

Applications and Relevance of Activity Based Costing

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Abstract: *As students of commerce, we have been dealing with the costing systems and their application in India. The domain knowledge of Costing Systems will help us gain insight into practices of Indian corporate sector for measuring and reporting performance of cost accounting. Despite of advancement in information technology and decision support systems, Indian firms predominantly use traditional costing systems like Absorption Costing and Standard Costing for performance management. This has resulted into inaccurate reporting of costs to management and thereby has resulted in lacunas in managerial control especially with respect to financial aspects. As an alternative, modern costing techniques such as 'Activity Based Costing (ABC)' provide a definite solution to this problem of inaccurate cost management. ABC has been successfully adopted by many multinational companies across the world. Unfortunately in last 20 years there has been a very slow progress in adoption of ABC in India. The rationale of this study is to identify financial performance and justification to adoption of ABC. This research will explore areas of concerns for Indian firms in their approach towards ABC as an organizational performance management tool. The significance of the study can be stated as it will bring out prospects, issues, performance and problems of adopting ABC in Indian context. This should help us in gaining knowledge about key factors that decide success of new costing system and the contributions it can make to the value of the company.*

I. Introduction

In the present scenario of fierce competition, galloping quality standards and price wars for customer attraction, the costing of products or services has become an important success issue in today's business world. Companies are zealous to make their product more competitive and affordable. Cost leadership is an effective strategy to maintain competitive advantage, as suggested by Porter (1985), and can even decide the corporate success or failure (Panda, 1999). In such a cost driven global market, the costing system is a strategic rather than an operational issue. All these strategies depend on the fundamental objective about information on the cost that would be incurred in manufacturing/selling the product. Therefore, consideration of all these dimensions especially in the fierce competition regime is important to know about the different costs or cost involved in manufacture of the product and cost involved in selling the product. This information has to be very accurate for taking scientific decisions. In the past also, the information about cost was important. In view of the importance of this vital information, different cost concepts and costing techniques were developed at different intervals of industrialization.

Global Competition has become critical to almost all the business firms in the world. In order that the firms compete with organizations in global place, lowering of labour and manufacturing overhead cost is prime. The margins have become thin and, therefore, companies can no longer afford to make mistakes in decisions that impact product mix, price quotes, capital investment, technology, outsourcing, and make or buy decisions because of bad numbers from their accounting system (Cokins, 2002). This essentially requires that decision makers must fine tune their accounting processes and make every effort to understand the cause-and-effect relationships within their companies.

Brimson and Antos (1994) define cost management is the management and control of activities to determine an accurate service cost, improve business processes, eliminate waste (non-value added activities), identify cost drivers, plan operations, and set enterprise strategies. The accuracy of cost information is, therefore, strategically, important to the organization.

Johnson & Kaplan (1987)'s publication of the book titled 'Relevance Lost' brought revolution in the history of the management accounting. The then management accounting systems failed to provide relevant information for product costing and performance evaluation in the time of 'rapid technological change', 'fierce competition', and 'information processing revolution'. The pre-war cost accounting systems were designed to meet the financial reporting and tax planning needs. They failed to provide information for managerial decision-making and control purposes.

Drucker (1992) argued that accounting systems should provide answers about their businesses, markets, customers, and environment to 'information literate' manager. Thus, the role of a management accountant expanded in multiple dimensions. They were not just to collect the cost information as accurately as possible but also analyze the utility of the cost information for taking vital managerial decisions. This new

paradigm of management accounting called for certain additional skills of the management accountants. Anastas (1997) discussed the changes required in the skill set of the management accountants in view of the "Project Millennium: Customers & Future Markets... Looking Ahead to 2007".

Vries, W.T. de and M. Pholbud (2009) argue that to remain competitive and keep budgets in balance, "geographic information organisations" need to streamline operations, eliminate waste, reduce cycle time, reduce costs, adopt a commitment to total quality, and judiciously incorporate advanced technologies, such as scanning of documents, electronic data interchange, and paperless offices.

Managers seeking to succeed in this environment are turning to their management accounting systems for new types of information.

The conventional costing systems allocate fixed cost differently. It has been empirically argued by most of the researchers that ABC is more suitable for medium to long-range planning and flexible margin costing is more suitable for short to medium range planning. In traditional cost accounting systems, direct materials and labor are the only costs that can be traced directly to the product. By using the ABC system, activities can be classified as value-added and non-value-added activities. In order to improve performance of the system, non-value-added can be eliminated (Akyolet. aI, 2005).

Therefore, cost accounting systems have greater flexibility in allocating and dealing with both variable and fixed costs. Traditional approaches have proved inadequate for today's global and technological environment (Cooper and Kaplan, 1991).

As a result, the Activity-based Costing (ABC) technique has emerged in recent years to provide managers with more accurate cost information.

The present study plans to identify activity-based cost management practices in corporate India. Further, it investigates whether the corporate India uses contemporary cost management tools in the value chain analytic framework. The results of the study done on Indian Companies about the use of the costing systems are presented.

II. Review Of Literature

Boris Popesko, Utilization of Activity-Based Costing System in Manufacturing Industries – Methodology, Benefits and Limitations (February, 2010)

The subject matter of the paper is the detailed consequences of applying an Activity-Based Costing system and its structure within the manufacturing industry.

It defines steps within ABC application, as well as analyzing the input and output information and data required for effective utilization of the system. The relationship between cost allocation methodology and application procedures is also determined within this work, thereby describing all the features necessary for effective ABC implementation. The results published in the paper come from research projects over a 3-year timeframe focused on the methodology of implementing an Activity-Based Costing system and its resultant influence on the efficiency of manufacturing businesses. The author has conducted a number of ABC system applications in manufacturing industries in order to gather the data and information necessary to define application and allocation principles. The paper reveals two final outcomes. The first of these determines the methodology of building an ABC system, looking at the essential steps necessary to construct a system in an organization. The other describes cost allocation methodology, which is performed within separate stages of implementation. The major part of paper is dedicated to explaining the methodological steps within ABC implantation. An effectively implemented Activity-Based Costing system then provides accurate product costing and proves a useful aid for managing business operations. In the final part of paper, the results are discussed according to the all features of ABC application in the manufacturing industry.

