

CHANGES AND CHALLENGES OF ERP IMPLEMENTATION IN THE CONTEXT OF PROCUREMENT AND SUPPLY CHAIN PROCESSES

Rickard Karlsson and Erik Flink

Lund University, Faculty of Engineering

Department of Industrial Management and Logistics

Lund, Sweden, 10th of January 2014

ABSTRACT: This article is the summary of a master thesis carried out in the autumn 2013 for Maersk Drilling. It brings up the challenges of implementing an ERP system and how it will affect the Supply Chain Management and Procurement processes. It was a qualitative single case study and the data collection comes from internal data, surveys and interviews with personnel involved in the ERP project. The conclusion is that the ERP has been an enabler for the changes and the new processes will become more streamlined, standardized and cross-functional. Increased information sharing will help MD to work more efficient and additional/improved data will give MD an enhanced overview in form of management reporting. This has led to many benefits and the challenges concerning the project have been communicated well, which has given a uniform picture among the involved actors.

ERP - changing the way we work

Maersk Drilling (MD) is growing rapidly. To support the growth and facilitate stronger collaboration between departments, new business processes supported by a new IT landscape – a so called ERP platform - is required. The ERP solution is currently being built and will be rolled out both offshore and onshore in the coming year.

MD is specializing in oil drilling services in harsh and deep-water environment operation. The customers are oil and gas companies who want to drill holes to explore where the oil is. After the exploration-rig has been drilling, if there is oil in the well, the oil company will put a production rig there to take up the oil. MD has a young fleet and the rigs are equipped with advanced technology to stand the harsh conditions (MD Annual report 2012).

The purpose of the study is to dig deeper into how the change with a new ERP system will affect the procurement and supply chain processes at MD. Since the ERP project is big with many persons involved, it will mean changes in the organization as well as in the roles and responsibilities. It is important to get a deep understanding of the perceptions of challenges in the project to see if everyone works towards the same goal.

The research questions that the study answers are:

- 1. How are supply chain and procurement processes changed by a new ERP system at Maersk Drilling?*
- 2. How do the different parties involved perceive the challenges related to the change of supply chain and procurement processes?*

SPLIT IT LANDSCAPE

The chosen case company, Maersk Drilling, has problems with a split IT-landscape with poor data quality (see figure 1). It has caused problems with inefficient and complex processes with much communication required and parallel information.

"We cannot wait or rely on our current systems any longer. New work processes supported by a new IT landscape is incredibly important for the future of Maersk Drilling"

- Claus Hemmingsen, CEO Maersk Drilling

Within procurement this translates into problems in spend management and time wasted with tracing orders. The new ERP system therefore plays an important role in supporting information sharing, cross-functional ways of working and a better overview. The ERP project is significant and there are many stakeholders such as ERP team members, offshore personnel, vendors and consultants who may perceive the potential challenges differently, hence the importance of knowing the perceived challenges amongst the different actors.

THE STUDY

The thesis is a qualitative single case study. The theory was gathered prior to a pre-study that was made at the company in order to grasp the problem and come up with the research questions. Thirteen interviews were made and archival data from the company was collected. This provided several sources of data and triangulation was possible. The data collection was then matched with the theory in order to secure that the theory would cover the specific research questions. After that the analysis was conducted where empirical data was compared

