This article presents the results of a study conducted at Sandvik Rock Processing (SRP) AB in Svedala. The aim of the study was to develop a process for planning and optimization of the global wear part production capacity.

Introduction

Sandvik Rock Processing (SRP) AB in Svedala produces crushers for the construction industry and the mining industry. A crusher has a long life expectancy but certain parts need to be replaced regularly and these are referred to as ‘wear parts’. Although wear parts are used in the production of new crushers the vast majority of the production volume is sold on the aftermarket. All crusher wear parts were until recently produced in a foundry in Svedala but market growth has made outsourcing necessary. Today the sourcing strategy is to produce large volume items externally and complex or slow moving items internally. An independent company within the Sandvik Group, called Sandvik Mining and Construction (SMC) Logistics are responsible for the wear part distribution. When the study was initiated the service level for wear parts did not reach set targets. Sandvik identified capacity planning as an area where improvement was necessary and a global capacity planning team was appointed. The intention was that a global perspective on planning would improve the performance of the wear part supply chain. Therefore, a Master’s Thesis was initiated to develop guidelines for a global capacity planning process.

Problem discussion and purpose

Several changes have recently been made at Sandvik concerning their wear part distribution. A result of this is that SMC Logistics now have the operational responsibility of both planning and distributing wear parts. Organizational changes are often made with little consideration given to the impact on the company’s processes. In this case the strategic and tactical aspects of the wear part distribution have been neglected.

Organizational changes coupled with increasing demand have resulted in poor performance and an unsatisfactory customer service level for wear parts. The purpose of the study was to develop a strategic/tactical process for global capacity planning involving all wear part players and suppliers in order to increase the customer service level.
Method

In addition to logical reasoning the primary method of analysis used in the study is gap analysis. A present state was identified through analyzing the gathered data and the “target” state was defined as a standardized process that would improve the wear part service level. This was done by collecting primary data through interviews and by performing on-site investigations. Secondary data provided the means to bridge the identified gap between the present state and the target state.

Results

During the interviews several reasons for low wear part performance were expressed by the interviewees. In short these can be summarized in the following list:

Sub-optimization

Different functions focus on optimizing their own results with little concern to the overall performance of the supply chain. Little focus is on the end customer.

Unclear areas of responsibility

There is confusion regarding responsibilities. As a result certain tasks are not performed at all or are performed in an unsatisfactory manner.

Lack of coordination and communication

There are no standardized work processes and individuals do not know how their contribution relates to the whole. Information sharing and coordination need to be improved.

When analyzing the situation the authors concluded the following areas to be especially important. Firstly, the organizational structure was found to be highly function oriented. A process-oriented approach would reduce the risk for sub-optimization and shift more attention towards the end customer. Functional and corporate borders reduce the transparency in the supply chain. Improved cooperation and coordination between the separate organizations and functions would ensure that a holistic view could be maintained. Prior to the study several forecasting methods were in use throughout the organization. In addition to the disadvantage of having different views on demand, these methods did not take any information from sales companies into account. Combining data from sales companies with exponential smoothing will likely help improving fill rates as well as reducing inventory levels. The authors conclude that a process that facilitates information exchange in the supply chain will increase transparency, reduce demand amplification and improve the overall performance of the supply chain.

Conclusions

The overall aim when developing the process was to increase coordination between functions and cooperation among supply chain members. Therefore the solution focuses on defining areas of responsibility and clarifying which information that needs to be communicated over organizational and functional barriers.

To be able to capture the complexity of the inter-organizational business process a new mapping technique was required. A combination of the SCOR concept and a process mapping technique proposed by Ljungberg & Larsson (2001) was therefore used to illustrate the process design.

The resulting capacity planning process is divided into six different organizational “swimming lanes”, each containing its own specific activities and objects, figure 1.
The swimming lanes represent specific functions or organizations and visualize the organizational barriers that need to be crossed to achieve effective supply chain capacity planning. Activities are represented by gray boxes placed in the organizational swimming lane where they are to be performed. White boxes represent objects, in this particular case information, that are input to or output from an activity.

In addition to a new capacity planning process the authors have identified three key actions to improve the service level for wear parts: review of performance measurements, process orientation and the implementation of a capacity planning process.

**Review performance measurements**

Review of performance measurements concerns the findings regarding sub optimization. Aligning performance measurements so that different functions share common goals reduces the risk of different actors trying to optimize their results with little regard for the supply chain as a whole. A prerequisite for achieving coordination between functions is common interests. It is important to keep in mind that key performance indicators have great impact on the operational focus and should be carefully chosen.

**Process orientation**

The function oriented organizational structure concerning wear parts would benefit from a greater emphasis on processes. Process orientation could be seen as a way of changing the organizational paradigm so that processes become the basis for how the organization is lead, viewed, shaped, operated and developed. Changing the organizational paradigm so that processes are emphasized will lead to increased customer focus. Actors should understand how their task relates to the fulfillment of customer needs. This cannot be achieved while functions and functional goals dominate the organization. The authors recommend educating employees in process
management in order to achieve the above.

*Implement the capacity planning process*

A successful implementation of the capacity planning process would increase coordination and cooperation among actors in the wear part supply chain. A holistic view of the wear part supply and demand would be achieved through standardizing the work process. Clarifying every actor's input and collecting and compiling all available data is necessary in order to make well-founded planning decisions. Essential information gathered and stored in one place enables in-depth analysis and follow up. Increasing the information exchange in the supply chain will reduce demand amplification and thereby improve the overall performance of the supply chain.

Decisions regarding global capacity planning will require extensive quantitative analysis of large amounts of data. A system tool capable of taking all relevant parameters and restrictions into account would make it possible to cut costs and improve operational performance.