumption and usage* (e.g. maintenance, leasing, information, customer training, software upgrading, complaints handling, invoicing)
- After consumption and usage (e.g. waste management, recycling)

Together with Vandermerwe's Customer's Activity Cycle (CAC), 1993, these can be divided into three main phases: Prepurchase (Before and during manufacturing), Purchase (Selling) and Postpurchase (During and after consumption and usage):

To give an overall idea of the three categories, Table 6 summarises which activities are performed under each phase, and an example of a Swedish producer of ball bearings are used, as they no longer only produce, but also advice its customers through different areas; spare parts, training and maintenance.

Phases	Characteristic	Example - SKF
Prepurchase	- Planning - Designing	 Advice on bearing management Inventory management Warehousing
	- Manufacturing	
Purchase	 Execution of the decision Processing orders Arranging financing 	- Delivering bearings - Training - Mounting bearings
Postpurchase	 "Keeping things going" Maintenance and repair 	 Repair and replacement Maintenance and support Environmental Manage- ment

Table 6 - Service activities according to CAD ((Grönroos, 2007) (Vandremerve, 1993))

The term Postpurchase are used by many researchers replacement of After-sales Service, but are in most cases and believed to cover the same aspects. After-sales Service will be used through the thesis.

Previously AS was defined as:

" ... all activities geared towards maintaining the quality and reliability of the product/service after the customer has taken delivery with the goal of ensuring customer satisfaction"^{*} (Ehinlanwo & Zairi, 1996)

This statement is still valid, but has been developed from its traditional function (maintenance, service and repair), to other services, such as product installation, commissioning, training, documentation, spare parts supply and logistic, product upgrading and medications, software patches, warranty, schemes, phone support, to be used as a source of differentiation and profit generations. ((Legnani, Cavalieri, & Ierace, 2009), (Tore & Uday, 2003))

Their provision, which normally comes during the middle an end-of-life of a product, has been considered very advantageous. Several authors have reported the benefits associated with this business especially in terms of profitability, competitive advantage, customer retention and environmental sustainability. (Gaiardelli, et al., 2012)

As seen in the car industry, the profit margin generated by AS are often higher than those obtained with the actual product sales, in some cases three times the turnover of the original purchase during a given product lifecycle ((Baumgartner & Wise, 1999) (Anderson & Kerr, 2001)). Kone Corporation, producing primarily escalator, realised this years back, which meant that their current workforce was reorganised from being primarily involved in manufacturing operations, to service oriented tasks, after-sales service. Now their business is divided as follows: service area, 90%, manufacturing jobs, 10%.

7.2.1. B2B vs. B2C in after-sales service

Offering and selling after-sales services, requires that organisation are capable of differentiating its customers, are the end users or business users. Organisation normally differentiates their customers into two kinds of relationship and segments:

* Original quotation: " all activities geared towards maintaining the quality and reliability of the car after the customer has taken delivery with the goal of ensuring customer satisfaction

- Business-to-business (B2B): Describes commerce transactions between businesses, such as between a manufacturer and a wholesaler, or between a wholesaler and a retailer.
- Business-to-Customer (B2C): Describes activities of businesses serving end consumers with products and/or services.

These types of customers require different kind of focus, whether it is sales, marketing or service. In Table 7, the difference between B2B and B2C customers are shortly described.

B2B buyer	B2C buyer
Often understands firms product/service better than they do	Looking for the best price
Wants or needs to buy products or services to help their company stay profitable, competitive, and successful	Often looks for trusted brands
Has high interest in – and understanding of – firms product/service	Will research the competition prior to shopping
Interested in quality customer service	Interested in quality customer service

Table 7 - Difference between B2B and B2C customers (McCleave, 2010)

Both B2B and B2C have common interests and requirements to firms, such as their purchase need to be maintained through its life cycle to ensure maximum value from their purchase, whether this is based on high technical and expertise or close collaboration and learning the in process of developing the solution.

B2B customers often requires even more dependability and flexibility than B2C, based on the fact that their purchase from the manufacture/firm, accounts for a part in their own supply chain for fulfilling e.g. the end users requirements. This requires the processes, which the manufacture/firm accounts for to function and deliver on time, right quality, else the B2B customers own output will be affected.

7.2.2. Strategy

As a consequence, organisation has started to develop concrete strategies within the service area, as the strategy normally defines the map for everyone in the organisation to follow. This road map shows not only the destination but also the directions that need to be followed to reach that from that destination. Also said, managers tries to develop strategies that differentiate their firms from its competitors, so that customers will perceive added value in the services and be willing to pay for that value (Davis & Heineke, 2003). This means that customers and what they see as value have a huge impact on which kind of strategy a firm is directed by.

As stated and presented by Porter, organisation can chose between three generic competitive strategies: *cost leadership, differentiation,* and *focus.* This view is also useful within the service business.



Strategic advantages

Figure 15 - Market Position of generic Strategies (adapted version, Fitzsimmons, 2004)

With *overall cost leadership*, organisations strive to have a efficient structure, tight cost and overhead control, which in most cases leads to a low-cost position, which gives a competitive advantage and creates a high entry barrier for possible competitors, because of innovative technology and high capital investment in state of art equipment and methods. Put into a service business context, this is referred to as firms producing/delivering service offerings of mass volume, e.g. call centres, standardise offerings, with a big volume.

The essence of the *differentiation strategy* lies in creating a service that is perceived as being unique, e.g. brand image, technology and other dimensions. The primary aspect of this strategy is creating customer loyalty, and especially enhancing the service offering is important, and target customers are normally willing to pay the price. E.g. insurance companies.

The *focus strategy* is built around the idea of servicing a particular targeted market by addressing the customers' specific needs. It requires that the firms can serve its market more effectively or efficiently than other firms. A firm can chose to focus on meeting customers' need or lower the price for the customer. This strategy can be used when firms, has key customers, who are the main driver behind their business. (Porter, 1990)

Therefore organisations need to figure out their distinctive competencies. Which is an exceptional capability that creates a preference for a firm and its products/services, enabling it to achieve a leadership/ competitive advantages.

To support organisation in choosing, between the above, the four strategically profiles of AS has be identified by Cavalieri et al. 2007 which can be used. It views service from a mere functional and supporting role to an important enabler of profitable service driven or customer loyalty driven strategies. The four profiles, and effects are illustrated in Table 8. Each of the strategies are can be used differently based on the needs of the organisation.

After-sales strategy	Business strat- egy	Relevance of after-sales	Economical responsibility	Product-service portfolio	Time Horizon
Product sup- port	Cost leader	Necessary Evil	Cost centre	Relevance of tangible prop- erties	Short-term
Cash generator	Cost leader Technological pioneer	Ancillary role Source of prof- itability	Profit centre	Relevance of tangible prop- erties	Short-term
Business gen- erator	Technological pioneer	Generator of new business opportunities and profit- ability	Business unit	Relevance of intangible properties	Medium-term
Brand fostering	Best in all	Supporting company's image and cus- tomer loyalty	Cost/invest- ment centre	Relevance of intangible properties	Long-term

Table 8 - Strategy profiles of after-sales service (Cavalieri, Gaiardelli, & Ierace, 2007)

Product support: AS is seen as a need, and a cost centre is mainly deputed to manage warranty issues or early defiance of the product. Normally used with low cost items, e.g. small domestic appliances.

Cash generator: AS is seen as good sources of revenue by selling spare parts and accessories. Lost in sold product is gained through the spare parts and services e.g. consumer electronics.

Business generator: AS proactively represents the business leverage for opening new market niches by developing and offering product-service bundles according to the specific customer profile and needs. This approach is used where high competitive pressure and market saturation strongly affect company's profitability.

Brand fostering. With high complex and highly service-oriented component, though its main mission is not to act as a profit centre but rather as an investment centre for excelling in product price, quality and functionality and gaining customer retention and loyalty to the market product.

The four strategies are specific and quite relevant for organisation when choosing their AS strategy. While *cash generator* and *business generator* profiles are more related to a profitable-driven strategy, *brand fostering* is more suitable for a loyalty-driven approach.

Choosing to follow one of the strategies above in accordance to AS, do require that the organisation is structure and managed in a way so that they can respond according to.

7.2.3. After-sales service and organisational structure

Going from a manufacturing perspective, to a mere service perspective does require that decision about configuration and managing the internal organisation is made. When products and services are combined, almost every aspect of an organisations business model needs to be renovated/adjusted, from strategy and position in the value stream, to capabilities, organisational structure, cultures and mind-set (Oliva & Kallenberg, 2003)

Especially new employees with new knowledge and skills and creation of new departments facilitating the development of customer-centred services is required. This will have an impact on the relationship between the departments, as more cross-functional work is needed, together with better transparency and communication, in the effort of fulfilling the customers demands. Service and after-sales are in some cases quite new to organisations, making it preferable to collaborate with other partners and suppliers, who have the required knowledge, skills and experience within these fields. (Gaiardelli et al., 2012)

7.2.4. Initiative for better after-sales service offerings

Organisations should strive to improve the efficiency of its maintenance and repair activities, which are carried out to facilitate and enhance product availability as well as to assess periodically any unforeseen issues that may arise. Gaiardelli et al. emphasis in their article from 2012, that enhancement of such activities may impact:

- personnel efficiency and productivity
- process lead time

This is also believed to have a positive affect on the overall value for the customer. For this purpose the LEAN philosophy has been highlighted as having a positive effect on the service business and operations, with its different initiatives, focusing on increasing the efficiency and effectiveness, together with supporting the delivery of more competitive services. (Portioli-Staudacher, 2010)

7.2.5. AS processes

As Sampson and Froehle highlights in their article from 2006, AS has become important for survival, which has put requirements for the design or the thorough reengineering of service business processes, thus having a common understanding, inherent activities, related performance metrics and best practices has to be considered and properly assessed (Sampson & Froehle, 2006).

Unfortunately companies operating in the AS business face the problem, that their domain lacks reference models that support them in creating an efficient and transparent process organisation and allow for internal and external benchmarking. According to 73% of the service provider participant in a recent survey conducted by Hertz et al, 2012, stats that they are not using any reference framework for standards to map their processes that integrate their business with the manufacturers (Hertz et al., 2012).

This next chapter will analyse After-sales Service at Vestas.

8. Analysis of Vestas After-sales Service business

Based on the description of Vestas service business, Chapter 6 together with knowledge gather under a four month internship and Chapter 7, the service business and mainly the after-sales service will be analysed and evaluated.

In the following an analysis of Vestas service business will by made, with special focus on the after-sales service part. The analyses will be divided according to the sections presented in Chapter 7.

8.1. Vestas and value

Through Vestas service offerings and resources, the customer needs and demand are always incorporated, as their service, and mainly After-sales service, is helping to enhance the value of their products and offerings, which ensure continuously maintenance and optimisation of the performance of the wind turbines.

Vestas role is to be the value facilitator for the clients, as they provide the value foundation, the physical product, followed by their services, pre, purchase and post. These services helps to secure a solid value foundation, which the clients can utilise and by this start their value generation processes, illustrated in Figure 16.





8.2. Vestas service offerings and resources

In most cases the basic offerings are made based on a generalisation of their general customers, but mostly on their key account customers demands and requirements, combined with trends in the market. The advantage of this; Key accounts are normally are quite well informed in what can be required by a company like Vestas, to secure maximum value of their investment. The disadvantage; clients are not fully understood and their demand cannot be complied, which equals a drop in customer satisfaction, bad hear saying and in worst cases no repurchase from clients.

Key account clients can become the big player towards Vestas, giving them huges saying in regards to how Vestas do business. These client do not always hold the key to what is true value, which means that Vestas always has to weight, measure and benchmark these according to another clients requirements. This should be combined through constant dialogue, in the attempt to spot and analyse trends in demands in the market. Having their collaboration with clients' ensures that they in most cases deliveries the required value foundation enabling the clients to start their value generation process and by this true value.

Even though Vestas uses it key accounts for defining this value foundation, it do not mean that Vestas are try to push it on their smaller clients, but refer to it as the trend of the market, in the effort of helping client to chose the solution that gives *them* most value.

8.3. Vestas' AS business

Vestas posses different kinds of service offerings, going from administrative to physical service tasks. These can be divided according to Grönross and Vandermerwe, classification and model, Table 9.

Phases	Characteristic	Vestas examples
Prepurchase (Before and During manufacturing)	Planning Designing Engineering Manufacturing	Customer wishes for service contracts Turbine requirements Planning of the sale Grid calculation Analysis on location
Purchase (Selling)	Execution of the decision Process orders Arranging financing	Tailored solutions is sold Logistic solution Finance solution
Postpurchase (During Consumption and After)	"Keeping things going" Maintenance	AOM contract put into ac- tion Service are performed after schedules and plans Unexpected issues are fixed Dialogue regarding new con- tract or possible problems in old contract Problems outside contracts are negotiated and per- formed

Table 9 - Vestas AS according to the three service phases

Based on Chapter 6, Vestas main offerings, AOM contracts, are AS service, which is seen as good, based on trends in other markets, as AS is giving high profit. This is, to some extent, the cases at Vestas as the service business is profitable and growing. The numbers indicating this do, unfortunately, not say anything about how many resources are put into securing the performance and service offerings.

Through observations, at the service department at Australia, it was discovered; if clients were experience any kind of miss match according to their AOM contract, Vestas is willing and need to react according to the requirements and written promises in the contract, and in some cases beyond, even though it would be very costly and not profitable to fix for Vestas. This is not done on an ad hoc approach, but through calculation and investigation within the specific area. In a number of cases, the efficiency of the service support to the clients, was seen not be efficient enough, as many resources were used, instead of seeking a more generalised procedure for simple problems as e.g. renting lift truck costing about 500,000 AUD \$ per trip, instead of planning services on a general level between sites, meaning they would utilising this resource, of the truck, best possible.

8.3.1. Vestas service strategy

Vestas have specialised strategies for their offerings, through the AOM contracts. Each contract is aiming at different customer segments, small as big. Clients with big investments normally seek reliable solution, where mainly financial and performance risk is minimised; helps to give return on investment, long term.

According to Porter's three strategies, the following is reached: Vestas is not a *cost leader*, as their offerings are cost heavy, seen from a purchasing perspective and cannot be classified as mass services. The *differentiation* strategy, could very well fit on their strategy as Vestas are aiming at creating strong bonds with its customer through it reliable product and service offerings, which are not alike its competitors. On the other hand, Vestas are also likely to have a more focus perspective as they are acting according to clients needs, e.g. key account customers, and are willing to follow their needs, even though the offerings will be less profitable than wanted. Based hereon, it can be said that Vestas are following mainly *the differentiation strategy*, but are in some cases leaning towards the *focus strategy*, depending on the customer type and its importance.

Taking these findings and putting them into the context of the four strategically profiles, highlighted in Table 8, indicates that Vestas are using the *Business Generator* and striving to use *Brand Fostering* strategy. Vestas are Technological pioneer from a business strategic perspective with their turbines and also their services, which are used as a differentiator compared to its competitors. The AS is generating new business opportunities and has been proven to be quite profitable. Their service and AS business is a dedicated business unit and holds intangible properties e.g. expertise and knowledge, which customers seeks and sees as value.

Trying to link the strategies above according to the challenges and possible solution created by the service excellence team, in Chapter 6, the following is achieved:

- Customer are shifting from having focus on maintenance of the turbine to the entire life lifecycle, as well as becoming more knowledgeable regarding services and products. Vestas sees the solution to start-up framework agreements to minimise this, together with opening their organisations by giving more transparency and integration through the organisation. The aim is to make Vestas the preferred business partner, leading to new business generator possibilities, but just as well a demand for Vestas to become *best in all*, moving towards a more *focus strategy*, based on increased customer involvement.
- Competitors turbines are getting higher performance and have higher technical similarities, independent service providers are professionalising and offering similar basic after-sales service offerings and Vestas unique LPF goal, is becoming the standard for the entire wind turbine industry. As a respond, Vestas are aiming at cost out initiatives together with increasing revenue and broaden portfolio of offerings. Vestas are moving towards *brand fostering*, meaning they are best in all.

It can be discussed if Vestas is actually using the *Brand fostering* strategy in accordance to its entire AS business, as they are still quite focused on cost according to satisfing customer needs and expectation. This is believed to only account for their top key accounts, and not for all of their clients.

As a consequence, it is required that Vestas has a system in place that can handle this kind of diversity and allow agility.

8.3.2. Vestas service organisational structure

Vestas has build a separate and didicated team working with its service business, called service excellence, which are focused on structuring the service offerings and putting up procedures and processes for the entire service business.

The team do recognise that not all knowledge required in the maintenance and development of the service business is possessed, but draws upon expertise through the organisations functions together with external expertise in the attempt to optimise and improve the service business.

Vestas way of organising and using their service business is fitting with the statement from Cavalier et al. article from 2007 saying: "AS departments is rapidly evolving into an in-depended business unit endowed with own profit and loss responsibility and perceived as a main strategic driver for ensuring long-term revenues, customer satisfaction, customer retention and a continuous improvement of the product and service quality, by performing an important supporting activity for other company's internal functions (design, quality, production, sales and marketing)" (Cavalier et al., 2007). It can be said to be; a small organisation within the overall organisation.

Overall processes exits for global processes, but also local process exits, which means that e.g. legislation difference from country to country can be incorporated in the processes, making these flexible and concrete. Customer from different countries have generalised needs but also differentiate needs, which the local sales offices handles. This is good from an effective perspective, as Vestas can respond according to this, but seen from and efficient perspective, it can be discussed if this is the best solution. But if they are not responsive, some clients will choose another supplier that can deliver.

8.3.3. Vestas development of their service business

Within Vestas different initiative are made in hopes of becoming more efficient and effective; lowering cost and simply do things smarter. To achieve this, Process management and also LEAN initiatives has been used through the organisation. (Excellence, 2008)

At ASP, the LEAN philosophy have just been implemented at their wind sites, where actual after-sales service is performed. This meant Vestas gained many of the advantages possible from LEAN; e.g. shorten lead time, better planning and cost reduction, as a consequence of customer increasing demand for better quality, efficiency, lower cost and increased value focus.

At the present the LEAN initiatives performed in ASP, have not been made a standard and spread to the rest of Vestas, even though the materials for a roll-out is created and has shown to give great results. Whether the is caused by the new structure being implemented or if it is a matter of cost, is unknown, but based on the success and the solid foundation that has been created, this LEAN initiatives should be integrated.

After the development and implementation of LEAN in Service Business in ASP, it was notice that the USA service division already had performed some of the LEAN initiative and most of the groundwork without codifying these in forms, manuals and processes, making the work at ASP more efficient. This meant that ASP started more or less from scratch, hire external consultancies, meaning high cost, time and other resources used in the start phase.

Other initiatives are constantly being developed within Vestas, from strategically, tactical to operational.

Unfortunately many of these, as the case of LEAN, is never spread, as these are either not deemed important or formalised so it can be shared quickly and easy to the rest of the organisation.

