Why *Working Capital* Should Matter to YOU

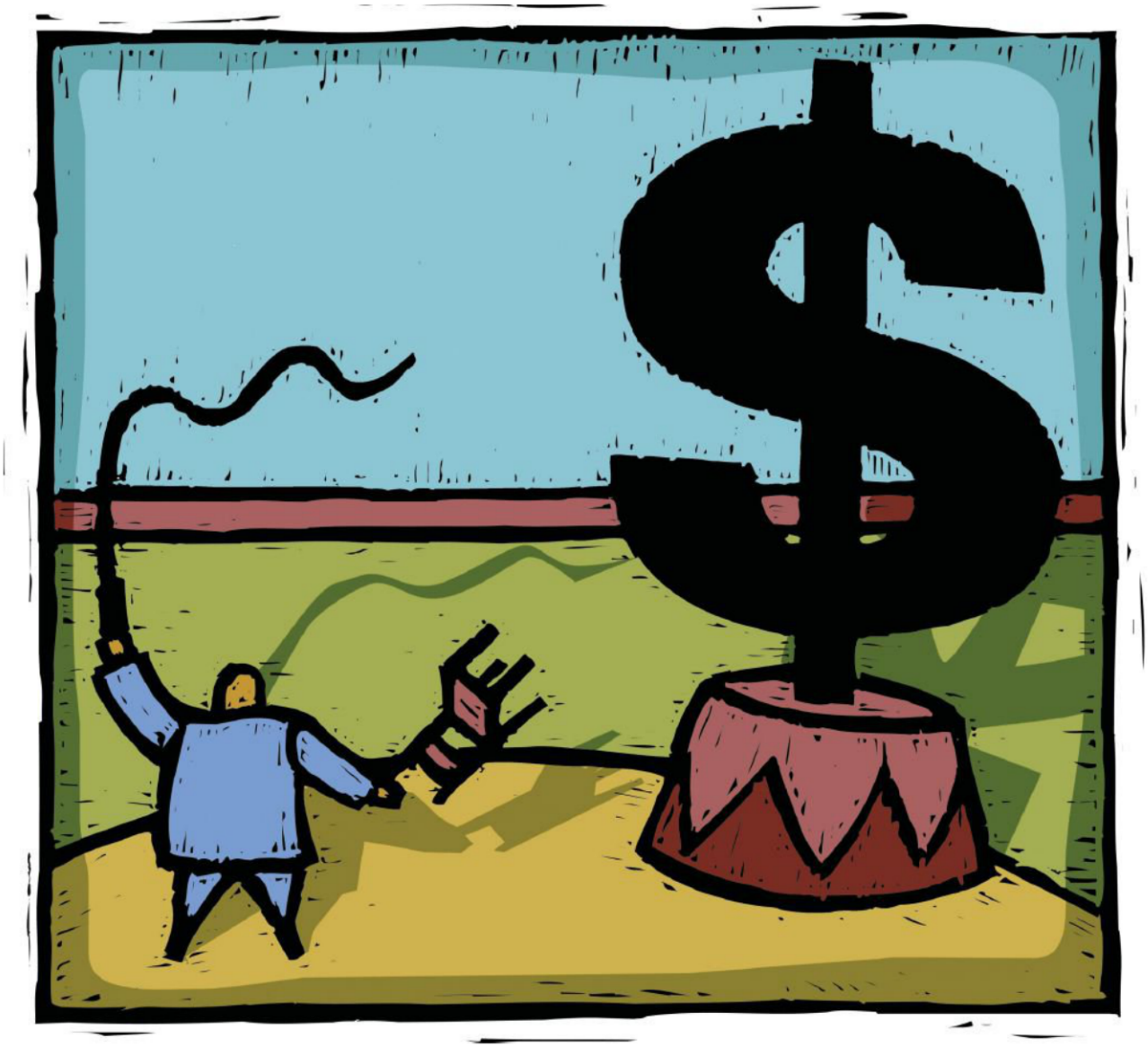
Working capital is one of the most powerful and least understood drivers for supply chain managers to improve a company's cash flow and profitability. In pursuing initiatives to achieve sustainable working capital improvements, supply chain managers need to look beyond their own organization. The best results are achieved when supply chain partners are embraced as well.