Cardos, Iidiko, Reka, An analysis of ABC(2007)

The traditional methods of cost failed to comply the complex business structure of multinational corporations. ABC system has emerged to meet the need for accurate information about the cost of resources demands by the individual products, service and customer. Activity-based costing has attracted high levels of interest from both academics and practitioners since its emergence in the late 1980's (Bjornenak & Falconer, 2002). In the late 1990's and early 2000's Bjornenak and Falconer conducted a study about the development of ABC/M journal literature between 1987 and 2000. Through their study, Bjornenak and Falconer, tried to investigate the significance of the ABC literature, how ABC has developed, how information on ABC has been obtained, analyze the role the articles played in the communication structures and diffusion of ABC. They argue that the reasons for adopting ABC are Cost reduction, improving the internal production processes, more accurate cost information about products and services, more accurate allocation of indirect costs, improving cost and management control, improve customer profitability analysis and modernization of cost accounting systems. Callaway Mark, Jacobs Glenn, contingency research in ABC (2009)

The current research will adopt Contingency theory and organizational theory to develop the research framework.

Contingency theory has been widely adopted to conduct research in management accounting field. ABC can be more successfully implemented in mechanistic organizations. Centralization and formation will be treated as indicators for organizational structure in current research.

Organizational culture still produces significant on ABC success, as Skinner pointed out uncaring culture leads to the failure of ABC. Baird used outcome orientation, team orientation, attention to detail, as well as innovation to examine the relationship between activity management success and organizational culture. And the current study also will adopt those dimensions. As for ABC success, the current study will adopt McGowan's definition. McGowan used four perspectives to measure

Activity-Based Costing Management, namely users' attitude, technical characteristics rating, perceived usefulness in improving job performance and impact on organizational process. This measure subsequently adapted by Byrne to test ABC success implementation in Australian context. In their research, they stressed that McGowan's definition provides the most robust measure, hence the current study will also apply McGowan's definition as the indicators as ABC success.

Cooper & Kaplan, Activity based competition (1997 & 1998)

In this study, the authors have argued that operational control and activity-based cost systems are two separate systems as they have different purpose and different requirements for accuracy, timeliness, and aggregation. Any attempt to integrate the both be made with utmost care otherwise it would perform neither function well. The operational learning & control system provides economic feedback about process efficiencies by using actual & highly accurate data on continual basis in respect of each responsibility center. They emphasize on short-term fixed and variable costs and the cost centers that are expenses actually recorded in the financial system. The authors identify product, customer, and business-unit profitability are the objectives of the activity-based cost systems which use standard cost data based on standard cost driver rates and practical capacity of organizational resources and updates it periodically for the entire value chain. They conclude well-designed integrated cost management system will help the management of company to identify opportunities for continuous improvement and point out unused capacity or capacity constraints, if any and will facilitate the introduction of activity-based budgeting in the organization. They finally infer that the activity based budgeting mindset makes all cost variable and attempts to match resource supply to resource demand.

Dean Hubbard, Quality, Cost, and Value-Added in Comprehensive Institutions of Higher Education: Toward New, Testable Approaches (1998-2002)

In this study, the author describes the application and utility of activity based costing to educational sector units like schools and universities. They propose that the higher education community needs to be more analytical and systemic in its understanding of costs and their relationship to quality. In their study they attempt to develop a model of costing through correlating quality and costing that enables education sector units to differentiate students' novelty value in relation to the unit and the courses. Their thesis is that the outcome of such model will be an uncommon attention to course design, course sequencing, collaboration within and across disciplines, strategies to improve efficiency, and short cycles of formative evaluation. They also believe that the process will result in similar dynamics in student and support services. In other words, their goal is to design a process that will kindle a thoughtful discussion about what cost-effective quality is in a comprehensive institution nationally.

Douglas Cagwin, Marinus J. Bouwman, The Association Between Activity-Based Costing And Improvement In Financial Performance (2000)

This paper investigated the improvement in financial performance that is associated with ABC use and the enabling conditions, including concurrent use with other initiatives, under which benefits are obtained. Information regarding initiative use was collected from a sample of 204 firm business units. Confirmatory factor analysis and structural equation modelling (SEM) were used to test a model hypothesizing the conditions under which there is a positive association between a composite measure of the use of ABC and change in financial performance. Control was provided for the moderating effects of concurrent use of other initiatives and enabling conditions derived from prior research.

The first finding was that positive synergies are obtained from concurrent use of initiatives with ABC. This finding is consistent with statements by researchers that management accounting systems are meant to be efficient in supporting firms' operational effectiveness (Granlund and Lukka 1998; Cooper 1996; Porter 1996; Granlund 1997). A primary purpose of initiatives is to improve this effectiveness and ABC is contributing in this regard. The second finding provided evidence supporting previous analytical and theoretical research regarding the conditions favorable to obtaining benefits from ABC. There is a positive association between ABC and improvement in ROI when 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. These positive findings regarding ABC are of particular interest to practicing and academic accountants because they are often the primary proponents and administrators of ABC. Finally, there was some evidence that previously used measures of ABC success, satisfaction with ABC, and financial benefit obtained from ABC

(Shields 1995; Swenson 1995; Krumwiede 1996, 1998) are predictors of improvement in financial performance. This finding is an important step toward completing the link between identification of the conditions affecting the success of ABC implementation, to documentation of ABC's efficacy as a profit-enhancing tool.