8.3.4. Vestas and service processes.

Through the use of BPM and creation of the different forums Vestas have tried to codify and utilise the processes best possible through different IT-systems, SAP and SharePoint. This has been done centralised by pin pointed stakeholders, whom has been nominated as the responsible personnel. The service business process is some of the best mapped and described processes of Vestas according to a key persons of the Service Excellence teams: Going through the systems, it is concluded to true, as other function is missing mapped and codified business processes. The description and analysis regarding this will be saved to Chapter 11.

8.3.5. General

The service business has shown to be the order winning criteria for Vestas, meaning the competitive advantage and the differentiation factor, helping to win customer and sell turbines, but just as well an important element of doing business as state above.

Also good service helps to ensure well performing turbines, which normally equals happy customers, as they are getting value for their money. This helps to enhance their partnership and future collaboration with its clients, which in the long run should help to secure customer and also repurchase of new products and services.



9. Business Process Management at Vestas

This chapter will shortly give a short description of how Vestas discovered BPM, what their precondition were for BPM and how top management acknowledge BPM. This will be used in a later analysis of Vestas BPM setup, Chapter 11.

Currently the Business Process Management (BPM) is incorporated at Vestas and is controlled and placed under department, Group Finance & Operations, which is closely related to top management and the CFO.

9.1. History and reason for BPM at Vestas

The implementation of BPM has been an on-going process, which started in the HR department in the start of 2008, followed to the rest of Vestas in mid 2008. In 2009 the BPM work was connect to upper level of Vestas organisation in a dedicated centre called Process Excellence, also housing service excellence. Within this centre, the full responsibility of the overall work of the entires organisations processes in accordance to BPM is placed. The excellence centre is placed on the same levels as seven other excellence functions, which are responsible for separate functions. These can be seen in Figure 17, combined, Vestas Excellence.

Sales	Production	Site Construction	Service
Transport & Logistics	Sourcing	Quality Management	Process Excellence



Each centre is responsible for: defining objetives and targets, deploy the functional strategy, engage in organisational aligment, drive performance management, develope competences and act as a Business Process Owner. (Excellence, 2008)

Their work will be done through Vestas Value Chain, which consist of 16 process domains Figure 18.



Figure 18 - Vestas Value Chain (Internal Source, 2012)

The reasons for implementing BPM at Vestas was to start-up, support and gather the process of mapping the business processes on all Vestas organisational units. The work regarding BPM was and is seen as an element in securing the future progress of Vestas organisation through continues improvement and optimisation. The documentation of the business process had the purpose of giving a newfound focus on the end-to-end processes, and through this secure business operations. Vestas wanted to obtain, in accordance to the processes; clearly definition of responsibilities and roles, combined with strengthens of its business processes through, at that time, newly acquired SAP system. Also, it should function as a support to the quality assurance of Vestas' core and supportive processes, and finally a better foundation

for absorbing and integrating new employees in, at that time, growing organisation. (Vestas, 2008)

The overall vision was and is to become a fully a process-oriented company, which should give the benefits of: *"Aligning and optimising processes, as these are believed to be vital to keep Vestas competitive and fit."* (Vestas, 2008)

9.1.1. Precondition for BPM

Years before implementing BPM, Vestas had already started up some of its business functions work on process related initiatives. But these were mainly kept internal within the individual business function unit and not managed in a cross-functional manner. But when People & Culture, started its focus on documentation, optimisation and development of HR process with employees development cycles in mind, BPM started slowly to recognise as valid and useful.

When the IT-project called Mayflower, SAP system on all levels, was decided to be implemented, BPM was seen as an element that had to be integrated as well. This meant that HR was chosen as the Pilot project for BPM as they already had some knowledge regarding BPM. HR started to build a BPM organisation, with focus on only the HR processes. Here the first process standards were defined together with the governance of the HR processes and finally the BPM tool of ARIS were chosen to be used. (Excellence, 2008)

With this pilot project, Vestas realised the usefulness and the need for integrating BPM in other areas of the business, which lead to the creation of the Process Excellence department.

9.1.2. Top management and BPM

The higher management level at Vestas were quick to realise the value BPM could give to the rest of the organisation casused by the success of the Pilot project. Within top management there were an understanding of the value, which a newfound focus of the business processes could bring to Vestas, short and long term. Also the advantages gained by having a documented standardise system in place for the business processes but just as well for the Mayflower IT-project. Based on the good and bad experience from the pilot project, the BPM organisation was adapted and used as the foundation for rolling out BPM to the rest of the organisation.

To give a clear signal to the rest of the organisation and to illustrate the support of top management, the responsibility was given to the Group Finanace to highlight the strategically importance of BPM. To minimise centralisation, each business function were asked to point out Business Process Owner (BPO) and Business Process Experts (BPE) and finally Business Process Specialist (BPS). These will be ellaborated on in Chapter 11.

Next chapter will present how the theory of BPM.

10. Business Process Management

This chapter will have the purpose of investigating the area of Business Process Management, in an attempt to understand and use it as a foundation when analysising Vestas current BPM approach.

This section will highlight how Business Process Management (BPM) rose, what it is about and what organisation should be aware of when integrating BPM in their organisations for making it successful. This will later on be used as a basis when analysing Vestas current BPM approach.

10.1. Process

Ever since Henri Fayol, recommended a subdivision of labour in order to increase productivity to Frederick Taylor focus of advocating the creation of an optimal work environment based on scientific methods to leverage the most efficient way of performing individual work steps, a focus has been on describing, formalising and optimising work through processes. This culminated with Ford, when he created and arranged the assembly line system, and at that time putting efficiency standards to a new height (Daft, 2007).

A process can be defined as:

"a series of actions, activities or steps taken in order to achieve a particular end/output" (Oxford Dictionary, 2012)

The focus of processes is still valid, as they are performed in any organisation and on a daily basis, intentionally and not, formal and informal. The processes can said to be the backbone of any organisation, and the employees, machines etc. are depended on these for being capable of performing their work in the right quality, as efficient and effective as possible. As a consequence, organisations are constantly trying to secure, maintain and optimise their processes through different management initiatives: formalisation, Total Quality Management (TQM), Six Sigma, LEAN, just to name a few.

10.2. Business Processes

Whenever an organisation attempt to satisfy its customers' needs it will use its processes, in both its operations and in other functions. Each of these processes will contribute some part in the fulfilment of the customer needs. Having dedicated processes that contain all the elements necessary for its production of the product/service helps in this manner. Customers' needs for each product/service are entirely fulfilled from within what is called an *end-to-end business process*^{*}, which often cuts across conventional organisational boundaries (Slack, 2004), illustrated in Figure 19.

Processes within a business context, are frequently referred to as business processes and can be defined as:

"... a set of activities intended to transform systems inputs into desired (or necessary) system outputs by the application of system resources to fulfill customers' needs." (Kalpic & Bernus, 2006)

Based on the definition, it can be said that business process has the same view as a general process. The main difference is that business process is more contexts based and are depended on an operating system and customers requisition. The output are either other business functions, employeesor customers.

*

Processes that fully a defined external customer need



Figure 19 - Business Process cuts across conventional organisational boundaries (Slack, 2004)

There will, within any organisation, be processes, which can be discussed whether these are specific business processes or not, as they have characteristic of more supportive role to the dedicated business processes, e.g. HR processes, maintenance of it system and cleaning. These are usually referred to as *supportive processes*, and are normally not given the same value, as their contributions to the whole are minimum and not crucial for the finale output.

10.2.1. Organising the process

From a top management level, it is preferable that the employees are capable of performing their task in the best possible way and also in the right way. It is about having consistency through the organisation (Daft, 2007)

Trying to understand an organisation business processes is a huge task and it requires a lot of communication between the different departments, since no one can have the overall view of all the business process. It is extreme important to have a good and functional system or procedures in place for managing the business processes in a structural and understandable manner. This requires a well-functioning support system that can help the employees in their work, and secure the performance as much as possible. This will enable the employees from other departments to obtain an understanding of what the other functions are doing and if they can benefit from each other expertise, skills, but just as well share each other resource. An organisation can really achieve great output and be efficient and effective in the execution, as transparency through the organisation is present. (Slack, 2004)

This is, on the other hand, not an easy task and organisations are constanly trying to standardise its procedures and processes in formal documents and different information's systems, to secure the performance. This requires several hours of work, and most organisation are lacking the expertise in this field and some have not been preventive enough, but just grown as an organisation without taking the right precautions. This has caused redundant steps being done, leading to bad or in some cases wrong result, but just as well reasonable result, where a lot of resource and time have been used without being efficient and having the wished effect.

Based on this, an area as BPM has arose and gotten the attention of some organisations.

10.3. Business Process Management

BPM is a relatively new concept has gained an increased recognition in the recent management literature. (Smith and Fingar (2003) cited in Møller, Maack, & Tan, 2007). BPM is, when googling the term, mostly related to IT software called BPM-system or BPMS, but in fact it is much more than that. It is actually a comprehensive system for managing and transforming organisational operations and controlling business activities and process in an efficient manner. ((Hammer, 2010) (Liu, Li, & Zhao, 2008))

BPM is concerned with creating and managing agile business processes^{*}, and is neither a new idea nor a shortcut to quick gains. It is a structured approach, which uses different management methods to control and continuously improve organisations processes and activities, but also a strategic initiative that requires a lot of hard work. It is in some cases referred to as the newest concept/stage within process management (Snabe et al, 2009). Smith and Fingar calls it for the third generation of process management, started with the early scientific management movement, Adam Smith and Frederic Taylor, followed by the second wave, Business Process Reengineering ^{**} (BPR), introduced by Hammer and to some extent Davenport in the 1990's (Smith & Fingar, 2003).

In some cases it can be difficult to differentiate between BPR and BPM, as each are complimentary of the other rather than a substitute. In Appendix A a short dicussion and presentation of BPM vs BPR is found, to help out identify the difference between the two.

BPM will be defined as:

"..a management discipline referring to the integrated and continuous analysis, design, implementation, execution, and monitoring of business processes to increase effectiveness and efficiency with respect to the corporate strategy" (Snabe et al., 2009)

and or simply put

"..a process control methodology, where business processes is controlled, designed and continuously improve with the aim at increasing efficiency and value adding of the business." (Bramsen et al., 2009)

Because BPM has a process focus, it enables and helps to create a common understanding of how the different organisational units each contribute to the overall output. Therefore it is necessary to move the managerial point from the conventional vertical communication system usually found in organisation to a horizontal communication system and establish a BPM system that can speedily and flexibly manage its responses to such environmental changes (Lee et al., 2010). It can be said that BPM assist organisations to reach goals and strategy together with focusing on highlighting the process, which could be useful to optimise in the near future.

10.3.1. Benefits of BPM

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Having BPM within an organisation gives potential benefits, which will range from modest to substantial, they can be said to be the value of actualising agile business processes. Gartner, 2006, found that organisations will benefits from BPM by gaining value in three stages; *Productivity-related value*, *Visibility-related value* and *Innovation-related value*, shown in Figure 20.

The ability of a business process to adapt rapidly and cost efficiently in response to changes in the business environment. (Slack, 2004)

^{**} The philosophy that recommends the redesign of processes to fulfil defined external customers needs (Slack, 2004)

- 1. Productivity-related value: Quick improvements in business process. Focuses on narrowly specific and often local processes. Remove redundant activities and eliminate low-value tasks. **The benefits**: increased process speed and reduce cost.
- 2. Visibility-related value: Enhanced business process visibility and increased agility. E.g. creating transparency of an entire supply chain, including customer and supplier. The benefits: Better value creation due to an overall coordination of resources.
- 3. Innovation-related value: Agility is enhanced through creativity and innovation. Higher focus on customers, development of strategies, identify core processes, and automate, manage, and improve these processes. The benefits: Broader business process, which will lead to greater awareness of new ways of doing business, from launching new products to crafting service offerings. (Snabe, et al., 2009)



Figure 20 - The Rewards From BPM Compound (Hill et al., 2006)

As seen, this is a natural evolution of having BPM and what organisations can expect from it.

10.3.2. Organisation and BPM misunderstanding

BPM has within most organisations been about mapping and documenting the processes in some kind of BPMS system, which has given well-documented processes mainly within the IT-system and some few business areas. This unfortunately means that a minimal focus on establishing a foundation to control and continuously improve the organisational processes is missing (Lee et al., 2010).

As a consequence the full potential of BPM have not been realised in the organisations, making Bramsen, et al. 2009, recommened organisations to start taking ownership and incorporate BPM in the daily work of its employees and the general organisations culture.

This means, organisations should start breaking down their silo-orientated structure to become more processes-oriented, which will give:

- Optimisation of task across the silo functions (better service)
- Synergy between functions, giving innovative solutions.
- Focuses on the through-put time (Process lead-time down)
- Improved collaboration between employees
- Create common understanding of the function role in the end-process and value creation for the customer.

In Figure 21, the views are illustrated, left-side, and shows how the silos are broken down and moved towards a more process-oriented view. This is greatly alike the view presented by Møller and Henriksen, right-side, and illustrates how BPM can transform an organisation through different stages and provide business value.



Figure 21 - From silo to process oriented focus and Evolution of the Process-Oriented Organisation (Snabe et al., 2009)

The organisational transformation is usually conceptualised through various forms or stages between functional organisations towards the process-oriented organisations. This kind of transformation cannot be achieved instantly but needs to be developed in stages, and is said to be a "journey" and is claimed to be impossible as the true process-oriented organisation merrily a vision for organisation in regards to BPM (Snabeet al., 2009).

Nevertheless, being capable of breaking down the barriers of the silos requires a foundation for management of the business processes and especially the management part of BPM is crucial. As a consequence, it is important that organisations have a foundation in place for managing these processes.

10.4. BPM methodology

To be capable to do so, different methodology frame works has been created, but through this thesis, the methodology frame developed by Deloitte Business Consulting, 2009, is used, combined with linkage to other researcher view on the area. Here central management areas are indicated as having importance. These are: *BPM-governance, BPM-organisation, BPM-processes, Standards for process mapping, Mapping of Business process* and *IT-foundation* and *Process optimisation* (E.g. Lean, Six Sigma). The framework is based on a generalisation of other organisations work of BPM, combined with trends in the business enviroment. The framework is presented in Figure 22.

As seen, in the middle of the framework, an AS-IS and TO-BE continuously circle is illustrated, which can be traced back to the basis thinking of BPR, which was focused on four areas: 1. Identify, 2. Update and review AS-IS processes, 3. Design TO-BE and 4. Test and Implement, which are still valid and useful in BPM.



Figure 22 - Business Process Management: Management and Achievments (Bramsen et al., 2009)

10.4.1. BPM-Governance

The purpose of governance is to maintain the overall structure in the work with BPM. The central areas within BPM governance are:

BPM strategies and priority of effort: The BPM strategy has to be in connection and support to the overall strategy of the organisation. As a consequence, strategic changes will also affect the demand for the processes then (Snabe et al., 2009). Priorities is needed, whether processes are *play-to-win* (competitive parameter), *Needed-to-play* (requirement) or *Neutral*.



Figure 23 - Strategy and processes

- Organisations needs to be aware of the stakeholders and their position and location, when working with processes. Some has more ownership than other regarding the process work.
- Follow-up on BPM-performance is deemed of importance, as the effect of BPM is better value creation through the process-preparation (measures typical and efficiency through BPM-standards)

10.4.2. BPM-Organisation

The construction of a BPM organisation is the foundation for the success of the BPM initiative and should become an integrated part of the basis organisation structure. The purpose of a BPM organisation is to

institutionalise the work for establishing the dedicated resources bases needed for the BPM work and also, build, maintain and secure the competences within BPM. The BPM organisation will in some organisations be a solely unit and others an integrated unit.

The relationship of the BPM organisation is also deemed important, as it helps to clarify the roles and the responsibility in the execution, and it also affects the choice of governance, as mentioned above.

The general clarity ensures: organisational form, the need of competences, physical staff, responsibility and the role dividing, between BPM organisation and basic organisational - the process ownership role. (Bramsen et al., 2009)

10.4.3. BPM-Processes

It is important to determine the BPM processes for being capable of supporting and secure the consistency in the work of BPM. The number of BPM processes varies from organisation, depending on the maturity of the organisation. The processes can be divided into three main groups:

- 1. Processes for supporting the strategy: A process for determining how the relevant input from the strategically considerations are incorporated in the overall process preparation work. This will help to secure that the BPM organisation is prepared for process changes, it-application and systems.
- 2. Processes building and maintaining the BPM methods: Establishment of procedures to secure the quality, approval and changes to any process, which is a part of the BPM work is crucial. These methods needs to be continuously adapted, to assure that these are up-to-date to maintain, integrity and consistency. Also the maintenance of the process database needed together with areas as, Master data, Politics/rules, KPI's etc.
- 3. Processes for change management: Two overall processes has to be focused on here, communication and training processes.

The Communication processes secures that all process changes and initiatives are performed and communicated to relevant areas and stakeholders.

Training processes captures and improves the competences required in the work of the BPM organisation. These will functions as foundation and help to cover the requirements that will occur in connection with the process documentation work.

10.4.4. BPM-Tools

As the BPM work is performed at different levels, it gives high requirements, e.g. the interaction between the business processes and the IT processes, to the tools used in the process documentation work. Through the years, several well-developed tools has hit the market and the most popular are: *ARIS, MEGA International, QualiWare, Visio* and *WebSphere* (Bramsen et al., 2009). Each tools has different functionalities and complicities and organisation should be aware of this when choosing the tool that fits their organisation. In most cases it will be preferable when starting the work of mapping the business processes and here under, the process hierarchy and the modelling standards. Also the training of employee and recourse needed for the system has to be evaluated.

10.4.5. Standard for processes mapping

The work regarding standardising and mapping of an organisations processes have been going on for many years and is now incorporated in its culture. Unfortunately, this is often not done in a structure manner or in different systems, where alternative notation, graphic and labelling are used. When working with BPM, is it important that these are done in the same structure manner. This requires a standard, which is

normally done in a manual or handbook. The following should as a minimum be required and stated: *Process hierarchy, Graphic standards* and *labelling of processes*. Figure 24 give an example of a process hierarchy.



Figure 24 - Process Hierarchy (Snabe et al., 2009)

10.4.6. Mapping of business processes and it-support

Having a structure method for mapping the business processes and the associated IT-support is a key when working with process mapping. It is recommend that organisations use a structure method, which support consistency, and help to secure the quality of the documenting and mapping of the processes. The task of localising the processes is often done through interviews and workshop with employees and manager, which requires a mapping technique/method, but also secures the validity of the processes (Lee et al., 2010).

