

Applying Classical SCM Techniques to Tap Savings

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Financial supply chains are full of untapped savings opportunity that can be realized through systematic application of proven SCM techniques

Over the last 20 years, companies have leveraged advanced management science and process improvement techniques to radically transform their physical supply chains. Side by side, there has been the revolution in information technology and the internet, resulting in even larger leaps in their information supply chains. However, little attention has been paid to improvements in the associated financial supply chains. While forecasts and documents are exchanged in real time and more products are being delivered within 24 hours of order, it still takes 30-45 days or more to settle the associated financial transactions, virtually unchanged from 20 years ago.

Working capital that is locked up in anticipation of this settlement cycle is enormous. It is estimated that the cost of working capital is over 1% of the revenue of an average Fortune 500 company. Optimizing working capital has been

traditionally within the purview of the finance function in a company with the result that the focus has been on ensuring cash availability (risk reduction) and improving interest yield on cash. The accounts payable and accounts receivable functions have been driven by transaction processing efficiencies rather than by a motive to drive improvements to the financial supply chain.

In addition, limited attention is paid to the integrated financial supply chain that traverses companies in a trading partner network. Each company operates according to fairly static rules such as standard payment and discount terms that pay no attention to the relative value of financial assets and liabilities to each trading partner. Each trading partner looks for local optimization without regard to optimizing financial flows across the trading partner network.

Sounds familiar? This is fairly close to the way product supply chains operated 20 years back.

GOING BEYOND TRANSACTION AUTOMATION

The real time information environment in today's supply chains creates tremendous opportunities to optimize the financial supply chain without an attendant increase in operating risk. Although the importance of improving the financial supply chain has been widely recognized, approaches that companies and software product vendors have taken so far mainly focus on automating invoicing and payment processes, for example, Electronic Invoice Presentment and Payment [1]. A holistic solution must go beyond automation. The application of tried and tested tools from the product supply chain world can bring significant benefits to the company's financial supply chain.

The current environment of global product and service flows creates even deeper challenges and opportunities in the realm of financial supply chain management. The trend towards low cost country sourcing of products and global outsourcing/off-shoring of services means companies first focus on getting their basic product/service supply chain right - in the face of new infrastructural, informational and cultural barriers. This leaves little time or attention to be paid in optimizing supporting processes such as financial supply chain management. These trends also introduce inefficiencies in working capital flows that can effectively increase the cost of goods and services.

Global companies are recognizing the need to better understand the challenges and opportunities in increasing the efficiency of their financial supply chains, especially in the current environment of low cost country

sourcing and global outsourcing. We believe there are useful approaches and methods from the classical supply chain management realm that can be innovatively directed towards enabling improvements in the Financial Supply Chain.

TRADE FINANCING IMPACT OF LOW COST COUNTRY SOURCING AND GLOBAL OUTSOURCING

The current shift towards low cost country sourcing poses new challenges and opportunities in the financial supply chain. The trend increases the complexity and reduces the visibility of events that contribute to the product-movement and the associated funds movement across the players in the supply chain. This situation results in imperfect information on physical and financial flows, causing the build up of "cash buffers" much like inventory buffers in the physical supply chain. Although companies have invested in sophisticated tracking mechanisms to pinpoint exactly where products are in the supply chain, the same information is typically not available or not leveraged in the financial and cash management processes and systems that govern optimal deployment of working capital.

The cost of working capital in emerging countries is typically higher than in western markets. The level of sophistication of processes and systems of suppliers is generally lower than that of buyers in developed markets. While buyers attempt to extend payment terms to be more effective with their working capital, suppliers must take on increased financing cost to enable this, ultimately resulting in increased cost of goods for buyers.

If we were to consider inventory turnover ratio as a proxy for the efficiency of the physical supply chain, the receivables turnover

ratio could be a parallel for the financial supply chain efficiency. According to the CFO magazine, between 1980 and 2000, the average inventory turnover period in publicly listed US corporations was reduced from 73 days to 48 days, a net saving of 25 days, while receivables turnover decreased only by 11 days - from 68 days to 57 days [2].

At first glance, financial supply chain optimization appears to be a far simpler problem than its physical counterpart. Integrating accounting information should be fairly simple - in the most elementary sense, there is only one SKU (dollars) and two possible locations (buyers and seller's bank accounts) for cash in a supply chain transaction - making it a more straightforward problem to tackle - if trading partners, especially buyers are motivated enough.

Therein lies the problem - buyers are generally not motivated to make major improvements in settlement efficiency. By extending payment and credit terms, sellers provide working capital finance to the buyers. On the surface, this looks advantageous to the buyer since it appears as though the buyer is receiving free credit. The incentive for the buyer to settle early is not transparent enough to create an impact on the buyer's strategies and plans to improve working capital efficiency.