Finley Gary, *Approaches to activity based costing-long term competition perspective*(2009)

In this study the author found that the firms facing a high level of competition and having a diverse product mix are more likely to benefit from precise cost information and introduction of activity-based cost systems, with an added caution that the activity-based costing system introduction initiative itself should be cost effective. He further observed that many companies used single cost systems to meet three diverse needs, namely, inventory valuation and financial reporting, product/ service/customer costing and providing 'operational feedback to frontline employees' in the plant. However, he apprehended that, in a complex manufacturing environment with 'product and process diversities' and 'concern for excellence', the single cost system might not suffice for all the three needs.

Fei and Isa "Factors Influencing Activity-Based Costing Success: A Research Framework" (2005)

In today's advanced manufacturing and competitive environment, accurate costing information is crucial for all the kinds of businesses, such as manufacturing firms, merchandizing firms, and service firms. Argued to be superior to the traditional volume-based costing system, Activity-Based Costing system (ABC) has increasingly attracted the attention of practitioners and researchers alike as one of the strategic tools to aid managers for better decision making. The benefits of ABC system and its impacts on companies' performance have motivated numerous empirical studies on ABC system and it is considered as one of the most-researched management accounting areas in developed countries. Previous research on ABC have examined pertinent issues related to ABC implementation such as the levels of ABC adoption in various countries, the reasons for implementing ABC, the problems related to ABC and the critical success factors influencing ABC. This paper reviews the research on ABC carried out within the last decade, from 1995-2008, and from the review research gaps are identified. Specifically, this paper examines the selection of factors influencing successful ABC implementation, variables used by previous research and the definitions and operationalization of the variables. The review reveals that past research concentrated mainly on behavioural, organizational, and technical variables as the main determinants of ABC success but very little research have been done to examine the roles of organizational culture and structure. Based on the research gaps identified, a research framework for future research is provided.

G.L Sharma and P.K.Sharma, *Activity Based Costing: Strategic Implications for Indian Companies* (2010) In the present scenario of cut-throat competition, both on price and quality, increasing consumer demands and product differentiation, the traditional costing system has become obsolete and even have led to strategic failures in many organizations when various costs especially the overheads, are incorrectly allocated to product lines. In this paper, the authors trace the historical development of concepts and techniques of cost accounting that have shifted the attention of management practitioners toward alternative methods of costs allocation. Exploring the past, current, and future trends of cost accounting in Indian companies, the paper highlights the distinctive features of Activity-based costing vis-a-vis conventional costing methods and the Activity-based costing implementation process. It shows that Activity-based costing is a definite improvement over the traditional methods on the premise that the costs are collected on the basis of activities rather than products and it can effectively contribute to the top managerial decision-making process. The paper examines feasibility of hybrid methods of costing and its use by Indian companies. Finally, it establishes that in spite of superiority of Activity based costing over other costing methods, awareness about it and its implementation is still low in India as compared to the developed countries.

John Innes, Falconer Mitchell and Donald Sinclair, *Activity-based costing in the U.K.'s largest companies* :(1999-2009)

This paper reviews the results of two U.K. surveys of activity-based costing (ABC) in the U.K.'s largest companies. These provide an opportunity to assess the changes that have occurred in the ABC adoption status of companies over a recent 5-year period. For the ABC users, some comparative information is provided on the nature of the ABC systems in use, their designers, the uses to which they have been put and the levels of success and importance that participants attribute to them. For the non-users, the reasons for their lack of commitment to ABC are explored. This paper provides some empirical evidence of current general trends in the practical consideration, adoption and use of ABC. It was conducted in January and February 1999 and involved two mailings. In summary, adoption positions on ABC have not changed significantly over the period either in total or by sector. Firms in the financial sector and larger firms continue to have higher adoption rates.

Thus, 'committed' ABC users, i.e. those using it as their sole costing system in most or all applicable areas of the business, remained low in 1999, but did exhibit a small increase on 1994. Although small changes are apparent in the popularity ranking, cost reduction, pricing, performance measurement/improvement and cost modelling remain the most common applications, with over 60% use by the adopters. These results are

indicative of no growth in the popularity of ABC, and are consistent with both a levelling off in interest in it and the adoption of it over this 5-year period.

J. Michalska and Szewiecsek, Improvement of the quality management by Activity based costing (2006)

This analysis permits to detect in the enterprise the places, where are carried costs, which do not have the influence on the effectiveness and quality of the whole enterprise, "identification of places where the enlargement of outlays can significantly raise effectiveness". Activity Based Costing has special usage on calculation of real cost of individual products. The realization of ABC permits on very detailed acquaintances with costs of undertaken activity in a company.

In the research, ABC technique has been applied on a coal mine in the Silesian region. It helps in dividing all the activities into 18 basic activities, having direct and indirect influence on extraction of raw material.

Jtikainen; TarjaRoivainen; MirvaHyvärinen; JuhaniToivonen; TimoKarri, Activity-Based Costing Process of a Day-Surgery Unit – from Cost Accounting to Comprehensive Management (2005)

This research paper points out the changes that had taken place during the activity-based accounting process in the day-surgery unit of South Carelia Central Hospital in 2003-2005. The benefits and advantages that have come true because of the ABC-process are clarified.

These include both numerical and managerial results. Also the problems connected to this process are discussed. This paper describes the two-pronged ABC-process and gives evidence about the outcomes that this process has had so far. The basic structure of the two-pronged activity-based costing process was used as the theoretical framework of the study. It includes the cost view and the process view (Turney, 1991). The aim of this study was to find out whether the cost views can be handled first, followed by the process phase. The separation of these views does not harm the process but it can give additional benefits. This research studied the various activities of a hospital like surgeries, recovery and those of anaesthesiologists. It identified suitable cost drivers and the various processes involved.

It then allocated costs, first on the basis of the various activities and then on the basis of the principles of activity based costing. The researchers concluded that allocation of costs on the latter basis led to a much appropriate allocation of costs and thus laid stress on the integral and the activities that generated the most of the cost in the hospital leading to a realisation that the activities which led to approximately 80% of the total cost was given by only 20% of the total activities of the organisation i.e. surgery.