Dr. Heimo Losbichler is Professor of Finance at the Upper Austrian University of Applied Sciences in Steyr, Austria. Dr. Farzad Mahmoodi is the Joel Goldschein '57 Chair Professor in Supply Chain Management in the Clarkson University School of Business. The authors can be reached at heimo.losbichler@fh-steyr.at and mahmoodi@clarkson.edu

By Heimo Losbichler and Farzad Mahmoodi

Over the past few years, a global recession and tight credit markets have created a challenging environment for businesses in a variety of industries. Most recently, the uncertainties regarding the timing and the type of economic recovery have only added to the pressure. It is during such times that working capital management captures the attention of top management as the corporate goals shift from maximizing profits to securing liquidity. A 2010 Grant Thornton /World Trade survey confirms that optimizing working capital has been a top priority. Fully 90 percent of the survey respondents, who were in top management positions, reported taking some action to reduce their working capital.[1]

The Grant Thornton study also found that the most common approaches to reducing working capital were obtaining price concessions from suppliers and extending their payment terms rather



than investing in supply chain infrastructure improvements in such areas as warehousing, transportation, inventory management, and technology upgrades. Thus, it is evident that many companies that have successfully reduced their working capital may have done so at the expense of their supply chain partners.

It is widely acknowledged that effective supply chain management practices can reduce operating costs and logistics expenses, significantly impacting a company's working capital. The leading companies recognize this, but more importantly realize that sound supply chain practices can also achieve profitable growth. In striving to lower working capital, they pursue initiatives that will not only reduce their operating costs and improve profitability, but also benefit their supply chain partners.

This article will explain why working capital should matter to supply chain professionals. We begin by underscoring the impact that working capital has on financial performance and then discuss companies' overall progress to date in creating supply chain initiatives that positively impact working capital. The article then describes some of the limiting factors in working capital management and how supply chain managers can identify and overcome them. Finally, we offer some ideas on how supply chain managers can meet the working capital challenge going forward.

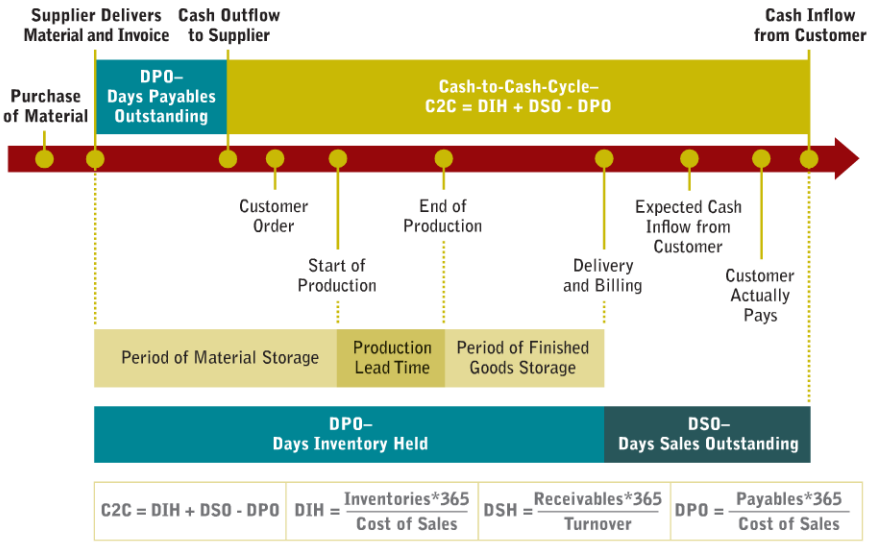
Working Capital's Impact on Financial Performance

From a supply chain management perspective, working capital is defined as the sum of inventories and customer receivables, less supplier liabilities, and is often

measured by the cash-to-cash (C2C) cycle time. The C2C cycle time is the average time required to turn a dollar invested in raw material into a dollar collected from customers. The C2C cycle time metric is the operative capital employed in days. It is calculated as days inventory held (DIH), plus days sales outstanding (DSO), minus days payment outstanding (DPO), as illustrated in Exhibit 1. If the C2C cycle time is short (or negative), the company is considered to be managing its working capital effectively. If the C2C cycle time is long, however, the company's capital is being tied up too long in business processes and thus cannot be used in other investments.

