Using Financial Accounting Throughout Supply Chain Management: Now Is the Time

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Supply Chain Management (SCM) is unarguably the most critical organizational function, and it continues to gain high visibility, particularly due to current environmental issues. SCM is viewed as the coordination of all activities beginning from the fundamental raw materials until the final product reaches the consumer. SCM generally includes suppliers, manufacturing organizations, distributors, wholesalers and retailers. Accounting can potentially lead SCM to success, but financial accounting rules have always seemingly blocked the way. Today, however, financial accounting can lead SCM to success if one knows where to look for information and how to use it. As the effects of new revenue-recognition rules trickle down into cost accumulation systems, there is no better time to harness financial accounting and derive ultimate SCM success. The paper describes how and why financial accounting rules hinder SCM. Also, the paper explains why now would be the best time ever to implement financial accounting rules into SCM. Finally, the study explains how to implement financial accounting into SCM success.

Introduction

Supply Chain Management (SCM) is unequivocally the most critical function of an organization, and it is gaining tremendous visibility—particularly in the current global environment. It is viewed as the coordination of all activities beginning from the raw materials till the final product reaches the consumer. Generally, SCM includes suppliers, manufacturing organizations, distributors, wholesalers and retailers. As the world continues to become flatter, the simple supply chain network that includes domestic organizations continues to become a complex network involving organizations around the world. According to Sahin and Robinson (2002), the objective of supply chains is to improve organizational performance and enhance customer satisfaction by efficiently delivering products or services to customers.

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Additional supply chain goals include minimization of cost, reducing cycle time, maximization of profit and maximization of return on assets.

Many researchers have described SCM and discussed the importance of this function. Oliver and Webber (1982) and Vitasek (2013) discussed SCM as the planning and management of all activities such as sourcing and procurement, production and logistics. Wisner (2017) described SCM as a network of organizations in the production of goods, services and associated functions for the consumers. SCM provides the opportunity to capture the synergy of intra- and intercompany integration and management and enhances total business excellence and relationships with the members of the supply chain network (Lambert and Cooper, 2000).

Accounting can provide tremendous support for all levels of SCM. However, accounting is not designed with SCM in mind. Accounting is focused on the creation of external financial statements with heavy emphasis on the calculation of net income. While internal accounting measures and controls can be made beneficial for SCM, the financial-statement focus can overshadow and overwhelm such benefits. To make accounting useful for SCM, one must drill down into the accounting system and find the useful elements. Fortunately, now is the best time in accounting history to obtain the information that SCM needs. Today, however, financial accounting can lead SCM to success if one knows where to look for information and how to use it. As the effects of new revenue-recognition rules trickle down into cost accumulation systems, there is no better time to harness financial accounting and derive ultimate SCM success. Many organizations have been evaluating their global supply chains mainly because of the impact of recent pandemic. This revitalization of global supply chain incorporates financial accounting such as total cost of ownership and activity-based costing. The objectives of the current descriptive study include: (a) how and why financial accounting rules hinder SCM; (b) explains why now is the best time ever to implement financial accounting rules into SCM; and (c) how to implement financial accounting into SCM success.

Problems with the Financial-Accounting Focus

First and foremost, accounting has a financial-accounting focus; accounting information is designed with financial statements in mind. All accounting rules (collectively, accounting rules are called Generally Accepted Accounting Principles or GAAP—pronounced 'Gap'), including new accounting rules, are designed to enhance the decision usefulness of financial statements. Usefulness focuses on two main user types—investors and creditors. Each rule is designed to maximize the relevance, timeliness and reliability of the resulting information. Much of the attention decision usefulness receives focuses on cost information. Ideally, this is the type of information demanded by SCM. However, with the focus so strictly aimed at investors and creditors, it is not as simple as downloading cost information 'as is' into any SCM system.

The best examples of the existing problems are in inventories. In SCM, using modern production philosophies, inventories are viewed as buffers, at best. Their best role is to serve as safety stock. Indeed, often, inventories are viewed as bottlenecks. Some SCM philosophies view inventories as liabilities—once a company creates inventory, it has an obligation to sell

it. Yet in financial accounting, inventory is viewed as a strategic asset, and the rules for valuing inventory are complicated.