10.4.7. Process optimisation methods

The processes needs to be secured and optimised, so that they are not just documentations of the present situation, AS-IS. Organisation should strive to continuously follow-up on its current processes, which in most cases will give input to BPM and by this start-up process optimisation project (Snabe et al., 2009). It can be said that the process optimisation initiative are a cornerstone in BPM, and it is individually how organisation goes around this. In the presence, many organisations are using the philosophy of TQM, LEAN and Six Sigma as these approaches has a fitted support of the initiatives of BPM. These approach has a focus on process optimisation, and secondly also the aim at the end customer and on the processes being value creating across the whole organisation. This gives an end-to-end perspective, which is a key in BPM. Thirdly the approach's gives tools that can support the continuously work on improving the processes, e.g. DMAIC from Six Sigma. Using either the Six Sigma or LEAN approach has shown at Deloitte to increase the opportunities for realising the following (Bramsen et al., 2009)

- Effective results illustrated through: less costs and higher productivity
- Increased focus on minimising errors, eliminating redundant work and better transparency
- Better and more focused business use of IT-Systems, because the preparation work has had a process view
- Increased customer focus. Not only in the front office, but across functional areas.
- Higher success rate in optimisations projects, based on better developed and tested methods, which secures the connection between strategy and business goals.
- Higher employees satisfaction, because of involvement and creation of ownership of processes.

10.4.8. Gains from BPM

As illustrated in Figure Figure 22, there are gains from BPM, which organisations can use as their purpose/ reason for BPM. These are:

- Better strategically management foundation
- Transparency and effective processes
- Measures able processes
- Quick adaptability
- Enhanced customer focus
- Optimised IT-support
- Better foundation for restructuring
- Increased employee

The benefits from BPM are to some extent already mentioned in the above, so the description of each is not deemed necessary to explain.

In the following chapter Vestas current BPM setup will be described and analysed.



11. Analysis of Vestas Business Process Management Setup

This chapter will analyse Vestas current BPM setup according to the theory presented in Chapter 10 of BPM together with the short history of BPM, presented in Chapter 9.

11.1. Management of BPM at Vestas

Vestas has been quite focused on implementing BPM from its start. In the following, the success of it will be evaluated based on the management principles presented in the BPM framework Chapter 10, together with the benefits gained.

11.1.1. BPM-governance

When BPM was introduced into Vestas the main purpose was to create formalised process in a structure and unified manner that would allow Vestas to work in a way, which would follow a disciplined and repeatable design. This would enable Vestas to: work more efficiently, constantly improve the way they work, deliver high-level performance that their customers demanded (Exellence, 2008).

This meant that Vestas from the start of BPM was quite keen on establishing a solid foundation. This meant that the BPM-governance were aimed at creating guidelines, roles and responsibility for process owners, but also create procedures for changes, quality assurance. The process governance principles of Vestas can be seen in Figure 25:



Figure 25 - Process Governance of Vestas

The governance principles of Chapter 10, gives the following with put into the context of Vestas:

- Having dedicated BPM strategy These are no clear described processes at the present within Vestas, of the researcher knowledge, but are believed to be implicit in Vestas. This argumentation is based on the fact that BPM is viewed as sources/tool and not the goal at the management level when spreading and integrating new initiatives and strategies.
- Be aware of stakeholders and their ownership of processes Vestas has through its BPM organisation

ensured the overview of stakeholders and their ownership of processes is secured.

 Follow-up on BPM performance – Vestas have created KPI's based on the e.g. BPM processes, to be capable of measuring it business processes performance. But these are difficult to understand, and in many cases the KPI's are more focused on effective results rather efficient results, which is believed to be a bit contradicting the idea of BPM.

11.1.2. BPM-organisation

The BPM-organisation at Vestas is responsible for running BPM-work across the business function, together with managing and coordinating on an upper-level. The BPM organisation ensures that methods for process mapping, documentation standards are created and updated continuously, together with determining the governance aspect: who should have the responsibility and who owns the processes. Below, in Figure 26 the BPM organisation, or BPM Backbone as Vestas calls it, is illustrated (Excellence 2008).



Figure 26 - BPM organisation of Vestas (Excellence, 2010)

The BPM organisation is organised as follows: The Business Proces Owners (BPO) is responsible for globally align & processes optimisation in his/her domain (Example Service, Asia Pacific). But as he/she cannot do this alone, a Global process organisation has been set up to ensure collaboration between the Domain owners and the business with clear roles & interfaces referred to as the BPM Backbone. Each out of the 16 domains in the Value Chain is owned by a BPO and around each domain is created a *Community*, These communities are headed by a BPO - or by a BPO-appointed person and each *Community* can set up a number of *Forums* headed by a Business Process Specialist (BPS). In the forums processes are being designed, revised and improved and later approved in the Communities (Excellence, 2010). In Table 10, below the role from Figure 26 is explained and in Table 11 the activity of the forum is summerised.

	Name	Level	Example
BPO	Business Process Owner	Strategically Level, Domain	Vice president Service Asia
BPR	Business Process Refer- ence	Strategical/Tactical level, Country	Department Director, Singapore
BPS	Business Process Spe- cialist	Tactical level, Domain	System Specialist, Asia
BPE	Business Process Expert	Operational Level, Country	Service planner, Aus- tralia

BPM Process	BPM-Organisations Activities
1. Process for uspport- ing the strategy	- Design, Sustain and review the BPM Backbone structure
2. Process building and maintaining the BPM methods	 Sustain and review BPM roles, responsibilities and skills requirements to secure the right competences in the BPM organization Facilitation of BPO Board/BPS Community Facilitate and review process communities and forums according to BPM Backbone Sustain and review cooperation structure between the Excellence
	Centre's and Line of Business
3. Processes for change management	 Support BPM Backbone by rolling out necessary training initiatives
	 Ensure appropriate and dedicated communication of the BPM backbone to relevant stakeholders



As seen, most of the current process are aimed at the *Process building and maintaining the BPM methods*, which is quite normal, based on Vestas maturity accroding to the BPM.

11.1.3. BPM-processes

As presented in Chapter 10, Vestas can have three types of process in accordance to BPM. To refresh these are: 1. Processes for supporting the strategy, 2. Processes building and maintaining the BPM methods and 3. Processes for change management

Vestas do not as basis has a process for supporting the strategy, but Figure 27 could be seen similar to what is thought and presented in theory section.



Figure 27 - Process Excellence Improvement Concept in Vestas (cvest, 2009)

This figure is used within the Process Excellence division as an improvement concept, which helps to be ensure that new initiatives are responsive to that of the overall strategy, is believed to be somewhat is presently done at Vestas based on informal discussion and observation. Vestas has build as comprehensive portfolio of process for building and maintaining the BPM methods to secure the quality, approval and changes to any process that is important for the BPM work is done. There is a minimum of 10 diverse, documents, manual, power-point presentation, in the step of understanding the handling process documentation. Going from process governance, to quality standards, stakeholder analysis to creation or revise documentation process. The overall process of handling the process documentation are yearly revised and updated, to secure that the processes is up-to-date and to secure high quality.

In regards to the process for change management, focusing on training and communication, this is done through the BPM Backbones communities and forums to the identified stakeholders.

11.1.4. BPM-tools

Vestas is using the tool of *ARIS* in their underlying work of their processes. The tool has been a big help in the process of mapping the processes across function and regions of Vestas, because of top management decision of anchoring it in the organisation and making it the "language" used when mapping and formalising processes', but mostly because of the BPM organisation. Support to the employees in the documentation process together with education within ARIS was given. This meant that the BPM organisation developed and delivered complete documents for helping functions and units starting up their BPM work, but also supporting them. The output of their work was passed on to an ARIS developed, an educated user of the program, who would be responsible for drawing/mapping into the system. The effort and results ended in what is now known as, Vestas Process Portal or VPP.

Vestas Process Portal – VPP

The VPP is an Internal Value Chain, placed in Vestas local Intranet also known as, The Hub. Within VPP, the employees can always get an overview and description of the processes connected to their work, but just as well see the linkage made to other functions within Vestas, the figure were presented in Chapter 9. The VPP should be: **Single point of access** to process-related information in Vestas, **Globally aligned processes** - Through the BPM Backbone communities and forums processes are aligned across Vestas and published in the VPP, **Updated process versions** – it always contains the latest version of live processes and **Fresh view on processes** which are not determined by the BU, but by the process domain

11.1.5. Standards for process mapping.

The standards for process management has been of great importance from the start of the BPM project, and the BPM organisation has been managing it with creating guidelines for mapping and documentation of processes within the organisation. In the work of creating the VPP, Vestas adapted and used the idea of creating a process hierarchy to classify and divide their processes, illustrated in Figure 28.



Figure 28 - Hierarchy level at VPP

Vestas has divided their Value Chain into four levels, L1 and L2 are higher level (Strategically and tactical) and L3 and L4 (tactical and operational) concerned with actually processes. The level are defined as following:

- Level 1: Vestas Value Chain is the structure that describes how Vestas' activities link together in creating value for the company's stakeholders
- Level 2: Domain Value Chains for each domain, providing an overview of all Main Processes in the respective domain.
- Level 3: Main Processes are the main processes that Vestas carries out to deliver value to the company's stakeholders. The main processes are valid and mandatory across all business units.
- Level 4: Processes are more specific than main processes. Each main process may have one or more associated processes.

The manner of dividing is quite helpful when, reviews, updates and new process implementation is performed and needed. On a daily basis this level deviation is not something that the employees are thinking about.

Since the implementation of BPM and till now, it has been the BPM organisations task to control and to secure that the documented processes are consistent to how these are done in practice.

11.1.6. Process optimisation methods

Vestas has always been using simple process management approach to minimising and up-date or eliminate out-dated processes. No specific approach has been used for this purpose, but elements from Six Sigma, LEAN, TQM is known, as each function, through the years, has had its own responsibility to perform these. The main overall driver has been ISO 9001 certification and it audits, here some guidelines has been put forth to secure that their processes was actually acting and performing according to what is located in the VPP (Internal Source, 2012).

11.2. Gains from BPM

When BPM were decided to be implemented, no specific key numbers were put forth as a measurement for the success of BPM. The primary focus were on creating a common understanding of the business end-to-end process through institutionalising the management of the business processes – mainly for being capable of becoming more responsive. Secondly, the task of defining roles and responsibility of the processes was of importance, as a need based on Vestas rapid growth as an organisation.(Excellence, 2008)

Vestas has through BPM gained (Internal Source 2012):

- Better strategically foundation: Vestas has created a solid foundation in codified and mapped processes.
- Transparency and effective processes: Redundant processes are constantly being remove and old processes are continuously being updated and improved in different kind of reviews.
- Measurable processes (KPI/PPI and benchmarking)
- Become more responsive: When problems occur, Vestas can now better traces back the problem through its processes.
- Higher customer focus: The customer, if needed, can see which processes are needed in delivering their product /service, and can be more involved in the value processes.

Based on the use of the methodology framework, it is now possible to evaluate the use of BPM according to Gartner's benefits and following how far Vestas are within the process of becoming a process-oriented organisation

11.2.1. Benefits of BPM at Vestas according to Gartner

Going back to the views presented by Gartner 2006, and putting them into the context of Vestas the following is reached:

- 1. *Productivity-related value:* Vestas has been in the process and to some extent still in the process, but the basic foundation has been created. Here the redundant processes are removed, which has given quicker processes and lower cost processes. (Goal)
- 2. *Visibility-related value:* Vestas are presently within this stage, as they currently are trying to create better transparency through the organisation, mainly internally. This task is also an area and focus according to the newly presented service strategy. (Mission)
- 3. Innovation-related value: This is not believed to be present, and also based on the time aspect, should not be possible yet. This will instead be the future vision of Vestas, so that their BPM work is constantly evolving. This requires that a dedicated strategy has to be developed, putting up demands for the new BPM system and its processes, based on the present AS-IS going to TO-BE. The is belived to be quite attractive for Vestas when looking at the benefits gained (broader BP, greater awareness, new products), as these will all help to make Vestas more attractive towards customers as they will help to differentiate it offerings according to that of its competitors. (Vision)

This is when looking at the figure, quite normal for an organisation as Vestas, as they should first be a the second stage in or at the end of 2012, and the third stages should be reaced way after 2012.

11.2.2. Silo vs. Process oriented view at Vestas

As stated by Bramsen et al., organisation will obtain achievement if they focus on breaking down their silo structure. These achievements are used to judge if Vestas has moved to a more process orientation view.

- Vestas has on the BPM level broken down the silo and understood that each process contributes to a finale output. This is also seen through the different cross-functional lines existing within the VPP system.
- Vestas have a huge focus on process lead times and have put up KPI with the purpose of measuring these.
- The role within the BPM organisation together with the rules of the BPM governance has helped to create a common understanding of these and how each contribute to value creation for the customer.
- Vestas have got improved collaboration between employees, as the VPP helps to give other function insight into the work of it colleague. But again, this is not fully developed, but Vestas are getting there.
- Synergy between functions, giving innovative solution are not in focus and an aim yet, but are believed to become more important as the BPM system will mature.

With the above in mind, the model presented by Møller and Henriksen, Figure 21, can be used to classify to what extent Vestas evolved according to the process-oriented view. Vestas are clearly between the stages of *Function and Process Organisation* and *Process-centred Organisation*, as Vestas has realised that to have fully business process, it requires that the end-to-end process consist of cross-functional process work, before the customer can achieve value. Whether they are in one or the other need further investigation, which will be left out at this, as the main thing is that Vestas has started to break down their silo orientation, but also base on the time horizon shown in Figure 20. But within e.g. the sales division, they have to a certain extent moved towards a process-centred organisation as each processes are link across function, how this is done in the rest of Vestas is presently unknown. But one think that is certain is that they are not fully process-oriented organisation, based on the statement put forth by Snabe et al. that no organisation are true process-oriented organisations, it is more a vision.
11.3. General

Based on the current BPM setup it is seen that Vestas are currently fulfilling most of the management areas as highlighted in the BPM methodology framework. It can be discussed how integrated BPM really is within Vestas, mainly based on the fact that BPM only has been within Vestas for four years, together with the way BPM was introduced into Vestas. This was done by their P&C division, which can be said to be a good way of introducing a new system/way of thinking through a Pilot project. But is can still be discussed if this was the right approach, as their BPM pilot project could have been coloured by the P&C's needs and wants and not for Vestas as a whole. The approach used seemed to be a somewhat add-hoc, which can be an advantages, but as there were not clearly defined goals put forth, this approach can be said to be a resource demanding and time consuming. It could have been of interest to have used a more neutral approach, had e.g. an consulting company with experience in integrating BPM, to create a somewhat more general and tested approach, which could have given faster results and more goal orientated.

As a final comment, it should be notice that BPM in some cases at Vestas, is more the goal rather than the tool/source, which mean that to much focus on formalising and evaluating processes can become to resources demanding.

But in general BPM and the setup is working according to the requirements of Vestas and it has given a handful of benefits in the present and for future use. E.g. a business process foundation has been created, which is believed to be an advantages in the work of changing the strategy of Vestas together with the restructuring of Vestas, as important and crucial business process has been secured and formalised, and not lost in the layoff round.

In the next chapter, the AS and BPM setup will be evaluated based on a recent ISO 9001 review performed at Vestas ASP.



12. ISO 9001 audit – Reviewing the Service processes in VPP

This chapter will describe the findings of a recent ISO 9001 audit performed at Vestas Process Portal system holding Vestas service business processes. The specific analysis and findings are placed in Appendix A-1 enclosed on the attached cd, which will be used as the basis of this chapter.

Recently an ISO 9001 audit was performed of Vestas Process Portal, which is handling the Service process, and after-sales processes within the service division of ASP. To recall, the VPP is an output of the BPM worked done. The audit had the goal of finding variance between global and local business process at Vestas, but just as well finding possible areas of concern in the current system, e.g. redundant steps, outdated processes and other anomalies. The audit was part of a global project, which had the main purpose of ensure the quality and the standardisation of Vestas processes are fulfilling the requirements of the ISO 9001, enabling Vestas to be ISO certified. This audit will be used to investigate, in this thesis to evaluate if Vestas current BPM approach is operating properly.

In Appendix B a short description of ISO audits and its purpose it made can be found, which can help to get a basic understanding of the approach.

12.3.1. ISO audit

An ISO audit can be performed in two stages, internal and Independent.

- Internal audit also known as First audit is performed by organization on its own systems, procedures and facilities. E.g. Vestas current audit focus.
- Independent or External audit is performed by a certification body in order to verify the compliance with various standards. During certification, auditor verifies whether the system is designed in compliance to the standards (e.g. ISO or OHSAS) and weather the system is operated in the way it is documented.

Organisations can also experience an *External audit* or *Secondary party*, which is performed by a customer on a supplier. External audits may take place prior to awarding contracts to a supplier or to review a supplier's performance. (Standard, 2011)

These audit are performed with regular intervals, as recommend by the certification body, this means, becoming an ISO certificate organization is not a once-and-for-all award, but must be renewed at regularly basis, every six month to once a year, if the system is mature, if new, monthly. (Standard, 2011)

Putting ISO audits into the context of BPM, it is said to be a helpful tool, which helps to secure and controls the BPM process system as it continually helps to maintained and update the current system, in this case the VPP. The audit performed at Vestas is classified as *Internal audit*.

12.1. The Internal Audit

As described, this audit is focused on identifying local and global process, but just is also used to review the entire Business Process Management setup according to the service process internally. This result of the audit will be used for integrating new and correcting old processes, so the system is ready for the second stage of the ISO audit, the external actual audit of the system. The result of the audit will in this thesis be used to evaluate the BPM setup of Vestas in accordance to its AS Processes.

12.1.1. Result

A total of 39 existing and documented global process were found, needing improvements of either big or small character, 9 new none written processes globally had to be created as these where deemed critical and needed in the system. On a local level, 6 new processes have to be created and 5 existing have to be updated. The result were based on emails, that had been send out and been benchmarked according to "physical" process performed by employees.

12.1.2. Responsible

The review is on a global scale controlled by the quality department at Vestas, known as QPEX. The local audit is managed and delegated from the Quality director of Quality Assurance, ASP, centralised in the in India. The more hands-on review work were delegated to BPS and BPE, in their respective division and countries, mainly because of them having the overview and knowledge about the specific processes and the related stakeholders. A BPS and the researcher of this thesis performed the review at Australia, New Zealand and the Singapore office.

12.1.3. The process of the Internal Audit

Basically no specific guidelines were put forth, which meant it was solely up to the reviewers, to make sure that the asked stakeholders were the right employees. In this case the BPS employee with her premade excel sheet of possible stakeholder helped to determine this.

Firstly the processes within the VPP were investigated based on common sense and experience, which gave a huge output of possible areas of concern, wrong construction of processes, redundant steps, role variance and more. These were narrowed down in collaboration, between BPS and researcher, and an email was formulated explaining the reason for the review, responsible and why they were asked for performing the review, this email is attached in Appendix C. Secondly emails were send to stakeholder together with a time frame for their feedback.