Levesque Paul, Wight Donald "The Association between Activity-Based Costing And Improvement In Financial Performance." (2002)

This study investigates the improvement in financial performance that is associated with the use of Activity-Based Costing (ABC). Internal auditors furnish information regarding company financial performance, extent of ABC usage, and enabling conditions that have been identified in the literature as affecting ABC efficacy. Confirmatory factor analysis and structural equation modelling are used to investigate if, and under what conditions the use of ABC is associated with improved financial performance. Results show that there indeed is a positive association between ABC and improvement in ROI when ABC is used concurrently with other strategic initiatives, when implemented in complex and diverse firms, when used in environments where costs are relatively important, and when there are limited numbers of intra-company transactions. In addition, measures of success of ABC used in prior research appear to be predictors of improvement in financial performance.

Manoj Anand, B. S. Sahay&SubhashishSaha, Activity-Based Cost Management Practices in India: An Empirical Study(2006)

The study plans to identify activity-based cost management practices incorporate India. Further, it investigates whether corporate India uses contemporary cost management tools in the value chain analytic framework. It highlights the evolution of ABC and the various issues in its implementation in the industry. It also throws light on the varied applications of ABC costing in the various spheres of the business activities. It also says about the success of the existing cost management practices and the management's motivation for change. It then further delves into the relationship between the usage of ABC costing and the firm's value through a nationwide management survey. The universe for the present study consisted of the 500 private sector companies and 75 most valuable PSUs. Since the subsidiaries of multinational corporations (MNCs) form a major constituent of the Indian Corporate sector, an effort was made to get responses from this segment also. There is observed a significant positive correlation between the size variable and the operating profits variable both in case of the sample and the population. There is no significant positive correlation between the size and the profitability ratios. There is a negative correlation between the debt to equity ratio and the return on capital employed.

Mervyn Cohen, Donald Hawas, Gary Mcphee, Robert Fallon, Activity based cost analysis: A method of analyzing the financial and operating performance of academic radiology departments (2004)

The aim of the project was to develop a methodology for an activity-based cost (ABC) analysis in an academic radiology department, to test the hypothesis that the business of academic radiology can be separated into three distinct businesses—clinical activity, teaching, and research—and to determine the effect of the current teaching paradigm on clinical productivity. Forty-seven key departmental activities were defined and distributed among the teaching, research, and clinical businesses. All departmental revenue and costs were assigned to each activity in each of the three businesses. The methodology provided a successful understanding of the relative costs of each of the businesses of teaching, research, and clinical activity. It also provided the departmental costs of performing the separate activities typical of each business. Key findings included the following: Faculty spends 72% of time in clinical activities, research is the most expensive service per direct activity hour, and clinical reads (23%) are the single largest departmental cost element.

Nitza Geri a and Boaz Ronen b, Why ABC,

As an effective alternative for improved decision making, this article suggests the global decision making (GDM) methodology, which uses the measurements profile and the CUT diagram to support decision-making processes and to ensure that actions must have a cost system for financial reporting, decision-making decentralization, price aim at increasing the organization's value. The article proposes a "light ABC" system for organizations that already have an ABC base, which will provide them supporting, relevant and focused data. In order to implement GDM, an organization needs to change its decision-making process and its performance measurements, a step that requires the understanding and total commitment of top management.

Whereas most papers deal with organizations that decided to try ABC/M as a substitute for traditional costing, this paper uniquely describes an organization that practiced ABC/M for seven years before deciding to move to GDM. It confirms that though a case study is naturally limited to its specific circumstances the demonstrated inability of ABC to provide relevant information for strategic decision-making is general.

It also demonstrates that organizations deciding to implement GDM should consider developing systems which focus on measuring relevant data for global decision-making, which are not usually found in traditional costing systems. Organisations must have a cost system for financial reporting, decision-making decentralization, price justification, control and performance measurement.

Since Activity-based costing/management(ABC/M) requires more effort without delivering better results, most organizations hold on to their traditional cost systems.

Peter B.B. Turney, An Emerging Foundation for Performance Management (2009)

This article answers the questions about evolution of ABC, its scope and its role now by examining the evolution of ABC in the context of a product life cycle. It summarizes the history of ABC according to the phases of its life cycle, highlights its expanding functionality over time, and details the lessons learned from two decades of use. It concludes with a description of the current state of ABC as a key input and value added to performance management systems. It talks about the ABC hype cycle which is a graphic representation of the maturity, adoption and business application of a technology. It reflects differences in human attitudes to the technology as knowledge increases and risk decreases over its development and deployment cycle. What results from this exercise is that the evolution of ABC is not unique. In fact, it is remarkably similar to the life cycle of other technologies, including the achievement of two milestones typically reached by only mature and successful technologies. First, the performance of ABC has increased over time reflecting ongoing research and development, cumulative learning from application of the method, and enhancements in systems technology. Second, the behavioural response to ABC has progressed from user enthusiasm, through disillusionment, to eventual acceptance of the technology's relevance to business success.

Rey Callaway, Activity-based costing: An emerging foundation for control (2008)

The study explores the ABC life cycle: there are six phases showing the journey of the technical progress from a point where it was new, till today, where it has a theoretical framework and widely used all over the world. It has explained how the use of various stages of the life cycles of ABC could be of the use of the organization and the organization can use these stages for the purpose of better allocation of cost to various activities.