A Common Problem Area – Valuing Inventory

Suffice it to say that the financial-accounting approach to inventory management is simply to assign a value to inventory. Inventory valuation is based upon two concerns: (1) flow assumptions; and (2) cost accumulations. Flow assumptions such as Last-In-First-Out (LIFO) and First-In-First-Out (FIFO) are commonplace…and they are acceptable quick alternatives to specifically identifying each and every unit of inventory. Companies spend tremendous amount of time focusing on the effects of LIFO and FIFO on net income. Variations on these basic assumptions, such as retail-inventory methods and dollar-value-LIFO, have evolved. Also, companies must focus on how their flow-assumption choices are viewed for tax purposes. Indeed, §472(c) of the Internal Revenue Code demands that a company that uses LIFO for income-tax purposes must also use LIFO for financial purposes. Additionally, some companies that use LIFO must still use FIFO for some calculations, and (via IRC §1363(d)) they may owe tax on the excess inventory created by LIFO. Thus, flow assumptions receive an incredible amount of attention, yet they offer no benefits for SCM. SCM can only benefit from specifically identifying (or tracking) units of inventory.

SCM certainly benefits from examining the costs incurred to manufacture units. But the financial rules for accumulating costs into inventory are quite specific, and they are still aimed at decision usefulness for investors and creditors. For cost-accumulation purposes, inventories consist of product costs. Product costs include all costs necessary to make a product. Other everyday costs, such as general costs, administrative costs, and the costs of selling a product, are all classified as period costs. Product costs are capitalized as inventory, whereas period costs are expensed as incurred. In and of itself, this distinction has direct effects on net income, but it is not useful for SCM.

The information that is useful for SCM is hidden in those product and period cost classifications. Product costs occur in three basic categories: (1) direct materials; (2) direct labor; and (3) factory overhead. Direct materials are the costs of raw materials that can be directly traced to make the product. Direct labor includes the costs of all labor that can be directly traced to make the product. The third category, factory overhead, is a catchall category that includes all product costs that are not direct materials or direct labor. Over the years, the number of various factory-overhead costs, and the sheer dollar amount of those costs, have increased exponentially. While these increases have profound effects on cycle times and throughput times and all things related to SCM, they have no effect on the financial-accounting product/period cost approach to inventory valuation. Thus, for financial-accounting purposes, the cost accumulation system continues un-phased.

The problem for the sake of SCM is worsened by how factory-overhead costs are defined. Some of the definitions seem to be contrary to common (production-management) sense. The concept of spoiled units is a prime example. For accounting purposes, spoiled units are "units that are not good (cannot be sold) that also cannot be reworked so they are good." In other

words, spoiled units are units that cannot be sold. Somewhere in the manufacturing process they became defective. The accounting rules do not determine when or why they became defective. Indeed, the accounting for spoiled units is based upon the point in time when the defects are discovered; this may or may not be the point in time when the defects occurred. Worse still, is the accounting itself. For accounting purposes, companies must indicate a "normal-spoilage policy." Such a policy might be stated as "normal spoilage is ≤ 1% of goods transferred out of the manufacturing process." Then, the costs of any quantity of spoiled units greater than 1% of units transferred out—so-called abnormal spoilage—is written off as a loss. But the costs of defects that are deemed 'normal', rather than written off, are added to product costs. The costs of normal defects not only reduce net income as they should, they are added to the value of inventories. For financial-accounting purposes, defects make inventories more valuable.

These financial-accounting inventories are captured in three types: (1) raw materials inventory; (2) work-in-process inventory; and (3) finished goods inventory. Raw materials have not yet been used, work-in-process is under construction, but not yet finished, and finished goods are ready to be sold. Once units are sold, their costs are accumulated in Cost of Goods Sold. Cost of Goods Sold is typically the largest expense a company has. Companies do spend substantial amounts of time focusing on Cost of Goods Sold. For example, the accounting rules require that product costs be assigned to each unit in a systematic way. For direct materials and direct labor, that is a simple process; these costs can be traced to products. Much of the time that companies spend on Cost of Goods Sold, however, is spent creating theories as to how best to assign factory-overhead costs to each unit. A factory incurs $30,000 for electricity (a common factory-overhead item); how does the company allocate the $30,000 to individual units of product? These theories range from simply spreading costs evenly over finished units (so-called 'peanut-butter' costing) to sophisticated game-theory approaches driven by data analytics. The American version of activity-based costing even evolved from such concerns; it began as a new way to assign factory-overhead costs to products using a cause-and-effect rationale. The accounting rules focus on assigning the costs to products, even when flow assumptions are used, and even if units are not specifically identified. Most companies that specifically identify units use job-order costing to track costs. Companies that do not specifically identify units still must allocate costs to each unit; these companies typically use a fairly elaborate system—process costing—to track costs. Accounting rules do not focus on controlling or minimizing product costs. Getting this and other information for SCM has always been viewed as expensive, because it essentially necessitates the creation of a second accounting system—a system that focuses on SCM rather than financial accounting. This may be the best (and least expensive) time in accounting history to do just that.