12.1.4. Feedback

The feedback that came back was quite minimal and only 10-15 % replied at first, even though the email clearly stated the importance and had Vice President of Service, ASP, Service Director and managers connected as cc. Emails were followed by calls, in the attempt to get the identified process reviewed and comment. The main part of the lacking responses were from employees in operational levels. After several attempts with more calls and emails, more feedback did came back, which gave the following:

Employees understood the purpose of review, but did not see the point or did not understand the processes send to them, even though they were working with that specific business process. Many claimed that they did not know anything about VPP, even though all employees at Vestas are required to review and updated their work process once in a while to make sure that these are up-to-date, according to the BPM setup.

Also the roles description in the VPP of some employees did not add-up to the role in real life, giving misunderstanding in role process responsibility etc. In most cases, the employees explained, after closer look, that is was caused by none-updated terminology as they were in fact the right person to contact.

The stakeholders also pin-pointed that they felt neglected, in some cases, by not getting the right information regarding updates in their processes, development of new and efficient tools and more which could help out on a daily basis.

In some cases when stakeholders had improvements they wanted to report, the governance structure made

the progress time consuming, because of the different hearings and levels it had to go through. This lead to irritations and frustration, and by this not reporting findings, updates, creation of new and redundant process back. They claimed that the system mainly works one way, top down and not down up, which should not be the case with BPM-Forum and its communities. Here to-way communication should be enhanced.

12.1.5. Evaluation

This ISO 9001 review gave a more profound insight into the service processes and how these are integrated into VPP.

The current VPP seems to work on the strategically and tactical level as maintenance and updates are done, and the operational level, based on the feedback, are not. This is concluded as there exist lacking understanding and knowledge of the system from some stakeholder and employees at this level, which lead to believe that more process are effect and none-existing than reported back.

The system currently holds the global processes and as indicated in the review only 6 new local processes had to be integrated into the system, which is quite few, based on the fact that the service division and its value chain consist of over hundreds of processes and the ASP region consist of several countries with different service division with possible local business processes. This lead to think that this number is not valid and more local processes is existing. The service director and other employees have following confirmed this thought subsequent the review was done.

The lack of none updated and formalised processes both globally and locally, are lowering the overall transparency of the organisation, which is one of the key areas, which Vestas are in the progress of minimising in their new strategy focus, but also having at hand in their restructuring of organisations. This illustrates that the problem is not unknown to Vestas.

The general problem with the transparency is seen leading to overall minimisation of efficiency and effectiveness of its service processes, primarily internally but also external as it in the long run will affect the customer.

Also, thoughts and concern are made to the rest of functions within Vestas Value Chain, as stated by a Service Excellence member:

"The Value Chain according to Service is one of the most structured and finished part of Vestas entire VPP system, and e.g. Construction are lacking gratefully, and I do only believe that only Sales and Finance are better and more finished than us!"

Even though this statement is quite coloured by her work in Service Excellence, it still give consideration, which were confirmed after browsing through the over value functions chains. Either nothing was added or the processes existing were one big mess, based on the principles put forth in Chapter 10. But as this thesis is focusing on After-sales service and BPM this is without of the scope, but is worth taking notice off.

Putting the findings into the bigger picture of Vestas and its future, it raises some areas of concern, as the VPP is seen as a foundation for use when dealing with BPM, which will enable e.g. new initiatives and strategies put forth at Vestas, which is currently the case. If the foundation of Vestas is not in order, the future initiatives and strategies will probably be very likely to fail or make the processes of the change even harder than needed.

With this in mind, the next chapter will, try to summaries the areas presented in the first part of this thesis, and try to combines these into an answer to the preliminary question put forth in Chapter 3.

13. Subconclusion

This chapter will combine the areas of the preliminary analysis in the process of answering the initiating problem of this thesis.

In the following AS and BPM will firstly be summarised followed by a combination of the two according to the initiating problem, which will following be put into the context of Vestas.

13.1. After-sales service

After-sales services has been proven to be a need for securing an organisations future business, as it helps to ensure value for the customer through the products lifetime. This indicates that AS is an important way of creating business for organisations, and has lead to the creation of dedicated departments and strategies with the goal of ensuring this part of their business. AS gives this following benefits:

- Higher competitive advantages
- New source of revenue
- Helps to maintain customer relationship
 - Possibility of contract renewal and future business opportunity
 - Knowledge gained / learned

For having well-performing After-sales Service involves collaboration between function and department as to solve the problem rising for customers. This requires a process overview, which enables the participants of a value stream to identify other stakeholders and enablers, so these can be contact quickly and start improve the areas of focus.

The increasing importance of the AS service provision calls for proper management of the existing processes and activities to encourage a continuous improvement of service quality, which will help to secure the satisfaction of customers and future business. But as customers demand often are different, the AS business has to be managed in an agile and responsive manner to be capable of delivering customer value, in the attempt to stay competitive. This is unfortunately a cost and resources heavy issue.

In recent papers, authors highlight the importance of mapping and codifying the process of after-sales service, to get the opportunity to create better transparency, which can lead to efficient and effective work processes, cut down on cost and simply do things smarter. Having transparent processes, allows the customer to provide significant inputs into the production process of service or products, e.g. new requirements, wishes and development ideas. A consolidated understanding on the importance of processes as basic is needed to perform services. Value is created and strategies are realised at business processes level.

Through the managed and optimised processes, true value to the client or end-user is ensured. This helps to higher the competitiveness of AS and the organisation, as it can differentiate it offerings, and give innovative and customer focused solutions. AS therefore needs to be managed in a agile and responsive manager to give the customer value which has shown to give a competitive advantage, with the possibility of repurchase of service and products.

As highlighted in Chapter 7, organisation unfortunately has a tendency to neglect the creation of process reference model, which can help to create the required transparency and knowledge sharing, which will enable internal and external benchmarking possibilities.

13.2. Business Process Management

As identified, Business Process Management is a good and functional management approach, which helps to structure an organisation processes in a unified manner, that creates a process platform, which helps to create agility, transparency and gives the possibility of becoming efficient, effective and in best cases innovative. BPM has been shown to provide:

- Secured business processes and work activities through formalisation initiatives
- Focus on effectiveness and efficiency of current business processes
 - Minimises cost and heighten customer value
- Secures the quality of the business processes
- Create and managed Business Process in a agile manner
- Helps to realise strategies
- Support a two-way dialogue between acting links, process design and the overall strategies.

13.3. After-sales Service and Business Process Management

BPM helps to create a structured process foundation for AS, which means it is an enabling factor for performing the activities and processes of AS, as it secures the end-to-end processes are integrated and managed according to what is required by the customer, as stated by Slack, 2004, and illustrated in Figure 19 (End-to-end processes). Having these end-to-end processes allows organisations to become a more process-oriented organisation, which is believed to be an enhancer of true customer value, which is believed to give higher customer satisfaction. This will lead to retention of client, equalling, repurchase of service or new products, together with a better foundation in the attempt to keep business and be competitive, which is useful outputs when going back to the AS business. BPM also allows the integration of service strategies so organisations can become innovate in its future service setup, according to the three value stages of Gartner, Figure 20.

Through the BPM initiative, the AS activities and processes is getting the opportunity to be optimised, improved and made efficient and effective, which will help to become more flexible, making the setup more agile. BPM has been stated to help create higher quality processes and by this quality outputs. It can help to secure efficiency from and organisations processes and as stated by Gaiardello et al. 2012, "a continuous improvement of service process quality and efficiency is a fundamental requirement for creating competitive advantages". Through the managed process, value to the customer is given, which means BPM is an enhancer of AS processes, making AS more competitive.

To answer the initiating problem, the following can be said to be the summaried conclusion of the preliminary analysis:

By using the management approach of BPM, organisation can better utilise its AS business processes possibilities (e.g. becoming more competitive, secure future business), as BPM integrates the strategies of the organisation into the process work, which will yield more dedicated business processes. These will, through the structured BPM methodology, deliver higher performance, according to the principles of efficiency and effectiveness, as the processes agility is enhanced based on the increased transparency, which then will enable the organisation to become a more process-orientated organisation. Having a total picture of the end-to-end processes leads to reach actual customer value, and by this customer satisfaction, fostering repurchase of new service offerings or new product and service contracts.

13.4. Vestas After-sales Service process and Business Process Management

At Vestas a solid AS business has been build through the years, which has shown to give good financial results and has had a positive effect on customer relationship and loyalty, in some cases the order winning criteria. The BPM initiatives which was started in 2008 has help to set the foundation for process management, at Vestas, and through its structure and discipline, helped to ensure a continuous review and updates of it processes and businesses.

On the overall level, AS and BPM works as intent, Vestas has a healthy and feasible after-sales service business, which is contributing to the overall revenue. The BPM initiative has been done through several years and its value chain and the business process of its different functions has been integrated and cross-linked in their VPP and SAP system. This means that a good overall and global overview of the service processes exits, which helps to give an overall transparency through the organisation. This can be used when new strategies and other initiatives have to be integrated into their current business system. Also, employees working in cross-functional tasks and newly recruited employees can easy and quickly get an overview of Vestas business processes and their connection. Also customer can, if needed, examine Vestas value map and see the different activity and processes contributing to the overall value chain and to their finished good, external transparency.

Utilising these areas has been identified to be a source of creating competitive advantage for Vestas, in the increasing competitive energy market as it helps to deliver true value to the customer, through efficient and effective end-to-end process. This is, according to the new strategy of Vestas, key elements, where the customer and its needs are in focus, competiveness is heighten, effectiveness is gained, which all-in-all is believed to help ensure Vestas future business.

Together with the new strategy, Vestas presented a new structure for organising its organisation, which meant departments and functions has to be merged to become more efficient and effective in its work. This requires a good solid business process foundation, as some processes have to be removed, updated, created or merged. Here their BPM approach has been deemed critical element in this work, as it creates a basic foundation for being capable of performing and integrating these changes and upcoming changes.

13.4.1. Problem

As discovered through a recently internal ISO 9001 review, Vestas' VPP showed to have several errors in redundant and none update processes, together with missing processes, globally as locally, of different volume. The most crucial part of this review was seen through the fact that many employees, mainly at the operational level, were not updating and sharing new processes. This was based on the employees not seeing the relevance/need or simply understood the processes. As a consequence, it is difficult for other employees to see if there are any local processes that should be taken into consideration when calculating or improve a certain area on a higher level, but just as well just be informed. Also sharing of experience and knowledge between departments are not done automatically or at all, which has lead to loss of useful hands-on information and best practice. In most cases it has lead to redundant steps being redone, waste of resources, or the reengineering of the wheel, sort of speak.

All of this is affecting the general efficiency, which is normally associated with the resources used, time and money, to reach a specific output/goal. It is important to understand that Vestas in many cases are actually very effective and are satisfying the customers needs, but the problem as seen, is that they are not doing it in an efficient manner, costing people, time and most importantly money. Looking at their new strategy, the word effectiveness is present, but efficiency it missing, which is believed by the research to be just as

important, if not even more.

The problem above are mainly of BPM character, but as indicated earlier, BPM and AS are connected, as BPM is the solid foundation for performing good and efficient AS business. So BPM problems equals problem to the AS business, as they will have a domino effect through the organisation. Especially AS will lack crucial knowledge according daily problems and opportunities, but most important in dealing with customer of international and professional character.

This leads to the next part of this thesis, the main analysis, which will be started by a problem formulation based on the problems highlighted above.

Main analysis

14. Problem formulation

The findings from the preliminary research will be summarised and used for formulating a problem statement, which will be used for the research in the main analysis of thethesis.

As investigated and found in the preliminary part of this thesis, AS and BPM are closely related and are each other enablers. BPM sets the solid foundation, which are based on AS input. This means that problems within one area will affect the other, which showed to be the case at Vestas, based on an ISO 9001 audit of Vestas' Process Portal.

Here it was found that several processes were missing local and global updates, caused by employees' minimal of sharing of knowledge, together with missing understandings of the system, leading to lacking knowledge sharing and overall transparency. This was mainly seen at the operational level, as the strategically and tactical was concluded to operate as required.

Vestas is in many cases are not achieving the maximum results of their BPM efforts and by this the full benefit of their AS business possibilities, which indicates that the main problem at Vestas is its current BPM approach in accordance to VPP as it is inefficient on the operational level.

The lack of transparency is a problem in accordance to efficiency and effectiveness, as detailed and useful knowledge are not shared and utilised by others. This will on a long-term basis affect customer satisfaction as the value foundation delivered is giving false output, making the generating process of the customer wrong and not enabling true value to be created, which is essential for the customer.

This will, on a bigger scal, also affect the new strategy initiatives and to some extent the work of restructuring their organisation, as going back to the statement presented: *value is created and strategies are realised at the business level*. If the business level is performing according to was it presented in the system, the output will be affect and worst case be false.

The problem of lacking transparency is to some extent already know at Vestas, and as state by Jørn Hammer, Vice President of Sales, ASP, and Sales Director of Australia:

"We have and are still struggling with transparency through our organisations, from management level to operational level. We need to focus on this and try to minimise this problem" (Vice President of Sales, 2011)

This statement was made shortly after Vestas internally announcement their financial result from 2011, which had the consequence of 2300 employees being fired over the next months.

The result of the preliminary analysis and the description above leads to the following problem statement:

"How can Vestas improve its BPM approach in relation to the operational after-sales service business processes transparency?"

Answering this question is believed to help improve the efficiency and effectiveness of the AS processes, which should benefits customer satisfaction and loyalty. But most importantly secure the BPM foundation for the AS business processes, through improved knowledge sharing initiatives.

Being capable of answering this question requires supportive question as it is deemed to be to comprehensive. This leads to the following areas and these respectively questions:

Firstly an basic understanding of issues and possible initiatives existing at the operational level needs to be created:

"Which types of knowledge from the operational level are useful and should be shared?"

This will give inputs to the development of a seeking solution to improve the lacking knowledge sharing and by this overall transparency, which leads to the next question:

"Which hands-on initiatives should be utilised and others developed for sharing knowledge?"

But as in many cases the solution will often be implemented without being evaluated and adapted to the needs of the users. This leads to the next question:

"What should Vestas be aware of when implementing the initiative?"

The adaption of the solution will end up in the creation of the final solution/guidelines for Vestas, which they firstly can use and test out at Vestas Australia / New Zealand, but following send to the rest of the After-sales service business:

"What can be extracted for use on a global level?"

These supportive questions will be used for the development of the solution and used to construct the approach of the main analysis.

To make sure that the researcher it kept at a realistic level some limitations has to be made to make the further research less extensive.

Limitations

This thesis has been based on an internship at a service department as Vestas Australia, which means that the answer to the question above will mainly be developed based on the work performed and created at this division. The solutions/ideas for answering the problem is very influenced by the work done in this region.

The work is anyhow believed to be transferable to the rest of Vestas, as the main structure and ideas is seen as a frame, where local and global inputs requirement can be used.

The solution and ideas will use the basic idea and initiatives already created and conducted at Vestas in an attempt to minimise to radical changes and investments.

The researcher will not implement the solution based on time constraints of the internship. This means only guidelines accordance to this phase will be given to Vestas.

The next chapter will describe the approach of the main analysis.

15. Main analysis approach

This chapter will describe the approach of the main analysis, that will be used in the effort of answering the problem stated made in Chapter 14.

Through the main analyses the problem statement will be work upon, by developing and presenting a solution according here to.

The main analysis will be focused at the operational service level at Vestas Australia and New Zealand, as it was in this part of Vestas the problem was identified. The operational division is seen as an important part of the AS service business, as these are performing the actual work and is the front of Vestas when dealing with clients on a daily basis. As a consequence, it is important to have this part of Vestas business operating as efficient and effective as possible, both when it comes to being updated, but just as well being capable of continuously improve its activities and work processes.

The following structure will be used in the attempt to answer the problem formulation and its supportive questions, Figure 29. Each stage is aimed at answering each of the supportive questions of the problem formulation.



Figure 29 - Main analysis approach

In the processes of creating a solution, it is of importance to understand the actual problems and possibilities, which the employees and other stakeholders are facing and possessing, as these should be incorporated in the development of the solution. This leads to the first part of the main analysis, which will start out with the presentation of empirical data found, at a Conference and Workshop attended and held through the internship. The reason for attending is to use these as empirical data, as it will help to create an understanding of which kind of daily problems the employees are dealing with and also which possibilities exits according to the problem statement, which should be utilised. In Chapter 5, Methodology, further elaboration is placed.

Having gained a good solid qualitative foundation the next step is to create a solution together with knowledge gained through the internship and found in their present system, which lead to a qualitative as

quantitative research approach, as e.g. interviews and investigation has to be done to understand the system together with internal documents. The development of the solution is going to be based on already existing possibility within Vestas, system/tools/methods, in an attempt to minimise the complexity, but just as well do it within a realistic time frame and most importantly within Vestas financial possibility.

To secure the usefulness of the solution a qualitative research has to be conducted. Firstly the ideas to a solution will be presented to a key stakeholder, elite user, for review and evaluation, to secure compliance with the operational level use. This will be followed by a meeting with the management department of service, service managers and service director for evaluation and discussion of the possible initiative. Their feedback and comments will be used as input for the future process.

As presented in the limitation, the responsibility of the actually rollout of the systems will be Vestas'. But nevertheless initiatives for minimising the effort in this progress will be presented. Firstly theory regarding motivation will be presented shortly, in the attempt to illustrate that different things motivate human individuals. Based hereon together with the feedback of solution, the concept of creating Business cases will shortly be discussed as it is seen as a useful way of creating motivation and openness towards new initiatives. This will end up in a suggestion for the implementation should be done in Australia and New Zealand.

Finally a somewhat generic model/best practice for use throughout the rest of Vestas after-sales Service Business is presented.

In general the main analysis, will not be focusing on creating a theoretical foundation, but more focus on creating a solution based on the resources already present within Vestas. This is deemed to be more relevant and useful for Vestas at the present. The solution will still be done based with connection to theory in some cases, but as stated as some point, *"Theory is merrily a representation of reality and best practices"*

Based on figure Figure 29, the next chapter will be that of creating an understanding.

16. Creating an understanding - Conference and LEGO Serious Play Workshops

In this chapter a conference with a related LEGO Serious Play workshop will be presented. Here findings were made in regards to problems and new opportunities in accordance to knowledge sharing and enhancing the transparency on the operational level. The material from the conference and workshop together with minutes are enclosed on the enclosed Appendix CD, under folder Appendix B-1.

In the start of November 2011, a conference was planned and held, independent of this thesis focus. The participants where, Area Site Managers, Site Managers, Site Planners and Service Technicians, from different sites in Australia, all working within the same area and focus: servicing Wind Turbines and making sites operational and performing efficient and effective.

16.1. Desired output according to the thesis scope

By attending the conference and LEGO Serious Play workshop, the researcher was aiming at meeting and listing to the operational levels employees, service technicians, planners, site managers and supervisors, fact-to-face, instead of having constant email correspondents. The goal was to collect primary qualitative data, which later on should be used as inputs in the development of the solution to the problem formulation.