Roztocki, Valenzuela, Porter, Monk and Needy, "A Procedure for Smooth Implementation of Activity Based Costing in Small Companies." (2006)

This paper describes a procedure that allows small companies to smoothly switch from a traditional costing system to an Activity Based Costing system at low risk and with minimal investment. The paper focuses on any type of small company (less than 100 employees) for which the standard implementation of Activity Based Costing is too expensive and complex. The implementation guide leads a company step-by-step through Cooper's two-stage activity based cost system model. The complete implementation procedure consists of eight major steps. At first, decision-makers choose among three methods, educated guess, systematic appraisal, or actual data collection, for obtaining cost information. At this stage, the decision-makers determine the level of accuracy that is needed and the amount of money to be assigned to this project. Next, the overhead expenses such as administration, rent, utilities, and transportation are compiled into product cost information using newly

developed matrices. Using these matrices, cost related calculations are simplified and thus the overhead costs are easily traced to the cost objects in the final step. The easy-of-use of the proposed procedure is illustrated using actual data from a small tool & die manufacturing company.

Sualp Omer, Urkmez David Stockton, Reza, Activity based costing for Maritime enterprises (2005)

This paper is concerned with the development of an Activity Based Costing (ABC) system for use by SMEs in the shipping industry in Turkey. It reports on the application on an Artificial Neural Network in ABC/ABM with the intention of determining costs more accurately.

Several companies were included in a preliminary phase which led to the development of a questionnaire. The results are promising, clearly showing that network can reliably be used to predict the cost of each activity in building a vessel and also forecast the time taken for each of these activities. Similar experiments were carried out for the four ships.

The results obtained were used in the construction of the two new vessels. The research work is continuing and is expected the work would lead to improved data gathering system enhancing the quality of the data. In parallel the neural network developed as part of this research programme is being incorporated into a knowledge-based-system with a view to improve the quality and reliability of forecasted activity costs and activity time as well as ability to predict lead-times and project management of ships built in the future.

Importance Of The Study

As students of commerce, we have been dealing with the costing systems and their application in India. The domain knowledge of Costing Systems will help us gain insight into practices of Indian corporate sector for measuring and reporting performance of cost accounting. Despite of advancement in information technology and decision support systems, Indian firms predominantly use traditional costing systems like Absorption Costing and Standard Costing for performance management. This has resulted into inaccurate reporting of costs to management and thereby has resulted in lacunas in managerial control especially with respect to financial aspects. As an alternative, modern costing techniques such as 'Activity Based Costing (ABC)' provide a definite solution to this problem of inaccurate cost management. ABC has been successfully adopted by many multinational companies across the world. Unfortunately in last 20 years there has been a very slow progress in adoption of ABC in India. The rationale of this study is to identify financial performance and justification to adoption of ABC. This research will explore areas of concerns for Indian firms in their approach towards ABC as an organizational performance management tool. The significance of the study can be stated as it will bring out prospects, issues, performance and problems of adopting ABC in Indian context. This should help us in gaining knowledge about key factors that decide success of new costing system and the contributions it can make to the value of the company.

Statement Of The Problem

This study will cover large and mid-sized multinational Indian companies and will exclude small companies. This study will be restricted to companies whose turnover exceeds 50 million rupees. Prominence will be placed on companies based in Delhi region. Small organizations do not adopt ABC as the process of implementation is very expensive. Moreover overhead cost may not form a significant proportion of total cost of these firms. One of the limitations of this study will be that since it will be a research using secondary data, the beliefs of the respondents will not necessarily capture the true action that eventually takes place in future. One of reasons for such a dichotomy can be technological limitations in adoption of new costing system in any company. It will be a perception based research and the results will be empirically tested using appropriate tests.

Objective And Scope Of The Study

The project is made with the intent of addressing the following objectives and issues related therein:

To determine how Activity based costing is applied in Indian companies.

To determine the impact of ABC analysis on the performance management of the manufacturing conglomerates.

To determine the application of activity based costing in small scale business.

To determine the cost-benefit analysis of ABC.

Hypotheses

The activity-based cost and performance management systems are required for accurate cost and profit analysis, when the organizations have high overhead cost and diversity in their processes and products. It is expected that only large and mid-size companies with these characteristics will implement contemporary cost and performance management systems.

III. Research Methodology

Management history and financial data of various companies will be analyzed regarding the concerned areas and for data analysis, the firm will be classified based on sector, whether they have adopted activity based costing or not, the extent to which they have adopted activity based costing and the degree to which activity based costing is integrated in the organization. Further Microsoft excel tools will be used to analyse the data for the respective objectives.

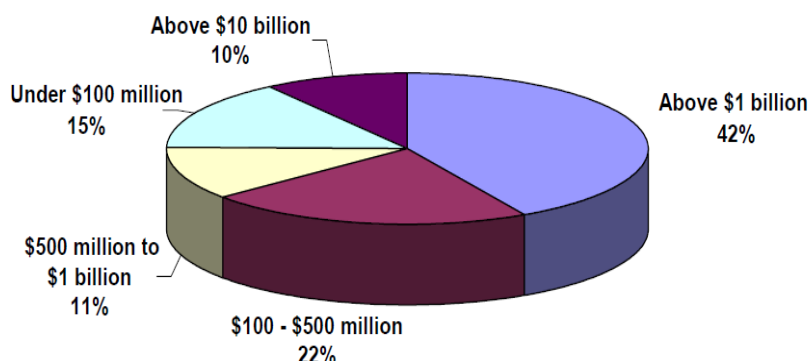
The data employed would be secondary data obtained through existing sources. Statistical methods of tabulation and analysis would be applied to the data so obtained.

IV. Results And Discussion

For the purpose of our study, the sample size consisted of 50 companies in the primary data which belonged to the various sector in the Indian economy. These were global conglomerates manufacturing in the range of 25-100 products and were selected on their market performance in the period 2009-2011. The companies chosen were from a variety of industries. The manufacturing industry had the highest representation with 24%, followed by financial services at 18%, public sector at 16%, and communications at 8%. Other industries accounted for less than 5% each.

For the purpose of the study, small companies will be defined as companies having turnover between 50-100 million rupees, midsized business as companies having 100-1000 million rupees and large MNC as having turnover exceeding 1000 million. The respective weightage of these companies are as follows.