EXHIBIT 1

The Cash-to-Cash (C2C) Cycle Time Metric



$C2C = DIH + DSO - DPO$ | $DIH = \frac{Inventories*365}{Cost\ of\ Sales}$ | $DSH = \frac{Receivables*365}{Turnover}$ | $DPO = \frac{Payables*365}{Cost\ of\ Sales}$

A reduction in working capital has many positive effects. First and foremost is the release of liquidity that increases a company's cash flow. The impact can be significant. For example, reducing the C2C cycle time in 2010 by one day at IBM would have improved the company's cash flow by $1,578 million, as shown in Exhibit 2.

Importantly, the impact of the working capital reduction on financial performance goes far beyond the one-time release of cash. Reducing working capital also will have a permanent positive impact on profitability through lower capital investment in inventory. Add to this the positive impact on the operating costs tied up in inventory—that is, the non-capital carrying costs of storage, utilities, shrinkage, obsolescence, damage, insurance, taxes, and so forth.

EXHIBIT 2

Effects of Working Capital on Liquidity at IBM in 2010

	December 31, 2010		Leverage
	Million $	Days	Cash Flow per Day
Inventories	2,450	17.0	145
Receivables	10,834	40.5	267
Payables	7,804	54.0	145
Working Capital /C2C	5,480	3.5	1,578

Source: IBM Annual Report

These costs are frequently not considered, even though such costs are generally estimated to be 10 percent of the amount of inventory per year.[2] In summary, lower inventory provides a double boost on profitability (lower cost and lower capital employed) and a double boost on cash flow (one-time effect of unfreezing assets and permanent lower operating expenses).

In discussing working capital's many positive effects, it's important to remember this caveat: Because of working capital's interaction with profitability, supply chain initiatives need to be carefully considered in order to achieve the desired outcome. The reason is that supply chain initiatives that reduce working capital also generally influence cost structures. To illustrate, while reducing raw materials inventory by frequent just-in-time deliveries can reduce working capital, the resulting higher transportation costs could lower profitability. On the other hand, certain initiatives that increase profitability could result in an increase in working capital. For example, switching from local suppliers to overseas suppliers can reduce total landed costs. Yet this change could also result in longer lead times that would necessitate holding more safety stocks, negatively affecting working capital. These are the types of trade-off decisions that supply chain managers need to keep in mind when addressing working capital.

Progress to Date on Working Capital Management

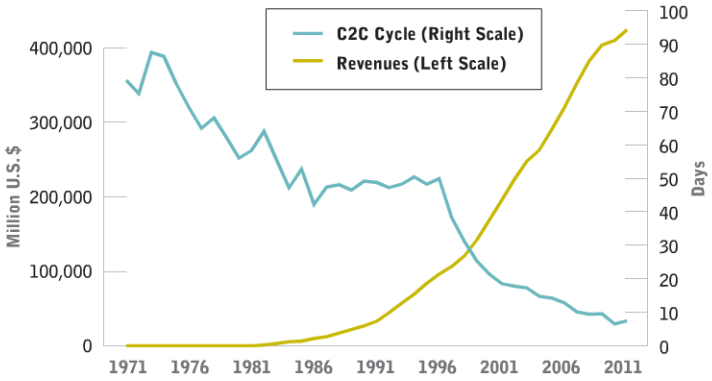
The significant role of working capital in financial performance is the primary reason why C-level executives are so concerned about managing it efficiently. This presents great opportunities for supply chain managers; however, many times those opportunities are left untapped.