Cost Accumulation and the Matching Principle

SCM examines the roles that costs (in dollars and times) play in the manufacturing process. These costs drive the SCM process. But financial accounting is driven by the matching principle. The matching principle seeks to pair product costs with products as they are sold. Thus, when the revenue from selling a product is earned (and shown on the income statement as Sales), a matching entry is made to Cost of Goods Sold to expense the cost of making (or merchandising/

retailing) the product. Product costs are capitalized as inventories to delay expensing until the corresponding units are sold. This means that for accounting purposes, revenue recognition drives the recognition, classification, definition and expensing of costs.

The Financial Accounting Standards Board (FASB) determines American rules for revenue recognition. To improve the decision usefulness of revenue information for investors and creditors, the FASB recently revised and recreated the rules for recognizing revenue (see Financial Accounting Standards Board, 2014). These rules went into effect in 2019. Note that the FASB creates the vast majority of American accounting rules. The Board works in close cooperation with the International Accounting Standards Board (IASB). Indeed, the new Revenue Recognition rules represent one of the first attempts to converge American GAAP with the international GAAP that apply in other countries.

Why Now Is the Time to Leverage Accounting into SCM

Because of the new revenue recognition rules, companies are scrambling to examine all their revenue functions. They must review every type of sale, every contract—even preexisting contracts—to redefine what is and is not revenue. While the revenue-recognition changes had long been rumored, most companies did not begin examining their revenue processes until the new recognition standards went into effect. Thus, 2019 and 2020 have been spent examining revenue streams and often reclassifying what is and is not revenue. Now, in 2020 and 2021, companies must focus on the ripple effects of the new revenue-recognition standards. Revenue recognition drives cost recognition. The redefinition of "what is revenue?" ripples down to "what is product cost?" and "what is period cost?" Each company must reexamine the classification of every cost it incurs. This is the perfect time to also examine each and every cost for its usefulness, importance and application in SCM.

What to Look For

Reclassifying costs based upon the new revenue-recognition definitions does not make the costs any more useful for SCM. The advantage is simply in the reexamination of costs. While examining costs for financial accounting purposes, users can also examine them for SCM purposes. If one ignores the product versus period cost distinction, many of the costs necessary for effective SCM can be found in the accounting information provided by daily operations. Detailed cost information can be used for controlling and planning both value-added and non-value-added activities. In many companies, costs are already pooled by activities (and allocated using cost drivers). Information from accounting can be traced to accounting cost objects; such costs can easily be traced to SCM cost objects. Additionally, because of the new revenue recognition rules, tracking costs from materials to work-in-process to finished goods is reexamined. This provides an excellent opportunity to evaluate processes and processing times for what they are, what they might become, and how they interact, in terms of SCM.

In addition, accounting's traditional focus on tight internal control can be essential for SCM. The long-standing well-demonstrated effectiveness of Committee of Sponsoring Organizations or COSO (see *COSO.org* for details) can also be useful for SCM. COSO revolves

around viewing the processes as a control environment, monitoring all activities, identifying essential control activities, assessing risk, creating useful information, and communicating the information throughout the SCM process. COSO provides an excellent general framework for controlling data in SCM. For more detailed information, those implementing SCM can consider COBIT (Control OBectives for Information Technology). COBIT is created and managed by the Information Systems Audit and Control Association (ISACA). COBIT traditionally provides internal control guidelines for all processes throughout all organizations. Furthermore, the newest version, COBIT 5.0, provides a holistic approach to governing the entire supply chain. This approach is designed to assure that information affected and created by technology serves to benefit SCM at all levels.

Accounting data are powerful, but they must be constantly refined. Especially in the United States, accounting overemphasizes dollars when controlling costs. In this way, using thousands of cost variances, management can reconcile every dollar difference between the master budget and actual results. But SCM focuses more upon times and quantities than dollars. For example: most companies calculate direct-labor efficiency variances. For accounting purposes, such variances are calculated as

$$SR * (AH - SH)$$

The essence of the formula is (AH – SH), actual hours minus standard hours. Actual hours are the hours the direct laborers worked on the product. Standard hours are the expected hours needed for each unit multiplied by the actual number of units of output made. Thus, the difference, (AH – SH), can be an important measure for SCM purposes. The United States' tradition of expressing the variance in dollars, by multiplying by SR (the Standard Wage Rate per hour) can be ignored/avoided for SCM purposes. When drilling down and digging out the details necessary for strong SCM, accounting is rich in valuable information, but the user must often sift important input and output quantities, times, and processes out of dollar-dominated data.

Financial-Accounting Data Are Nevertheless Important

As SCM manages to sift out quantities, times, and processes without dollars, production control becomes easier and easier. But at times, SCM requires dollars; at times SCM requires financial accounting. When dollars are required, financial accounting can be useful without any sifting or modification. For example, most SCM users are familiar with the financial cash-to-cash approach. Cash-to-cash manages the entire supply chain, beginning with (payments to) suppliers, and progressing all the way through (receipts from) customers. Indeed, accountants have realized the importance of planning and budgeting cash for decades; advances such as continuous (rolling) budgets—creating a new budget each month on a continuous budget—enhance the value of SCM data in the cash-to-cash approach.

