

Reducing Working Capital through Purchasing

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This article summarizes the master's thesis, with the same title, which has been conducted at Trelleborg Material & Mixing from January 2012 to June 2012. The purpose of the study is to analyze how working capital can be reduced through purchasing initiatives. In order to fulfill the purpose of the study an analysis model has been developed and applied at the case company. The analysis model gives guidance for companies of how to assess current working capital performance, identify areas of improvement, evaluate impact of counter actions, and how to prioritize actions when launching working capital reduction initiatives.

Key words: *Working capital management, purchasing strategy, inventory management, polymer industry*

Introduction

Trelleborg Material & Mixing is a business unit within the Trelleborg Group, a global engineering group operating in the polymer technology industry. Trelleborg Material & Mixing mainly purchases raw materials, which are refined into rubber compounds against customer specification. The customer is often internal, i.e. another business unit within the Trelleborg Group, who continues the refining process.

In the beginning of 2011 the working capital levels rose drastically for companies operating in the polymer industry, as a result of macroeconomic factors and changes of supply market conditions. Suppliers were allocating capacity and uncertainty spread among buyers. This resulted in that large volumes were purchased in order to secure supply. Moreover, the suppliers were dictating the conditions, leading to non-favorable payment terms. For

companies pursuing corporate strategies involving acquisitions, a large amount of capital is needed. Thus, initiatives for reducing working capital are likely to be prioritized. Working capital initiatives can be focused at purchasing activities, since these heavily impacts the working capital performance of companies.

Purpose and objectives

The purpose of this study is to analyze how working capital can be reduced through purchasing initiatives.

In order to analyze and understand how working capital can be reduced from purchasing initiatives, the following objectives are set for this master's thesis:

- Develop an analysis model for working capital reduction.
- Apply the analysis model on the case company in order to identify areas of improvement.
- Analyze the possible impact from implementing the identified purchasing initiatives.

Methodology

The research started with a literature review in order to gain understanding of how purchasing was related to working capital. Also three previously conducted studies on working capital reduction were synthesized. Then a single-case study was conducted, in which collected empirical data and theory resulted in that an analysis model was developed. The model was applied at the case company in order to analyze the impact of implementing possible purchasing initiatives.

A systems approach was taken, in which the buying company and the suppliers were analyzed, and synergies were searched for, to improve working capital performance. The analysis model that was developed, and applied at the case company, took its shape by moving between empirics and theory. Thus, a so-called abductive research approach was used in the study. Moreover, both qualitative and quantitative data was used to obtain a holistic view of the working capital situation. This is known as triangulation and strengthens the validity of the study. The qualitative aspects considered areas such as: purchasing organizational structure, purchasing strategy, and supply market structure. The qualitative data was collected through personal interviews. The quantitative data included all purchase orders that were placed in 2011 as well as all usage of materials in production during 2011 at two of Trelleborg Material & Mixing's production sites in Trelleborg and Forsheda. Furthermore, established contracts with suppliers including payment terms and volume-based pricelists were also collected. The

quantitative data was excerpted from the Enterprise Resource Planning (ERP) system.

A typical single-case study was chosen, because the Trelleborg Group is considered as a representative company for the polymer industry. The units included in the analyses were price, payment terms, lead time and order quantity. Thus, the study was of embedded design.

Theoretical frame of reference

Three main fields were in focus in the studied theoretical frame of reference: purchasing, working capital management and inventory management. Concepts of purchasing strategy, organizational structure and supply market structure were included within the field of purchasing. The main sources used covering the field of purchasing were Monczka et al. (2009), van Weele (2010) and Kraljic (1983). The section covering working capital management and calculations of related KPIs was mainly based on the work of Berk & DeMarzo (2007) and Tennent (2008). Theoretical concepts of inventory management were also included in the frame of reference chapter. This section was primarily based on Axsäter (2006), Nahmias (2009) and Jonsson & Mattsson (2011).

