

The Success and Failure of Activity-Based Costing Systems

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Abstract

This paper studies the factors determining the success and failure of Activity-Based Costing Systems (ABC) implementation. Despite its perceived technical validity, ABC has not been widely adopted since its introduction in 1980s. For those organizations that have adopted ABC, the majority of them are using it tentatively. The perceived administrative and technical complexities are the main reasons of rejection of ABC. While ABC model is feasible for initial pilot studies, it is difficult and costly to scale to company-wide applications. Success or failure of ABC is found to be heavily influenced by a number of behavioral and organizational factors. The degree of importance of these behavioral and organizational factors to success of ABC is different at different stages of ABC implementation. Cultural differences play an important role in ABC implementation strategies. Approach to implement ABC should be tailored to specific cultural context.

Introduction

Considerable effort has been devoted to the development of more sophisticated costing system. The need to improve the accuracy of product costing information was driven by changes in the competitive landscape as well as increased global competition (Cooper 1988). The new competitive conditions challenged the validity of conventional costing systems. Cost accounting had traditionally allocated overhead to products or services using only one volume-sensitive driver, typically direct labor. For organization with high overhead and a mix of products or services, using a single cost driver may distort cost estimate (Cooper and Kaplan 1988).

Management accounting researchers have devoted considerable effort to addressing these limitations. Almost all of the attention has been devoted to studying activity based costing (ABC) systems. These systems emerged as the generic solution to product costing distortions and consequently as a means of improving competitiveness through more informed pricing and product mix decisions (Kaplan 1994). It has been claimed that activity-base costing (ABC) can provide improved information for strategic decisions involving product planning and cost management (Cooper 1988; Swenson 1995).

While the literature promoting the benefits of ABC systems is intuitively appealing, evidence has indicated relatively low rate of adoption of ABC (Innes, Mitchell & Sinclair, 2000; Cotton, Jackman and Brown 2003). In addition, it is apparent that many organizations have not gained promised benefits (Innes et. al, 2000). It appears that while the technical characteristics of ABC are well understood, some organizations have difficulties in implementing the systems (Innes et. al, 2000; Shields 1995). The low rate of adoption of ABC and implementation failure has created considerable debate on its usefulness.

A stream of literature has emerged recently examining the broader organizational contextual factors that influence both initial adoption and the extent of implementation of ABC (Shields 1995; Malmi 1997; Anderson et al 1999). Several authors have suggested that an important obstacle to successful implementation of ABC is a lack of attention to behavioral factors (Cooper 1992; Argyris and Kaplan 1994; Shields 1995; Foster and Swenson 1997; McGowan and Klammer 1997; Krumwiede 1998; Anderson and Young 1999; Anderson, Hesford and Young, 2002).

Research problem

As competition increased, companies need more accurate estimates of product costs to set prices and to identify the most profitable products. Activity-Based Costing (ABC) was introduced as the solution to meet this challenge. Besides getting more accurate product costs for competitive pricing and product-mix decisions, it was reported that adopters of ABC are able to pinpoint opportunities to cut costs. In addition, companies can use ABC in routine planning and control. However, recent surveys indicated relatively low rate of adoption. In addition, many organizations have not gained promised benefits. From the literature review, it appears that the usefulness of ABC is being questioned. Effectively, the research problems are summarized as follows:

- No clear indication is noticed on reasons of low rate of adoption of ABC.
- No identification of common factors is made contributing to the successful adoption of ABC by those companies which have been using ABC for an extensive period of time.

Objectives of the Research

The objectives of the research are:

- To identify reasons of low rate of adoption of ABC.
- To suggest ways of successful adoption of ABC by those companies which have been using ABC for an extensive period of time.

Survey of Literature

Limitation of conventional costing method and the promises of Activity-Based Cost System (ABC)

Miller and Vollman (1985) mentioned that overhead cost as a percentage of overall manufacturing cost have been rising steadily as direct labor costs to value added had declined. Data suggest that manufacturing overhead averages 35% of production in the United States and 26% in Japan. The drivers for overhead cost are transactions involve exchanges of the materials and information necessary to move production along but do not directly result in physical products. The transactions are classified as logistical, balancing, quality and change transactions. Logistical transactions involve order, execute and confirm the movement of materials from one location to another. Balancing transactions are activities which ensure that the supplies of material, labor, and capacity are equal to demand. Quality transactions include quality control, indirect engineering, procurement, identification and communication of specifications, certification, and the development and recording of relevant data. Change transactions include update manufacturing information systems to accommodate changes in engineering designs, schedules, routings, standards, material specifications, and bill of material. There are three general approaches to managing overhead costs more effectively. Firstly, identify the necessary transaction and improve the method used to carry them out. Secondly, increase the stability of the manufacturing environment. The last approach is to rely on automation and systems integration. However, automation does not solve all problems. It may create some unless handled carefully. The authors presented various transactions as the cost drivers for the escalating manufacturing overhead cost and the importance of categorizing these costs. However, they did not elaborate on the method to categorize them.

According to Kaplan (1988), cost systems need to address three different functions: inventory valuation for financial and tax statements, operational control and individual cost measurement. The demands of each function differ in term of reporting frequency, degree of allocation, nature of cost variability, system scope, and degree of objectivity. For inventory valuation, financial accounting principles do not require that assigned overhead costs be causally related to the demands of individual products on the enterprise's resources. So many companies use an aggregated, simplistic method for assigning overhead costs to products. Operational control system must provide accurate, timely feedback to managers on their performance. The system must correspond to the unit manager's level of responsibility, control for known variation in costs behavior, and minimize the incidence of cost allocations. The frequency of report should follow the cycle of the production process being measured. The cost control system should be based on a flexible budget that adjusts for costs that vary with fluctuations in short-run production activity. For product cost measurement, the system should realistically approximate the long-run demands each product makes on the organization's resources. All costs should be considered to be variable in the long-run according to the diversity and complexity of products. Besides traditional volume-related measures, the cost system must also measure setups, inspections, receipts, parts, vendors, and engineering change orders. A good product cost system should report expenses incurred across the organization's entire value chain,

including factory resources to convert raw materials and purchased components to finished goods, marketing and sales, after sales services, engineering design, process improvement, purchasing, information systems, financial and cost analysis, and general administration. No single system can adequately answer the demands made by the diverse functions of cost systems. While companies can use one method to capture all transaction data, the processing of this information for diverse purposes and audiences demands separate, customized development. The current economics of information collection, processing, and reporting have made multiple cost systems possible. Managers can exploit new trends in distributed computing by developing decentralized systems for operational control and product costing. Even though the author mentioned that the product costs system should report expenses incurred across the organization's entire value chain, he did not elaborate the method to allocate these expenses.

Cooper and Kaplan (1988) highlighted that typical cost accounting system which allocates factory and corporate overhead by burden rates on direct labor resulted in distorted cost information. Expenses from factory support operations, marketing, distribution, engineering, and other overhead functions have increased significantly with increasing product lines and marketing channels. An alternative approach, activity-based costing is presented. The theory for this approach is that all activities exist to support the production and delivery of goods and services. All factory and corporate support costs are divisible and can be traced to individual products. Two types of cost should be excluded from activity-based costing, e.g. the costs of excess capacity and R&D cost for entirely new products. The R&D cost should be split into two categories: those that relate to improvement and modification of existing products and those that relate to entirely new products. The first category should be traced to the products that will benefit from the development effort. The second category should be treated as investment in the future. Activity-based cost system can lead to radically different evaluations of product costs and profitability than more simplistic approaches. Information generated by an activity-based cost system can encourage companies to redesign products to use more common parts, change new process technologies evaluation, streamlining the manufacturing process to reduce setup times, rationalizing plant layout to lower material handling costs, and improving quality to reduce postproduction inspections. Activity-based costing is designed to provide more accurate information about production and support activities and product costs so that management can focus its attention on the products and processes with the most leverage for increasing profits. The authors highlighted the benefits of using ABC but did not mention the cost of implementation and challenges that need to be overcome.

Cooper and Kaplan (1991) stated that gross numbers on corporate financial statements would not help managers improve future financial performance. To improve profit, managers need to understand patterns of resource consumption at the micro level. Different products, brands, customers, and distribution channels consume company's resources differently. ABC analysis illuminates activities that are associated with that part of the business and links those activities to the generation of revenues and the consumption of resources. By highlighting those relationships, ABC helps managers understand precisely where to take actions that will drive profits. Managers should take two types of actions after an ABC analysis. First, they

should raise prices for products that make heavy demands on support resources and lower prices to more competitive levels for the high-volume products that had been subsidizing the others. Second, and more important, managers should search for ways to reduce resource consumption. This requires either decreasing the number of times activities are performed for the same output, such as by changing product and customer mix, or reducing the resources consumed to produce and serve the existing mix of products and customers. This might mean designing products with fewer and more common parts, or customizing products at the last possible production stage, or implementing continuous-improvement programs to enhance quality, reduce setup times, and improve factory layouts, or adopting information technology to facilitate the processing of batches, products, and customer orders. When fewer of their resources are being demanded, managers must either get rid of the freed-up resources or redeploy them for additional output. If managers fail to follow up any reductions in the demands on organizational resources, improvements will create excess capacity, not increased profits. The authors presented the usefulness of ABC to increase profitability but did not discuss the challenges to implement it successfully.