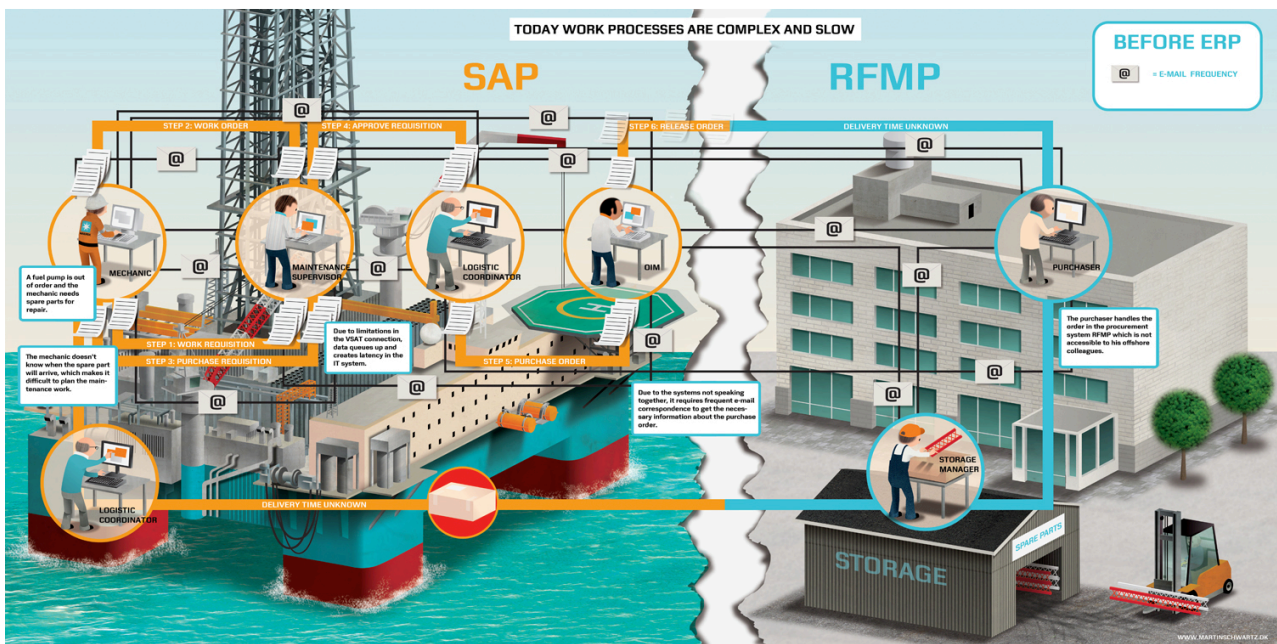


Figure 1 Illustration of the current split IT-landscape and the ordering process (Project Introduction)

with the theory. Finally the conclusions and recommendations from the whole study were drawn.

LITERATURE

An ERP is an integrated information system that spans across the organization and a powerful tool to change, integrate and automate business and system processes (Umble & Umble, 2003). Processes deal with creating value to satisfy the customer by increasing the effectiveness and using the resources and competence of an organization in the best possible way. According to Ljungberg and Larsson (2012, p 60), a process is a network of linked activities, that are repetitively used, which uses information and resources to create value to satisfy a given need. Nah et al. (2001) say that the most important attributes of an ERP system are the abilities to:

- Automate and integrate organization's business processes
- Share common data and practices across the entire enterprise
- Produce and access information in a real-time environment

Procurement can be affected by an ERP system by minimizing administrative tasks (Velcu, 2007) as well as getting better quality in the data (Gattiker & Goodhue, 2005). Relating to the supply chains there are several activities that need to be coordinated according to Mentzer et al., (2001) such as; marketing, sales, research and development,

forecasting, production, purchasing, logistics, information systems, finance and customer service. In order to have a good coordination there needs to be trust, commitment, a sound risk dependence and organizational compatibility. There are typical business functions such as planning, organization and business processes. They have to be inter-coordinated for the supply chain to reach its full potential (Mentzer et al., 2001) and lowering costs while increasing efficiency is essential (Umble & Umble, 2003). It is a global setting for most of the supply chains and companies are faced with increasing competition, global expansion. To accomplish the previous objectives, companies seek for solutions that can help and this is where an ERP system comes in (Umble & Umble, 2003). It plays an important role in staying ahead of competitors and succeed in the current dynamic business environment (O'Brien & Marakas, 2010).

Implementing ERP

When implementing a new ERP system in a company it is a major change, which will affect many employees and their way of working. One of the fundamental sources of resistance is perceived risks (Aladwani, 2001), why it is a relevant area to study in connection with the new ERP system. Change management plays an important part here in communicating the change and having a clear vision for the future state. It is also important to make the change stick (Kotter, 2011). Mismatches between ERP and organization can have significant impacts on

organizational adoption, which could be the main reason causing ERP implementation failure (Umble & Umble, 2003).