Relatively few companies have recorded much success in reducing supply chain working capital. One notable exception is Walmart. The retail giant reduced its C2C cycle time from about 90 days in 1971 to fewer than 10 days in 2011, while growing revenues significantly (see Exhibit 3). Unfortunately, Walmart's impressive and sustainable improvement has been rarely duplicated across entire supply chains. In fact, several studies paint a gloomy picture in this regard. One study conducted by researchers in Europe found no significant and sustainable improvement in the C2C cycle times of the extended supply chains, but rather *displacements* of the C2C cycle times to other supply chain partners.[3] This empirical study shows that neither American nor European companies have been able to continuously reduce their working capital in the past few years. An example of the displacement of the C2C cycle time to other supply chain partners cited in the study can be found in the food supply chain. Specifically, food stores were able to decrease their C2C cycle time from 1.5 days in 1995 to -11.5 days in 2004, while the C2C cycle time of their suppliers (i.e., food and kindred products manufacturers) increased from 51.9 to 53.3 days.[4]

We find these results remarkable, considering that inventory reduction has been the primary focus of the just-in-time programs implemented in so many companies in recent years. The relatively constant days of inventory held that has been reported likely reflects a trade-off between the positive effect of the JIT philosophy and the negative effect of a long global supply chain that necessitates higher inventory levels. Furthermore, several studies show that the majority of companies are struggling in their efforts to continuously lower working capital. For example, one study illustrates that more than half of the largest 1,000 non-financial U.S. companies have failed to reduce their working capital for two consecutive years.[5]

EXHIBIT 3

Walmart's C2C Cycle Times and Revenues from 1971 to 2011



Source: Annual Reports, Walmart, 1971-2011

What's Limiting Success?

Considering the significant leverage of working capital on a company's financial performance, it is disappointing that companies have not been more successful in lowering working capital in a sustainable manner. Our experience points to four major and interrelated reasons for this: shifting management priorities, wrong metrics and incentives, lack of assigned responsibility, and supply chain managers' general lack of financial skills. We discuss each in turn below.

Shifting Management Priorities

Although executives indicate that working capital management is always a top priority, research shows that the attention they pay to it tends to be negatively correlated to the economy. In periods of downturn, working capital management rises to the top of the boardroom agenda. When faced with weak customer demand and tight credit, management immediately looks for the internal levers to unfreeze much-needed cash. When the economy recovers, however, management's focus shifts elsewhere. In a study of the largest 500 global companies covering three economic crises, KPMG found strong evidence that C2C cycle time tends to move inversely with the economic cycle—that is, it improves during downturns and deteriorates in recovery years. [6]

Sustaining working capital management requires management's continuous attention, robust working capital management practices in place, and a cultural discipline that enables organizations to keep working capital levels low. Today, some companies (Apple being a prime example) sit on piles of cash. For these organizations, there is little pressure to unfreeze even more cash

from working capital. However, working capital's impact on financial performance goes far beyond the one-time release of cash, as we discussed earlier. In particular, effective management of working capital is an important driver of the company's profitability. Lower working capital would allow companies to operate at lower profit margins, while earning the same or higher profitability overall. This provides companies with the opportunity to capture market share by either lowering prices or offering higher service levels. Thus, working capital management should always be a core element of doing business rather than an activity pursued only when cash becomes tight.

EXHIBIT 4

Impact of Profits-focused Metrics on Working Capital Practices

Department	Traditional Objectives/Metrics	Desire	Impact on Working Capital
Sales	Maximizing sales	Broad product portfolio and customer specific variants Great service level, products in stock Long payment terms	High levels of finished goods on stock Increased accounts receivable
Manufacturing	Minimizing manufacturing cost	Utilization of manufacturing equipment Huge batches of standardized products	High levels of inventory (finished goods on stock and WIP)
Sourcing	Minimizing purchase prices Reliability of supply	Large order quantities Short payment terms	High levels of raw materials Lower accounts payable

Wrong Metrics and Incentives

Top management is traditionally expected to maximize profits. Accordingly, companies plan and monitor their performance mainly through profit-related metrics such as operating profit or earnings per share. They assign profit-related performance targets to all major departments such as sales, manufacturing, sourcing, and logistics and then link their incentives to these targets. At first glance, this widely accepted approach appears to be a reasonable method of aligning and coordinating decisions made within the organization.

Yet this intense focus on profits has a drawback. Namely, it encourages managers to apply practices that increase profits at the expense of working capital. For example, sales managers are expected to sell as much as possible; hence, they have a tendency to offer customers whatever they want, when they want it. This results in a broad variety of products and numerous customer-specific variants that, in turn, can lead to high levels of finished goods inventory. Further, sales people are more likely to meet their sales target if they can offer the whole product portfolio with no or short lead times while offering customers long payment terms—all of which results in increased inventory and working capital.

