

# **An Evaluation of the Information Flow's Influence on the Internal Processes at Vestas**

- From a Supply Chain Perspective.

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*This article was based on a study conducted at Vestas Northern Europe in Malmö. The purpose was to evaluate and increase the efficiency of the internal processes by clearly visualizing the information flow and present improvement suggestions at Vestas Northern Europe. The academic aim was to develop a theoretical framework for an analysis of the information flows impact in a supply chains. The study is based on a master thesis in Engineering Logistics at Lund Institute of Technology.*

*Key words: Information flow, Knowledge, Supply Chain Management, Functional organization, Silos, Process organization*

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## **Introduction**

When companies grow rapidly during a long time the information flow, together with the physical flow, can really differ within supply chains. The information might not correspond with the physical flow, which can create problems with the communication and future planning. The way companies receive information from its different suppliers and customers can differ greatly and this makes the information flow even more complex and hard to understand. There is also a disparity in what type of information that is transferred, depending on for example the relationship with the supplier.<sup>1</sup>

## **Vestas**

Vestas has grown rapidly the last couple of years. Today Vestas is No. 1 in Modern Energy and Vestas strategy is to strengthen its competitiveness in order to stay No. 1. The organization has facilities in 26 countries and the headquarters is in Denmark, Videbäck. Vestas has four independent Production Business Units (PBU), they are: Vestas Towers, Vestas Blades, Vestas Nacelles and Vestas Control Systems. Vestas also have several Sales Business Units (SBU) and the main office of Vestas NEU is placed in Malmö, Svågertorp. The different departments within this SBU are Sales, Operations, Service, QSE, Legal and P&C.<sup>2</sup>

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<sup>1</sup> (Näslund, 2009)

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<sup>2</sup> (www.Vestas.com, 2009)

## Problem formulation

The problem formulation of this study was to clearly define what information is shared today, identify where the critical interfaces take place and where vital information is lost.

Even though Vestas has a common supply chain with sub-suppliers and end customers, Vestas also has a similar supply chain structure within the company. A reason for this is that Vestas has different, almost independent, production and selling units around the world.<sup>3</sup>

## Method

This study takes a hermeneutic-oriented approach as well as it is deductive. The study is best defined as a case study of Vestas NEU. The study is based on qualitative data by performing interviews. The interviews have been conducted with employees within the SBU, at one PBU and at one construction site. Both primary and secondary sources have been used. The primary sources refer to the interviews and the secondary refers to the literature studies. The methodological procedure of the study started with a process mapping in order for the authors to be able to identify the critical interfaces. Then a information mapping was conducted with help of the interviews and visits. This was performed in order to be able to analyze the critical interfaces and come up with improvement suggestions.

## Theoretical framework

To perform this study there are several theoretical areas of interest that have been studied. These areas were: information sharing in supply chain, organizational structures, process mapping and measurement.

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<sup>3</sup> (Damgaard, 2009)

The authors used the following definition of a supply chain:

*"...the supply chain is any combination of processes, functions, activities, relationships and pathways along which products, services, information and financial transactions move in and between enterprises."*<sup>4</sup>

Mutual sharing of information is one of the activities supply chains have to perform and frequent information updating is important among the chain members in order to manage the supply chain effectively. Information sharing can be defined as the willingness to make strategic and tactical data available to other supply chain members. The information shared could be inventory levels, forecasts, sales promotion strategies and marketing strategies.<sup>5</sup>

The biggest issues facing communication today is breaking through silos, influencing management and other structural problems. There are strong agreements among panelists that organizations need to break through silos to create more effective organizational communication. You need to have all voices coming in to be able to create the best solutions.<sup>6</sup>

Cross-functional interactions between departments refer to information sharing. By using this approach an increase of the information flow can be enhanced by having meetings and continuous written reports. Cross-functional interactions enhance the integration of departments as well as it includes an interdepartmental collaboration. This is characterized by shared goals, mutual respect and cross-functional teams.<sup>7</sup>

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<sup>4</sup> (Lambert, 2008, p. 5)

<sup>5</sup> (William DeWitt, 2001, p. 8)

<sup>6</sup> (Karen Vahouny, 2007, p. 41)