16.2. Conference

The concept of having a conference, were, in this case, to gather the wind sites from Australia and New Zealand, for a couple of days where training was given within the field of Project management techniques, together with the introduction of new upcoming concepts, e.g. certificating of technicians. The training was seen as a secondary part of the conference where the main objective were to have each wind site present their current AS-IS states, which would function as a tool for knowledge sharing and open up the discussion regarding best practice and problems. These discussions had the purpose of starting up the development of TO-BE ideas and concepts. As a side effect, the conference should also function as a method for improving the socialisation between the wind sites, making them aware and get to know of each other on a personal level. (Service Director, 2011)

Each wind site gave presentations with the purpose of quickly creating an overview of events occurred since last site conference, a half a year ago. The presentations gave different outputs, as no specific key areas were requested beside a general update. Some were very keen on highlighting key numbers; others on initiatives for increase efficiency in daily work task and be more visionary. Some had even taken a more organisational perspective than operational. The advantages, the participants got through each presentation new inputs and material for considerations on how to work with a given problem area or what they should be aware of e.g. typical technical issues, customer problems/possibility, but just as well inspiration for development of present work task.

16.3. Consolidation of the presentations and discussions

The output from the presentations and the discussions has been summaried and classified in Table 12, according to being either an *issue* or a *possibility*, which respectively should be dealt with or utilised.

The majority of the findings have been classified as possibilities of which Vestas could benefits from, and are seen as useful inputs into the development of the solution. The issues are related to the problem area already identified, missing knowledge sharing.

Issues	- Optimisations initiatives done on sites, not shared on a daily basis
	 Specific and technical problems found (Climate, specific oil etc.), not shared on a daily basis
	 Safety culture improvement missing. Huge focus from mostly every participant, as their work is strongly related to safety hazards
Possibilities	 Customer focus initiatives were done at some sites, using the philosophy of Jan Carlson and his book, Moment of Truth (Total customer focus, down to smallest detail). Job rotation possibilities, letting employees try different tasks, according to their area, e.g. send them to other sites for learning or to teach others. Idea for electronic sign-in program, which could benefit the whole of Vestas service operational system.
	 Missing Vision, Mission and goals for sites. One site had created an organisation within an organisation. Everyone knew where he or she was headed, based on them being a new wind site. Optimised use of SAP system, learn the different and use code according to service work.
	 LEAN processes, usages. All sites is now LEAN sites, but some have moved a step further, and integrated it even more in their daily work, besides physical LEAN. Efficiency initiatives – Going back to LEAN incorporation, but also employees started to think about minimising climbs to turbines by gathering tasks per climb.

Table 12 - Findings from presentations and discussion.

The possibilities and issues will be link to the findings of the LEGO Serious Play later on.

16.4. LEGO Serious Play Workshop

As a new and different activity, LEGO Serious Play was chosen as a workshop method at the conference. The purpose was to gain something beyond what is normally expected by a normal conference and workshop. The main idea behind the workshop was too create a room for sharing of knowledge, regarding best practice, problems etc. with special focus on a specific area, in this case, project management skills since these are crucial for the participants every day work, but all within the scope of enhancing the general transparency and knowledge sharing between sites.

Based hereon, LEGO Serious Play was chosen since this "tool" is a good and simple way for participants to communicate and share ideas without having any specific prerequisite; they just have to work within the same field, in this case servicing Vestas Turbines. But just as well to let them try something new and fun, instead of the traditional PowerPoint slides filled with numbers and graphs.

In accordance to the thesis at hand, the method is deemed useful, and the argumentation is placed in Chapter 5, Methodology.

16.4.1. What is LEGO Serious Play?

The following statement helps to explain what LEGO Serious Play, as concept is:

"LEGO® SERIOUS PLAY is an innovative, experiential process designed to enhance innovation and business performance. Based on research that shows that this kind of hands-on, minds-on learning produces a deeper, more meaningful understanding of the world and its possibilities, LEGO® SERIOUS PLAY® deepens the reflection process and supports an effective dialogue – for everyone in the organization." (LEGO Serious Play 2011)

Based on the statement, is can be said that LEGO Serious Play is a method that enables constructive reflection and dialogue processes. During a structured process, participants used LEGO bricks to create models that express their thoughts, reflections and ideas. The concept consisted of three basic phases:

- Phase 1: *The challenges,* The facilitator poses the building challenge to the participants.
- Phase 2: *Building*, The participants build a LEGO model representing their reflections on the building challenge.
- Phase 3: *Sharing*, The participants share the meaning and the story that they have assigned to their own models

The description of how LEGO Serious Play was performed at the workshop is located in the PowerPoint slide show enclosed on the Appendix Cd under folder Appendix B-1.

16.4.2. Output from LEGO serious play

In Appendix D a table is placed, which summarises the findings and outputs from the LEGO Serious Play workshop. Here the participants in collaboration formulated overall goals, which were followed by factors and their possible implication, which to could prevent Vestas from fulfilling the goals. In accordance to the goals, *Stop, Continue* and *Start* activates were identified. These were categories as: AS-IS situation (Stop and continue) to TO-BE (START) statements.

These results were analysed and evaluated by the researcher, which resulted in inputs to action plan / strategy, which were following confirmed by the Service Director. Not specific methods were used in conducting this analysis, but were merrily based on experience and grounded knowledge. The analysis, were aimed at summarising and classifying the results into groups or related areas, making it easier to develop actions plans and strategies according to. This is also illustrated in the table in Appendix D.

This table has been divided into two main colours, a blue and a gray scale. The blue scale is what can be solved/dealt within and on an operational and tactical level, within Vestas Australia. The grey scale is deemed to be higher strategically level, and not possible to be dealt with on an operational and tactical level. The reason for having it present is to have the possibility of referring to it later on, if needed. These areas also indicates that the employees at the operational level knows that he/she is involved within something bigger than his own practical and operational work and division.

16.5. Conference and LEGO Serious Play Findings

Based on the findings from the presentation done by the participants together with the output from the LEGO Serious Play workshop, the following areas has been found and summarised according to the problem area.

Issues

The issue of lacking Knowledge sharing and by this transparency, has been confirmed by the participants according to the following bullets:

- Lack of sharing regarding optimisation initiatives and technical problem Use existing methods for sharing knowledge, emails, phone calls etc.
- Communication could be improved on a daily basis use existing and formalised channels
- Make sure business processes are right Update and formalise processes used according to VPP, support it with a handful of stakeholders.

These are areas, have been identified as having a negative impact on efficient and effective, but just as well increase overall knowledge sharing and transparency if not dealt with.

Possibilities

According to possibilities existing and known by the participants the following bullets are reached and can be referred to in the development of the solution.

- Knowledge sharing use existing tools and channels.
- Staff focus, employees need to be continuously be developed through job rotation
- Customer Focus utilise the idea of Jan Carlson, customer is god.
- Efficiency initiatives, share these to all sites.
- LEAN integration, become even more LEAN.
- SAP, help to create better understanding of SAP and its possibilities.

The possibilities have been highlighted by the participants to be crucial element in effort for improving the efficiency of Vestas business and actions plans for each has been presented in the table in Appendix D.

In the following chapter the development of the solution will be described

17. Development of a solution

This chapter will have the purpose of developing a solution to the problem of transparency and knowledge sharing at the operational at Vestas Australia and New Zealand, based on the findings and input gained through the conference and LEGO Serious Play, together with general knowledge of Vestas.

Developing a solution to the problem at hand at Vestas, do require some basic understanding of Knowledge management and mainly the area of knowledge sharing, but as Knowledge management and its elements is seen as a project in itself, a short description of this research area and mainly knowledge sharing are placed in Appendix E. This will be drawn upon under the development of the solution.

17.1. Requirements for the solution

Before going into the development of a possible solution, it is deemed important to sum-up the current problems and use these to setup the requirements or system requirements for the solution.

17.1.1. Summary of the problem

General it is evaluate that the current system is not functional at the operational level as updates is missing on current processes together with none integrated existing processes. This has shown to be based on lacking understanding of the system from the employees at this level and lead to bad and inefficient VPP system, where knowledge is lost as it is not shared. This has led to a decrease in transparency of the AS business process, making the work done here inefficient and ineffective, and affecting the customer in the end.

At the site conference employees were mainly updating each other with useful knowledge, practice, problems and ideas. As these conferences is only held every half year it is believed to be of use to have this kind of knowledge sharing happening on a more regular basis. The problem of the lacking knowledge sharing is believed to be caused by having unstructured methods/approach's missing e.g. procedures, rules. Even though the current setup with the conference is only done every half year, it is still seen as a good starting point in the development of the solution. As shown in the LEGO Serious Play workshop, results could be gained if employees communicated and share knowledge when being focused and given the opportunity. This indicates that the employees are not resistance to share knowledge but is more missing the possibility to do so.

The solution should be capable of solving, as presented in the last chapter:

- Lack of sharing optimisation initiatives and technical problems.
- Communication could be improved on a daily basis.
- Make sure business process are right

17.1.2. Elements and possibilities at hand for developing the solution

In the development of the solution the following methods for sharing knowledge will be drawn upon, which is believed to help the system to become functional and useful for the upcoming users, Table 13.

The table has been created based on the findings from the conference and workshops together with general knowledge of Vestas knowledge sharing possibilities.

	Type of knowledge	Method	
	Explicit	-	Emails
Not Codifiablee		-	IT-System, folders
		-	PowerPoint slides and documents
		-	The Grid (Intra net)
		-	Team-sites – SharePoint
		-	VPP
Easy Codifiable	Tacit	-	Training
		-	Conference
		-	Conversations – (Water-cool talk)
		-	BPM-Forums
		-	Microsoft communicator
		-	Meetings

Table 13 -Method for sharing knowledge possessed by Vestas

These should be combined with the outputs from the conference and workshop as these gave new and useful knowledge, which should be incorporated into the system, e.g. optimisation initiatives, undeveloped ideas. Together with the fact that the employees have a general knowledge base, which other employees can draw upon, e.g. useful links and stakeholders.

17.1.3. Stakeholders and users

Stakeholders and users of the solution, is believed to be operational employees working at wind site, as it is this segment missing the solution, to make their work simpler. But it is also believed that service management level is required to be part of the solution as these will and should come with input into the daily use of the system.

17.2. Solution

Based on the setup or system requirements, initiatives and ideas to that of transparency and knowledge sharing is presented in the following, first the idea and proposition of the creation of BPM forums is described, which will be followed by the idea of having a team-site as a supportive tools.

17.2.1. BPM-forum

Based on informal meetings and discussions with key members of the global service excellence team, together with the action plan highlighted in the table, Appendix D, the idea of creating an operational BPM-forums were developed.

As described in Chapter 9, BPM at Vestas, the process excellence team has created a BPM-forum on a global scale, consisting of different roles and communities. The setup is believed to be useful and helpful besides the strategically and tactical level. Based hereon, the idea of down scaling the forum from global to local was developed. The idea is very much in hand with the general evolution idea of the overall BPM forum. The more levels of details, the stronger the backbone of the BPM organisation is going to be, which will heightened the level of transparency through the organisation (Excellence, 2009).

The main purpose of the forum is to create a local community between the wind sites, which will help in the overall work with BPM: formalising, continuously improving the daily work, implementing new strategies and initiatives, but mainly to enhance and create better transparency and knowledge sharing between these sites. The forum when putting into the context of knowledge management, works with the element knows as, knowledge creation, storing and transfer/sharing (Alavi & Leidner, 2001).

The participants of the forum will be key members from each sites e.g. Site managers, Supervisor and Planners, as they are the operational management level at the sites, and normally acting as the middle link between tactical and acting level. The community owner will be a Business Process Specialist (BPS) or Business Process Expert, who is familiar with the values and ideas of the BPM organisation of Vestas, as this kind of employee is already members of another forum and knows the procedure. This will help to ensure consistency in the work done by the new forum, formalisation of processes and ideas, but just as well be a link between the global forums and the local forum. He/she will be responsible for managing new and old information to the participants, e.g. new initiatives such as the Mobile Customer Solution (MCS)^{*}. The forum and its members are illustrated in Figure 30.



Figure 30 - BPM-forum Wind farms Australia

Through the forum, knowledge sharing is performed in a structure frame, and helps to ensure it being stored and saved, either through other forum members, but preferable through meeting minutes and formalised documentation. It should of cause be notice that not all knowledge can be codified or formalised, as some will have character of tacit^{**} and not explicit^{***}, see Appendix E for further elaboration. But this discussion and focus is not within the scope of the thesis, but is a observation that needs to be remembered when working within the forums, as tacit knowledge requires different methods for being spread, such as training, lectures, physical experience, just to name a few.

Also the forum will help to enlighten the participants in the work of BPM and its importance as they will become users, and to some extent owners, of their own forum. This should also help them in the progress

^{*} MCS is a Vestas developed IT-system that uses value from SAP (Planned services) to calculate each service task to the maximum. A new optimisation initiative, which aim is making each technician's work and climb to turbines as efficient and effective as possible. The goal is to lower cost and time used at the turbines.

^{**} Knowledge that can be expressed and codified easily (Alavi & Leidner, 2001). E.g. explicit knowledge within a document can be training manual about how to operate a specific software program.

^{***} Non-verbalised, intuitive and unarticulated knowledge (Polanyi 1975). This type of knowledge is not easily captured or codified. E.g. How a person ride a bike.

of becoming a unit, which together can develop and create cases and initiatives for improving, which, when send by multiple senders, will be taken more seriously than if send by one person alone. This means, the lacking two-way communication mentioned in the ISO 9001 audit, is to some extent is improved.

Besides storing knowledge and information, the forum will also work as a enhancer of daily communication between sites, but just as well ensure higher-level information is spread to each wind site, which at the present in Australia/New Zealand is minimal or not performed in a structured manner.

The forum should meet on a regular basis, e.g. every Friday over Microsoft Communicator^{*}, where open discussion can be made and each site if needed can make presentations, which can be done by virtually sharing computer screen desktops. The structure of the meeting will mainly be very open, were no ideas and discussion are redundant as a basic, but it will be the BPS responsibility to secure that debate is kept with the goal of knowledge sharing and problem solving, and not for personal interest. The tool is already presented in their current IT-system and is integrating with Outlook and their work calendars, making it very efficient when working on a geographical scale. Mostly every employee is already using it in his or her daily work, so it is not something new that has to learn.

Going a step further

As the wind farms in Australia and New Zealand are quite big, both capacity of wind turbines, but just as well employees, it could just as well be of interest to go a step further in the creation of BPM-forum. Each wind sites has in average 19 employees, based on internal documents, mainly technicians, which on a normal day only see each other once and maybe twice a day, where the sharing of information is minimal, as this time is dedicated to lunch.

At the presents, most wind farms has a Friday meeting, where status que is discussed and general information is given out, here it could be preferable to have structure meetings, where the floor is also open for initiatives and ideas from the technicians, and not only for site managers or ASMs to present. The ideas/initiatives could be formalised so these could be evaluated at the BPM forum a level up, and shared between the wind farms.

The general idea of creating forum on a local base could be of interest to do throughout Vestas and in other countries, as it has been proven through the ISO 9001 review, that critical knowledge and updates are not done on a daily basis in ASP, which gives indications that this could be present at other places in the organisation. This idea is further elaborated in Chapter 23, Further Research.

17.2.2. The need for a tools or system

This creation of a new BPM forum is mainly on an intangible level, meaning, it is more like a philosophy of how the knowledge sharing approach should be structure in the attempt to enhance transparency of the AS processes.

As the BPM forum will mainly be functional on the operational level, it will be the BPE/BPS responsibility to take initiatives, updates and make these formalised through the dedicated document processes, highlighted in Chapter 11. Having the initiatives, updates etc. present to the BPE/BPS it is deemed important to have a media platform, where discussions can be made, beside phone conference, emails and physical conferences, which will be used as a "physical" place for storing and sharing the information and knowledge found at the different sites. Putting this into the context of Knowledge management, this kind of forum will function as a knowledge application, which helps to create, store and transfer/share knowledge (Alavi & Leidner, 2001).

^{*} A communication tools similar to Skype, mainly aimed at business use, as screen scan easily be shared, enabling presentation, excel, word and other elements to be shared without being presented in the room. The virtual meeting space.

BATOFF-criteria

To make sure that the tools/system will be within the system demands of the BPM-Forum and the problem formulation, the criteria of BATOFF developed at Aalborg University will be used to ensure this (Mathiassen, 2001).

Requirements - Betingelser

The tool/system has to be accessible from within Vestas internal system and preferable through their browser, and should be used as an enhancer of knowledge sharing and allow for members to start-up discussion and keep these codified at all time. The tool/system should be easy to use and be accessible for employees at all time and should not be a need to use, but merrily a support in their daily work, function as a news site/forum were the members can go in their lunch break to check out the latest news and quickly be updated.

Area of use - Anvendelsesområde

Members of the operational BPM-Forum will mainly use the system. The system can and should also be available to technician, so they always can be informed, regarding upcoming initiatives or announcement from management level. This kind of user will on the other hand, not have the rights to write or update documents and be participating in the discussion. They will only have rights of viewing, as it is deemed important to minimise the input and ensure that the quality in the system is kept.

Technology - Teknologi

The technology used, should utilise the possibilities already presented within Vestas current IT-systems, to minimise investment needed and also training of users to a new system. Based on the fact that implementing a new IT-system often taken months and some cases years before being fully integrated, together with it being a complex task to integrate, as new databases has to be established, data mining has to be performed and more.

Objects - Objekter

The system/tools is developed with the goal of enhancing transparency by improving the knowledge sharing and storing. The objectives of the system will be to categorise the knowledge present and needed, e.g. best practice, innovative and new ideas, general problems etc.

Functionality - Funktionalitet

The system will let the users upload, change and delete documents, pictures and discussion, together with always showing who is active in the system/tool. Notification will be capable of be send out news-feed regarding new input as known from Facebook and other social media when updates are made by friends or areas of interest.

Philosophy - Filosofi

*

The philosophy can be said to connect to that of the management discipline knows as *knowledge management*^{*} and mainly knowledge sharing. The system/tools will help to ensure that the problem of transparency at Vestas operational level will be improved by the sharing and creation of knowledge, together with the enhanced focus of communicating and discussion work problem, best practice etc. and continuously improve and update AS processes.

With the above in place the next section will describe the system/tools created.

17.3. Team site

For this purpose and according to the *technology* and *functionality* criteria the use of an existing tool within their present IT-system is chosen. The tool is a Microsoft software system called SharePoint^{*}, which gives the possibility to share, create and update files, mainly documents, but also has incorporated the possibility to structure these in a homepage/team-site which only can be accessed internally, which is fulfilling the criteria of *Requirements*. This approach has been chosen, as it is useful according to the problem of missing structure of knowledge sharing, which is suiting to the criteria's of *Objective* and *Philosophy*.