Certain profit-related incentives in manufacturing and sourcing also run counter to sound working capital practices. To bring unit costs down, for example, managers often will purchase large quantities and produce in large lot sizes. However, these practices inflate inventory levels and increase working capital. By taking a focus that is solely profit related rather than one that balances profit and cash flow, companies encourage their managers to make decisions that may negatively affect working capital. Exhibit 4 illustrates the impact of profit-focused metrics on working capital practices on three functional areas of the company—sales, manufacturing, and sourcing.

Lack of Assigned Responsibility

According to the commonly accepted definition, working capital is the result of three components and their related business processes: forecast-to-fulfill, order-to-cash, and purchase-to-pay. These processes span the organization, encompassing multiple corporate functions and departments. For this reason, effective working capital management requires both coordinated and

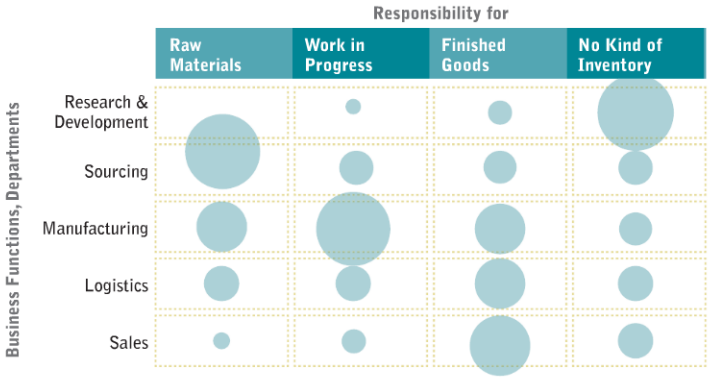
Working capital management becomes one of management's top priorities during periods of financial turmoil, as the corporate goals shift from maximizing profits to securing liquidity.

aligned activities across a company's silos and company-wide assigned responsibilities. Working capital-related metrics and incentives will be of little help if no one—or everyone—is responsible.

In practice, however, clear responsibility for working capital management is the exception rather than the rule. Exhibit 5 illustrates the findings of a German study concerning the responsibilities for inventory, which is used as a proxy for working capital management in this instance.[7] The larger the size of a circle, the more participants in a particular department say that they have responsibility. The results clearly indicate that multiple functions or departments are responsible for different types of inventory, with no responsibilities clearly assigned to a single function.

EXHIBIT 5

A Lack of Assigned Responsibility for Corporate Inventory



Size of circles = number in that department with inventory responsibility.

Supply Chain Managers' Lack of Financial Skills

Working capital is a financial term. However, policies driving working capital are primarily executed by supply chain professionals who have little background in finance and accounting. According to Peter Drucker, if you can't measure it, you can't manage it. And clearly, any measures in place must be understood by the responsible managers. Many financial metrics can be grasped by common sense; unfortunately, working capital and the C2C cycle time are not among them. Although the basic meaning of the metric is simple, the C2C cycle time is notably affected by accounting policies and by business activities that have little to do with working capital management. We provide two examples below to demonstrate how supply chain managers could draw the wrong conclusions.

First, if labor costs increase in the manufacturing department, so do unit costs. Furthermore, costs of sales and inventory also increase, as both are the result of unit costs and the respective quantities. Days inventory held (DIH) as one component of the C2C cycle time should remain fairly stable as both the numerator and denominator increase in the DIH equation (DIH = inventory/cost of sales * 365). However, days payable outstanding decreases for no logical reason. DPO is determined by the division of accounts receivable and cost of sales (DPO = accounts payable/cost of sales * 365). As accounts payables are not affected by the internal cost increase, DPO declines and C2C cycle time becomes longer, suggesting that the company does pay its suppliers sooner and thus locking more cash in working capital.