Three previously conducted studies on working capital reduction were synthesized. Hofmann et al. (2011) found that working capital could be reduced by focusing on improvement and standardization of payment terms, optimizing inventory, and analyzing materials and manage suppliers accordingly. Ek & Guerin (2011) highlights the importance of considering both quantitative and qualitative aspects

when analyzing working capital performance and sizing the opportunity of launching a working capital initiative. Finally, Meyersiek (1981) found that working capital could be reduced through standardization of articles, optimization of inventory and reduction of delays in production.

Analysis model

An analysis model for assessment of working capital performance and identification of possible improvement areas was developed. The analysis model, which is presented in Figure 1, is intended to give guidance for companies when assessing working capital initiatives from a purchasing point of view. The model has been developed

based on existing theory in the field of working capital and purchasing, previously conducted working capital case studies as well as insights from the empirical study and case company interactions. The model is designed as an 'easy to use' tool, highlighting possible areas of improvement as well as suggesting measures and deriving the impact of each measure.

The model suggests that four main steps should be taken, including several sub-steps, in order to complete a thorough analysis of which purchasing related actions to focus on when launching a working capital initiative. The structure of the model, meaning the different steps, is based on the previous conducted studies on working capital.

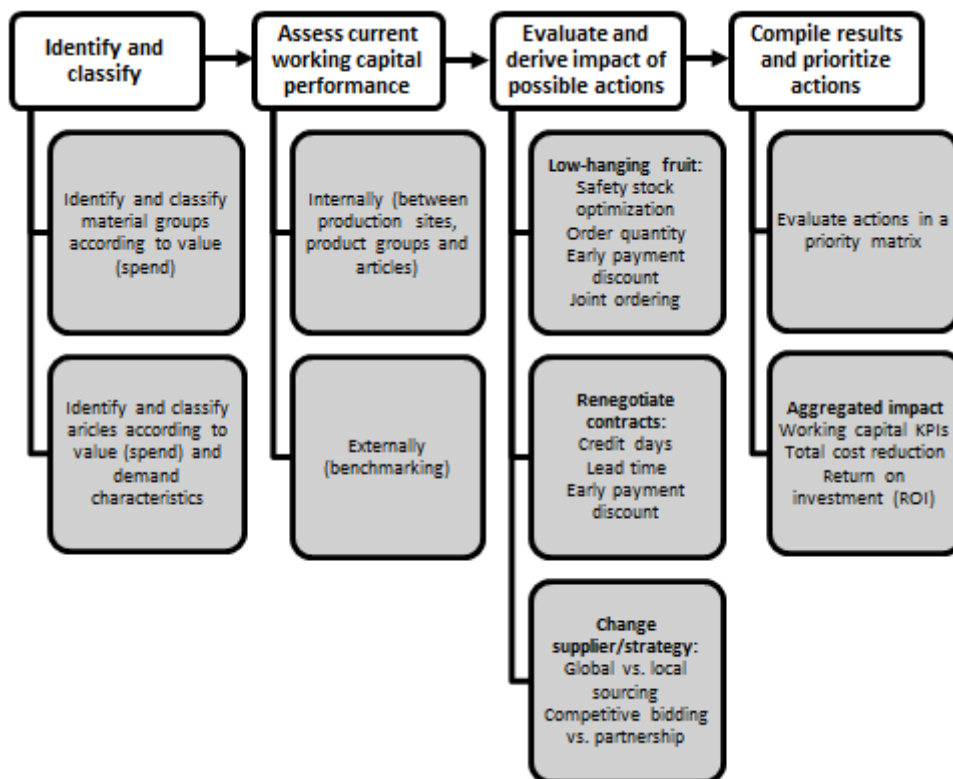


Figure 1: Analysis model for assessment of working capital performance.

All four steps are not included in any of the previously conducted studies. However, the steps are obtained by combining the previous studies. As data was collected at the case company and based on interactions with case company representatives, the model was complemented with additional theoretical concepts to fulfill its purpose. Thus, the model was developed by moving between theory and empirics. This is called an abductive research approach, as previously discussed.

The steps in the analysis model are in brief:

- The first step aims at identifying the right material groups and articles to include in the analysis, thus also ensuring that time is not spent on articles of low monetary potential.
- The second step that needs to be taken includes assessment of current working capital performance of the chosen material groups and articles.
- Next, evaluation of purchasing actions to improve working capital performance should be made. The possible impact on working capital performance for each purchasing initiative does also need to be derived.
- In the final step, the actions should be prioritized and working capital reduction initiative should be selected. The aggregated impact of launching the initiative should be determined.