Imagine a situation where the cost of capital for the buyer is 8% p.a. and that for the seller is 15% p.a. This is not far from the truth for current low cost country sourcing environment [3]. Also imagine two scenarios, one in which the buyer settles the seller's invoice immediately (on receipt) versus one where the buyer pays after 60 days. The second scenario requires the seller to get working capital finance at a rate that is 7% p.a. more than what the seller would pay to finance the payable. The seller incurs an incremental

cost of approximately 0.7% of revenue as added cost of finance. As the seller's profit margins are squeezed by globally liquid market for goods and services, this cost will ultimately be passed back to the buyer, sometimes with a profit mark-up. This hypothetical scenario is vastly simplified from reality, but conveys the essential challenge facing companies today.

ANALYZING FINANCIAL SUPPLY CHAIN OPPORTUNITIES

In order to get a clear picture of improvement opportunities and available savings potential, companies need to first translate the information inherent in their product/service supply chains. Traditionally, paper based processes have been used to exchange business documents, including invoice and payment information, across business partners. These processes provided little visibility into the actual status of cash positions or requirements, limiting the ability of companies to react to events causing disruptions in the supply chain. Over the last 10 years, supply chain collaboration and event management technologies have given rise to higher level of visibility of schedules, status and impacts both upstream and downstream due to a disruptive event happening at any point in the supply chain [4].

To achieve better visibility into financial supply chain opportunities, a company would need to fully understand the relative significance of various working capital assets and liabilities. The starting point is a visual map that represents the assets and liabilities forming part of the company's financial supply chain. Fundamentally, a financial asset can be equated to inventory in the physical supply chain. It is characterized by its size (in dollars) and its duration (term). The following steps outline a basic

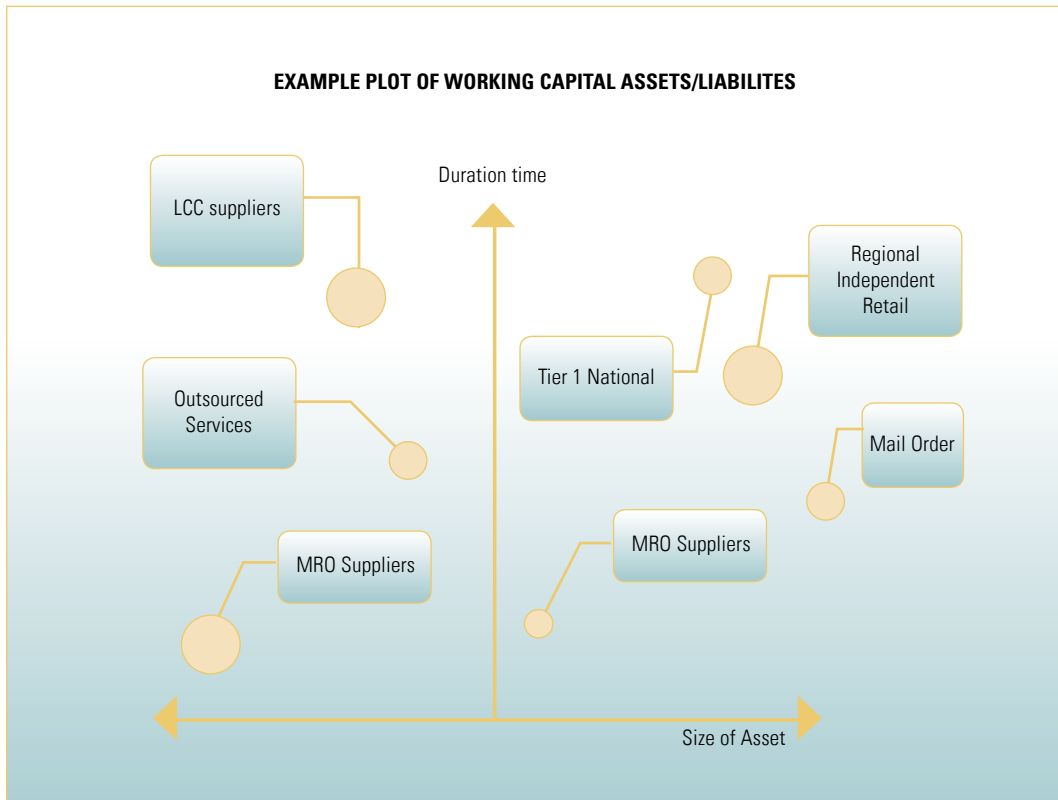


Figure 1: Hypothetical Plot of Working Capital Assets/ Liabilities

Source: Infosys Research

approach to enable a company to classify and characterize its working capital assets and liabilities with a view to identify the areas that offer the most opportunities for improvement.

