Efficient production and logistics interaction at
The Absolut Company
-analysis of the current situation and potential areas of improvement

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This article is based on a master thesis written at the Department of Industrial Management and Logistics, Lund Institute of Technology during summer and autumn 2008. The purpose of the thesis was to analyze The Absolut Company’s current inventory and production management and if possible suggest areas for improvements. In order to fulfill the purpose, different inventory control systems was evaluated for the company’s situation.

Introduction
Efficient production and logistics management are complex problems. Optimization of certain areas can result in sub optimization of other areas. This can affect both the company itself and their customers. Production and logistics are closely related, meaning that processes and working procedures must be compatible with both.

Background
During the past couple of years, the Absolut Company has experienced a huge growth rate. Production, inventory and working procedures were all designed for smaller volumes than the ones Absolut experience today. The company has repeatedly hit their capacity limitations in production and warehousing with a few years in between, forcing them to continuously ramp up production and warehouse capacities.

Since the start of the company, 1979, the U.S. market has been the most important. This market has a fairly simple structure with only a few different unique items. Nowadays, the growth in the international market (all markets except the U.S.) is larger, and since 2005 it is even bigger than the U.S. The structure of the international market is much more complex. Many countries have their own unique items due to special types of bottles, labels and different types of customs strips. This makes the production planning and inventory control more complex.

Additional unique stock keeping units (SKUs) force the company to produce articles in smaller lot sizes, leading to higher inventory levels. Therefore, correct allocation of SKUs in inventory and efficient production planning are necessary in order to fulfill the customer needs. The company’s current production and inventory management focus on three different key performance indicators (KPIs), service level, production efficiency and inventory turnover. Due to the new conditions that The Absolut Company faces, it is more obvious that there are clear clash of interests between their KPIs. The problems mainly occur when the inventory levels are extremely high or low.

The Absolut Company’s current priorities are a high service level and a high inventory turn-over, leaving the production efficiency as a secondary goal. In regard to
the changed conditions for the company, their priority order can be questioned.

The Absolut Company’s production planning and inventory control is mainly conducted with manual methods that are poorly related to established theory. However, this was good enough when the company produced smaller volumes, but nowadays problems occur more and more often due to the obsolete methods.

**Purpose and problem definition**
The purpose of the study was to analyze the Absolut Company’s current inventory and production management and suggest areas for improvements.

The study focused on three major problem definitions;

- How can The Absolut Company handle the increasing complexity in the production planning due to market changes, increasing turnover and limitations in capacity of production and warehousing?
- Will other priority rules than the ones currently used generate better results for their KPIs?
- Is it possible to increase the overall level for the KPIs by using different types of inventory management?

**Focus and delimitations**
This study’s main focus was on SKUs which were both produced and stored in Åhus, Sweden during year 2007. Therefore only items within the Absolut and Level segment were included.

A fundamental assumption for the study was that the material supply never become insufficient.

Activities before the production planning phase and after the delivery from the warehouse were delimited. Therefore the focus will be between when the order reaches the production planning division until the items are loaded on a truck or in a container. This is explained graphical in Figure 1.

![Figure 1 - Focus of the Study](image)

The study did not deal with the sequencing problem in the production. A fundamental assumption was that the simulated weekly production plans easily can be distributed on the different production lines.

**Methodology**
This study has been pursued with a positivistic approach and a deductive research policy. Quantitative as well as qualitative data has been used to solve the problems. The collected data has been both in form of primary and secondary variety. Performed interviews were mainly conducted in a semi-structured way, but also structured interviews were performed. Remaining data gathering included observations, literature studies and collection of former analyzed data from The Absolut Company. Collected data was structured and processed by a synthesis of analyze models and statistical methods. The credibility of the study was strengthened regarding objectivity, reliability and validity.
**Theoretical frame of reference**

Inventory control systems are used to manage production and inventory at a company in an efficient way. The most basic inventory control system is a re-order point system (called R,Q-system). When the stock level is equal to or less than the re-order point R, the order quantity Q is ordered, see Figure 2 below. [1]

![Figure 2 - A basic re-order point system](image)

The order quantity can be determined with the Wilson formula. The formula minimize the cost of placing orders and holding stock according to Equation 1 below. [2]

\[ EOQ = \sqrt{\frac{2 \times D \times C}{H}} \]

*Equation 1 - Wilson formula*

Where:

- **EOQ**: Economic Order Quantity
- **D**: Demand / time unit
- **C**: Cost per order
- **H**: Holding cost /unit and time unit

The time that is consumed for delivering the order quantity is called lead time. During this time, uncertainties in both the lead time itself and the demand during this period occur. A safety stock can be used to handle these uncertainties. The level of the safety stock can for example be based on the company’s desired service level. [3]

Production planning can be performed for different time periods and on different strategic levels. Irrespective of the strategic level the planning has to be done firmly so that surprises can be avoided. [4]

**Conclusions**

The Absolut Company’s management of production planning and inventory control is mainly performed with manual methods. These methods have been used for a long time and they have only been exposed to petty changes over time. Three KPIs, service level, production efficiency and inventory turn-over, are used for analyzing the production and logistics at The Absolut Company. The priorities between these KPIs do not end up in satisfying results.

A firm with The Absolut Company’s dignity is in need of better management of their operations. A number of areas with potential improvements have been identified. The lot sizing method of today has a faint theoretical relation. The Absolut Company is able to reduce their costs, as well as increase their service level and production efficiency, by determining new lot sizes with the Wilson formula.

By letting the size of the safety stock correspond to the desired service level, the company get better possibilities to handle market changes, increased turn-over and limited capacity of production and warehousing.

More efficient production planning and inventory control can be achieved by combining the new lot sizes and safety stock in a theoretical inventory control system. This will eventually lead to an increased overall level for their essential KPIs. The only KPI that will remain on the same level is the inventory turnover. The authors came to the conclusion that the inventory turnover should be a secondary priority and as a result of the desired service level.
The inventory control system that was designed for The Absolut Company uses and combines the positive aspects that can be achieved by combining a R,Q and a s,S-system. The system prioritizes high service level in addition to not exceeding capacity constraints for production and warehousing. This will be obtained by consequent use of optimal lot sizes without downsizing.

Recommendations
The conclusions regarding the production planning and inventory control at The Absolut Company resulted in a number of recommendations;

- Determine new lot sizes according to the Wilson formula
- Dimension the safety stock according to the desired service level
- Utilize the new inventory control system presented in the report. The new priority rules should also be used
- Reduce the focus on the KPI for inventory turnover. Let this KPI be a consequence of the preferred service level

List of references
[1] Olhager, Jan, Produktionsekonomi, Studentlitteratur AB, 2004