Cooper and Kaplan (1992) stated that activity-based cost systems contain two important insights. First, the activities performed by many resources are not demanded in proportion to the total volume of units produced. The demands arise from the diversity and complexity of the product and customer mix. Second, activity-based cost systems are not models of how expenses or spending vary in the short-run. ABC systems estimate the costs of resources used to perform activities for various outputs. During any given period, the production of products and services, and their marketing, sale and delivery to customers, create a demand for organizational activities. The quantity of each activity supplied to outputs is estimated by activity cost drivers such as the number of setup hours, number of purchase orders processed, number of receipts, number of direct labor and machine hours, and number of parts maintained. By summing across the costs of all resources supplied to perform activities for individual outputs, the ABC model estimates the costs of resources used during the period by all the organization's outputs. Activity-based systems model how activity usage varies with the demands made for these activities. If activity usage exceeds the quantity available from existing resource supply, then higher spending to increase the supply of resources will likely soon occur. If, however, activity usage is below available supply, spending or the expenses of resources will not decrease automatically. Management, to obtain higher profits, must take conscious actions either to use the available capacity to support a higher volume of business or to reduce spending on resources by eliminating the unused capacity. Costs and profits are fixed only if management takes no action, and leaves the unused capacity undisturbed. Management behavior, not cost behavior, determines whether reductions in resource demands become translated into higher profits. The authors presented clearly the importance of ABC but did not elaborate the efforts needed to implement ABC systems.

McKenzie, J. (1999) stated that while standard costing techniques used by most companies is easy to understand and apply, with the exception of factory or operational direct costs, they fail to allocate other business costs on a realistic basis. These other business costs include manufacturing indirect, sales and

marketing, customer service, R&D, purchasing, supply, IT support and personnel. Standard costing allocates these on an arbitrary basis, using direct labor hours, square meters, number of units produced or sold, number of customers etc. In a non-manufacturing or service business, the problem is understandably even more acute. ABC takes a rational approach to product, service and customer costing, identifying what major activities are performed in each function across the business. An assessment is made of how much company resource is actually consumed by each activity. These are allocated to activities using appropriate methods dependent on the type of resource to be allocated. Many companies using ABC have found that highly prized customers are found to be amongst the most unprofitable. Some products thought to be highly profitable turn out to be the complete opposite when all the hidden costs are allocated. ABC produces far more accurate and rational management information on which crucial product, customer and service decisions can be taken. It is being used as part of product lifecycle management by tracking total costs over time and for costing key business processes such as new product or service introduction. It is used for establishing economic order quantities in purchasing by costing the full and true acquisition cost and for establishing minimum order values or quantities to be applied to customer orders. In short, the potential applications of ABC in the management decision process are many. The introduction of ABC can be daunting to organizations, especially the on-going maintenance. However, a number of PC-based ABC software tools have been developed to take away much of the pain in data capture, modeling and reporting. Also, sufficient implementations have resulted in the accumulation of sufficient ABC experience to avoid the bigger pitfalls. While it is true that ABC can produce much more accurate information, the author may have understated the challenges organizations have to overcome to implement and sustain ABC.

Hornigren, Harrison and Bamber (2005) stated that ABC is one of the several methods managers use to deliver value to the customer at a profit. Organizations use refined ABC costing systems because simple systems can assign costs inequitably. As competition increased, managers need more accurate estimates of product costs to set prices and to identify the most profitable products. ABC focuses on activities as the fundamental cost objects. The costs of those activities become building blocks for compiling the indirect costs of products, services, and customers. Each activity's indirect cost has its own cost driver. After implementing ABC, companies often realize they were over costing high-volume products and under costing low-volume products. Most companies adopt ABC to get more accurate product costs for pricing and product-mix decisions. But they often reap even greater benefits by using ABC to pinpoint opportunities to cut costs. In addition, companies can use ABC in routine planning and control. However, ABC must pass the cost-benefit test to be adopted widely by companies. Benefits of adopting ABC are higher for companies in competitive markets; that produce many different products that use different amount of resources; have high indirect costs; that produce high volumes of some products and low volumes of other products. The costs of adopting ABC are lower when the company has accounting and information system expertise to develop and sustain the system, and information technology like bar coding, optical scanning, or 'data warehouse' systems to record and compile cost driver data. A recent survey has shown that 89% of the companies using ABC data say it was worth the cost. Adoption is on the

rise but ABC is not a cure-all. ABC will not reduce cost, it will only help companies understand costs better to know what to correct. The authors stated that adoption of ABC is on the rise but did not elaborate on the growth rate and source of data for verification.

Surveys of Implementation of ABC

Swenson (1995) carried out a study to determine the benefit of ABC to manufacturing industry. The results show that all respondents reported an improvement in at least one dimension of their cost management systems following the implementation of ABC. They reported the most improvement for product costing and cost control efforts, but they also reported significant improvements in their performance measurement systems. ABC was also used to improve the accuracy of customer cost information, which supports customer profitability analysis. Twenty-four percent of the sampled firms use ABC for product sourcing decisions. Seventy-two percent of the sampled firms use ABC to support pricing and product mix decisions. Managers at firms which secure business through a bidding process stood out as the most satisfied users of ABC information for pricing decisions. ABC information was used most frequently to support process improvement. Forty-eight percent of respondents use ABC to support product design decisions. Only seven of the twenty-five sampled firms had incorporated ABC into their performance measurement systems at the time of the interviews. Yet many respondents view performance measurement as the "final output" of their ABC implementation efforts. This study found broad support for activity-based cost management systems among the sampled firms. The applications of ABC techniques were quite varied, and the participants represented a wide variety of industries, yet each firm appeared to benefit from at least one dimension of its ABC system. Following the implementation of ABC, they reported higher levels of satisfaction with their cost management systems. The participants also provided specific examples of how they used the activity-based cost information to support decision making. Future studies should include firms which have attempted to implement ABC but failed. These studies can then look for differences in firm characteristics, or other factors such as management support or commitment, to explain success or failure with activity-based costing.

Survey carried out by Trond Bjornenak (1997) in Norway indicated that adopters of ABC have a higher overhead cost as a percentage of total cost than non-adopters, which is consistent with the argument presented by Cooper. Even though the survey results indicate that the adopters have more refined systems than non-adopters, there is no difference in allocation bases. This is not in aligned to the claims by ABC literature that conventional costing systems employ a limited number of cost pools and allocation bases (Cooper, 1988), whereas ABC typically involves a greater number of cost pools and bases. The survey results indicate that adopters have a higher number of product variants. However, the results show that the non-adopters make significantly more customized products than adopters. Product diversity is argued to be the major factor causing product cost distortions in conventional costing systems (Cooper, 1988). Highly customized production normally means high product diversity, especially complexity diversity, material diversity and set-up diversity. Customized production also normally increases the cost of developing a

costing system. This may explain the findings. One possible interpretation of the result is that ABC is adopted by companies with a high number of semi-standardized products. The survey results indicate that non-adopters of ABC have a higher number of competitors and a higher export rate. This is not consistent with the assumption that higher competition means higher adoption rates. The author pointed out that adoption of ABC is related to market rhetoric on ABC and the role of consulting firms in diffusing ABC. All firms that had implemented ABC or currently were implementing ABC had used assistance from consultants. In addition, the source of ABC information seems to effect the adoption decision. Larger companies have a larger network of communication channels and the necessary infrastructure for adopting ABC. Although the author presented the potential reasons on the differences between the results of the survey and claims by ABC literature, he did not have data to verify his claims.

Gosselin (1997) examines the effect of strategic posture and organizational structure on the adoption and implementation of general forms of activity management (AM) by a sample of strategic business units (SBUs) in Canadian manufacturing firms. AM is divided into three levels: activity analysis (AA), activity cost analysis (ACA) and ABC. AA is the initial level while ABC is the final and most refined one. ABC subsumes ACA and AA. AA is a prerequisite to performing an ACA. The results show that strategy influences the extent to which SBUs adopt an AM approach. As expected, organizations with high vertical differentiation are positively associated with the adoption of ABC over other form of AM. Furthermore, centralization and formalization are associated with organizations that actually implement ABC after adopting it. The results show that prospectors adopt ABC approach more frequently than analyzers and defenders. Furthermore, prospectors tend to be larger organizations. Analyzers also tend to implement AM approaches more than defenders. These results are consistent with the hypothesis that competitive strategy influences managers' decision to adopt an AM approach. SBUs with higher number of hierarchical levels are more likely to adopt ABC. The selection of an administrative innovation like ABC is facilitated in SBUs that have a higher level of vertical differentiation because this type of innovation is much more formal. Centralized and formal SBUs that adopted ABC tended to implement ABC while decentralized and informal organizations tended to stop at the AA or ACA level or finally decided to stop to implement an AM approach. The results show that when mechanistic SBUs make the decision to adopt an innovation such as ABC, they carry through with the overall process without stopping at an earlier level of AM like AA or ACA. Thus, the author suggests that ABC is adopted and implemented in bureaucracies. The authors did not elaborate if adopting AM at AA or ACA level will benefit the SBUs sufficiently that proceeding to ABC will not bring much additional benefits.