<sup>7</sup> (Douglas Lambert, 2005, p. 31)

What Information?	Why?
<b>Operational Info.</b> ~ Order status ~ Inventory levels ~ Lead time ~ Product base ~ Cost constraints ~ New product initiatives	~ Reduced stocks ~ Reduced lead time ~ Clearly defined product base ~ Cost savings
<b>Tactical Info.</b> ~ Capacity plans ~ Production schedules ~ Forecasts ~ Demand data ~ Quality issues	~ Improve inventory management ~ Optimize production planning ~ Customer orientation ~ Improved service level ~ Cost savings
<b>Strategic Info.</b> ~ Market info. / strategies ~ Product development ~ Pricing strategies ~ Distribution strategies	~ Improve decision making ~ Reduce market uncertainties ~ Enhance supply chain performance ~ Customer orientation ~ Faster R&D cycle-times ~ Improved service level ~ Cost savings
<b>Info. Feedback</b> ~ Feedback on current/earlier projects	~ Improve decision making ~ Understand the holistic view
<b>Knowledge</b> ~ Know-how	~ Put to account earlier experiences and expertise

Table 1 Theoretical Framework

The theory was summarized in a theoretical framework, which can be seen in table 1 above.

### Analysis

First the critical information that needs to be shared between departments, according to the respondents, was analyzed. Then the focus was laid on how to overcome the existing barriers that makes it difficult to share this information and knowledge. With the help of the theoretical framework, which was created and presented in the theory chapter, the authors had the possibility to compare this with the information flow mapping. The theoretical framework enabled a localization and visualization of the critical factors that Vestas has to deal with. These results would then lie as a foundation further on in the report for improvement suggestions.

Barriers	How to overcome?
<b>Org. Structure</b> ~ Functional Silos ~ Hierarchical levels ~ No holistic view ~ Difficulties with common goals	<b>Process-oriented Approach</b> ~ Cross-functional teams ~ Act as one ~ More holistic approach ~ Aligned common goals ~ Joint decision making ~ Process measurement ~ Customer orientation
<b>Org. Culture</b> ~ Lack of trust ~ Limited info. Sharing ~ Lack of commitment ~ No common mindset ~ Lack of communication policies	<b>Open Org. Culture</b> ~ Free info. Flow within/between groups ~ Enhanced trust and commitment ~ Common mindset
<b>Techn. Systems</b> ~ Lack of collaboration systems	<b>Techn. Readiness</b> ~ Use of collaborative systems
<b>Lack of Customer Involvement</b> ~ Limited knowledge of what creates value for the customer	<b>Customer Involvement</b> ~ Work in the same direction ~ Focus on value-adding activities

The critical information that was analyzed was placed in the theoretical framework. The categorized critical information is summarized, for example the tactical information, and then divided with the total amount of the critical information. This method has been used for all the categories. The results that were visualized were the following:

- Tactical information (30 %)
- Strategic information (7 %)
- Information feedback (44 %)
- Knowledge (19 %)

This shows that Vestas needs to enhance their ability of transferring information feedback as well as the tactical information. These are the two factors that will influence Vestas' information flow performance the most. The information feedback that Vestas should share refers to Lessons Learned (LL) for whole projects and progress reports. The tactical

information that Vestas needs to share refers to for example Quality information, Process information, Contract changes, Design and production changes and Forecasts.

The same method was used concerning the barriers and the results that were visualized were the following:

- Organizational structure (36 %)
- Organizational culture (28 %)
- Technical systems (20 %)
- Customer involvement (16 %)

The barrier organizational structure mainly pinpoints the influence that the functional silos have and the results therefore show that Vestas needs to take a more process-oriented approach.

### Improvement suggestions

#### Cross-functional teams

The cross-functional teams should be used throughout a whole project and involve all departments connected to a project, see figure 1. The core team should consist of the Sales Manager, Sales coordinator, Service Sales Manager, Project Manager, Transport coordinator, Quality Manager, Safety/ Environmental Manager, Service Manager and Supply Chain coordinator together with Quality coordinator (from the PBUs). The main task for these teams is to discuss progress reports, issues that occur, changes in contract and LL.