Changing Processes

It is almost inevitable to change processes when implementing an ERP system (Bingi et al., 1999). Typically a business process is supported by an ERP system that represents business functions and in an implementation it is important to begin with well-defined processes (Aggarwal & Jong-Sung, 2009).

Changing a process can be necessary in order to make it perform better. The process can be improved continuously, or if it is a more drastic change, it can be redesigned or reengineered (Davenport, 1998). The similarities are that the process is the main unit. The main differences are that redesign requires radical enhancement where an improvement can be 10% better result.

It can also be a challenge to move from a hierarchical structure to a process structure in a company since several business processes might have to move at the same time. A business process redesign is often a major change, which cuts across functional boundaries (van Ackere et al., 1993). Typically very strong support is required from top management.

These changes makes the implementation of a new ERP system to a major undertaking and installing them entails not only technical challenges but also organizational and people challenges. It will eventually affect the organizational structure, culture and strategy, which require adaptation and change

management. (Aladwani, 2001)

It is often said that ERP implementation is about people, not processes or technology

- Reddi Prasad Bingi et al., 1999

Often companies are good at identifying needs to change but the knowledge of the need alone is not sufficient. The capacity and willingness of the organization to adapt to external and internal changes will affect the outcome (Jacobsen, 2005). Corporate culture, poor leadership and lack of teamwork are all factors that impede change (Kotter, 1996).

RESULTS AND ANALYSIS

Changes

In the study most of the expected improvements at MD, like better planning, process automation, transparency and more was in line with what the literature suggested. The increase of internal trade due to more information sharing is probably industry-specific. With regards to the purchasing process it will become more streamlined with less waste (see figure 2). With the changed processes less time will be spent on tracing orders and expediting. The new system will also lead to a better spend management in terms of better and improved data of the spend. This will lead to improved supplier evaluation as the spend will be consolidated and can therefore be used as leverage during negotiations. It is expected that more spend will be made with frame agreements.