Surveys carried out by Innes et. al (2000) showed that the rate of ABC adoption and the pattern of ABC use by adopters have shown few changes between 1994 and 1999. Adoption of ABC has also remained significantly higher among larger companies and among those from the finance sector. However, the proportions of ABC users and of those currently assessing it have fallen, the percentage rejecting it has risen slightly, while a significant increase has been apparent in those currently giving no consideration to it. These results are indicative of no growth in the popularity of ABC. The survey results provide some

conflicting evidence on ABC user experiences. Although 17.5% of respondents claimed to be using ABC in 1999, almost half of them used it in only a few applicable parts of their organization, and several others had merely used it in pilot studies. Only 7.9% are left as reasonably extensive and committed users of ABC. This represents a reduction on the comparable 1994 figure of 9.7%. In addition, some of these users retained their original costing system and used ABC in parallel with it. These results reveal a somewhat tentative ABC implementation, which is not suggestive of a strong positive experience with the technique. To those who had considered and rejected it, and those who were still considering it, the potential complexity and cost were major deterrents to its adoption. Between 1987 and 1994 there was a considerable growth (from nil to over 20%) in ABC adoption in the U.K.'s largest companies. This rate of growth has not been maintained and, indeed, by 1999, some reduction in ABC use is apparent. Whether this marginal fall in adoption rate of ABC revealed in the 1000 survey represents a blip in an underlying growth trajectory or a precursor to a decline will require further research in the future to ascertain whether users remain loyal to ABC. Besides mentioning potential complexity and high cost of implementation, the authors did not elaborate on other potential reasons on the low and reducing rate of adoption of ABC in the U.K.

Cotton, Jackman and Brown (2003) reported that the overall success of ABC was rated on average and most of the respondents considered that the investment made in ABC had been financially beneficial to their organizations in NZ. The survey showed that the most significant variable related to the success of ABC in the UK and NZ was top management support. The participation by accountants in the design of an ABC system seemed not to contribute significantly to its success. ABC adoption rates were found to be similar, with NZ Companies showing slightly lower rates of implementation of ABC than UK companies. However, once they had implemented the method, NZ companies demonstrated greater commitment to ABC than UK companies. The degree of ABC adoption is different in the same industry sectors at NZ and UK. In other words, there is no direct relationship between industry sector and ABC adoption. NZ ABC systems are less complex than UK systems. The potential reason may be smaller size of NZ companies and the perceived benefits of an ABC system versus the resources required. The most common applications of ABC were cost reduction, pricing, performance measurement/improvement and cost modeling. Similar with survey from U.K., besides mentioning potential high cost of implementation, the authors did not elaborate on other potential reasons on the low and reducing rate of adoption of ABC in the NZ.

Factors Determining the Success or Failure of ABC Implementation

Argyris et al (1994) stated that the management of the change process focuses on overcoming barriers to implementation of the new ideas and practices like ABC. Typically the barriers that oppose and obstruct change are framed as resistance at individual, group, intergroup, and organizational level. The authors also pointed out that traditional explanation of resistance to change is too limited and needs to be extended. They described the series of processes required to implement an innovative technical initiative such as ABC beyond aligning the interests and incentives of participants. First, the technical theory must be

demonstrably valid. Its internal consistency and external validity should be established. Then, two additional processes must occur. The first one is an education and sponsorship process enables change advocates to explore and articulate the technical merits of the new proposal, and gain senior management support for acting in accordance with the articulated ideas. If this process is successful, the participants learn to understand the new ideas and believe that the ideas are valid and useful. The management will encourage the implementation of the new ideas. However, a successful education and sponsorship process is only a necessary, not a sufficient condition for the new ideas to be actually used to influence decisions in the organization. A second process to create internal commitment may be required to overcome the barriers to change from the defensive routines that participants trigger to protect themselves from experiencing embarrassment and threat from the new ideas. To overcome the barriers created by defensive routines, the second process must develop motivation for individuals to implement the new ideas and to take effective action based on their implications.

Shield (1995) stated many firms that implemented ABC are experiencing problems. An important reason is that the introduction of ABC in many firms has focused on the architectural and software design of ABC, with insufficient attention being given to behavioral and organizational factors involved. In many firms, ABC is treated as a technical innovation and not the administrative innovation. Seven behavioral and organizational variables are identified as being important to the implementation of ABC: (1) top management support; (2) linkage to competitive strategies, particularly quality and speed strategies; (3) linkage to performance evaluation and compensation; (4) sufficient internal resources; (5) training in designing, implementing and using the system; (6) non-accounting ownership; and (7) consensus about and clarity of the objectives of the cost management systems. The reason that these variables are important is that they determine what is important to employees and their preparedness to accept and work with innovation. ABC success will be increased when these behavioral and organizational variables are used in concert, as part of an integrated implementation strategy. The reason is that these variables have reinforcing and complementary roles in administrative innovations. The author also argues that the successful implementation of ABC does not depend on technical resources, such as whether software is used, whether the system is integrated with other accounting systems or stand alone, or whether external consultants are used. However, these technical resources can help increase the success of ABC if they are used in conjunction with and support the previously-identified behavioral and organizational variables. The author deemphasized the importance of technical resources but did not elaborate the reasons on his claims.

Rowe (1995) stated that a poorly-planned introduction of ABC can be as fruitless as the traditional cost management concept ABC was meant to revolutionize. Besides waste of time, effort and money, companies who failed to implement ABC will most likely revert back to traditional cost management and inevitably impair their competitiveness against other industry members who adopt ABC successfully. Rowe highlighted six lessons learnt from the experiences of companies in a variety of industries. The project team members should come from cross-section of the organization so that the implementation of ABC has buy-in across the entire organization. Support of senior management is critical to the success of ABC

implementation. All activities identified should be defined in the right level of detail. There is no set number that is 'right' for every company. A balance must always be struck between too much detail, which produces too many activities, and not enough detail, which produces too few. Cost objects should be identified appropriately. Cost objects are those key products or service outputs to which costs are attached. Cost objects should always be useful to customers rather than convenient or traditional for the organization. The ABC implementation should be subjected to its own activity analysis. If the total cost of the engagement exceeds the perceived benefits then the project should be either reconceived or abandoned. If the total cost is acceptable to management, then each person involved in the implementation can be apprised of each process cost within the project and accept responsibility for the budgeted cost and any overruns. Finally, companies should engage independent professional consultants to provide the necessary guidance and objectivity in the design and implementation of ABC. The author presented only the overview of the lessons learnt.

Kock, S. (1995) stated that ABC systems can be recommended for service firms wanting to analyze their costs for different services. Time studies have to be carried out to identify the actual time consumed by the activities carried out in producing services. Volume is initially the most preferable basis for distribution when the activities carried out are many and short. It is not cost effective to use ABC analysis if the costs for the used activities are too small, or the activities are too complex. Traditional cost calculations are therefore preferable. A very important issue when using ABC is that the information used in the analyses is correct. It is not profitable to trace costs to every activity. In the initial stage there is little or no need to start using computer follow-ups as in manufacturing firms. In manufacturing firms it is quite easy to use computer follow-ups of what activities a person carries out. For a service firm the costs of similar computer follow-ups would be higher than the expected benefits. If the results of the ABC implementation are good, and the personnel get used to working with ABC calculations, other bases than volume can be used. In the second stage it might also be useful for the service firm to start using ABC calculations that are computer-operated. Finally, it is also important that the management must not use all their time dealing with cost calculations and thereby forget to make more basic analyses concerning flexibility and customer orientation. A successful service firm must always focus on the customer's needs and wants and the customer's total perceived service quality. The service firm will reach profitability through satisfied customers, not by selling as many products as possible. It is not wise only to study the costs for producing different services and stop producing services with low profit margins. Even though the author highlighted that traditional cost analysis should be used under certain circumstances, the criteria for choose traditional vs. ABC is not clearly specified.

Foster et al (1997) stated that a growing body of research is analyzing the success of activity-based cost management and the determinants of that success. The authors examine the effect of using alternative approaches to measuring success in that research. They examine two approaches: (1) an a priori classification approach (use in decision making, actions taken with ABC information, dollar improvements and management evaluation as to overall success), and (2) a factor analysis approach. Their study found

that top three decision uses are: identifying opportunities for improvement, product management decisions, and driving process improvement decisions. Furthermore, operations managers and department managers use ABC information in their decisions more frequently than do line personnel. After implementing ABC, the areas with the greatest changes made were processes, pricing strategy, component parts and strategic focus. Three areas - product / service profitability, manufacturing / production, and overhead support are reported to have the most amount of dollar improvements resulting from the ABC site implementation. In term of management evaluation, ABC Champion group rank at the top, followed by senior management. Line personnel are perceived to have the lowest average success rating for ABC. The results show substantive support for at least five of the seven factors included in the Seven Cs model presented by Shields and Young (1989) as success determinants for ABC implementation -culture, controls, champion, change process, commitment, compensation and continuous education. Consistent with the prior literature, the authors find support for success determinants such as top management support, and the use of ABC data in performance evaluation/incentive systems. Two variables not included in prior studies-number of applications and time-in-use of application-individually are also significant in explaining success differences across ABC sites. The authors did not elaborate on the reasons on lack of support from the study for the two of the seven Cs as success determinants for ABC implementation.