- Segment supply chain transactions into groups, based on characteristics such as average values of receivables/payables and actual settlement cycle times. The segmentation could be performed according to customer or supplier groups, product families or geographies
- Map the groups into a scatter plot, with the horizontal axis representing the size of the asset/liability and the vertical

axis representing the settlement cycletime

- For each cluster, draw a circle around the mid-point, with the radius of the circle representing the variability of the settlement cycle in terms of the standard deviation of the mean.

The map [Fig. 1] enables the company to get better visibility and establish areas of opportunity. The idea is to segment the opportunities on both the buy side and sell side. The most promising opportunity areas are those with high impact and high variability as denoted by the larger circles in the top corners of the chart.

APPLYING CLASSICAL SUPPLY CHAIN MANAGEMENT LESSONS TO FSCM

Most of supply chain improvement theory and practice over the last twenty years has focused on a few key themes – increasing responsiveness, improving velocity, decreasing variability and optimizing resource use. Approaches such as Six Sigma, Lean, TQM and Theory of Constraints – all focus on one or more of these related themes. A tremendous amount of rigor and learning has resulted from the systematic application of these methods to the physical supply chain. It is worthwhile considering the applicability of such approaches to solve the challenges posed by today’s global FSCM environments.

Approach 1 - Using Six Sigma techniques to reduce variability

A significant amount of working capital is locked up in un-reconciled invoices and payments. Financial systems are geared towards forecasting cash requirements on the basis of expected payments over the short-term time window. For instance, cash requirements for servicing payables are generally forecast over a 60-90 day period based on historical patterns, as well as commitments arising from purchase orders. However, if a vendor invoice does not match the purchase order or goods receipt, the invoice generally goes into a “held” state, with some action required either internally or from the vendor to enable the company to post and pay the invoice. This results in disruptions in the cash forecast - some expected cash outflows do not happen, with the resulting excess liquidity and unwarranted cost of financing. Similar situations also happen on the accounts receivable side, with invoice exceptions occurring within customer systems to cause cash shortfall and resultant need to find short term cash at higher interest rates.

Optimizing accounts payable and accounts receivable functions assumes critical importance in the world of financial supply chain management. Improvement initiatives aimed at these functions have traditionally centered around process automation and internal error reduction. However, making real improvements to the financial supply chain require a focus on management and reduction of exceptions across supply chain partners. Variability in settlement cycles is the chief enemy here.

Transaction exceptions cause high degree of unpredictability and attendant cost increase in the financial supply chain. Exceptions can run to as much as 5% to 10% of transaction volume, lock up cash and increasing financing costs. Six sigma approaches can be very effectively leveraged to reduce exceptions and reduce variability in the financial supply chain.

Case example:

By applying its six sigma methodology to the analysis of invoice payment process and implementation of a best-of-breed EIPP system, General Electric realized the following benefits:

- 61% reduction in paper invoices
- Reduced invoice defect rates
- Average rework queue for reconciliations reduced from 85,000 to 5,000
- 90% of allowable discounts captured, worth over \$100mn
- Improved ability to forecast cash flow requirements.

Through this initiative, GE saved about \$1.8 bn or 12% of their Accounts Payable in one year [5].

The approach starts by defining the problem, i.e., inherent variability in process resulting in exceptions. The variability is then

measured, through the use of a series of metrics such as “sigma of process.” The variability can be benchmarked, against other business partners, locations or product types. For instance, it may turn out that the rate of invoice exceptions from supplier A are double that of supplier B, although both of them supply roughly the same commodity. An analytical phase follows, using techniques such as root cause analysis and correlation analysis. Business partners have to work closely, leveraging cross-functional teams from individual organizations to effectively perform this type of analysis. Improvement projects and action plans are then put in place and executed, with close and collaborative teamwork from both partner organizations being necessary to make sure projects are well planned and executed. Finally, the effectiveness of the outcome is constantly measured through use of control charts and other similar methods.