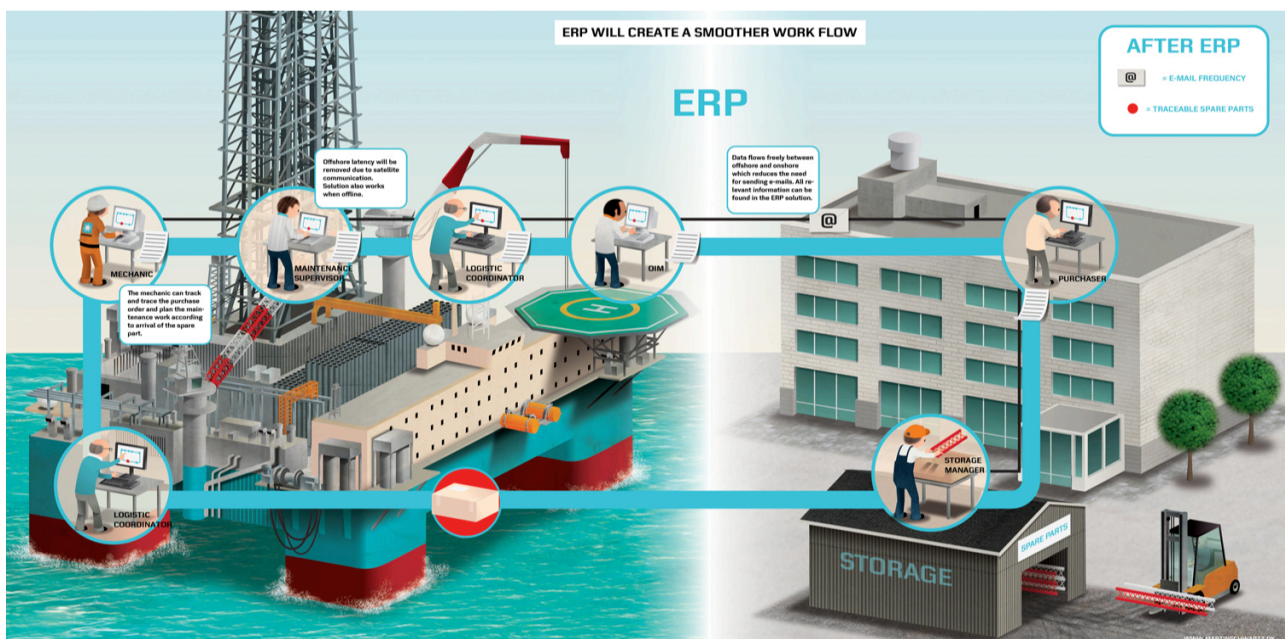


Figure 2 The new IT-landscape

Ranking of Challenges

The technical challenge was highly ranked (see table 1), since MD starts from a low level with poor data quality and that the project was in the “Establish phase” when it was executed, the master data issue was then “top of mind”.

Table 1 Rankings of perceived challenges among the different actors

Actor	Technical issues like master data	Challenge of change	Business not enough involved	Requirements not covering business needs	Weak top mgmt support
ERP team SCM and Procurement	3,75	3,5	2,75	2,75	2,25
Group Procurement	3,5	2,5	3	3,5	2,5
MD Procurement	5	3,5	3,5	1,5	1,5
Vendor	5	4	3	1	2
Consultants	5	4	2	3	1
Offshore	3	3	3	4,5	1,5
Sum	4,21	3,42	2,88	2,71	1,79

The challenge of changing the way people work was perceived by all interviewees as a major challenge (see table 1). Reaching out to the offshore personnel will be tough. People with deep knowledge in SAP will most likely be a source of resistance. A way to get support from them is to turn them into “change agents” or super users who teach other about the system.

Comments from the ERP vendor and Implementation consultants

- MD has a good understanding of the communication issue
- Very good top management support
- Extremely important to involve end-users make show their benefits to them
- The scale of the project is a challenge in itself, to make people communicate.
- Working to fulfill the long list of requirements makes the solutions a bit limited, it would be more beneficial to work more solution-oriented with the ERP solutions.

Comments from persons with offshore experience

- It would be beneficial for the SCM and Procurement track to have a person with offshore experience in the team.
- If the new processes are easy, the chance is higher that people will follow them. “Offshore people do stuff the easiest way”

CONCLUSIONS

Overall the ERP project is very well organized and many benefits will be realized when the new system is in place. It is therefore a sound strategy to first improve internal cooperation between functions and then move on to integrate customers and suppliers.

How are supply chain and procurement processes changed by a new ERP system at Maersk Drilling?

- MD will get a better overview from management reporting when owning all processes. MD will be able to access the data since they own it. Better data is helping in evaluating and choosing suppliers, and to realize these benefits MD needs to have good master data.
- Better planning will be possible with same real time data and better cooperation between maintenance and procurement. It will become a more cross-functional way of working.
- ERP system supports increased centralization with higher use of standard articles and coordinated purchasing. The approval matrix of a purchase was not In MD the opinions on centralization differs.
- The new processes are more streamlined, efficient and standardized, which supports scalability and helps in easy upgrading for the future. Less time will be spent on tracing orders due to increased transparency, leading to lower administration costs.

How do the different parties involved perceive the challenges related to the change of supply chain and procurement processes?

- MD has so far been good at planning the project and they are well on their way. They have awareness of the situation and the potential challenges. This has unified the different stakeholders in their perceptions on the possible risks in the ERP implementation.
- Master data is the biggest perceived challenge of the chosen ones, probably because of that the project is in the establish phase and that MD has a starting point with very poor data.
- Top management is the least perceived challenge of the chosen ones, which can be explained by the strong support from the CEO and that the project has been given sufficient resources from top management.
- End-users must understand the benefits before they can ever achieve true buy-in and the challenge of change is perceived as a very big challenge.