Malmi (1997) stated that even though many firms have implemented ABC systems in recent years, many of these firms are experiencing difficulties with ABC. Recent literature on ABC implementation has argued that most implementation problems are neither attributable to technical flaws in ABC nor to the way ABC is applied, but to organizational issues, namely resistance. Economic rationale, political motives, and organization culture are all suggested to be related to the resistance to accounting change. It is widely acknowledged that managers have a number of informal ways of keeping themselves informed. When ABC systems provide basically the same information as management was able to derive from informal sources, there is little incentive to have the systems. Resistance to ABC can be caused by perception of extra work which will not bring the benefits to the level of organization that implements the systems. Furthermore, change in the accounting system potentially changes the distribution of power in an organization. The new system may expose inefficiency in the existing method of production in the organization and creates opportunities for the group management to exert direct control over the unit operation. Resistance to new systems can come from an organization which is dominated by engineering culture with accounting playing only a minor role. The resistance to a new accounting system seems to be fundamentally structural. Power distributions and organizational cultures are structural factors behind resistance. Task and information asymmetry inherent in decentralized organizations, coupled with cost / benefit responsibility as one potential structural source of resistance. Task and information asymmetry creates the need for both a diagnostic control system and various types of strategic calculus which serve the top management, but potentially have only a limited value at the local level. Cost / benefit responsibility provides negative incentives at the local level management. The divergent perspectives between managers at the top and at the local level determine the success or failure to implement ABC systems. The author focused only on the

economic, political and cultural factors that cause failures on ABC systems without exploring other factors which may also be critical to the success or failure of ABC systems.

McGowan et al (1997) examined employees' satisfaction as a measure of success of ABC implementation. The authors extend a model developed by Shields and Young (1989) to examine the correlation between preparers' and users' satisfaction with ABC implementation and behavioral, technical and situational variables describing the characteristics of the implementation and the ABC system. The results indicate that on average, the preparers and users of ABC information report moderately favorable satisfaction with the ABC system implementations. Top management support, the degree to which objectives are understood, the adequacy of training and training resources, and the linkage of the ABC system to performance evaluation criteria are significant correlates of satisfaction with ABC implementation. Additionally, this research corroborates the relevance of situational and technical variables, such as user involvement and information quality to the implementation of ABC. Individuals within the same organization may react differently to the implementation. The findings of this study have both practical and theoretical implications. First, future implementers of ABC systems should be attentive to the motivational effects of incentives and the process of influence in the organization. Further, managers who wish to maximize employees' satisfaction with ABC implementation may benefit from choosing implementation procedures that allow users to participate in the process. While the perceived need for goal congruence within the organization may not be an issue that the users and preparers in this study relate to ABC, the results indicate that the power of goal-related variables may be attributable to the effectiveness of the management information system in making goals clearer. It also is important for managers of future ABC implementations to note that while the quality of the information is very important, it is not the sole determinant of satisfaction. No matter how technically competent the system, its true potential will never be realized unless behavioral issues are effectively addressed. The authors did not elaborate what are the behavioral issues that need to be considered to enable successful implementation of ABC.

McGowan (1998) stated that there is a lack of empirical evidence to support the long and impressive list of benefits from the implementation of ABC. In this study, four major areas are considered: general attitudes toward the implementation process, technical characteristics of the ABC system, perceived usefulness of the system, and perceived organizational changes resulting from ABC implementation. Consistent with prior ABC implementation research, the results of this study indicate that, on average, individuals express moderately favorable attitudes toward ABC implementation. However, although the results show that the implementation of the ABC system has resulted in significantly more accurate, reliable, timely and understandable information than that produced by predecessor systems, they do not find ABC information to be more accessible. Further, respondents report that they find ABC useful in their jobs and that the implementation of ABC has had a significant positive impact on the organization. However, perceptions concerning changes in waste reduction, relationships and communication vary from site to site. It is interesting to note that responses concerning the impact of ABC implementation on relationships and communications across functions are less favorable at a site where the implementation

procedure required little involvement from personnel other than the implementation team. It also emphasizes the need to further examine the socio-technical implications of ABC implementation. Viewing the implementation of ABC as a change process in which various groups compete to increase their power and control may provide an alternative perspective for understanding the process and developing techniques to improve the effectiveness of ABC. The author did not elaborate on the results where there are inconsistent response from different sites.

Brewer (1998) stated that international cultural diversity had not been considered in previous studies on ABC implementation success or failure. Conventional wisdom in the ABC literature is that ABC success depends upon six components: top-level managers 'champion' the ABC project; adequate ABC training; cross-functional, team-oriented generalists who can exploit ABC's process orientation; decision-making by 'front-line' workers who have process knowledge; and a company and its employee adopting a long-term view of the ABC project. Cross-cultural research suggests that a company that relies upon top-level managers to champion an ABC initiative in a strong 'top-down' fashion will generate more defensive behavior in low-power-distance culture, thereby reducing ABC success relative to high-power-distance cultures. The second prediction was that employees from high-uncertainty-avoidance cultures will require more ABC training than employees from low-uncertainty-avoidance cultures. Thirdly, the cross-functional team based approach to work inherent in ABC systems will result in more defensive behavior in individualist cultures, thereby reducing ABC success relative to collectivist cultures where cross-functional teams cooperatively work as ingroups. The fourth prediction was activity-based team-oriented performance metrics will produce more defensive behavior in individualist cultures, thereby reducing ABC success relative to collectivist cultures, where cross-functional teams cooperatively work as ingroups. The fifth prediction was that distributing activity-based data access and decision-making rights to 'front-line' workers will produce more defensive behavior in high-power-distance cultures, thereby reducing ABC success relative to low-power-distance cultures. Lastly, ABC implementations, which inherently require a long-term perspective, are likely to generate more defensive behavior in low-Confucian-dynamism cultures and high-uncertainty-avoidance cultures, thereby reducing ABC success relative to high-Confucian-dynamism and low-uncertainty-avoidance cultures. The author did not mention whether he had considered the influence of corporate culture on employees when he carry out the study. Employees who worked for an extensive period of time in a MNC may be heavily influenced by the corporate culture, and thus confound the finding of this study.

Krumwiede (1998) investigated how certain contextual factors affect the pre-adoption and adoption stages of ABC and how various contextual and organizational factors affect the several implementation stages. The results show that different factors become important as higher stages of ABC implementation are reached. Among the contextual factors, the potential for cost distortions appears to be an important motivator in both the adoption and routinization of ABC. The usefulness of cost information, although not found to be a significant adoption factor, may affect a firm's motivation to integrate ABC with the existing financial system. Strong IT may encourage either rejecting or abandoning ABC, but it is also

integral in reaching the highest level of ABC implementation. ABC adoption is found to be much higher for non-job shop firms, presumably due to less task uncertainty. Finally, larger firms are consistently found to be more likely to adopt ABC than smaller firms. Among the organizational factors, top management support is found to be strongly linked to reaching the stages in which ABC is used routinely or integrated with the existing financial system. Reaching the highest stage of ABC implementation also appears related to non-accounting ownership and implementation training, confirming earlier studies. Firms abandoning ABC often do so because of lower top-management support, lower usefulness of cost information and higher quality information systems.

Drake, Haka and Ravenscroft (1999) investigate one of the important linkages suggested in survey research on ABC implementations - the linkage of the costing system and the incentive structure (Shields 1995; McGowan et al 1997). In this study, providing ABC information did not, in and of itself, consistently lead to increased innovation, efficiency or profits. However, when workers had both increased cost driver information (ABC) and higher incentives to cooperate (GRP), they initiated more cooperative innovations, had lower production costs and higher profits than any other examined combination of cost system and incentive structure. When detailed ABC cost knowledge was combined with a tournament incentive, workers engaged in innovations benefiting only themselves, and the production costs were higher and profits lower than in any other examined combination. The latter results illustrate Milgrom and Roberts' (1995,191) prediction that, "changing only a few of the system elements at a time to their optimal values may not come at all close to achieving all the benefits that are available through a fully coordinated move, and may even have negative payoffs." The results indicate that ABC workers with tournament incentives used the more detailed cost driver information to focus on individual innovations and create more output. The impact was higher cost per unit and lower firm profitability. While some researchers suggest tournaments lead to sabotage (Wruck and Jensen 1994; Nalebuff and Stiglitz 1983), the authors observed no overt attempts by individual workers to undermine the productivity of other workers. The authors did not elaborate on the type of tournaments behaviors that negatively impact product cost and firm profitability as well as methods to prevent these behaviors.