Description of the team site

This team site will have the purpose and function as a link between all Serviced Wind Farms placed in Australia and New Zealand. Here participants can share and discuss best practice and general problems, ask for help and generally tell what is going on at their sites - an informal room for discussion. This can be referred to as the criteria *Area of Use.*

The site should function as a common point for increasing knowledge sharing and creation on a daily basis. Through information sharing, it will be possible to gain new inputs of a daily operations, help each other out on a daily basis, find inspiration for managing site and also sort out problems, small as big. The overall goal is to create better transparency between sites by supporting knowledge sharing and creation. This will help to remove redundancy in processes and procedures, but just as well create new and smarter once in collaboration. This is believed to help achieve more efficient result in the daily work.

Having the knowledge and information codified in the system, helps to enhance better transparency, as employees can accesses knowledge and information without having the knowledge carrier present.

The site will also function as a supportive function in connection to the BPM-forum, but just as well the site conference held each half-year. Here the topics discussed and outputs from the conference will be place for further work and also to be used for reference.

It will be of importance to explain which kind of information is "allowed" on the site, but still doing it without killing the motivation of the stakeholders/members. A solution could be to have a team site administrator, in this case the BPE/BPS, making sure that the right and important inputs are being uploaded and reviewed.

It will help to create better transparency between the Wind Farms and lead to:

- Creation of more efficient ways of performing daily tasks.
- Creation of new and smarter/innovative solution to problem solving.
- Improved organisational transparency

Stakeholders

The following has been identified as the stakeholders and user of the site: Primary: Site Managers, Supervisors Planner, Service Director and ASM'S, secondary: Service Technicians.

The participant will be the same as the workshop and the BPM forum, as they are believed to hold vital and useful knowledge. Primary users will have rights to upload ideas and documents to the site and start discussion threads. It is also believed that it could be of usefulness to have secondary users of the site, technicians, as they can find upcoming improvements and other relevant information for their work. This kind of user will only have the possibility to read from the site, as it is believed to help spread the information and knowledge to the rest of the workforces and minimise the documents uploaded.

Disadvantages

One of the biggest concerns with the site is that it will be a site among several other existing sites. This is based on the fact that any Vestas employee is constantly given new information to process. This can make the site seem redundant and just another place for getting information. Therefore it is of huge importance to "sell" the site and make it a place where each member will go every day for getting an update.

Also, the team members can misunderstand the site and upload wrong and maybe redundant data, e.g. picture of Christmas parties. A general, and maybe even more concern, is the site will not be updated and maintained frequently by the BPS/BPE, leaving the members unaware of possible problems or possibilities. This means that it will be important to follow the procedures and rules of the forum. These will not be developed in this thesis, as it is believed to be up to the participants to decide, in an attempt to give them an ownership of the concept and through this be engage making the forum a success, but will be referred to use and be inspired by the general procedure put forth by the "mother" BPM-Forum presented in Chapter 11.

The actual site

Based on the findings from the conference and workshop, it believed to be important to incorporate some of the areas into the team sites as Tabs as we know them from normal news site on the Internet. The following areas has been deemed important to have incorporated into the team site: *What's going on at the site right now* (Services, CIM's etc. Just like the conference), *What problems are you currently struggling with* (Heat, Blade repair, etc.), *What interesting things are under progress at your site* (new way of doing things-Job rotation, time registration etc.), *Hot topics, Optimising suggestions, Staff, Customer.* After some alterations with the above ideas for creating tabs, the site in Figure 31 was created.

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Figure 31 - Team-site for Australia and New Zealand

The site has incorporated six tabs which covers individuals areas, which are: *Home, Current status, General Problem, Best Practice, Innovative and New Ideas, and Upcoming Conference.* Each of these will shortly be described.

Home

Will be the FrontPage of the team-site. Here the users should be highlighted together with the team mem-

bers of the site and their rights, primary or secondary. Each tab on the site will have the same structure as a basic: the possibility to upload document and pictures regarding the area within the tab and start up discussion threads.

Current status

The purpose of the section is to let each member give an overview of their current status together with the possibility to discuss and comment on uploaded material. This tab is in connected to general knowledge sharing aspect.

General problems

Will have the same function as current status. It will highlight problems instead, in an attempt to divide the two, and make it easier for the members to navigate on the site. Here the goal is to create discussion, which can result in a solution to a problem. E.g. heating problem in turbines in the summertime's.

Best Practice

Best practice and stories is essential to share, when efficiency is a goal. Going back to the conference and workshop, the initiative regarding having job rotation at site, could be useful for others, and improve the strenght of the work force. Drawing on each others experience, to minimise start-up problems and maybe improve their procedures for this, is seen as crucial elements in the attempt to become more efficient.

Innovative and new ideas

This Tab will function as a place for creating discussion concerning new ideas and maybe just thoughts, needed to be evaluated by others, for further development. It is believed that some kind of synergy can happen in this part of the team-site, as others can grasp half thought ideas and extent to somewhat a final idea. Innovative collaboration is focus here.

Upcoming Conference

This tab was created based on a discussion with the service director, after the researcher of this paper, questioned the way the conference was held. No specific expectation was made to the participants together with limited theme of the conference. Based hereon, it was concluded that it could be preferable to have a place for discussion and letting participants of the conference come with input to the upcoming conference. E.g. have a poll survey where employees could help to design and affect the next conference and its theme.

Before the team-site was published to the members, examples of possible content to each tab was integrated to make sure that they could see each tabs purpose and which kind of information, data or knowledge should be included into the team-site.

17.4. Sum-up

To sum-up this chapter according to the requirement put forth and according to the problem statement, it can be said that the BPM-Forum will as a first help to improve the lacking knowledge sharing, and make sure that business processes are ensured and communication is improved. Secondly is should also minimise the lack of understanding the BPM approach, as users are involved and becoming a part of the approach. The Forum will also functions as a unit, which together can develop and send strong cases when changed are need, improving the lacking to-way communication.

As a tool the team-site will help to utilise better transparency by providing a physical overview of current initiative and ideas possessed within the operational level, without having to interact with other employees, as it will function as application for transfer, sharing and storing of knowledge, and in some casesit will start up the creation of new knowledge. The site can easily incorporating the possibilities mentioned in Chapter 16, as most of these are ideas and possible description, which could be uploaded and by this shared to other members.

Before roll the initiative out it is necessary to have the system evaluated to make sure it fulfils the demands of the upcoming users.

18. Pilot evaluation of BPM-initiative

In this chapter the solution create will be evaluated and adapted before being send to all the upcoming users.

This section will use dedicated stakeholders to evaluate the system/tool, together with their knowledge of implementing initiatives at Vestas, what is need/what not.

18.1. Evaluation by stakeholders

The solution presented in the previously chapter, is on the present stage only create on paper and not released as it is missing the feedback and input from the upcoming users. The system has been decided to be evaluated in two stages, firstly by a key user, in this case, a site supervisor, and secondly by the service management team. The reason for this, is to ensure that elements and views from both levels are included in the final solution.

18.1.1. Operational site supervisor feedback

The key user used to evaluate the system, was chosen based on his experience and knowledge of Vestas, together with the fact that his site, is often used for pilot project such as, implementation of LEAN, MRP system and other new initiatives, meaning he is used to evaluate new concepts and initiatives. Also, this specific person, is currently helping other sites to implement e.g. LEAN at their site, helping to spread the word sort of speak.

When presented to the idea of creating a BPM-forum, he was extremely positive, and could really see it as useful and easy things to implement, based on the fact, that some of the upcoming users were already, in a informal level, communicating regarding small errors, e.g. spare parts such as oil. But he did mentioned that this were not done on a continuously basis, and was missing a more structure approach, and referred to the site conference as the only formal arrangement for sharing knowledge regarding problems and best practice. He stated that very little preparation towards the upcoming members were needed, as it could only be on interest for the sites to participate in this kind of setup. (Site Supervisor, 2012)

In regards to the team-site, he was a bit cautious, as he, through his time at Vestas, had experience multiple of initiatives like this, without these being a success. The reason, based on his opinion, was that they had been presented without integrating any users in the development stage. He saw these kinds of attempts to be something pushed down from top management level, without confronting and letting the user be involved. He was therefore were very pleasant with the opportunity to come with input and suggestions. Generally he was very pleased to see that several of the areas discussed and presented at the conference and workshop had been integrated to the team-site. He had only had few remarks, regarding the setup and the description, as he needed some more explanation. Generally the site had to be as simple as possible, based on the fact, that many of the upcoming uses were very little interest in creating something pretty, but rather user-friendlier. He did make a statement, which is worth taking notice of in regards to the overall idea:

"If this initiative will be a success, the other members need to be capture by a somewhat sales speech. They need to know what they will get from it? (Site Supervisor, 2012)

With this in mind it is deemed important to be capable of creating some kind of business case, which can quickly explain the use of the system/tool together with the advantages gained, resources needed and cost.

The next step of the evaluation was to present the findings and the initiatives to the service management team.

18.1.2. Service management team

The results were presented at a meeting, where the problems identified through the ISO 9001 audit, together with the findings from the site conference and workshop were presented. This meeting was intentionally meant for focusing on the result from the LEGO Serious Play, presenting the created action plans, but as the researcher could see the connection to the other areas, based on the focus the thesis, these were included as well.

The reason for using the service management team was to get their view on creating this kind of forum. The team will not be the primary users of the setup, but is believed to be more secondary participants, but still with the right of the primary user, as most of them are setting in the centralised office in Melbourne, and will not be at the sites where the knowledge and experience is present. Nevertheless, they are still believed to be crucial elements in the success of the solution, as they will help to motivate the primary user, site managers, supervisor, planner etc. to use and develop this forum and team-site, and just as well come with comments and inputs to e.g. problem solving.

Firstly the ideas of creating a BPM-Forum at the operational level were discussed. Fundamentally they were very keen on the idea, as they previously had discussed the idea of enhancing the collaboration between sites, in an attempt to become more efficient and more responsive towards their customer, e.g. share best practice on handling customer complaints. But as in many cases, this was still kept at the discussion level, without any taking action, caused by daily tasks piling up. The were in general very fond of the suggestion, but on the negative side, they were right away questioning the time required by the members and investment needed, based on the fact that everything the service management team is doing is measured in some way, either, through KPI's or other financial key numbers. But as explained to them, these are merrily none existing, which were very satisfying in their eyes (Service Management Team, 2012).

In regards to the team-site, they quickly saw the potential, as some of the wind sites already had created their own team-site which were used for e.g. shared calendars, task dividing, social events and other for more simple use as sharing data and information, facts, history regarding the wind site. As a consequence, they requested, to have the possibility to implement links to their own team-sites, together with other sources of information they saw useful, e.g. Service LEAN team-site. Still, the problem of getting the employees at the site to use this kind of team-site were in focus, as some ASM had setup team-site for use, without having any movement at all. It was mentioned that these sites had been created without the involvement site employees and based on their own need, and maybe less of the site employees.

Overall, they like the ideas, but were very focused on at being capable of selling and capture the users, as this would determine the success of the initiatives in their eyes.

Both evaluations saw the potential in the created solution, but did highlight areas, which had to be done if the solution should be a success. The correction and additional elements were quickly added and corrected, as these were of minor importance, more description for each tab and links to other team-sites and useful sites were added. Secondly and most importantly the users had to be motivated to use the team-site, sell the solutions idea.

This leads to the next chapter, suggestion to implementing the solution.

19. Implementation initiatives

In this chapter, implementation initiatives will be suggested; in the progress of securing the solution will be grasped by the upcoming users and stakeholders. Firstly the focus will be on motivation and together with putting the element of a business cases forth. Afterwards an implementation plan will be suggested.

As indicated in the last chapter, the upcoming users and stakeholders' needs to be motivated to use the solution, it has to be sold. This leads to the areas of motivation and Business cases, which is believed to be the implementation initiatives needed for helping the suggestions to become successful received.

19.1. Motivation

In the progress of developing new initiatives, it is crucial to have the end user at hand or in mind. The main reason is that these users will be the solely responsible for whether the new initiatives, will be come a success or not. It is important to figure out how, the management level can motivate the upcoming users to use the system/initiatives.

Motivated employees seldom emerge from nothing, which means that an active effort needs to be made. Although some employees are more easily convinced and motivated than others, it is up to the management to secure a fully motivated staff. In the literature, it has been debated intensively whether individuals needs, preferences and value differ considerably, or whether a more general and simple model exits (Child, 2005). Thus, the consideration of whether all people are motivated by the same initiatives, or if groups or similar people have similar value, or whether the individuals person requires an individuals form of motivation has to be made. Several attempts of developing simple model to deal with motivation of employees have been conducted, e.g. Marshlow's pyramid of needs^{*}, Two Factors Theory of Hertzberg^{**} and more, in order to reduce complexity of reality.

It is believed that employees can estimate whether a given reward offered is valuable and sufficient according to the effort made. The degree of fairness is comprised of the balance of reward to inputs, e.g. time and effort, relative to expectations, and secondly, a comparison of the reward that others are receiving for similar inputs (Child, 2005). For instance, an employee can be highly satisfied with his field of responsibilities, as long as he does not know that his neighbour is paid twice as much for a similar effort. When the employee acknowledges that he is underpaid compared to his neighbour, he might not any longer be motivated by his field of responsibilities. Thereby, the *"Expectancy theory in essence states that people will decide how much they are going to put into their work according to: (1) what they perceive they are going to receive as a reward for that effort, and (2) how much they value the reward" (Child, 2005). Thus, motivated employees will perform a better effort as their engagement is larger. In connection hereto, figure Figure 32 illustrates how the perception of a reward affects the degree of an employee's effort towards a specific task.*

It is not believed that people are motivated by the exact same factors, Child (2005) emphasises that "Rewards are in principle intended to encourage the type of behaviour that precedes them [...] For management, the criterion of success for reward policies is that they motivate employees to commit high levels of physical and/ or mental effort towards performing required tasks well." Through rewarding employees it is possible for management to lead the work force in the direction that is most beneficial for the organisation. Therefore, management has the opportunity to intervene with the organisational culture by motivating employees

* Five stages: Physical, Satefy, Belonging, Selfesteem and self-actualisation needs (Kjær, et. al, 2008)

** Hygiene factors (create non-dissatisfaction) and motivation factor (Satisfaction) (Kjær, et. al, 2008)

to adopt company beliefs as their own beliefs; in this case knowledge sharing and wishing to minimise the lacking transparency.



Figure 32 - Relations between Reward, Effort and Individual (Child, 2005)

The expectancy theory presented in Figure 32, is adapted by Child (2005), however, originates from Lyman Porter, Edward Lawler and Richard Hackman, 1983. The figure suggest four key linkages which have to be fulfilled in order for employees to be fully motivated to accomplish supreme performance, and to satisfy performance requirements stated by the management. The four key linkages are presented in Table 14, where a short description of each is given.

Key Linkages	Elaboration
1. Expectancy "The extend to which employees see their effort leading to better performance"	 "Concerns the relationship that employees perceive to exist be- tween the amount of effort they put into their work and the level of performance they are recognized as having achieved." "Employees must believe that they can control the quality of their job performance; if they do not, they will see no point in trying harder."
2. Instrumentality "Whether performance is seen to be rewarded"	 "The extent to which "good" performance, as evaluated by management, is actually rewarded and whether the rewards offered adequately offset the cost and risks borne by the employee." "Even if people do conclude that greater effort on their part leads to better performance, this effort is hardly going to be encouraged if it is not seen as leading to any additional rewards."
3. Legitimacy "The legitimacy attached to the way rewards are ad- ministered"	 "The notion of fairness will enter employees' minds to the extend that they have a view as to the level and kind of rewards that "ought" to be available to the type of person performing the work required in a particular job." "The important point here is that employees are unlikely to be satisfied with the rewards they receive if these are not perceived to be equitable."
4. Valence "The value attached to the rewards that are offered"	- "If rewards are seen to be fair and equitable, but are not the kind of rewards to which employees attach much value, then their motiva- tional potential is likely to be low."

If all four linkages are fulfilled the engagement of the employees is secured. Putting this into the context of Vestas, the following is reached: The employees will need to be convinced that their effort in accordance to knowledge sharing and involvement in the solution is giving them something in return, either this be better performance or learning something new, *expectancy* and *instrumentality*. Additionally, the employees should feel as sort of fairness meaning no one should gain more from it than another, e.g. fell he is sharing without gaining anything new, *legitimacy*. Finally the new initiative should be use to the users and as such become a reward, *valence*. But as shown in the figure, two kinds of views on rewards exist, *extrinsic*^{*} and *intrinsic*^{**}, combined known as *Work Motivation* (Treville & Antonakis, 2006), which has to be incorporated in the work as much as possible. It is believed that none complete motivation proposition can be given as *human beings are complex individual human beings* (Nørreklit, 2009).

Putting this knowledge into the context of suggested solution presented, it is believed that Vestas needs to secure its employees experience in fulfilling the four key linkages, i.e. expectancy, instrumentality, legitimacy and valence. A clear link between effort and performance is required, in order for the employees to recognise that their contributions make a difference. Thereby, the reasoning why they need to perform specific tasks in specific manners, e.g. follow procedures of the BPM-Forum, needs to be clarified as well as the gains should be visible. This is believed to be the task of management level. Additionally, the key linkages of *legitimacy* and *valence* needs to be addressed in order to successfully motivate the employees at Vestas. The rewards that the employees receive must in essence match the reward that they have expected; otherwise the rewards will not be perceived valuable and will not contribute as a motivation factor.

Going back to the intrinsic rewards, the following question can be raised: "Is the solution intrinsically motivating?" The question is a basic impossible to answer as it is solely up to the employees to state what they find personally rewarding according to their jobs, but the extrinsic reward should be highlighted to ensure or improve the odds for success.

This leads to the next part of this chapter, as this is seen as a tool for management for motivating and aligning rewards according to employees.

19.2. Business Case

It is crucial to spread the words of the new solutions, and the employees needs to be captured and motivated, so they will be willing to participate and see the usefulness of the initiatives, as stated in the evaluation of the presented solution.

To secure this it is deemed important to build a strong business case, which will help to ensure the idea and the concept of the solution is given to the stakeholders, so it will capture and engage them. The success of the solution is fully depended on the employees' involvement and usage and performance of it.

"A business case is an effective and a multi-purpose document that generates the support and participation needed to turn an idea into reality. It explains what the idea, problem, or opportunity is about, how and who it will impact, what others are doing, each of the alternatives, the associated impacts, risks and cost/ benefit of each alternative, and makes recommendations" (Robinson & Dechant, 1997).

As this statement puts forth, a Business Cases is a comprehensive task and vary in size and importance, and

^{*} Extrinisic is related to tangible rewards, and are normally pay, fringe benefits, security of tenure, promotion, special rewards

^{**} Intrinsic rewards arise from the nature of jobs themselves and the working relationship created in their performance and less intangible (Treville & Antonakis, 2006). Variety in Job content, responsibility etc.

do require that the management team use dedicated time to describe and build these.