Findings from the case company analysis

In this section the working capital performance of eight different material groups that has been analyzed at Trelleborg Material & Mixing, and the corresponding purchasing strategies, are summarized. It was found that the two material groups for which logistical partnerships were established the inventory turnover (ITO) was 55-130 % greater than the average ITO for all materials. Moreover, the working capital days for these articles were found to be 60-85 % lower than the average working capital days for all materials at respective production site.

The material group which was sourced from Asia and shipped on boat was, not surprisingly, found to have the slowest inventory turns at the Forsheda site, however the average working capital days were 30 % lower than the average material group. Thus, the favorable payment terms which can be obtained from sourcing globally seems to have a major effect on the total working capital performance and should therefore be considered when planning for purchasing in the long-term.

The material group which showed the second worst performance in terms of ITO was the one for which R&D partnerships were established. These articles had a high inventory value in comparison to its share of the total purchase spend. The lead time was found to be 40 % longer than average, which probably explains the high proportion of inventory value and the slow inventory turns.

The material group for which a secure supply strategy was pursued the working

capital days were found to be above average and the ITO below average. Thus, the limited supply market seems to affect the working capital performance strongly and negatively.

Two out of the four material groups with widely available supply and purchased through competitive bidding were found to have working capital performance above average. One of these groups was the one being sourced from Asia, presented above. The other material group with satisfying performance was found to have short lead times and favorable payment terms. The poor working capital performance for the two remaining material groups, for which a competitive bidding strategy was pursued, might be explained by a large number of unstandardized articles and too large order quantities. One of the material groups represented 42 % of all articles but only 9 % of the total purchase spend. The poor performance of the other material group was probably caused by orders of full truckload (FTL), leading to slow inventory turns and a large amount of tied up capital.

From following the developed analysis model, significant working capital reductions was found to be possible for Trelleborg Material & Mixing to obtain. By optimizing safety stock levels, placing orders or economic order quantity, placing joint orders between the two production sites, and benchmark prices internally on common articles between the two production sites the working capital can be reduced by 16 %. Moreover, the inventory turnover (ITO) can be increased by 25 % and the profitability, in terms of return on investment (ROI), might be possible to increase by 25 %. All these actions are

categorized as low-hanging fruit, which are easy to implement and can be seen as missed opportunities.

If accounts payable days (A/P days) can be increased to 60 days, which is the overall goal of the Trelleborg Group, this would, in itself, correspond to a working capital reduction of 28 %. Moreover, if lead times can be reduced by 10 days for articles currently having a lead time longer than 10 days, it would correspond to a working capital reduction of 11 %. The improvement from shortened lead times would be obtained from reduced safety stock levels. These two actions require renegotiation of contracts and are more difficult to achieve than those actions categorized as low-hanging fruit, but the possible gains are of significant matters. If these two actions, as well as the actions categorized as low-hanging fruit, are taken then the aggregated possible impact would be: working capital reduction of 46 %, ITO increase of 31 %, and ROI increase of 70 %.

Conclusions

Purchasing is found to play a major role for a company's working capital performance.

The analysis model can be used to investigate a company's working capital performance, identify areas for improvement, and analyze the impact of realizing purchasing initiatives.

Working capital can be reduced by optimizing safety stock levels, ordering sizes of economic order quantity, benchmarking prices internally between two production sites and place orders jointly. Moreover, depending on the bargaining power over suppliers, additional working capital reductions

can be obtained through extended accounts payable days (A/P days) and reduced lead times. It is likely that working capital can be reduced from entering into logistical partnerships with suppliers for materials of large volume and of high financial impact. By sourcing globally it is likely to achieve favorable payment terms, which can lead to reduced working capital. However, the trade-off between favorable A/P days and high inventory levels need to be balanced. Finally, by standardizing materials in order to broaden the supply market and enable a competitive bidding purchasing strategy is likely to lead to reduced levels of working capital.

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