Anderson et al (1999) investigated the influence of contextual and process factors on ABC implementation. Managers' consideration of an innovation like ABC is motivated or constrained by circumstances in the firm's external and internal environment and by characteristics of the individual evaluating the innovation, i.e. contextual factors. Subsequent evaluations of the innovation are influenced by comparison between the innovation, the status quo, and alternative innovations, and by factors related to the innovation experience, e.g. process factors. They found that although the process of implementation clearly influences the outcomes of an ABC implementation, both the process and the outcomes are directly influenced by the contextual setting. Managers are more likely to support the ABC implementation process when good performance is viewed as likely to yield reward. Independent of involvement in the process, evaluators are also more likely to evaluate the ABC system positively in environment with high reward expectancy. Use of ABC data is influenced by a wider array of contextual and process variables, including:

top management and union support of the ABC project, adequacy of project resources, the respondent's commitment to the organization, the likelihood of layoffs, and the degree to which good performance is expected to be rewarded. For mature ABC systems, use depends on management support and the reward environment. For recent implementations, use is more closely tied to the ABC development team.

Abernethy, Lillis, Brownell and Carter (2002) provided insights into how product diversity, cost structure and Advance Manufacturing Technology (AMT) influence the design of costing systems. Analysis from the case data revealed that the relation between product diversity and costing systems was influenced by the way in which firms use their technology to manage product diversity. In other words product diversity was a necessary, but not sufficient condition for investment in sophisticated costing systems. Product diversity in itself does not generate a demand for hierarchical-based costing system. In firms where there are high levels of product diversity and an investment in AMT, the payoffs from implementing hierarchical costing systems will be minimal. As firms increase the range and number of products offered to customers, overhead costs will increase. These increases are likely to relate to increases in activities that vary either in relation to the number of batches produced or in relation to the number of product produced. In this situation, firms will benefit from an ABC system that distinguishes among unit-, batch- and product-level costs. This type of system will also assist in controlling costs, as it will identify the activities that result in increased expenditure on overheads. Based on the observations in this study, the authors concluded that the relation between product diversity and the design of costing systems is influenced by management's choice of the 'means' by which customer responsiveness will be implemented. If there is little or no investment in AMT, increases in product diversity will create demand for more sophisticated costing systems. On the other hand, firms investing in AMT are not as likely to require costing systems that are more sophisticated. Even though the authors explained how AMT reduces the overhead needed to support firms with high product diversity, and thus reduces the need for sophisticated costing systems such as ABC, they did not elaborate whether the simple costing system is sufficient for firms adopted AMT.

Cagwin and Bouwman (2002) pointed out that although ABC has found rapid and wide acceptance, there is significant diversity of opinions regarding the efficacy of ABC. They carried out a study to measure the financial performance improvement associated with ABC use and the conditions under which such improvement is achieved. Results show that positive synergies are obtained from concurrent use of ABC with other strategic business initiatives. When ABC is used concurrently with JIT, TQM, etc., firms have a net improvement in financial performance greater than that obtained from use of those strategic business initiatives without ABC. There is a positive association between ABC and improvement in ROI when ABC is implemented in complex and diverse firms, in environments where costs are relatively important, and when there are limited numbers of intra-company transactions to constrain benefits. Other enabling conditions such as information technology sophistication, absence of excess capacity, and a competitive environment affect the efficacy of ABC. Manufacturing firms may obtain greater benefits than non-manufacturing firms. Significant users tended to use ABC in several

applications, with cost reduction and product costing representing the highest uses. The authors did not elaborate why manufacturing firms may obtain greater benefits than non-manufacturing firms.

Anderson et al (2002) studied the relation between the process of designing ABC model and the adoption of ABC. Previous discussion on ABC have suggested that ABC models can be successfully implemented by a team of heterogeneous, skilled employees, trained in cost system design and provided with adequate computing resources. The authors tried to shed some light on how inputs influence team dynamics which in turn are related to cost system design decisions and the speed of project completion. They found a marginally significant relation between team and conflict resolution whereby as team size increased, the ability to resolve conflict increased. They found no support for positive relation between having an external consultant and the level of conflict resolution. Surprisingly, there was no support for a relationship between competition and the amount of ABC training and team size. They discovered that both the level of ABC training and the degree of competition affected task significance. In turn, task significance and the ability to resolve conflicts influenced team cohesion which ultimately was the major reason for time to develop the first ABC model. The implications of these findings are that ABC training not only has the obvious benefit of providing technical knowledge; it also influences how team members see the ABC model development task. Competition plays a similar role in affecting perceptions of the significance of the task at hand. There was a positive association between the presence of an ABC consultant and model complexity. They also found support for the relation between the degree of competition and model complexity. The most significant predictor of time to develop the first ABC model is team cohesion. Team cohesion and the commitment of the team to the task are critical factors for local management to develop for ABC teams.

Chenhall (2004) stated that while ABC has been increasingly adopted, there is evidence that promised gains were not realized for some organization. It appears that the main difficulties in adopting ABC derive from implementation issues rather than the technical design of the systems. The author conducted a study to examine the role of conflict in the implementation of ABC during early applications of the systems. It is argued that attention to ABC behavioral implementation enhance cognitive conflict that is then associated with successful ABC application, specifically the usefulness of ABC for product planning and cost management. Lack of attention to these factors generates affective conflict that is associated with less successful applications. Three ABC behavioral implementation factors were identified: top management support; clarity and consensus of objectives; and training. The results of the study support the idea that cognitive conflict is important in ensuring the usefulness of ABC, and training and clarity of objectives during implementation encourage cognitive conflict. The results of this study provide some support for the proposition that clarity of objectives has a role in ensuring benefits are received from ABC, and is significant in developing cognitive conflict. However, the results of the study show that lack of attention to ABC behavioral implementation factors did not generate the levels of tension that were predicted to result in increased affective conflict. It is possible that in some organizations accounting innovations are not a strong part of the information and decision culture. Consequently, they may be

ignored or tolerated in the early stage of implementation. Other aspects of the implementation not considered by the in this study may have been associated with affective conflict. It may also have been that the instrument used to measure affective conflict was not sufficiently sensitive in this study. This study is limited to three behavioral factors. More research is needed to explore other influences of other behavioral factors to success or failure of ABC.

Research Methodology

The topic gave a preliminary understanding on the level of adoption of ABC and the factors influencing the success or failure of ABC implementation. The information and data of the research project were gathered from various sources of secondary data. Sources of secondary data include journal articles published in magazines and downloaded from the Internet web sites including EBSCO Host Research Databases. The Internet search engine like Google also offered excellent search for locating on-line articles. Other references were also made on the research topic from various chapters of relevant accounting and financial text books. The research framework is developed in Figure 1 as below:

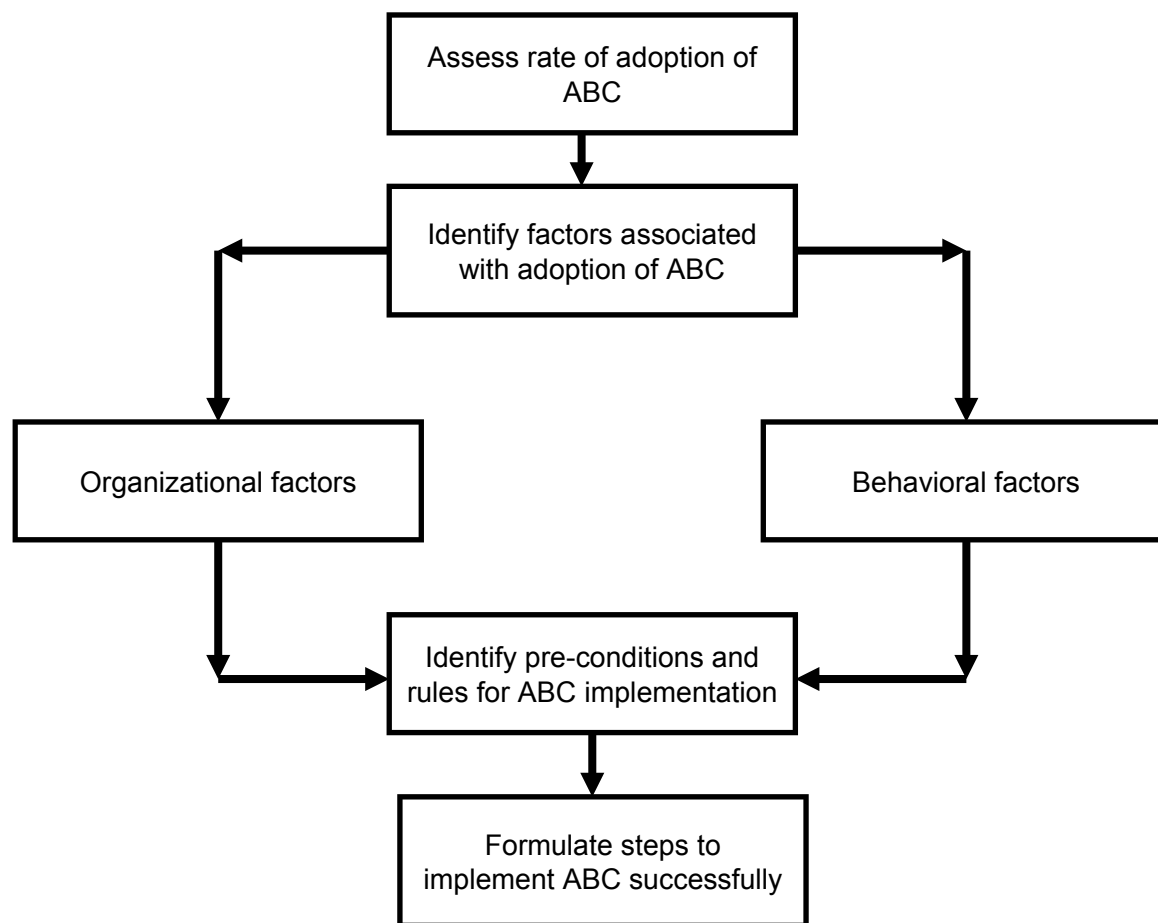


Figure 1: Research framework

Discussion, Analysis and Findings

Considerable effort has been devoted in the last two decades to the development of more sophisticated costing systems. The need to improve the accuracy of product costing information was driven by the changes in the competitive landscape as well as increased global competition (Cooper, 1988). Over the last 20 years there has been a shift in manufacturing priorities away from the production of a standardized product at low cost to strategic priorities focusing on responding to customers' demands for greater product diversity. These new competitive conditions challenged the validity of conventional costing systems. More specifically, it was argued that increasing product diversity introduced the risk of significant inaccuracies in product cost assignment using traditional costing approaches (Cooper & Kaplan, 1988). The limitations of traditional costing systems in this new manufacturing environment cannot be denied. Management accounting researchers have devoted considerable effort to addressing these limitations. Almost all attention has been devoted to studying activity-based costing (ABC) systems. These systems emerged as the generic solution to product costing distortions and consequently as a means of improving competitiveness through more informed pricing and product mix decisions (Kaplan, 1988; Cooper & Kaplan, 1988).

During the late 1980's and early 1990's, the ABC approach was implemented in a number of large manufacturing companies. Managers armed with the ABC system were able to reduce cost, identify opportunities for improvement, and determine a more profitable product mix (Cooper and Kaplan, 1991). The most improvement was reported on product costing and cost control efforts. Significant improvement was also reported on performance measurement systems. By providing more accurate product cost information, ABC was used to support strategic decisions such as product sourcing and pricing. ABC was also used to improve the accuracy of customer cost information, which supports customer profitability analysis. There was higher level of satisfaction with their cost management systems following the implementation of ABC (Swenson, 1995).

Results from the survey suggested that ABC was perceived to be significantly more favorable than old cost management system on accuracy, reliability, timeliness and understandability. Overall, ABC implementation has positive impact on the quality of work, control over work, ability to accomplish tasks quickly, support for critical aspects of the job, productivity, performance, ability to accomplish more work, and effectiveness on the job. Implementation of ABC was associated with significant improvement in the quality of decisions, waste reduction, innovation, quality of relationships across functions, communications across functions, and the overall focus on the goals of the entity. (McGowan, 1998)

Because of its perceived superiority, ABC was expected to gradually replace traditional costing methods. However, surveys results over the past ten years indicated relatively low rates of adoption of ABC. Survey evidence suggests that the adoption of ABC by firms is about 20 percent, although this is higher (up to 50 percent) in larger entities. Both the use of and interest in ABC has shown no increase. In fact, the proportion of ABC users and those considered its use have both fallen. ABC implementation appeared to be tentative and was considered as a 'pilot testing' in many firms. Majority of the companies

were still reluctant to adopt it as the sole costing system and use it in parallel with their previous costing system. In addition, it is apparent that many organizations have not gained promised benefits. It appears that while the technical characteristics of ABC are well understood, some organizations have difficulties in implementing the systems (Bjornenak, 1997; Krumwiede, 1998; Innes et al., 2000; Cotton et al., 2003).

The debate as to the efficacy of ABC system has taken a number of paths. One stream of literature has surveyed practice to examine empirically the antecedents of adoption and non-adoption (Bjornenak, 1997; Krumwiede, 1998). This literature is consistently unable to link ABC adoption with antecedents of adoption recognized in the literature such as product diversity, cost structure or use of advanced manufacturing technology (AMT). More recently, a second stream of literature has emerged examining the broader organizational contextual factors that influence both initial adoption and the extent of implementation of ABC (Cooper et al., 1992; Argyris et al., 1994; Shields, 1995; Malmi, 1997; Foster et al., 1997; McGowan et al., 1997; Krumwiede, 1998; Anderson et al., 1999). National culture differences are important factors on the process of ABC implementation (Brewer, 1998).

Behavioral and Organizational Factors Associated With Successful ABC Applications

Behavioral and organizational factors associated with successful applications of ABC include top management support, linkages to competitive strategy, adequacy of resources, non-accounting ownership, linkages to performance evaluation and compensation, implementing training, clarity of objectives, and number of purposes for ABC (Shields, 1995; Foster et al., 1997; McGowan et al., 1997; Innes et al., 2000; Cagwin et al., 2002). Technical characteristics of the system, such as the type of software adopted and the development of stand-alone system had no association with success (Shields, 1995). In addition, user involvement in the implementation, and their perceptions of the quality of information produced by the system, correlated positively with the degree of satisfaction with ABC implementation (McGowan et al., 1997). There is a positive association between ABC and improvement in ROI when ABC is implemented in complex and diverse firms, when used in environments where costs are relatively important, and when there are limited number of intra-company transactions (Cagwin et al., 2002).

For early stages of ABC applications, behavioral factors of importance were top management support, extent of applications, and years since adoption. For well-advanced stages, the role of non-accounting ownership, clarity, and consensus of objectives and training were important (Krumwiede, 1998). Behavioral factors associated with extent of use of the ABC for new applications were the reward environment, union support, commitment to change, adequate resources, and the likelihood of layoffs. For mature applications, top management and union support, and rewards were important (Anderson et al., 1999).

The reason that these factors are important is that they determine what is important to employees and their preparedness to accept and work with innovations. Top management support, linkage to competitive strategies, performance evaluation and compensation, and consensus about and clarity of objectives provide incentives for employees to attend to and use ABC information. Top management

support for ABC is crucial because they can focus resources, goals, and strategies on initiative they deem worthwhile, deny resources for initiatives they do not support, and provide political help needed to motivate or push aside individuals and coalitions who resist the change. Linkage to competitive strategy, performance evaluation and compensation are important to motivate and reward employees to appropriately focus on and use ABC information to improve their firm's competitive position and profits. Related, consensus about and clarity of the objectives of ABC among ABC designers and users are necessary to ensure that ABC systems and information are produced efficiently and are effectively used.

Training in designing, implementing and using ABC provides a mechanism for employees to understand and accept ABC as well as to feel comfortable with it. Since ABC information is intended to be used by a variety of employees for analysis and action, such training also is a good method for creating non-accounting ownership. Finally, sufficient internal resources are desirable so that employees do not believe that an ABC initiative is pressuring them to do more without adequate support. Resources should be provided that allow employees the opportunity to learn about ABC and to experiment with alternative designs and design methods.

User involvement in the implementation of ABC may promote the development of realistic expectations about the project and reduce resistance to the change. They may be better able to control important outcomes by confronting those in control of their needs and resolving differences constructively. This will lead to greater acceptance of ABC.

Corporate strategy and organizational structure do influence decision to adopt and implement ABC. Organizations that compete through innovation and product and market development tend to be more open to new techniques that enable their managers to improve process and information. As a result, prospector strategy is associated with the adoption of AM approaches (AA, ACA or ABC). Prospectors are usually more flexible organizations. Thus, they would prefer AA and ACA since there two levels require less time and effort and are less constraining than formal ABC.

Organizational structure influences the type of AM approach a firm selects. Mechanistic organizations give greater importance to formal systems while organic organizations favor informal systems. AA and ACA consist essentially of analyses of activities and their related costs. They are not formal accounting systems. ABC is much more formal. Therefore, mechanistic organizations were expected to select ABC while organic organizations would tend to select AA or ACA.

Organizational structure also appears to influence the implementation process. An administrative innovation like ABC would be easier to implement in mechanistic organizations. The implementation of technical innovations such as AA and ACA may be facilitated in organic organizations. In mechanistic organizations, when top managers have decided to commit themselves to a new system, they put forth all the resources available to ensure that the implementation will be a success and exert control on the implementation process. Among firms that adopted ABC, more centralized and more formal firms tend to implement ABC while the others prefer the AA and ACA levels (Gosselin, 1998).

Influence of national culture on activity-based costing systems implementation

The behavioral and organizational factors discussed above may trigger employee defensive routines and a lack of ABC system use if the influence of culture is overlooked (Brewer, 1998).