Figure 1: Use Of Abc

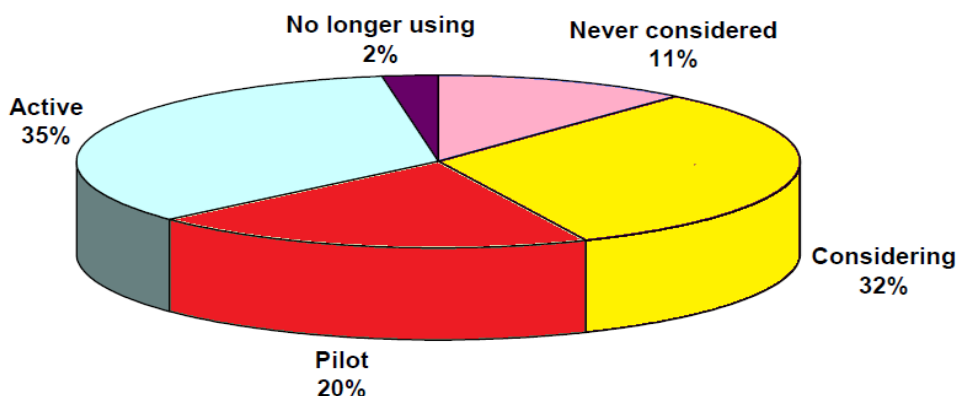


V. Research Findings

The extensive research sought to fulfill the project objectives in an objective manner. Using the data available from 50 companies, the researches findings are presented in relation to the corresponding objectives: To determine how Activity based costing is applied in Indian companies.

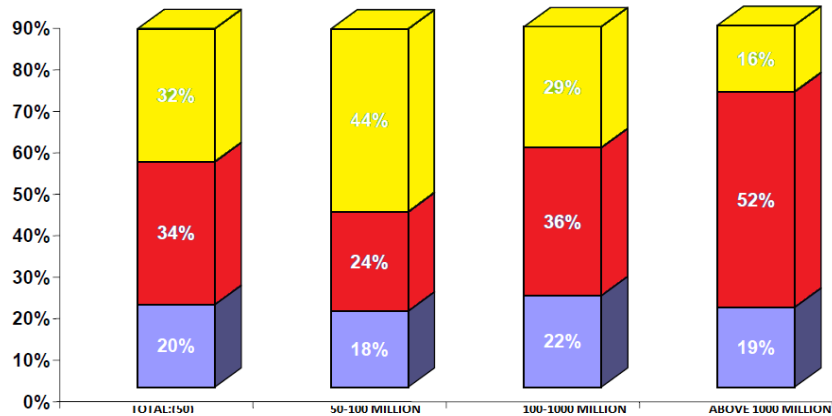
Research findings show that over half of the respondents (55%) indicated that their companies are currently using Activity Based Costing either actively or in a pilot project, with another third (32%) considering use. Only one in ten (11%) hasnot considered use of ABC. A very small portion of companies (2%) are no longer using Activity Based Costing.

Figure 2: Decision To Use Abc



The research findings also show that the use of Activity Based Costing increases with company size. While only 42% of small businesses are using or piloting Activity Based Costing, 58% of mid-sized and 71% of enterprises use some form of ABC. Overall, roughly nine in ten companies of all sizes are spending money on ABC or considering it.

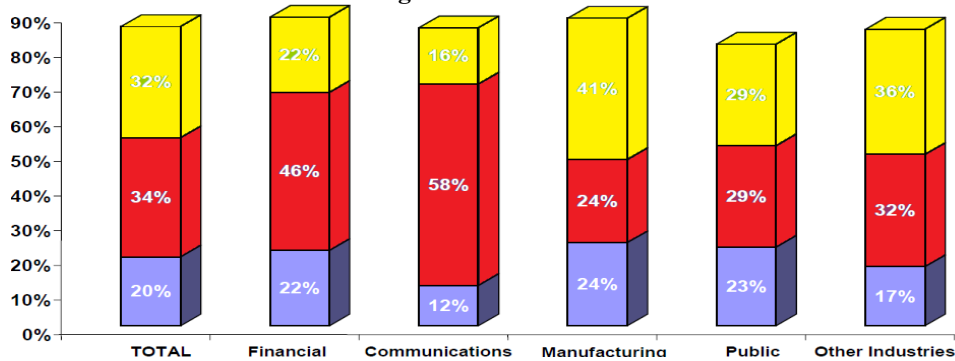
Figure 3: Correlation Between Company Size And Use Of Abc



Use of Activity Based Costing also varies by industry. Communications and financial services entities are much more likely than other industries to have active Activity Based Costing programs in place. Manufacturing companies seem to be lagging behind others in their adoption of ABC, with equal proportions in pilot phase and active (24% each). However, many in this industry appear to be in the market for Activity Based Costing, and a strong percentage is considering it (41%).

Firms in the public sector appear to be somewhat more tentative. While 52% are currently observed using some form of ABC, 19% of the public sector organizations are not considering ABC and are apparently not in the market.