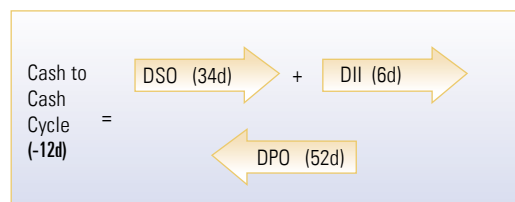
Approach 2 - Extending supply chain event management to FSCM

The concept of supply chain event management (SCEM) has been in vogue over the last several years and relates to the ability of organizations to respond intelligently to events occurring in their supply chain that deviate from planned outcomes. When extended to the financial supply chain, this concept has powerful parallels. For instance, delays in product receipts and attendant delays in cash outflows that have an impact on the cash forecast. Many supply chain systems have the ability to incorporate such delays into planning and execution cycles, but this information is rarely actively considered in financial activities such as cash forecasting. In addition to information on physical supply chain events, event management from a financial perspective must also factor in information on transaction exceptions, such as the example of

unmatched invoices mentioned previously. A more accurate forecast of financing needs allows the company to fine-tune cash requirements enabling the most effective method of financing outstanding cash requirements.

Some industries have adapted well to this need of streamlining the material and financial supply chains by defining new business models. The vendor managed inventory (VMI) model adopted widely in high-tech and manufacturing industries is one such example. In the traditional purchase order-based model, the supplier sends an invoice as soon as the material is shipped and the invoice creation-to-payment cycle is long especially if the 3-way match process (validating receipt of the material and right price on the invoice), is not automated. However, in the VMI process, the supplier is paid by the buying organization when material is consumed from a hub located in buyer’s manufacturing facility, resulting in reducing the payment cycle significantly.

With increased visibility to supply chain events affecting the inventory, AR and AP, organizations are able to manage working capital effectively. One of the leading examples of such a transformation is Dell Computers which had a negative cash-to-cash cycle and excellent visibility to forecast cash flow [6].



To effectively apply these techniques, the basic requirement is to have a tight linkage between the supply chain execution, AR/AP processing and cash management functions of

the company. The information building blocks do exist in today's sophisticated generation ERP environments such as SAP and Oracle. What is needed, in most cases, is the organizational processes necessary to synthesize this information and translate it into action.

Approach 3: Applying optimization methods - Dynamic Early Payment Discounts

Needless to say, there are constant innovations and breakthrough ideas that are at work in transforming the world of financial supply chain. The concept of dynamic early payment discounts is one of them, and has the potential to shake up the world of working capital finance [7]. Conventionally, payment terms were negotiated in a very static way. A supplier would offer a

the true cost of working capital and creating a virtual marketplace for funds. Consider the example, where a supplier has a standard payment term of Net-30. The supplier, however, is currently experiencing a cash crunch. The supplier may then extend higher discounts for early payments to its customers. A customer that has excess cash may take up the discount and settle early to get an effective cost saving. This process would be too time consuming with traditional paper based systems. However, given a fully electronic environment where all invoices and payments are accessible through a central settlement network, sellers are able to offer revised payment terms dynamically using a rules based engine that is driven by the seller's "cost of working capital." These electronic "offers"

Dynamic Early Payment Discounting method helps both the buyers and the sellers optimize their working capital and reduce cost of finance

standard payment term (e.g., Net-30) and an alternative, discounted payment term (1%10 Net 30). In some cases, large and more powerful buyers would enforce a set of standard payments terms on their suppliers. These methods do not recognize the relative differential value of funds to the buyer and supplier. This is exacerbated in the environment of low cost country sourcing and global outsourcing, where the differences in cost of financing are most pronounced.

In the dynamic discount environment, buyers and sellers essentially allow a high degree of flexibility to their payment terms, reflecting

are evaluated and automatically acted on by similar engines that buyers run on the settlement network. A negotiation process between supplier and buyer on the date of payment of invoice and associated discounts can also be enabled. This type of dynamic discounting allows both buyer and seller to optimize their working capital and reduce costs of financing through enabling a free market for working capital.

Although the approach sounds somewhat theoretical, it is not far removed from the capabilities of applications and tools available in today's environment. Companies may start

to take steps towards this state by automating their invoicing and payment processes, enabling the accounts receivable and account payable departments to collaborate on-line and offering more flexible discount options, besides the standard ones.

To take advantage of such opportunities, AR and AP departments need migrate to being more innovative and less transaction driven. Needless to say, trust between trading partners is critical and this may mean that dynamic discounting, at least initially, is restricted to certain categories of customers of suppliers that have the necessary strength of relationships in place and offer the greatest opportunity for optimization. It is also necessary for virtual "marketplaces" for discount management are in place. This void is rapidly being filled by boutique software firms as well as global financial institutions that are setting up and propagating similar discounting platforms.

CONCLUSION

Translating product supply chain data into information and knowledge improves the predictability of cash flows and frees up unused cash in the financial supply chain. Recognizing and leveraging the relative value of cash to different trading partners in the supply chain and applying systematic techniques to improve

predictability of supply chain will result in significant benefits for companies in the increasingly global, networked environment they operate in today.

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