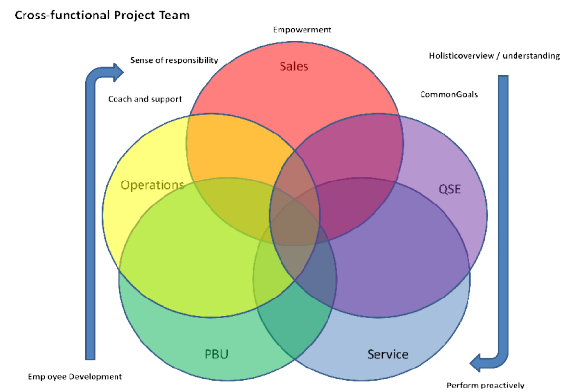


Figure 1 Cross-functional team

Advantages that Vestas could realize with the use of these teams are; Empowerment, Employee development, Influence of change, Perform proactively, Sense of responsibility, Common goals, Holistic overview / understanding and Coach and support. These advantages further leads to cost savings when the internal efficiency is enhanced.

#### Project Dialogue Forum

A project forum can be developed and implemented to ease the daily work for the employees and the cross-functional teams. Figure 2 of a Project Dialogue Forum, designed by the authors, can be seen in figure 2.

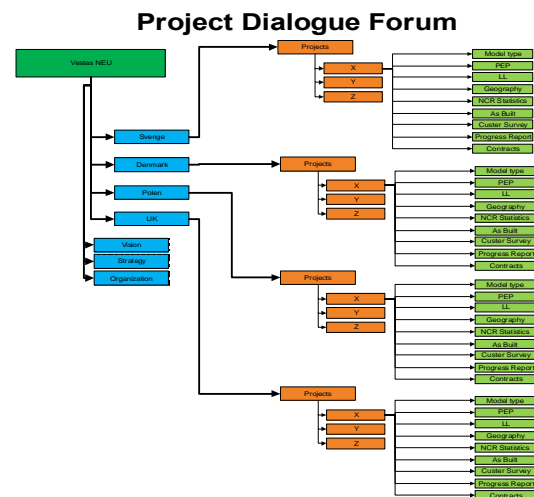


Figure 2 Project Dialogue Forum

This Project Dialogue Forum is to be implemented into the intranet or ERP system at Vestas. This will enable all the employees to get access to the information connected to projects that can be needed during different phases in the daily work.

#### QSE on Site

Sharing information concerning quality issues was realized as a problem today. One way of overcoming this issue would be to place a supervisor on site, which tasks would lie on this issue, reporting back to the cross-functional team. This would enable a better way of transferring this information through the hierarchical levels and also enhance the decision making.

#### New customer Survey

Vestas should measure a whole project with help of a new customer survey in order to further break through the functional silos. This customer survey should reflect all the involved departments in a project, as one, instead of measuring each department separately. By implementing this customer survey the cross-functional team can easily realize what to focus on in order to add value towards the end customer. The attributes in the customer survey is to be measured both on a satisfaction- and importance degree.

#### Conclusions

The market for wind turbines is changing in a rapid pace. The customers have more knowledge and larger projects with many wind turbines have become very common. In order to prevent a decrease of competitiveness Vestas needs to start harmonizing the organization within, to be able to act in a better matter on the market. Vestas needs to cooperate effectively between the departments and the business units and there is also a big need of a

holistic view. This could be the starting point of a new organization that strives towards common goals and acts proactive to new changes.

The authors' conclusion of what information Vestas has to focus on, according to the analysis, is the information feedback. The vital information concerning this field is listed below:

- Progress reports
- Lessons learned
- Quality / NCR
- Service performance

The issue today is that the possibility to learn from earlier projects is difficult because no lessons learned are performed. The authors strongly recommend Vestas to take a more process-oriented approach using cross-functional teams. Using cross-functional teams will also influence the organizational culture, which was shown to be the second most important barrier to break. The information shared will now not only be within departments but between departments as well. By using cross-functional teams and a project dialogue forum the information and knowledge sharing will take a new approach. Another recommendation is that QSE need to be more involved in a project in general and need to share more Quality and Environmental information, this because the customer demands more in these areas today.

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