But there are many other important elements in financial accounting that benefit SCM. First, companies should not limit their approach to managing cash flow. A more comprehensive and effective approach is to focus on all working capital—a working-capital-to-working-capital

approach. Cash-to-cash examines the current cash balance. That is important, because the company must be able to pay its bills. But examining working capital provides a more complete financial display of how the company is doing. A company can have enough cash but deteriorate quickly. Working capital management enables a stronger and more robust evaluation of the liquidity of the entire supply chain.

Other elements of the financial statements are important for sound SCM. Capital expenditures, for example, are essentially non-routine. But when they occur, they are large, and they usually have strong effects on some or all aspects of the supply chain. Financial management is also always necessary. Examples include derivatives. A derivative is a financial instrument that derives its value from something else. For instance, if a company decides to purchase a call option, because it believes a stock price will rise, then the value of the option is derived from the price of the stock. At first glance, it appears, especially in a traditional approach, that derivatives are unimportant and play no role in SCM. This is a naïve view at best.

In modern financial management, derivatives are necessary. Avoiding them—failing to use them—can expose the entire supply chain to unnecessary risks. Certainly, the supply chain may survive and thrive without examining derivatives, but one of the steadfast philosophies of SCM is continuous improvement. If companies do not examine the supply chain with derivatives in mind, they are failing to fully explore possibilities for improvement. Accountants have become effective when examining derivatives in that they determine whether derivatives are hedges—or speculations. In other words, are derivatives used to hedge against risk, or are they used to speculate (gamble) to (try to) increase net income? Accountants have carefully delineated the difference between hedging and speculation. Accounting treatments are far more favorable for the company for most hedges. Note, however, that a hedge must be at least 'highly effective', or accounting does not allow the favorable hedge treatment. Generally, 'highly effective' is defined as ≥ 90-95% effective. Very few derivatives are perfect (100%) hedges. Even in highly effective hedges, the small portion that is not an effective hedge is given less favorable (speculative) accounting treatment. Accountants must evaluate the effectiveness of hedges (test for "high effectiveness") at least every three months, if not more often.

How is the supply chain affected? Consider the company's relationships with its suppliers. Suppose one supplier provides aluminum at a price of $1,500 per ton. The company cannot afford to buy aluminum right now, or has no place to store it right now, but knows it will need the aluminum in the future. Unfortunately, it also knows that the price per ton will be much higher in the future. The company can enter a derivative commodity contract now that enables the company to effectively buy the aluminum in the future at today's prices. Such a contract is a cash flow hedge. Other hedges that receive favorable accounting treatment when highly effective include fair value hedges and foreign currency hedges.

If SCM does not examine the company-supplier relationship to ensure the effective use of hedging, (and the avoidance of sheer speculation), then the effectiveness of the SCM process is, at best, incomplete. To be effective, SCM must also constantly scan changes in financial

accounting. The importance of changes in revenue recognition has already been discussed. Changes occur frequently in accounting, especially now that the FASB and the IASB are converging their standards. Another current example topic is leases. In the past, if a company leased equipment, and was able to answer certain questions 'correctly', then the lease was classified as an *operating* lease. The only concern with an operating lease used to be rent expense. Now, with the new lease standard, even if the past questions are answered 'correctly', the lessee must treat the lease as a finance lease. This results in placing the liability for the lease on the balance sheet. Recognizing new lease liabilities affects the financial position of the company, which in turn affects financial management, working capital management and ultimately, SCM.

Conclusion

Accounting is specifically designed to fulfill the financial information needs of investors and creditors. It is not designed for SCM. Recently, to make that information more relevant and reliable, accounting rules for revenue recognition were changed. As a result, all the revenues and associated costs in companies must be reevaluated. This reevaluation process provides a perfect opportunity for companies to simultaneously drill down and obtain all the necessary information for SCM. Then, SCM can also take advantage of the controls on processes afforded by accounting control environments such as COSO and COBIT.

Supply chain managers should carefully consider financial accounting even beyond drilling down for new cost, output, input and quantity information. Many supply chain managers already consider cash-to-cash management algorithms; a better approach is to consider working-capital management instead. The best SCM systems also consider other financial accounting measurements such as capital expenditures, financial management, and even derivatives. Further, SCM should stay up to date on the effects of other changes in financial accounting rules. Most major accounting changes have direct, substantial effects on the supply chain. In today's environment, managing a supply chain without considering financial accounting is an extremely weak and incomplete approach. The approach presented in the study would provide the management with guidance in revitalization of global supply chain by incorporating accounting and financial management concepts.■

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