19.2.1. Characteristics of a good Business Case

But what is a good business cases and what does it hold? The following area has been identified as useful ((The Project Management Hut, 2009), (Alberta, 2002)):

The aim in writing as business case is to:

- Outline all the relevant information
- Outline the argument for the recommended course of action
- Be clear, logical and comprehensive

The business case will be more convincing if the arguments are supported by hard data:

- If stakeholder views are cited, provide some evidence of the consultations
- For community or other benefits, provide evidence of the research conducted into the existing situation and expected improvements
- Provide the experience gained by other organizations in implementing the same kind of initiative this provides a good realty check
- Accurate costing of alternatives and expected benefits, based on a thorough approach and using relevant assessment tools
- Reference material (articles, websites, libraries, books etc.) on alternatives

Having this clarified, the next step is to move to outlining the content of the Business cases needed at in connection with the solution developed.

19.2.2. The business case to support the solution

The business cases according to Vestas can be build for two reason, either to capture the management level or the operational level. It is believed that the two level needs different cases as management level often will require more detailed description, were operational mostly needs a "straight to the bone" case, which is the instance here. This means, the business case will be build hereafter, and the management level is seen as already supporting the decision based on the feedback from the evaluation.

The following will not give a fully description of the business case as it is believed that it should be the management task to formulate and send this out to the users, to show that they are supportive of the idea. But nevertheless, useful elements and needs for the business case will be presented.

Elements

General purpose

The business case should highlight that it will help to improve knowledge sharing between the site, which should be an enhancer of create better transparency of activities, best practice and problems.

Gains

The business case should emphasize the problems which knowledge sharing could have and why these should be prevented on an operational level, e.g. use of wrong oil types – unpaid hours used, redundant climbs to turbines instead of combining these.

As a side effect, the suggestion will help and enable better communication upwards in the system, as they

will in collaboration create and secure improvement initiatives are relevant and needed, making the upper level needed to respond.

Requirements from sites - Time and cost

As in any other cases, the cost should be highlighted, which in this cases is none-existing, as it will use the present system possibilities, meaning the cost will mainly be time used to integrate and understand the system. In the current stage is believed to be maximum 1-2 hours a week under a conference call where each can discuss and present.

The supportive tool is already created, but is not believed to be the finale setup, as the user can have the possibility to alter and improve it according to their needs.

The responsibility for running and maintaining the forum and site will be the BPS, who will be in constant dialogue with the user to secure the output and the future work.

Benchmark

Use the elements from the presentation made at the conference, to illustrate good examples of knowledge sharing, and use them for highlighting the possibilities existing in sharing knowledge on a more regular basis. This could be supportive by the use of best practice from another industry to highlight the advantages gained. Here a cases example, Buckmann Laboratories, from Harvard University, could be useful, as it deals with knowledge sharing on a higher level, but clearly illustrates the advantages gained by making it a part of the organisation.

The elements above are mainly indicators of what is important to include when formulating the specific business cases for the operational level. The BPS will responsible for implementing the solution, can add and integrate other useful elements, which will help to sell the solution. E.g. elements from the description of the system in Chapter 17 could be useful to add.

Having the foundation for business case in place this next step is to move to the actual implementation plan for the system.

19.3. Implementation plan

The suggestion should be send to the users together with a developed business case description, the selling initiative, as it will help to capture the interested of the user and by this motivated them to participate and use the approach.

This will need to be followed by a small workshop done over e.g. communicator, where the BPS will illustrate the use of the system and take on question occurring under and after this workshop and demonstration.

The system will be active from start, and the users should have access straight away, which will give them the opportunity to tested it, by playing and browsing through the different tabs and initiate uploads of documents and start-up discussion threads.

It is believed that in the implementation phase, pilot stage, is going to be a period of 1-2 months, as it is required to make sure that the BPM-Forum is started up and operating as required. Each week a meeting will be held as presented in Chapter 17, which will be used for firstly presenting new ideas and problems, but just as well to evaluate the setup and its functionality.

It is of great importance that the BPS and service director in the implementation phases constantly communicate with the participants to make sure that the element are up-to-date and evaluated. It is

believed that some kind of grant review after the first month is required to get some feedback from the users. This should be used to alter and improve the setup.

At the end of this thesis the success of the system is not yet seen or know as the responsible BPS employee as Vestas pushed it aside because of minimal effort and time. This is believed to be cause by the present restructuring and the new strategy, which has given them more work tasks to worry about.

Nevertheless, the solution together with the suggest implementation initiatives is seen as useful and needed.

In the next chapter a short summary of the elements of the total solution is presented.
20. Extracting a guideline for a global use solution

This chapter will try to sum up the findings and ideas from the last three chapters, in the processes of creating a global and generic solution.

The following key points has been created which should help Vestas to gain better knowledge sharing, and is believed to have an effect on the overall transparency leading to better After-sales Service process and in the end customers satisfaction.

1. Create BPM Forum

The idea of creating BPM-forums on the operational level is believed to be useful in the process of improve the lacking knowledge sharing and transparency. BPM forums should be extended and down scaled so it could be used on the operational level. The participants should be employees from the operational service level.

2. Create and establish a team site

Secondly, useful tools should be available so that the stakeholder and participants of the forums have a place for utilising and sharing their ideas, problem and best practice. Also, the tool or enabling factor should be in place were each participants easily can access information/knowledge and quickly get an updated without requiring involvement and interaction with other stakeholders. Here the SharePoint possibility to create team site is useful.

3. Incorporate and motivate the participants to become an active part

Employees needs to be captured to use the team-site. Top management should encourage the stakeholders to use and become an active part, by highlighting that the suggested solution is a new and important initiative in the daily work at Vestas. Even though it is small steps, it can and will have huge importance in the bigger picture. For this purpose, business cases are seen as useful tool, as it will functions as a sales element and help to motivate the upcoming users. Also giving the employees responsibility are believed to enhance motivation, as they will become owner of the BPM-forum and together with the other members be responsible for the development and succes of the forum, of cause with the frames secured by the BPE/ BPS as he/she is the "owner" of the forum.

4. Point of key members of forums to participate with other forums on a global scale.

This fourth point is aimed at the future evolution of the solution. Here key employees from each country should be appointed to participate in a global operational BPM-Forum. This should be done based on employees role, e.g. site planners talking to other site planner about daily problems, just on a global scale. Further elaboration regarding this concept is placed in Chapter 23, Further Research, later on.

21. Discussion

This chapter will put forth discussion topics regarding the analyses made and solution provided. The discussion will be divided into sub-sections according to the respectable areas.

21.1. Preliminary analysis

In the description of the after-sales service theory, literature regarding B2C were mainly used as the research within B2B is quite negligible and still in the maturity stage. If the generic and basic AS theory according to B2B had been found, it could have given a somewhat different results according to how organisation should relate to AS and its possibilities. It was acknowledged that B2B and B2C customers' demands according to its vendor are different, but not specific theory were found to support this observation. This was on the other hand gained through experience within other research areas. e.g. organisation theory and concepts.

The theory of BPM was quite covering and plenty of materials were accessible, but did show examples of being a quite new and still researching area, where the actually effect have not fully been seen. Some of the theories and concepts used, may still be under progress, which is based on a statement made by Charles Møller, one of the authors and researcher within this research area, under a lecture regarding BPM. *"The research within this field is constantly evolving, which means than one thing that is right today, maybe be "wrong" or further developed tomorrow"* (Møller, 2009). The statement clearly shows the dynamic and uncertainty existing within the research field. Even though, the validity and reliability is still believed to be high, as the theories used has been benchmarked according to others.

The BPM method used showed to be very useful in the analysis of Vestas current BPM setup. But as the principles within it has been developed be Deliotte, based on trends from other companies, it can still be discussed how scientific the approach actually is. To secure the creditable of the method used, other researcher views were included as well, which is believed to heighten the usefulness.

The ISO 9001 audit used to evaluate the BPM setup according to the AS processes, did not have the specific purpose of doing so. It were actually performed to ensure the processes in the Vestas VPP system were living up to the quality requirement of the ISO standards. The method for evaluating the system was not as intent, but the output is still believed to be of use as it gave indications of problems within the VPP, which is seen as a product of BPM.

21.2. Conference and LEGO Serious Play Workshop

The conference and the LEGO Serious Play workshop were used to create an empirical foundation for the suggest solution. Both did not have the research objectives of the thesis focus under execution, which could have an effect on the credibility of their use according to the thesis. Nevertheless, data, information and knowledge were generated, which were picked and analysed according to the thesis focus. It can be discussed if these were the right method for gathering the needed knowledge, but as the internship, at times, had difficult working conditions, these were deemed useful. It could have been preferable to conduct dedicated interviews with specific picked out stakeholders, which could express their unpolluted position according to the problems found in the ISO 9001 audit.

Mainly the LEGO Serious Play workshop could have been more useful if the topic had been "How to improve knowledge sharing between sites". Here results from the ISO 9001 audit, could have been presented and used under the development of the suggested solution.

21.3. Development of solution

It could have been preferable to include the key user used in the evaluation under in the development phase. This could have given a different and maybe even more concrete result, as his input would have increased the solutions level or given a totally new and different result. The development of the solution was from the start quite locked, as it was decided it had to be neither complicated nor need advanced investment, which highly affected the development of it, meaning only internal system and present procedures were used.

As the focus of the solution were improving knowledge sharing, it could have been of interest to investigate, which kind of external premade solution existed with this field, as these could have been acquired or helped to inspire the development of the solution. It is acknowledge that these kinds of systems do exist, which has been tested and helped to secure the knowledge sharing for other organisation. An example of this is the service called Yammer, Facebook for internal business use, which can be expanded to external users if needed. Even though systems do exits, it is believed that the system requirements made is difficult to find a specific system or tool that could fulfil the exact requirements put forth. Based hereon, it was decided to create a specific solution fulfilling the requirements, which also is believed to minimise the resistant towards the new initiative, as the systems and ideas are already incorporated into the culture of Vestas.

21.4. Evaluation

The evaluation performed can be discussed, as this step of the thesis was done without having any guidelines in how to do so, but merrily on an add-hoc basis, combined with practical experience. At this point the researcher do have not knowledge of other approach for this purpose, but is not neglecting that these might exist, which could have made or given the evaluation process a more structure approach, and a possibility of a different output. Surveys regarding the system could also have been sent out, to the upcoming users, this would have helped to concretise the element needed, but just as well have given an indicator of the overall concept and idea.

21.5. Implementation initiatives

The motivation theories used were kept at a very overall level and a discussion regarding Vestas culture in regards to knowledge management and sharing could have been beneficial. This was neglected as a generalised assumption were made based on the fact that employees at the conference were willing and open about sharing their knowledge regarding best practice and problems. This is believed to be very discussable, as knowledge in most cases actually equals job safety for employees, so why should they share? This is not seen to be the case at Vestas, as they are not trying to take advantages of it employees, but are merrily trying to create better understanding of its business and its activity, as a consequence of it rapidly business growth and lacking structual maturity. This means that Vestas should be honest about their intention towards the employees, and state that it also equals better work condition for the employees as an example.

As the suggestion solution is a change to the employees and Vestas i general, it to have been interesting to investigate and used the concept of change management. According to Cameron and Green, 2004, changes happens and have effect on different levels in organisations, which means organisation should evaluated which kind of effect new initiatives haves as it will need different management style and strategies to control (Cameron & Green, 2004). Based on old experience regarding this subject the following change level is reached when put into the context of the solution developed: *Individual change*, employees at sites will be affect as they are required to start sharing knowledge on a daily basis. *Team change*, it will be a team of employees that will be responsible for the maintenance of usage and utilisation of the BPM-forum. *Cultural change*, the operational levels will have to adapt the cultural of sharing knowledge. *IT-based process change*, a new approach to use their current system is need.

The decisions to use business cases as a help in the implementation phase, were mainly based on the feedback gained, but just as well being the first idea that rose, because of its usefulness in general. No bigger theoretical foundation was established, which can make it slightly discussable of how reliable and valid the method actually is. Nevertheless, it was seen as a method for formalising and sending a sales cases as a motivating mechanism to the upcoming user. No specific case were created and only guiding element was given, together with the full responsibility to the BPS employees.

The actual implementation rollout of the solution was not accomplished under the internship, and feedback according to this is missing. This do give the chance of not having the suggestion solution fully integrated as intended, as the BPS employees can choose to postpone the work to another time, leading to the possibility of not being implemented at al. But shortly before the return to Denmark an email were send to the upcoming users, enclosed in Appendix F, which tried to explain the user to the content of the solution, mainly that of the team-site. This were done to secure that the solution were given to the users, as it is believed that the actual rollout will be postponed until a later time, based on busyness of implementing the new strategy, organisation structure and other daily assignments.

21.6. Assumption made in accordance to the solution

Several assumption has been made in connection to creating the suggested solution which are can be discussed.

Firstly there has been an underlying assumption regarding employees willingness to share knowledge, which as stated above is discussible.

Secondly, management support is believed to be present. But this is only based on the meetings with service director and management team of service Australia and New Zealand. As stated, they like the idea, but the full support to the suggested solution has not been fully shown from their point of view. None have taking the "stick" and become a frontier and a active part. So their fully supported can be discussed.

Thirdly, the owner of the forums has been identified as being a BPS, who is fully equite for handling this kind of forum. But at the present, this specific employees is lacking huge experience in the field of acting as BPS, as he is newly hired in this position. This means that his knowledge of the concept is still in the learning phase, which require that the Service Director has to be available and fully supportive of this employee at all times, as the success of the suggested solution is mostly in his hands.

Fourthly, all knowledge is possible to share is the assumption made in the thesis. The is seen as quite discussiable, based on grounded knowledge concerning theis subject. Knowledge as experience and code of conduct can in many cases not be fully shared, but has to be taught, which is a time consuming and difficult task. In the cases of Vestas, the suggestion solution can help to start up the work regarding gathering knowledge and make employees away of the concept and make them think about which kind of knowledge they posses.

Fithly, the suggestion solution states that it will help to improve knowledge sharing and as an output enhance efficiency and effectiveness of the AS business. This is believed to be true, but as not specific measures for how to evaluated this has been presented, this can be discussed. Vestas could anyhow try to create KPI's focused on the five perspective of Balance Score, Customer (Percentage increase in customer satisfaction), Financial (Percentage savings in cost), Internal BP (Paper to electronic document ratio) and Learning and Growth (Numbers of ideas).

21.7. Transparency to what extent?

The solution aims at enhancing the knowledge sharing between operational wind sites with the aim of increasing the transparency of the work done at these. In some cases it should be notice that lack in transparency can actually be an advantages in accordance to e.g. competitor and customer, as not all knowledge should be shared and be visible. Having all knowledge out in the open can posses a thread for the Vestas, meaning easy to become redundant as a supplier, as their knowledge and expertise can be copy, they can lose negotiation foundation and by this be pressured from both competitor and customers. They can become too transparent almost become invisible and vanish in time.

Transparency is at the presented needed on an internal basis, and should be improved, which is also stated by the Vice President of Sales, Australia, which the thesis is working towards. Vestas can anyhow benefit from having more open boarders in accordance to it customer, mainly the key accounts, as open boarders and better transparency can help to co-develop new and innovative ideas. The transparency towards customers has to be balanced and it a totally new research area, going beyond the scope of this thesis, the concept of *Open Innovation*.

Having discussed the areas above, the next chatper will present the overall conclusion of the thesis.

PETAL Vestasi Conclusion

22. Conclusion

This chapter will summarise the findings of the report and conclude on the investigative question listed in the problem formulation.

The initial intent of this project at hand was to examine how BPM could be used to secure and improve the AS processes of Vestas, as it was stated that AS is become a increasing part of their business, as it is used by organisations as a strategically tools in an effort to win orders and stay competitive.

This was investigated in the preliminary part of the thesis, firstly on a theoretical level followed by applying it to the context of Vestas. BPM showed to sets the process foundation for the AS business, needed when new and strategically initiatives are required. Through its focus on continually maintaining and improving business processes, the quality of the output of the AS processes is secured, but still having the overall strategies included. The will lead to customer satisfaction is kept, enabling repurchase to occur.

The BPM approach according to the AS Business at Vestas seemed on paper to function, but after further examination of the system through an ISO 9001 audit, problems and errors were discovered: knowledge sharing, understanding of the current system. Which had lead to lacking of transparency through the organisation operational AS level.

These leads to the second part of the thesis, the main analysis, were focusing on creating a solution to the problems was needed. To help this, the following problem statement was put forth:

"How can Vestas improve its BPM approach in relation to the operational after-sales service business processes transparency?"

The question was determined to broad and was supported by sub-questions, which help to shape the content of the main analyses: 1.Creating an understanding, 2.Development of Solution, 3.Pilot Evaluation of BPM-Initiatives, 4.Implementation initiatives and 5.Extracting a guideline for global use.

The first part focused on creating an understanding, where the focus were to get inputs into the development of the solution. Attending a conference, together with a LEGO Serious Play workshop, with operational employees participating, were used for this purpose. The output was: possibilities already existing that could help improve the overall transparency, but just as well issues that had to be dealt with, e.g. knowledge sharing.

The findings were used in the second part of the main analysis to develop the actual solution. Here the concept of creating a BPM-Forum, consisting of wind site employees, supported by a created team-site, was presented. These two initiatives will help to create an increased in the knowledge sharing process between wind sites, leading to better use of resources and possibilities found at this level. This is seen as the starting point for increase the efficiency and effectiveness, together with enhancing the transparency of the AS processes.

The third phase was concerned with the implementation initiatives need for securing the success of the suggested solution. Firstly management has to have a focus on motivating the upcoming user, as humans are complex individuals motivated by intrinsic and extrinsic rewards. For this purpose the concept of developing Business cases for capturing the user were presented, which were followed by an implementation plan. 1. Present the concept, 2.Release and use and 3. Evaluate and fit.



Four and finale phase summarised the solution into guidelines consisting of four steps, which could be used on a global scale and can be said to be the summery of the main analysis. 1. Create a BPM-Forum, 2. Create and establish a Team-site, 3. Incorporate and motivate the user to be an active part, 4. Point out key members of forums to participate with other forums on a global scale.

To conclude on the overall problems statement, Vestas has to create a local BPM-Forum, instead of keeping these on the tactical and strategically level, as employees needs to be familiar with the concept and be a part of it before they can see the benefits. The solution is seen as an evolution of their current Business Process Management approach, and is the next step of it maturity stage. The benefits of integrating BPM on the operational level will be better sharing of knowledge and increase transparency of the After-sales Service Process, leading to more efficient use of resources and a more effective output of their effort, maintaining their service business strong position. Taking it to an overall organisational level, the increased transparency will help to strengthen the organisations process backbone, moving it towards becoming a more process-oriented organisation. This is seen as beneficial when new initiatives: the new strategy and organisational structure is taking place. The business process foundation is secured, increasing the possibility of success.

23. Further Research

In this chapter the future possibilities of the solution/guidelines developed through this thesis, will be explored, together with a concept developed under the internship, concerning creating physical transparency.