First, cross-cultural research suggests that the best way for a company to recruit champions and have the champions oversee an AC implementation may differ depending upon culture. High-power-distance cultures believe in the functionality of hierarchies. Subordinates are dependent upon their superiors and they abide by their superiors' directives. Low-power-distance cultures believe that inequality between people should be minimized. Disagreeing with your boss is an acceptable behavior and everyone is thought to have equal rights. Accordingly, seeking only top-level managers to champion an ABC initiative in a strong top-down fashion may hinder ABC success in low-power-distance cultures where subordinates are likely to become disgruntled if their input is not solicited. Conversely, seeking supporters or champions in a bottom-up fashion, or having top-level champions indirectly oversee a grassroots implementation makes more sense in low-power-distance cultures. In a high-power-distance cultures it could be regarded as a sign of poor leadership, and hence generate anxiety.

Second, the level of ABC training needed by employees may differ across cultures. In countries where uncertainty avoidance is strong, change is perceived as dangerous. However, in low-uncertainty-avoidance cultures, change is perceived as an opportunity. ABC training is not only used to educate employees, but also to reduce their feeling of being threatened. The task of 'reducing perceived threat' is greater for employees in high-uncertainty-avoidance cultures relative to low-uncertainty-avoidance cultures. While adequate training should be provided to everyone regardless of culture, the interpretation of how much training should be provided to satisfactorily minimize defensive behavior and enhance the chances of ABC success may differ across cultures.

Third, reaction to management accounting innovations such as ABC that inherently rely on team-based work arrangement is likely to differ across cultures. In individualist cultures, people are supposed to look after themselves. Individuals are primarily motivated by their own preferences, needs, rights and the contracts they have established with others. Group affiliations are secondary to self-interest and autonomy. In collectivist cultures, 'ingroups' are tightly bound, with each member putting the welfare of fellow group members above his or her own welfare. Ingroups are seen as the basic unit of survival and the need for group affiliation is high. Since ABC data span departmental boundaries, cross-functional work-groups are needed to identify cost-reduction opportunities that may not be apparent from a departmental perspective. In high-individualism cultures, where employees prefer autonomy and individual control, the lack of control inherent in ABC's team-based work orientation may be viewed as threatening and discomforting. Conversely, in collectivist cultures, if co-workers span departmental boundaries, ABC's team-based orientation would be consistent with cultural norms and would not be a source of threat or discomfort.

Fourth, the reaction to activity-based team-oriented performance metrics may differ across cultures. Team-based performance metrics may generate discomfort and defensiveness in individualist cultures where people are accustomed to autonomy and personal accountability. In collectivist cultures,

where team-based metrics are used to reward co-worker ingroups, subordinating individual goals to group goals would seem normal and non-threatening.

Fifth, distributing decision-making rights to front-line workers has cultural implications. In high-power-distance cultures, empowering front-line workers to use ABC data to make decisions is likely to generate anxiety from subordinates who prefer deferring decision-making rights to superiors. On the other hand, being held accountable for using ABC data to make empowered decisions would be viewed favorably in low-power-distance cultures, where subordinates prefer having the opportunity to provide input into the management process.

Sixth, there are cross-cultural implications associated with ABC's time orientation. It is noted that it often takes approximately 5 years for an ABC system to begin providing returns that exceed its start-up and maintenance costs. Employees from a high-Confusion-dynamism culture are more likely to expect returns from and formulate their opinions of ABC over the long-term. Accordingly, the 5-year payback period may appear reasonable in high-Confusion-dynamism cultures. Employees from low-Confusion-dynamism cultures will expect returns from ABC in the short-term. Loss of confidence and disinterest are likely to materialize if immediate pay-offs do not emerge from the new system. Furthermore, the high-uncertainty-avoidance dimension of culture may bear a relationship to ABC's time orientation. More specifically, high-uncertainty-avoidance cultures may be more uncomfortable with ABC systems, presuming that anxiety levels rise as the promised benefits of the system materialize further into the future.

Reasons for Not Adopting ABC

Companies rejected ABC on the basis of its perceived administrative and technical complexity and its need for new systems continuously generating activity data. While ABC model is feasible for initial pilot studies, it is difficult and costly to extend to company-wide applications. Even after the initial model has been built, updating the model requires essentially re-estimating through a new round of interviews and surveys to reflect changes in company's operations. Consequently, ABC models are often not maintained and their cost estimates soon become obsolete (Kaplan, 2003).

For those companies that were still considering to implement ABC, their concerns were also costly demands that ABC adoption on staff and other resources, the prioritization of other competing initiatives, the need to address difficult technical issues, such as the identification of cost drivers, and the need to provide accurate cost allocation, and behavioral problems, such as changing well-established practice and employee suspicion about the motives for using ABC. For those companies who had not considered ABC, the most common reasons given were its lack of relevance to their business, the existence of a cost management system that operated satisfactorily, the absence of the necessary expertise and resources to undertake an assessment and the lack of top management interest/support (Innes et al, 2000).

Economic rationale and political motives are suggested to be related to resistance to accounting change. Managers and other members in organizations have a number of informal ways of keeping themselves informed. These include interactions, observations and attending meetings. If ABC system

provides basically the same information as management was able to derive from informal sources, it seems that the new system did not serve the needs of the management. Consequently there was little incentive to maintain such a system. From the political perspective, accounting and control systems imply a distribution of power among those who design, use and are affected by others' use of ABC. As a change in the accounting system can potentially change the distribution of power in organization, it will be resisted. The new system could have negatively affected the position of a division of a group by making the economics of its operations visible. Such visibility creates opportunities for the group management to exert direct control over the unit operations.

Pre-conditions for Implementing ABC – Removal of Resistance

After gaining confidence about the ABC theory's internal consistency and external validity, the initial process requires three interdependent phases: education, sponsorship, and incentive alignment. The outcome from this process may reveal that previous decisions and actions (or inactions) were in error. Revelation of such error frequently produces organizational resistance and defensive behavior by individuals and groups who are embarrassed or threatened by the consequences of ABC.

Actions based on the ABC can be mandated by a senior line manager, so that the manager could claim that the organization is indeed using ABC. But if subordinates are implementing the concepts only because of the mandate from the senior manager, there will be less vigilance, learning, and continuous improvement in implementing ABC. As a consequence, the impact and persistence of the implementation will be lower than hoped for and expected. When managers implement ABC because of externally-generated incentives and authoritative mandates, they will hold the senior manager responsible for monitoring and maintaining the effectiveness of ABC.

As with any change process, when defensive routines at all levels of the organization become activated, the routines are systematically by-passed by all involved, and their by-pass of the defensive routines is itself systematically covered up. Furthermore, human beings appear to be systematically unaware of their own skilled incompetence when dealing with issues that are embarrassing or threatening. This systematic unawareness is protected by socially-sanctioned virtues of being realistic, caring, and acting diplomatically.

The usual approach for dealing with organizational resistance and defensive behavior requires the participants to agree to engage in a complex learning process designed to create awareness of how their "theories-in-use" conflict with their espoused theories. With technical theories, such as ABC, an alternative mechanism exists. The defensive behavior can be used productively as a basis for generating questions and tests about the theory's implications. This alternative mechanism requires advocates to be knowledgeable and skilled so they can pose questions and tests of the theory's assumptions, statements, and prescriptions. Through careful intervention, the advocates can attempt to engage doubting managers in productive discussions designed to generate tests of whether the technical theory can indeed lead to improved performance of the organization. The ability to provide valid and observable tests of the theory reduces the

likelihood that defensive routines will be activated to block ABC implementation.

How to Get Started To Implement ABC

ABC implementation needs senior managers in the organization to act as champion and sponsors. As most of the information used in ABC is non-financial, the entire organization must be involved in collecting it. Most successful applications involve a team of employees carrying out most of the work, with a management accountant providing analytical support. Employees themselves become accountable for results, not just to management, but more importantly, to themselves.

No matter how broad the company's intended scope, ABC should begin as a pilot project. The pilot project may be limited to a small portion of the business unit or it may include the entire organization. It is generally more effective to include more complexity rather than less, as the project will yield more substantive results for minimal implementation cost. It often takes less time and money to complete a single large project than a series of small projects. It is possible to obtain a broad view of the structure of the ABC system in advance. But as complexity comes out of the implementation, management and team members should be prepared to adapt and make changes.

Most teams include five or six individuals, each with a specific role, and a project or team leader with operation or marketing experience. The leader's primary function is to keep the team on track, apprise management of progress, and overcome obstacles. A financial analyst is usually assigned as a full-time team member to play the critical role of documenting proceedings and building the ABC model. It helps to have an operations team member available to assist the financial analyst throughout the project. Other team members include people from such functions as engineering, customer service, order processing, and affected administrative groups. Many organizations retain an outside consultant as a facilitator to train and guide managers and the implementation team throughout the process. All members should be middle-level individuals who are respected and knowledgeable.

Depending on the project's scope, most team members must commit about 40 percent of their time during the first half of the project (their direct involvement should be reduced substantially later). A pilot project takes between 8 and 16 weeks to implement. The schedule is influenced by the project's scope, availability of resources (team member time, cooperation from other employees), and the management priority/support.

