

## INFORMATION REQUIREMENTS FOR MAKING STRATEGIC DECISIONS AT THE ENTERPRISE LEVEL

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### ABSTRACT

*Despite the recent innovations in information technology (IT), strategic decision-making at the enterprise level remains problematic. The success of supply chain management depends on the strategic decisions made at various stages of the supply chain, and especially at that part of the chain that affects the actual production. In view of this, the availability of information required to make optimal decisions becomes critical. With the advent of innovations in information technology (IT) and the increased use of enterprise resource planning (ERP) systems, the situation is vastly improved in many areas. However, there are some areas—such as making decisions on dropping/adding a product or business segment, replacing/keeping equipment or implementing alternate processes/type of technology automated systems—that are not that effective. In this paper we examine the information requirements for making these strategic decisions in the production environment.*

**Keywords:** Information Requirements, Decision-making, Enterprise Resource Planning, Cost Allocation

### INTRODUCTION

The success of strategic decision-making at the enterprise level depends on the degree of accuracy of cost assessments done at the transactional level. In order for managers to accurately evaluate the profitability of their operations, they must receive useful revenue and cost information on a timely basis. Major changes in cost accounting occurred in the 1980s and 1990s [4, 14]. Manufacturers converted to the Just-In-Time (JIT) approach to manufacturing and the accountants changed their approach to gathering cost information. The implications of cost management from a total supply chain perspective are being considered increasingly by managers. Today, organizations are expanding the scope of cost-reduction initiatives to include both upstream (supplier) and downstream (customer) members of their supply chains [6]. According to

Barry [2], by optimizing the financial supply chain, supply managers and their enterprises can reduce their working capital needs by as much as 20-25 percent by using better invoicing control and cash-flow management. Before the introduction of e-commerce, in order to run an efficient physical supply chain, it was necessary to encounter excess working inventory and excess working capital to cope with the uncertainty of demand. The strategy consisted of having excess inventory, capacity and labor to compensate demand forecasting limitations, inefficient distribution and lack of supply chain visibility [2]. The increased use of the Internet and the Extensible Markup Language (XML) can be expected to result in increased automation in supply chain transactions. To minimize disruptions during the change over to automation, it is necessary that companies must incorporate e-business concepts into their overall business strategies.

Prior to the arrival of JIT manufacturing, the accounting function tracked inventories from receipt until the final units were produced. Theoretically in a JIT environment raw materials are received only when needed and there is little or no work in process used as buffers between work stations. To meet the needs of the new environment, the accounting profession developed a cost accounting approach called 'Backflush Accounting.' In this approach, the accountants would no longer track inventories. Rather, the manufacturing people would instead provide reports that the accountants then would use to prepare the statements that would describe the movement of inventories through the manufacturing process. A classic example was the Hewlett Packard Company's adoption of JIT. HP eliminated receiving reports, material requisitions, and work orders. Thus, most of the documentation and inventory reporting that management needed was eliminated. This did not remove management's need for real time information about their inventory. Since the requirement still existed, HP instituted an Activity Based Costing (ABC) inventory control system to provide the needed information and periodic physical counts were made to determine the number of units on hand [5, 8, 10, 12, 15].

Enterprise Resource Planning (ERP) systems were expected to integrate operational transactions and informational requirements of managers for strategic decision-making [3]. However, in some cases, the rigidity of “template approach” has resulted in unsatisfactory results.

### **EXAMPLE OF ABC ACCOUNTING VERSUS TRADITIONAL METHOD**

Today, the managerial accounting function is promoting Activity Based Costing (ABC) as the appropriate means for valuing inventories. Financial Accounting Standards require that all inventories be valued at their full cost of production. In this approach, costs generated by activities that are not directly connected with manufacturing are allocated to the cost of the final product. Where only one product is produced in a plant, the identification of a unit cost during a given time period is rather simple. One just has to divide the total overhead incurred by the total units produced to arrive at the overhead allocation per unit produced. The allocation is more complex when the manufacturing facility is a multi-product plant. Then, costs are allocated through the use of cost drivers. The cost driver could be something like the number of purchase orders generated in the purchasing department. In this way a portion of the purchasing department’s costs will be allocated to the value of the inventory [1, 5, 8, 15]. The IT implications of such transactions play an important role in making decisions at the enterprise level. What appears to be an optimal solution at the division level may not be such a good decision at the enterprise level.

The ABC system of overhead cost allocation has simplified and possibly improved the determination of more accurate product costs for inventory purposes. However, it is highly questionable that the ABC system has in effect identified the true cause of factory overhead costs and as a result identified the cause and effect relationship between units produced and those costs. By definition, overhead is a capacity cost that is an “indirect” cost of goods manufactured and can never be truly identified with a particular unit of product. To further compound this problem of relating plant burden costs to units produced, researchers are reporting that most factory overhead costs are fixed in nature [8]. With the increase in more automated factories, there are fewer costs of production directly related to units produced.

For the valuation of inventories, the ABC system of cost accounting is a step in the right direction. From a financial accounting perspective, improved inventory

valuation should enhance the correctness of the stockholders report. The new system, however, is not a great leap forward in providing information to managers for the strategic decision making process. Management is faced with numerous strategic decision making situations. Chief among these include the following:

- Special order
- Drop/add a product or business segment
- Replace/keep equipment
- Alternate processes/type of technology
- Eliminate an unprofitable segment
- Make or buy a component
- Analysis of performances (margin analysis)

All of the above decisions require that cost information must be provided on a fixed and variable cost basis.