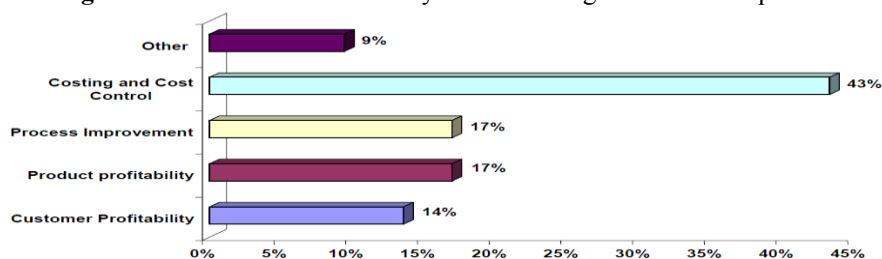
Figure 4: Sector Wise Use Of

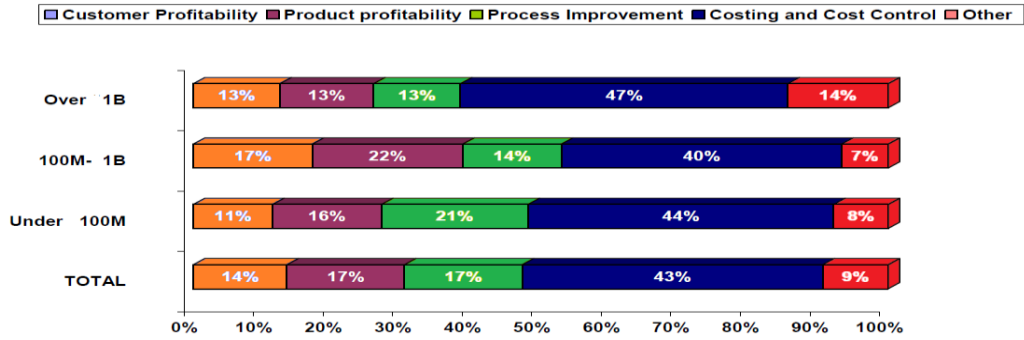


Primary Uses Of Activity Based Costing In Indian Companies

As per the research findings, the primary use of ABC among just over four in ten companies (43%) is costing and cost control. Fairly equal percentages use Activity Based Costing primarily for process improvement (17%), product profitability (17%) or customer profitability (14%).

Figures 5 And 6: Uses Of Activity Based Costing In Indian Companies

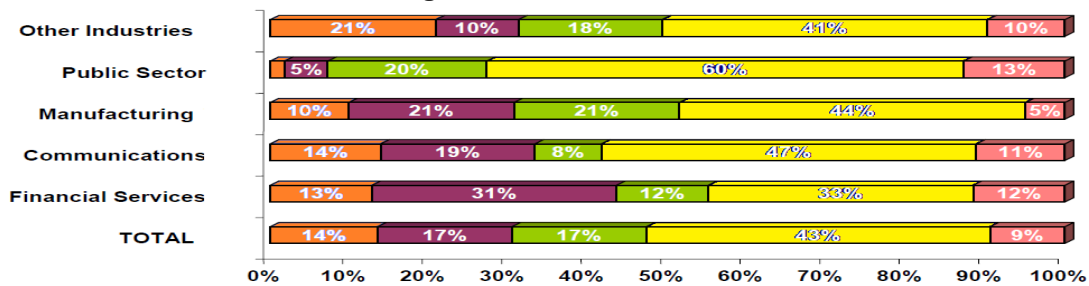




The research revealed some slight differences in primary uses of ABC by company size. Costing and cost control were observed as more used than any other use despite company revenue. However, also observed was higher portion (22%) of midsized businesses than other sized businesses use of ABC for product profitability as the primary use. Smaller businesses are more likely than their larger counterparts to use Activity Based Costing primarily for process improvement (21%).

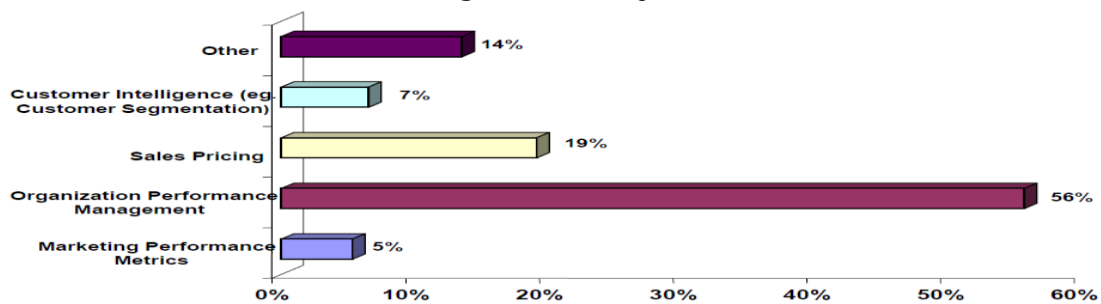
Primary use of Activity Based Costing differs widely by industry. In the public sector, the key focus is on costing and cost control (60%) and, expected, no emphasis on profitability. Among manufacturing firms, the chief use of ABC is costing and cost control at 44%, but process improvement and product profitability are the main uses by equal numbers (21%). Among communications firms, process improvement is less of a focus than it is for other industries (8%). The two primary uses in the financial services industry are costing and cost control (33%), and, not surprisingly, product profitability(31%).

Figure 7: Sectoral Use Of Abc

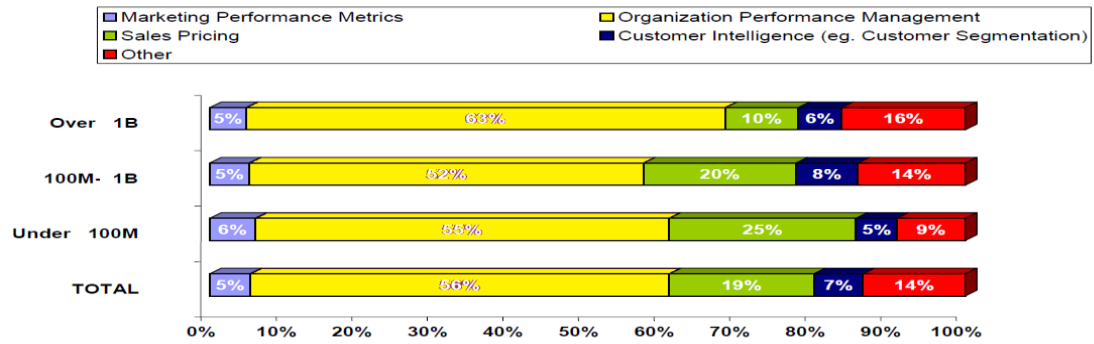


The research sought to find what their ABC outputs currently support for one specific purpose. It was found that in six in ten companies that their ABC output supports organization performance management, which correlates with the use of ABC for costing and cost control. In one in five companies (19%) was found that the output supports sales pricing. Further in fewer companies it was found that the primary output supported was customer intelligence or marketing performance metrics (7% and 5%respectively)