RECOMMENDATIONS

When comparing the MD case with literature and talking to different actors the researchers have found areas that are important to work with and could be improved. Obviously communication and change management are important tools for making the transition smooth. The recommendations are:

- MD should have **designated change agents** on the rigs that can communicate the vision well with the offshore personnel. Having people on the rigs seems to be the best way to make sure that communication reaches the personnel. Here it is a good opportunity to make people with good knowledge in old systems to change agents to decrease their resistance.
- MD needs to keep sure that the **quality of the master data** not suffers although there are tough time limits. In the interviews it was stated that the time limit might affect data quality. Considering the importance of precise master data extra resources or time might be needed to make sure that the quality is not suffering.
- In order to get **full support in the process ownership** MD has to make sure that the people hired by GPRO has the same incentives and structure as MD personnel, and have a close collaboration with GPRO. Clear ownership of the process is necessary.
- **The vision** is full of management jargon. To make it stick better and be easier to remember and easier to relate to it would be beneficial for MD to use a language of metaphors. An example of that could be "connecting the islands" or similar expressions in the vision.
- Develop and announce an **official procurement strategy** for MD, to know what strategy to support and to have better guidelines to follow both in ERP project, procurement work and GPRO relation. When asking people about the procurement strategy it has not been easy to get a clear answer and having a strategy is important to simply know what to strive for and what the objectives are.

REFERENCES

- Aggarwal, R & Jong-Sung, L, 2009, "*Identifying Business Processes: The Key Initial step of ERP Implementation*", Review Of Business Research, 9, 4, pp. 121-126, Business Source Complete
- Aladwani, AM ,2001, "Change management strategies for successful ERP implementation", Business Process Management Journal, 7, 3, p. 266
- Bingi P, Sharma M K, Godla, J, 1999, "*Critical issues affecting an ERP implementation*", Information Systems Management, no. 16(2), 7-14.
- Davenport, TH 1998, 'Putting the Enterprise into the Enterprise System', Harvard Business Review, 76, 4, pp. 121-131
- O'Brien, J & Marakas, G, S 2010, 'Management information systems', McGraw-Hill/Irwin, 10
- Gattiker, T, & Goodhue, D 2002, 'Software-driven changes to business processes: an empirical study of impacts of Enterprise Resource Planning (ERP) systems at the local level', International Journal Of Production Research, 40, 18, p. 4799
- Jacobsen, D., I. 2005. '*Organisationsförändringar och förändringsledarskap*', Lund, Studentlitteratur.
- Kotter, John P. (1996, "Leading Change". Boston, Mass.: Harvard Business School Press
- Lee H, Whang S., 1998, "Information sharing in a Supply Chain", Research paper series, Research paper no. 1549, Graduate School of Business, Stanford University
- Ljungberg, Anders & Larsson, Everth 2012, "*Processbaserad verksamhetsutveckling: [varför - vad - hur?]*". Lund: Studentlitteratur
- Mentzer, J, DeWitt, W, Keebler, J, Soonhoong, M, Nix, N, Smith, C, & Zacharia, Z 2001, "Defining Supply Chain Management", Journal Of Business Logistics, 22, 2, pp. 1-25
- Nah, F, Lau, J, & Kuang, J 2001, 'Critical factors for successful implementation of enterprise systems', Business Process Management Journal, 7, 3, p. 285
- Ngai, E, Law, C, & Wat, F 2008, 'Examining the critical success factors in the adoption of enterprise resource planning', Computers In Industry, 59, 6, p. 548-564, Scopus®
- Umble, E, & Umble, M 2002, 'Avoiding ERP Implementation Failure', Industrial Management, 44, 1, p. 25
- Van Ackere, A, Larsen, E., & Morecroft, J., 1993, "*Systems Thinking and Business Process Redesign: An Application to the Beer Game*", European Management Journal, 11, 4, p. 412
- Velcu, O 2007, 'Exploring the effects of ERP systems on organizational performance: Evidence from Finnish companies', Industrial Management & Data Systems', 107, 9, pp. 1316-1