A strategic decision of importance to decision makers is the possible elimination of a product in a multi-product production operation. The product may be unprofitable from a full cost basis. In this decision, however, the question to be answered is the effect on profitability by the elimination of the product. As long as a product has a positive contribution margin (price – variable cost per unit), it is reducing the fixed cost burden that other products would have to bear. An example would be the overhead burden from the typical purchasing department of today. In these operations, organizations are using the Internet (fixed cost), computers (fixed cost), and B2B or ERP (Enterprise Resource Planning) software (fixed cost) systems to provide material resources for the production process. Purchase orders are typically driven by an ERP system and are released to vendors over the Internet. The primary purpose of people in the purchasing department is to ensure that the system continues to operate. In short the system is automated and people are primarily observers. As long as the product is making a positive contribution, it is enhancing the profitability of the organization. The question to be answered at this point is any replacement product going to improve profitability to a greater extent than the product currently being produced. If not and the current product has a positive contribution margin it should be kept even though it is not profitable on a full cost basis.

For example, if a company decides to drop a losing division, the basic tenet of ABC that all costs are variable could bring a serious negative impact to the company instead of the proposed benefit of eliminating the loser. If the production has a positive contribution margin and fixed costs are not

discretionary, the result will be a lowering of company profits by eliminating the division showing a net loss.

In Exhibit A, Division X has a net loss of \$100,000 and a segment margin of a positive \$100,000. If Division X is eliminated, the allocated common costs will go on and be assigned to other products. The result may be to create additional Divisions with a net loss position. To compound this situation further, if Division X's direct fixed costs are not discretionary but committed, the company will have to continue bearing the direct fixed costs in some manner. The actual result will be to reduce overall profitability of the company by the amount of the lost contribution margin, \$400,000.

**Exhibit A.** End-of-Year Income Statement

Division X	
Income Statement	
For the Year Ended 12/31/05	
Sales	\$1,000,000
Variable Costs	<u>600,000</u>
Contribution Margin	\$ 400,000
Direct Fixed Costs	<u>300,000</u>
Segment Margin	\$ 100,000
Allocated	<u>200,000</u>
Net Loss	<u>\$ 100,000</u>

Another type of a strategic decision making problem would be the selection of the type of technology to be used in an operating process. The decision in this case would be to select between a labor intensive and a capital-intensive process. In the labor-intensive process, fixed costs would be low and labor costs per unit of production would be high. While in the capital-intensive process, fixed costs would be high and labor costs per unit of production would be low. Each would have an advantage given a particular environment. The critical decision would depend on the anticipated demand for the product. In a high demand situation, the capital-intensive process would result in lower total costs. In a low demand situation, the labor-intensive process would result in lower total costs. Thus, the important factor in this decision situation would be to match the relevant technology with the anticipated demand. In a standard transaction processing system, these differences will not be separately tracked and may lead to imprecise information being fed into the decision making process at the strategic level.

**INFORMATION INFRASTRUCTURE**

In each of the above decisions, the information system for supporting strategic decision-making must provide information that will allow managers to make these decisions correctly. Such information requirements cannot be sufficiently met by the standard knowledge management practices, if any. The current use of financial accounting data does not adequately support this process since the primary focus of financial accounting is the generation of financial accounting documents such as the Income Statement and the Balance Sheet. As such, the accounting information system is not geared to the production of information which is necessary for some strategic decisions. A mistake that many people make is the assumption that all costs are variable in the long run. In the long run all costs are changeable. The short run definition of variable costs implies that there are different possible operating levels with the given set of production facilities. In the long run, managers have choices about the fixed factors that they are going to operate in the short run. They can make decisions with regard to plant capacity, technology, location, etc. But, once these decisions have been made, managers must recognize that while their strategic decisions are made for the long-term, organizations operate in the short-term. As a result, managers must understand that some costs are variable in the short-term while others are fixed. Second, the concept of distinguishing between committed and discretionary fixed costs must be brought into the analysis. If a fixed cost can be eliminated without penalty to the firm, it is a discretionary fixed cost. However, many fixed costs are not discretionary. They cannot be removed without penalty and the firm must continue to incur them in one form or another. The practice of transferring them from the operations accounts to the income statement does not truly reduce the total expense. It simply advances the recognition of it. A classic example of this is transferring production from one plant to another and closing the first plant. In accounting, the cost of this closing is not charged to operations but rather to the nonrecurring expenses of the income statement. On the one hand it makes operating costs look smaller, but the reality is a huge expense and a significant impact on current income. For the strategic decision maker to make the correct decision, relevant information must be provided by the information systems within an organization. If the accounting function is not going to focus on providing this information, then who will?

## CONCLUSION

Jim Shepherd of AMR Research states the following in a recent report: “The notion that a company can transform itself into an e-business by simply using a piece of software and adding it to its existing infrastructure is wrong and dangerous.” As supply chain management becomes more involved in strategic decisions, it is critical that we have reliable information sources [13]. In order to fully realize the positive impact of IT, it is necessary to integrate physical, informational and financial supply chains. In this paper, we have studied several strategic decision-making scenarios at the enterprise level. Future research involves developing a framework that enables extraction of relevant information that is needed for optimal decision making. We also plan to study the ways in which RFID technology can be harnessed in the context of inventory management and its effect on some types of strategic decision making.

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