Rules for ABC Development and Implementation

To develop an ABC system, there are three rules to examine the demands made by particular products on indirect resources. The first rule is to focus on expensive resources. This will lead to resource categories where ABC has the potential to make big differences in product costs. A company that makes industrial goods with a high ratio of factory costs to total costs should emphasize on tracking manufacturing overhead to products. A consumer goods producer should analyze its marketing, distribution, and service costs by product lines, channels, customers, and regions. High technology companies must study the demands made on engineering, product improvement, and process development resources by their different product lines. The second rule is to emphasize resources whose consumption

varies significantly by product and the third rule is to focus on resources whose demand patterns are uncorrelated with traditional allocation measures like direct labor processing time and materials. These efforts will identify resources with the greatest potential for distortion under traditional systems. They point to activities for which the usual surrogates – labor hours, material quantities, or machine hours – do not represent adequate measures of resource consumption.

Two types of costs should be excluded from ABC. First, the costs of excess or idle capacity should not be charged to individual products. They should be treated as a period cost. The second exclusion from ABC system is research and development for entirely new products. The R&D costs should be split into two categories: those that related to improvements and modifications of existing products and those that relate to entirely new products. The first category can and should be traced to the products that will benefit from the development effort. Otherwise, the costs will be spread to products than bear no relationship to the applied R&D program. The second category should be treated as investments in the future and over the life cycle of the products.

The process of tracing costs, first from resources to activities and then from activities to specific product, cannot be done with surgical precision. It is better to be basically correct with ABC to within 5% or 10% of the actual demands a product makes on organizational resources, than to precisely wrong (perhaps by as much as 200%) using outdated allocation techniques.

A company does not need to update the ABC system more than once a year unless it makes major changes in its process technology, product mix, or organizational structure. Decision regarding product introduction, abandonment, and pricing are strategic matters that should be based on the long-run marginal costs of each products.

Steps to Implement ABC

Most ABC applications take place in several clearly defined steps. The specific steps and terminology vary slightly depending on whether the team uses commercially available ABC software. Here is a basic nine-step implementation process:

Identify and assess ABC needs

The management accountant should begin by determining whether ABC will be viable in the organization. To do so, he or she must address a number of questions. How accurate is the existing cost system? If the system is inaccurate, what management decisions could be affected? What are the sources of inaccuracy? Are there many different processes by which goods or services are produced and customers served? Are those goods and services wide-ranging in types, volumes and customer requirements? Are managers aware of problems created by their existing cost system, and are they sufficiently concerned to want to correct the system and to assign resources to the task? What are the organization's key business issues and concerns, and what kind of information does it need to generate?

Training requirements

Training requirements are actually established in the previous step, when the management accountant begins to make others aware of the potential problems with the existing costing system. Other training options are more formal. Briefing or workshop sessions can be organized for senior managers. Introductory training in ABC concepts is often valuable for all employees, particularly in preparing for implementation. Implementation training is extremely useful for the team members assigned to the pilot project. Finally, ongoing application training based on the results of the analysis is necessary for employees to use the ABC information in changing operations and managing the business, using such tools as process re-engineering and performance measurement.

Define the project scope

This step requires management and the team to evaluate what is required and what is possible, within a reasonable time frame and with available resources. What mission and objectives have been set for the project? What organization structure, facilities, business units, and product or service elements will be included? What is the preferred schedule for the project? Which cost elements will be included or excluded?

Identify activities and drivers

This step is often accomplished by interviewing managers and supervisors (while some teams interview all staff, it is not necessary). If process maps already exist, some activity analysis has already been completed. Process maps usually require supplemental information, such as the number of people involved in an activity, the amount of time spent on each activity, and the resources (machines, buildings) required to support processes. In regulated industries, time studies have proven useful when treated with caution because of the limitation inherent in the sampling technique. Activity dictionaries may prove useful in providing definitions and interpreting activity analysis.

Identifying drivers is difficult only when ABC is conducted using the cost decomposition approach based on general ledger analysis. However, most operations-based analyses of drivers are straightforward. The key question is what drives a particular activity or process. Most people get into difficulty when they seek to identify drivers of cost. Cost is only an attribute of resources. In order to identify the driver, it is important to assess the physical resources and their application. The driver, not cost, is the cause, and activity is the effect.

Create a cost and operational flow diagram (schematic)

A cost and operational flow schematic diagram captures in flowchart-style how resources are used in performing activities, how activities form steps in processes, and how processes produce the organization's goods and services. This diagram creates the architectural blueprint of the ABC model. It also identifies how general ledger line items should be assigned in the model.

Collect data

Collect data where the cost and operational flow diagram identified operational relationships exist. These data include effort of people and machines, measured in units of time. Driver quantifies produced by each activity are measured to determine how much activity was performed in a given period and how it was consumed.

Build a software model, validate and reconcile.

Building a software model involves entering all data and relationships into a computer in order to calculate costs of drivers, activities, processes, products, services and other factors such as idle capacity. Data may include activity attributes, such as indicators for value-added and non-value-added or unit processing time. Attribute analysis, for example, permits the organization to examine how much money it spends on non-value-added activities or cost of quality. Obviously, it's important to ensure that all the data have been correctly entered, and that the model reconciles to the general ledger.

Interpret results and prepare management reports

Interpreting results and preparing management reports is the "make it or break it" step in the process. The team must spend enough time studying the outcome of the analysis in order to identify all significant management issues. Initial project objectives need to be addressed by reports, such as comparisons of profitability by product, customer or services as well as costs of processes. The team will often discover unexpected benefits. Presentations to managers and other individuals should be carefully stage-managed, as the data exposed are often controversial.

Integrate data collection and reporting

Integration of data collection and reporting follows the initial ABC pilot project, allowing management to use the analysis in the future. Some corporations have gone so far as to develop and implement activity-based budgeting with actual reporting comparisons. Systems integration can be manual, or through automated data base relationships, or a combination of both. For example, integrating the general ledger into an ABC system is highly desirable because of the amount of structured data that need to be organized and transferred. Automation for loading other data elements depends upon what systems already exist or can be created cost-effectively. A mechanism such as an Executive Information System (EIS) must be established in order to feed results back to functional ABC teams.

Ownership and accountability within the organization for every aspect of each step within each stage must be managed carefully. Properly structured steering committees, project teams, review meetings and project management practices are vital to the successful implementation of an activity-based cost management process.

Limitations

There are a few limitations from this study. First, even though the theoretical benefits of ABC are obvious, there is no empirical data on financial gain for adopters of ABC. Improvement in financial performance in these companies may be due to reasons or initiatives other than application of ABC. Second, the factors associated with success or failure of ABC discussed above is generic. The dominant factors affecting the success or failure of ABC implementation may vary from one organization to another.

Conclusions

Despite its perceived technical validity, ABC has not been widely adopted since its introduction in 1980s. In fact, the proportions of ABC users have fallen and the percentage of organizations rejecting it has risen slightly and an increasing percentage of companies are not considering about it. For those organizations that have adopted ABC, the majority of them are using it tentatively. At a theoretical level, a strong consensus exists that ABC is superior to more traditional methods of calculating product costs and managing process costs. However, at a practical level, many firms are unsuccessful in attempting to implement and sustain ABC systems.

Success with ABC primarily depends on top management support, linkages of ABC to competitive strategy, linkages of ABC to performance evaluation and compensation, adequacy of resources, non-accounting ownership, training, and clarity of objectives. Technical characteristics of the system are not significant determinants of success. In addition, user involvement in the implementation, and their perceptions of the quality of information produced by the system, correlated positively with the degree of satisfaction with ABC implementation. The degree of importance of these behavioral and organizational factors to success of ABC is different at the different stages of ABC implementation.

Attention should be given on how to alter ABC implementation strategies to fit certain cultural contexts. Approach to champion an ABC implementation should be tailored to specific cultural context. In high-power-distance cultures, high-level champions may need to drive the implementation process. In low-power-distance cultures, high-level champions may need to be accompanied by a decentralized core of champions, thereby minimizing the autocratic presence of the ABC implementation. In high-uncertainty-avoidance cultures, more attention needs to be directed toward training employees and establishing guidelines. Low-uncertainty-avoidance cultures may need less training and, more importantly, less specific procedural guidance on managing the implementation. In low-Confusion-dynamism cultures, the ABC implementation process may need to focus on educating employees on the importance of adopting both a long-term shareholder value perspective and long-term performance metrics.

The perceived administrative and technical complexity is the main reason for companies to reject ABC. It is costly to continuously generating activity data to maintain ABC model. While ABC model is feasible for initial pilot studies, it is difficult and costly to scale to company-wide applications. For those companies who had not considered ABC, the most common reasons were its lack of relevance to their

business, the existence of a cost management system that operated satisfactorily, the absence of the necessary expertise and resources to undertake an assessment and the lack of top management interest.

A complex learning process can be used to remove organizational resistance and defensive behavior towards adoption of ABC. Through careful intervention, the advocates of ABC can attempt to engage doubting managers in productive discussions designed to generate tests of whether the technical theory of ABC can indeed lead to improved performance of the organization. The ability to provide valid and observable tests of the theory reduces the likelihood that defensive routines will be activated to block ABC implementation.

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