23.1. Knowledge management – Knowledge sharing

The solution is highly related to area of knowledge management, which as stated in the text is a comprehensive area to start working with. To minimise the complexity of this, only a short description were given in Appendix E, together with a short acknowledge of it as a research area in the text. This were to some extent realised to late in the progress of conducting this project, making it relatively difficult to incorporated it in the thesis, but just as well to minimise the complexity of the solution. The theory of Knowledge Management would have benefitted the development of the solution, as it could have had a focus on ways to capture knowledge and how to create new knowledge. This was only very shortly described, as it was impossible to incorporated in the thesis based on the time constraints.

23.2. The future evolution of the solution

In Chapter 17, it was shortly presented that the suggested solution were merrily the start of something bigger. The full matured and developed solution is believed to consist of a minimum of five evolution phases, which is believed to have the same effect as ripples in the water, illustrated in Figure 33.



Figure 33 - Evolution of suggested solution

The present solution is said to be in the first stages, and is concerned with integrating the system in Australia and New Zealand, making it functional, and tested for general issues, but just as well implemented other and useful initiatives to mainly the team-site.

The second stages, is concerned with spreading the idea and concept to other countries within the region of ASP, letting them utilise the benefits gained from the pilot project at Australia and New Zealand, which should hopefully have removed most of the necessaries errors and general problems.

The third stage will focus on creating an overall BPM-forum on a regional level, where key participants from local BPM-forums will be included. Ideas and problem from the different countries will be shared and the transparency of the After-sales service processes of ASP will be spread Regionally.

Fourth step is to go global and have other countries create their own BPM-forum on a local basis, which should make them capable of utilising the benefits gained from Australia and the rest of ASP.



Creating an overall global BPM forum similar to that of the regional level is believed to be the final and step of the evolution of the developed solution according to After-sales service processes. On an overall level, it will be a network of employees, communicating on a daily basis across national boarders without going through different levels and authorities in their effort to gain and share knowledge, in their effort to do things smarter, more effective, and improving the overall transparency of the After-sales service business and its processes.

23.3. Moving on, why not?

The BPM-Forum idea and the use of team-site for support, is not only aimed at Vestas Service Business, but just as well for other functions. It is believed that the solution/guidelines developed for operational level use can be used as a shell and be integrated on other functional level. E.g. manufacturing and R&D. This is believed to help make the work easier and more efficient the setup already has been tested and used.

23.4. Creating physical transparency

Introduced at the Site Conference held in November, service employees from Nee Zealand together with the researcher of this thesis, developed the concept for an electronic sign-in program. The program has been through a series of alterations, to get rid of the start problems and to make it more specific according to the needs identified as the site.

The program has been developed by an external company, but has been made from scratch according to the specification of Vestas, which mean that Vestas are owner of the system and the idea.

The program will function as a simple, but modern, sign-in/sign-out system, where employees, but just as well visitors can sign-in/sign-out when being at a site. The program will have incorporated reporting features, so that managers and employees can quickly get an overview of the activities at the sites. The system is illustrated in Figure Figure 34 and has the following advantages:





Figure 34 - Electronic log-in system

- 1. Safety, in case of incident or evacuation third party offsite can view who is on the site.
- 2. Technicians can view own log-in times to help out their SAP time inputting.
- 3. Time Recording for site supervisors to assist with approving times in SAP
- 4. Subcontractor auditing, reconciliation of times or jobs to invoices.
- 5. Quick and easy overview of current activities at site

The system will in the future become more simply than it is now: the screen will be more or less the only thing visible to the user. The reason for this is that user will receive a swipe card, which they will swipe through a magnetic reader, which will register the entry and automatically plot the data into the system. The main reason for having the swipe function is that it will minimise the time for each entry done. The system is in general believed to create constant overview of the wind site employees' whereabouts, given optimal transparency.

24. Reflection

This chapter will be used to reflect upon the internship, which this thesis has been based upon, my learning process from this experience and also the area of the thesis.

24.1. Internship

This thesis has been based on a four-month internship at a service department at Vestas, located in Australia, and has been used as a foundation for this thesis, as daily tasks and problems were experienced on a first handed basis, through discussion and assignments.

Having the internship taking place at a sales division abroad and not at the headquarter Aarhus has without a doubt made me work with something differently and much more operational than if I had been located in a centralised position e.g. strategically purchasing. I do believe that being at a more executing part of Vestas Value Chain, has enabled me to get much more hands-on information in accordance to their service business and its processes. Before going into the internship my idea and experience of the service business were mainly kept at only at after-sales service character, a need, more than an actually strategically part of Vestas overall business, having threads through out the entire organisation.

24.1.1. Company Cooperation

The service division responsible for the internship found it very interesting to have an intern from Denmark, which meant they quite engaged and keen on enabling me to have a good and interesting stay. After a short period it did became difficult to figure out how to utilise each other capabilities best possible, which meant that meetings were held, mostly informal, were topics were discussed with the purpose of finding the best fit. But as it quickly became everyday at the office, I was more a part of the team, performing work tasks, than focusing finding an interesting problem area for the thesis. This were caused by another employee's leave, and her role needed to be filled. It could have been very beneficial if I had been more critical towards this arrangement, but looking back, everything was interesting and new so this was postponed together with the fact that new work tasks constantly landed on the desk.

The general cooperation between Vestas and me has been very good, I have had free hands as I could work with what ever I wanted, contact who ever I wanted etc. But I have missed some more feedback regarding my work tasks done, as I have not previously had experience in this field.

24.1.2. Personally experience

I really believe that the internship has given me something useful and practical, in accordance to my learning process both according to the thesis, but just as well to professional and social aspect. I have gained practical experience working within the business world, instead of setting at the university and visiting a company once in while, together with learning to socialise and interact in the real world and in a business setting.

On a personal note, I have become better at taking action and not be afraid of failure in accordance to the work tasks needed done, small as big, as I have realised that I do posses tools learnt through the university period, even though they are well buried at some times.

24.2. Focus area of the thesis

The internship did not have a specific problem area, which the thesis should focus on besides an overall and quite generic idea of Business Process and optimisation of these, which seen back was way to defuse. It

could have been beneficial to have a specific hands-on problem to solve, making the internship more subject and problem concentrated.

Nevertheless, the overall focus of BP affected the task given and worked on under the internship, as these were mainly of business process character, within the service department. Looking back I had to many things to do, work tasks and areas, which meant I did not get a fully theoretical foundation and understanding, but mainly a practical approach through the internship.

Having had a specific problem and a better theoretical foundation could have yield very different result than what this thesis has produced and maybe given me the opportunity to require and asked for more detailed information than I did.

24.2.1. The solutions use

After having developed the solution to the problem of the thesis and having it evaluated by the users and other stakeholders, little progress to the actual use have not been made, caused by ended internship and lack of communication. Which I believe will be a major factor for the success and use of the solution.

Both the stakeholders and users could see the usefulness of it, but based on past experience from other project and observation at Vestas, the solution will probably not be fully used. The primary reason is that the personal at Vestas are quite busy together with the new strategy and reorganisation happening, they have more important areas to focus on from their point of view – keeping things going.

I do still believe that the solution is useful and needed, but I do understand if they decide not to utilised it at the present, but are hoping that it will be remembered in the near future for use.

24.2.2. My own work

I had from the start a positive mind regarding the internship, as I saw it as a source for my process learning cycle, which meant I maybe went into the internship with a too open mind.

I could have been more critical and focused regarding the areas worked at under the internship, and should have put forth demands regarding work tasks and areas, instead of just enjoying being out in the real world and away from the books.

I do believe that this laid back attitude has caused many frustration later on in the development process of the thesis and also lead to a somewhat chaotic state at some points. It has cause a lack of the straight-line trough the thesis, which has given many unnecessary work hours, after my arrival to Denmark.

A more structure approach to the whole thesis and internship could have helped to create a somewhat more specific result.

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Abbreviations

- AOM Active Output Management
- AS After-Sales Service
- ASP Asia Pacific
- B2B- Business-to-Business
- B2C Business-to-Customer
- BP Business Process
- **BPM Business Process Management**
- BPMS Business Process Management System
- SBU Sales Business Unit
- LPF Lost Production Factor
- PBU Production Business Unit
- VPP Vestas Process Portal
- WTG WTG



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Appendix A

1.1. BPM vs. BPR

Based on an article found on bpmgeek.com supported by Snabe et al, 2009, the following table has been created, which illustrated the difference:

Business Process Management	Business Process Reengineering
Automates and reuses the existing pro- cesses	Recreates process from scratch
Risk is low	Risk is high
Change is continuous	One big and radical change is done
Time taken for implementation is com- paratively less	It takes a lot time to be implemented
Business and IT collaboration is must	Business and IT collaboration is optional
BPMS is the technology used	Based on workflow
One or more process can be simultane- ously taken and worked upon	One major process is taken and worked upon at a time
BPM leads to assets optimisation	Sometime BPR leads to lay offs
Does not have any effect on the culture of the organisation	During implementation cultural issues becomes a major concern
Outcome is continuous and incremental	Outcome is drastic
Less expensive	More expensive

BPM versus BPR (BPMgeek, 2011) (Snabe, Rosenberg, Møller, & Scavillo, 2009)

Some of the elements in the table are more drastically put forth than what they are really alike, this is done mainly done to highlight the difference between the two areas. Nevertheless, both are contributing to the value addition of the organisation.

Trying to differentiate these on an overall level, it can be said that BPM is more integrated part of the organisation, as it is continuously happening comparing AS-IS with TO-BE scenarios, where BPR is more one big and drastically change.



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Appendix B

1.1. What and Why ISO?

The ISO 9000 family of standards is related to quality management systems and are designed to help organizations ensure they meet the needs of customers and other stakeholders. The standards are published by The International Organization for Standardization (ISO), which is a network of the national standards institutions in more than 150 countries, organized on a one member per country basis and is the biggest organisation of standards in the world (Standard, 2011).

ISO 9000 deals with the fundamentals of quality management systems, including the eight management principles on which the family of standards is based. ISO 9001 deals with the requirements that organizations requesting the standard have to fulfil. (Standard, 2011)

The use of standards has proved to result in higher return on investment and bottom line impact, together with contributing to make the development, manufacturing, and supply of products and services more cost effective, safe and clean. The ISO standards has become a need for modern organization, as it shows to give customer and clients a somewhat safety net, when choosing supplier. Being ISO certified can be said to be a enabling factor and in some cases the order winning criteria, and a competitive element.

Undertaking an ISO audit helps organization to secure their process and procedures are fulfilling the standards of ISO, which then will release a certification for the organization, and per se being ISO certified. (Porter & Tanner, 1998)

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Appendix C

Hey (Employees)

We are in the progress of reviewing the processes within the VPP for the Service part of Vestas Value Chain, and are in that connection been asked to: firstly to evaluate the existing process to see if they are still valid and secondly we need to integrate the local processes which exists beside the already codified process.

For that purpose we need our help to localise and describe these processes, even though they are only small add-ons to existing process.

The time frame for this review is XX august to XX September, so it is quite important for us to get your feedback as quick as possible within the time frame, the earlier the better.

We have attached process(es) which could be of our interest in connection to having a local process.

If you have any questions feel free to give us a Call or send an email

Kind regards Anders Hvidberg & Tegan Lodge Service Intern/System Specialist 7025 /7043 anhvi@vestas.com /telod@vestas.com



Action plan/ Strategy		nvolve employees in	lecision-making		end out internal surveys	understand the needs	ind wishes)	ormalise and stan-	lardise processes, use	/PP as guidance		3PM Forum, make some	handful of employees	ey-persons	Held session with service	xperts - enhance people	ervice spirit	Jse open session with	ustomer, understand	heir needs etc.	Centralise communica-	ion as much as possible.	lse formalised systems		n most cases.	la clear in communicat-	ng goals, vision
Start	Vision and goals for each site?	Sell the benefits of Vestas		rook at empioyee reten-	tion)	10	Lean processes	0	Eliminate "waste"	Forward planning		0	×	Better Visualization of	information	5		0	t	Use the pre-existing (formalised tools		· .			<u> </u>
Continue	Team building events	Improve life/work bal-	ance					Optimisation initiatives		LPF, planning, quality	of service and service	schedule			LPF, planning, quality	of service and service	schedule	Regular communication	with customer		Motivate						
Stop		Conflicts						Uncertainty		Unnecessary flow	Overtime				Seeing turbines as Vestas	Property					Inefficient and repetitive	meetings/discussions					
Implication	Daily service tasks, performance, work force	 Lost of work force		Demouvation				Inefficiency		Daily service tasks,	performance, work force	etc.			Loss of contract renewal	/ customers / new proj-	ects				Daily service tasks,	performance, work force	etc.				
Factors	Restructuring of Vestas	New job opportunity	(External)		Cost cutting (Internal)			Cost cutting (Internal)							Cost cutting (Internal)						Headquarter blocking	(Internal)	Restructuring of Vestas	0	(Internal)		
Goals	Clear vision and goals for sites	Balance at work place	(stability, mobility and	narmony on sue)		Create balance between	work and life	Making sure that busi-	ness processes are right		Continues improvement	of business process and	turbines		Better customer focus						Better communication						

Better safety system / mature Explain to Safety engi- neers what is needed and wanted!	Put forth demands to e.g. IT regarding system limitation Build business case/solu- tion and sell it	Lobbyism	Emphasis the benefits of Vestas Sell the total solution		Co-op with external sources. Universities, local institutes	
More practical More hazard observation	Coming up with new solutions Challenge SAP team to link WI's to SO's		Better customer focus / service contract		Risk analysis?	Become actively partner
High focus on safety KPI on Hazard observa- tion Timeline for closeout on incidents	Emphasise the problem	Being up-to-date			Being preventive	Understand demands
Being Reactive	Excessive reporting) (double reporting)		Stop the Chinese			Neglecting demands
Daily service tasks, performance, work force etc. Demotivation	Daily service tasks, performance, work force etc.	General business of Ves- tas, All employees	General business of Ves- tas, All employees Resources from site	General business of Ves- tas, All employees and contract renewal	General business of Vestas, All employees and Safety	General business of Vestas
Cost cutting (Internal)	Cost cutting (Internal) Headquarter blocking (Internal) Supportive tools failure (Internal, External)	Government regulation (External)	Competition (External	Customer none money (External)	Environment and techni- cal failure (External)	Union pressure (External
Keep focus on safety	Supportive function run- ning smooth					

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Appendix E

1.1. Knowledge management and knowledge sharing

Knowledge management is a relatively new concept, which is dealing with management the knowledge within an organisation. In this thesis the aim within knowledge management will be on that of becoming better at sharing knowledge, as the extent of explaining and fully utilise knowledge management is a project in it self. Knowledge sharing is one out four element within Knowledge management: Creation (Deals with how knowledge is created), Codification(How knowledge is stored), Transfer/sharing(How is transfer/ shared to employees) and application (The system or process which make knowledge useful) (Alavi & Leidner, 2001). As this project mainly works with Knowledge sharing, this will only be investigated, but the three others will still be kept in mind.

Knowledge

Knowledge is a combination of data and information and is normally said to be difficult to define, and by this manage, but two overall types has been identified and used in the management literature:

Explicit knowledge is knowledge that can be expressed and codified easily (Alavi & Leidner, 2001). E.g. explicit knowledge within a document can be training manual about how to operate a specific software program.

Tacit knowledge is non-verbalised, intuitive and unarticulated knowledge (Polanyi 1975). This type of knowledge is not easily captured or codified. E.g. How a person ride a bike.

Tacit knowledge forms the background necessary for assigning the structure to develop and interpret explicit knowledge (Polanyi, 1975). Working with each type of knowledge requires different method and tools for transferring it; Explicit, IT-systems for formalising and combining the knowledge, Tacit, training of a person in a given area.

Having the two types of knowledge defined the next step is to move to knowledge transfer and sharing

Knowledge transfer and sharing

Knowledge sharing occurs at various levels: between individuals, from individuals to an explicit source with no specific receiver, from individuals to groups, between groups, across groups and from the group to organisation (Alavi & Leidner, 2001). Knowledge transfer in organisations is the process through which one unit (e.g., group, department, or division) is affected by the experience of another (Argote & Ingram, 2000). Internal knowledge within an organisation is transferred for the purpose of re-usage.

In Figure X an illustration of knowledge transfer is made. As illustrated the process consist of two main components: the source or the sender, who transfers the knowledge, and the receiver who acquires the knowledge (Liyanage, Elhag, Ballal, & Li, 2009). This figure is a good illustration of what happens when knowledge is transferred from a source to a receiver who then learns something new.





Knowledge Transfer Process (Liyanage, Elhag, Ballal, & Li, 2009)

Knowledge transfer and sharing can be an employee asking for and receiving information from co-worker. In this case, the source of knowledge is the co-worker; the mode of transfer is the social interaction, whereas the receiver of knowledge is the employee which competences are improved. Thereby, it can be said that knowledge transfer is the process required for an organisations to function. Organisations require internal and external knowledge transfer for being able to function and gain new organisational knowledge.

The problems with tacit knowledge lie in the fact that it is often personally bounded, which entails that it is difficult to transfer. As a consequence, organisations tend to lack an overview of the knowledge present, and therefore, they cannot develop systems for locating or retrieving the knowledge that resides within the employees (Huber, 1991). Knowledge within key individuals needs to be identified and transferred in order for other individuals or the organisation to benefit from it. Then a problem arises because of the fast developing technologies and changing environment since this entails that knowledge quickly becomes out-dated. This causes problems in transferring accurate information into knowledge, and composes therefore an area of concern.

Through the report, knowledge transfer is viewed as different methods of how knowledge can be forwarded from a source to a receiver. Some examples of the methods are knowledge transfer through social interaction e.g. by talking face-to-face or calling, IT-tools like emails, presentations, etc.

Based on this, it can be said that knowledge is a huge size and requires different method for being shared, as the focus of this thesis is not on finding specific method for sharing.

Appendix F

Hey all

At the last site conference, a lot of good inputs and ideas were presented and also discussed, which can be beneficial and value adding for each site on daily basis.

Therefore it could be mostly beneficial to have this kind of knowledge and best practice sharing done on a more regular basis than each half year at the site conference.

Having it on more regular basis will be favourable for each site, since you will be helping each other out with general problems, doing things smarter and also maybe creating new and better work procedure/ method together through discussion and dialogue.

Also it would be preferable to brainstorm topics, ideas, problems, etc. for upcoming conferences, so that these can be presented and worked on in collaboration with the Melbourne Office at the conferences.

Based on this I have created a Team Site where each member/site has the opportunity to upload and share document, picture, start discussion etc. I tried to upload some of the subjects/areas mentioned and discussed at the last site conference. The reason for this is mainly to show the idea of the site, but just as well for having some kind of starting point.

I really hope that you guys will be an active part in this, so that it will be constructive and beneficial for all. It is up to you guys to make it functional and running, since you are the persons with the knowledge and experience.

The design of the site is still running, so if you guys have any wishes for modifying, adding or removing any elements, you are most welcome to tell me.

If you have any other questions or thoughts please do not hesitate to contact me.