Second, during the onset of the financial crisis many companies were frustrated by longer C2C cycle times despite their aggressive pursuit of working capital initiatives. In-depth analysis unveiled that the longer C2C cycle time was due to shorter DPO. Note that DPO is calculated based on purchased materials as well as purchased fixed assets. Unfortunately, accounting does not distinguish between these two categories. Thus, the total of purchased materials and fixed assets is used when determining working capital rather than just purchased materials. Because of this, accounts payable and subsequently working capital could be distorted by investment decisions and policies, resulting in misleading DPO and C2C cycle time figures. Thus, even though companies may have saved a lot of cash by not investing in fixed assets (say, a reduction or cancellation of investments in capital equipment), the longer C2C cycle time indicates an increase in working capital.

These two examples underscore that working capital and the C2C cycle time have to be carefully analyzed and interpreted to avoid drawing the wrong conclusions and making poor decisions. The examples also confirm that supply chain managers need basic financial skills in order to make good decisions, attract C-level attention, and avoid being the pawn in the hands of the accountants.

Impact of Supply Chain Initiatives on Working Capital

Let's consider how the three financial components of the C2C cycle time metric—DIH, DSO, and DPO—are affected by supply chain practices.

The link between supply chain practices and days inventory held is very clear, as evidenced by the supply chain glitches we've all seen resulting in higher inventories. Examples include: excessive processing, transportation,

and receiving times; poor management of purchase orders; inefficiency in distribution channels; inaccurate demand forecasts; purchasing from suppliers with long and variable lead times; pursuing policies that result in higher demand variability; excessive safety stock levels; purchasing large quantities of raw materials or component parts to obtain lower unit prices; and more.

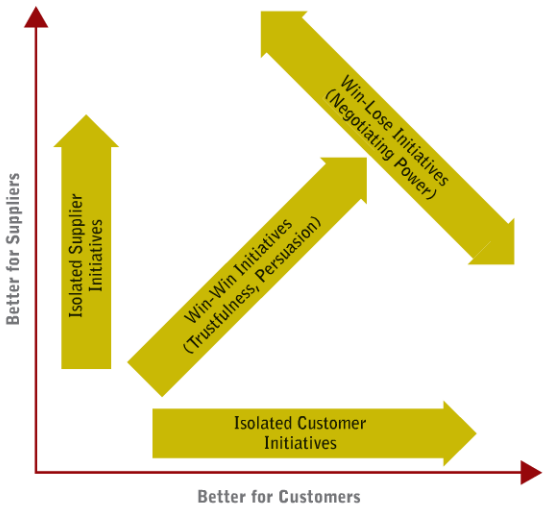
Supply chain practices also affect days sales outstanding—that is, the speed with which customer payment is received. So if the product is not delivered, is delivered in the wrong quantity, or with the wrong specifications, it may eventually be returned in full, thereby affecting the DSO metric. In addition, poor invoicing processes can extend the time period between the sales date and the collection of funds.

Finally, supply chain practices significantly impact days payable outstanding. For instance, purchasing managers can attempt to postpone payment terms to suppliers. Of course, this may not be a viable long-term strategy since suppliers will suffer and this will result in longer days sales outstanding for them. A more reasonable approach may be to postpone payment terms by negotiating an appealing counter-offer such as providing the suppliers better supply chain visibility, higher demand reliability, consistent scheduled deliveries, reasonable delivery time windows, and sharing best practices to improve their supply chain processes.

We classify supply chain initiatives to improve working capital into three categories, as illustrated in Exhibit 6:

EXHIBIT 6

Three Categories of Supply Chain Initiatives



1. Isolated supplier or customer initiatives. These include practices such as postponement/delayed differentiation, JIT, and lean programs resulting in optimized system inventories that can be pursued without influencing the business partners. In such initiatives, the internal ability to optimize is the key to success. These types of initiatives are the most common and have been implemented in many companies. The authors have personally been involved in such initiatives at several Fortune 500 companies.

2. Win-lose initiatives. The success of individual companies in reducing working capital and the relatively unchanged amount of working capital at the aggregate level supports the hypothesis that many companies have shortened their C2C cycle times at the expense of their supply chain partners. Many such companies have reduced their working capital by delaying payments to the suppliers through renegotiated payment terms. Who wins and loses depends on where the negotiating power lies. The *Wall Street Journal* (Oct. 29, 2009) reported that between 2008 and 2009 Amazon had extended its bill payments from 63 days to 72 days. For the quarter reported on, Amazon's sales rose 28 percent, but accounts payable nearly doubled, increasing cash flow by 116 percent to $696 million. While this policy shortened Amazon's C2C cycle time, it certainly increased its suppliers' days sales outstanding by the same amount. Put another way, the extended payment terms did nothing to improve C2C cycle time in the supply chain. Another example of a win-lose initiative can be seen in InBev's takeover of Anheuser-Busch.

Considering the significant leverage of working capital on a company's financial performance, it is disappointing that companies have not been more successful in lowering working capital in a sustainable manner.

InBev implemented a new payment term for their malt suppliers, extending the 30-day payment term to 120 days.

3. *Win/win initiatives.* Cooperation and information sharing among supply chain partners in the order planning process is a common example of a win/win initiative. Persuasiveness and trust are important for the success of these initiatives. They result in sustainable improvements in the supply chain and are advantageous to all the parties in the supply chain. The well-known initiative involving information sharing and cooperative supply chain policies pursued by Walmart and Procter & Gamble is a good example of a win-win initiative. Another example is Mercedes Benz use of its credit ratings to provide suppliers with more favorable credit terms, commonly referred to as "supply chain financing." In working to improve working capital management, supply chain managers need to place the highest emphasis on such win/win initiatives.

Meeting the Challenge

Although working capital management is considered to be a critical activity, it becomes one of management's top priorities during periods of financial turmoil, as the corporate goals shift from maximizing profits to securing liquidity. In fact, the release of liquidity tied up in working capital is critical to mitigating the negative effects of the recent financial and credit crises. As we have discussed in this article, effective supply chain practices can significantly reduce a company's working capital. Yet this can be challenging because supply chain partners tend to compete for capital with one another, particularly during tough economic times.

Supply chain managers need to step up to the challenge and identify and pursue win-win initiatives to lower working capital. Working capital initiatives that benefit only a single company may, in fact, harm overall supply chain performance. Finally, we urge supply chain managers to carefully examine the interactions between profitability and liquidity to achieve the desired outcomes, keeping in mind that initiatives that reduce working capital generally influence cost structures as well.

Working capital management encompasses and seeks to optimize three flows: the flow of materials, the flow of information, and the flow of funds. While supply chain professionals play a key role in coordinating the flow of materials and the flow of information, they are usually not charged with coordinating the flow of funds. Thus, we strongly encourage them to collaborate closely with their financial colleagues, who play the lead role in quantifying the impact of the flow of materials and the flow of information and are charged with controlling the flow of funds. In fact, the best approach to optimizing working capital may be to form effective teams consisting of both supply chain and financial professionals who can work jointly on specific initiatives.

Sources:

1 Grant Thornton Consumer and Industrial Products Practice (Part 2 of 3), April 2010, *Supply Chain Solutions*, pages 1-6.

2 Timme, S. G., Williams-Timme, C., 2003, The Real Cost of Holding Inventory, *Supply Chain Management Review*, July/August 2003, pages 30-37.

3 Losbichler, H., Eisl, C., Hofer, P., Zauner, B., "An Investigation of ROCE and its Drivers: Empirical Analysis of European Companies," in: Jodlbauer, H., Olhager, J., Schonberger, R.J. (Editors): Modelling Value: Selected Papers of the 1st International Conference on Value Chain Management, 2011, pages 119-148.

4 Losbichler, H., Mahmoodi, F., Rothböck, M., "Creating Greater Shareholder Value from Supply Chain Initiatives," *Supply Chain Forum An International Journal*, Vol. 9 – No.1 – 2008, pages 82-91.

5 REL Consultancy, Working Capital Survey, 2011, http://www.relconsultancy.com/working-capital.

6 Ashby, A., Bayly, R., Raddan, M. "Cash: Part of a healthy corporate lifestyle - KPMG cash and working capital management survey report 2011," KPMG International Cooperative, page 5.

7 Horvath & Partners, "Investitions-, Finanz- und Working Capital Management als Stellhebel zur Steigerung der Kapitaleffizienz." *Controlling*, March 2007, pages 153-163.