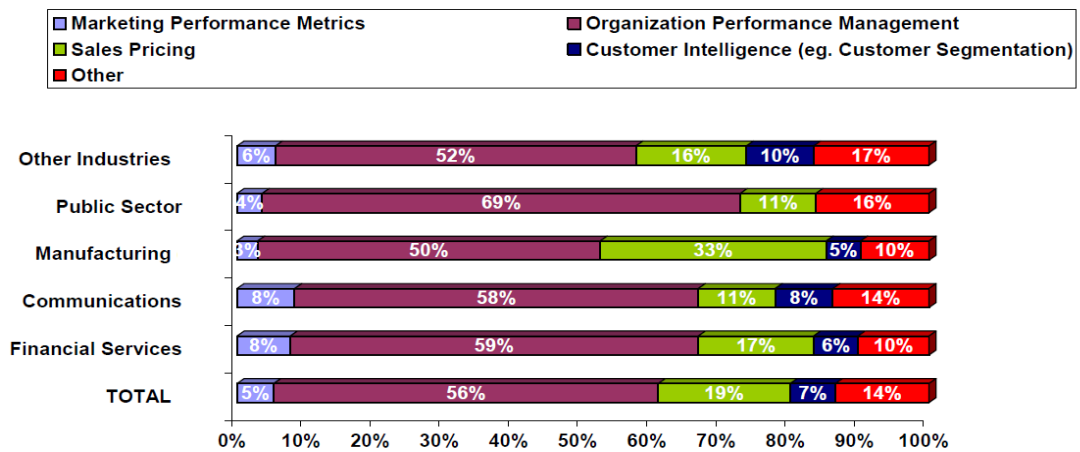
Figure 8: Abc Output



Across company size, the biggest difference in the primary output supported by Activity Based Costing is in the large sized businesses. Organization performance management is the primary output supported among more large businesses (63%) than midsized or small entities, and sales pricing output is the primary output supported among fewer of these businesses (10%).

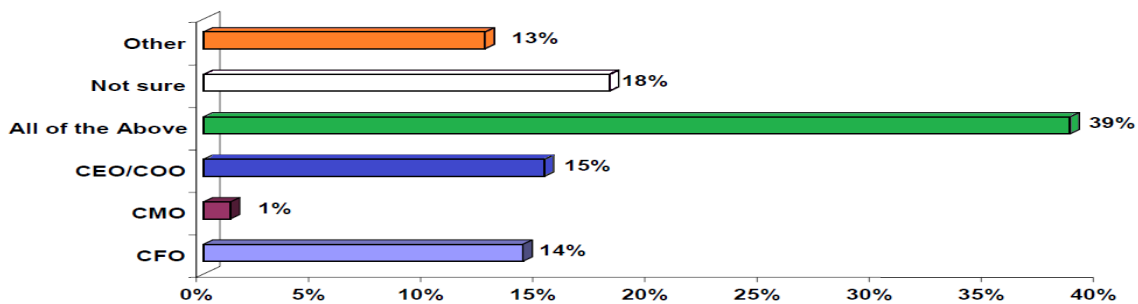


Across industries, the biggest differences in primary outputs supported are in the public sector arena and manufacturing. Organization performance management in the public sector is the primary output supported by a larger percentage than in other industries (69%), while sales pricing was less frequently observed as the primary output supported among this group. Conversely, only 50% of the manufacturing companies were observed as using organization performance management as the primary output supported, while sales pricing was significantly higher (33%) among this industries versus others.



Use Of Activity Based Costing To Make Decisions

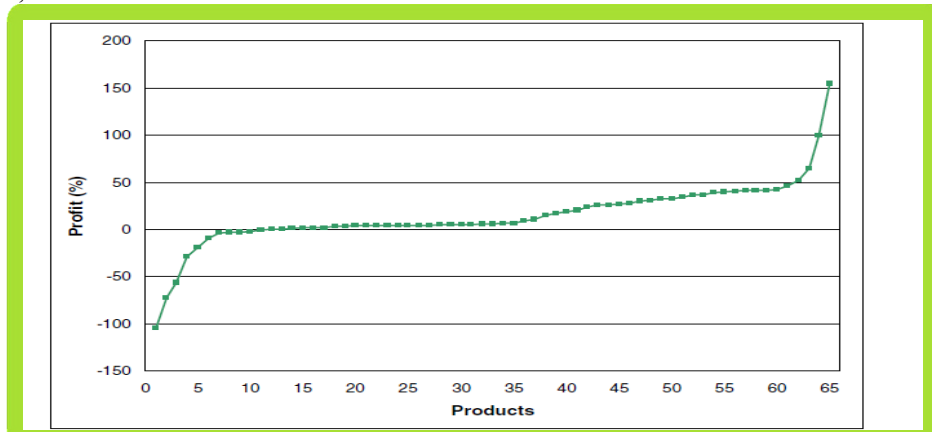
In four out of ten (39%) businesses represented in this research, it appears that all C-level managers rely on the information from ABC. The CEO or COO is the primary user of the information among 15%, followed by the CFO at 14%, and a very small reporting of the CMO at 1%. Interestingly, 18% of the companies did not know who relies on ABC to make decisions, and 13% report others.



To Determine The Impact Of Abc Analysis On The Performance Management Of The Industrial Conglomerates.

The study revealed that initially the manufacturing companies believed all of their products to be profitable but with the adoption of Activity-Based Costing Technique, it was found out that 25% of the products manufactured by the conglomerates were unprofitable and another 40% were at breakeven. ABC helped the company develop a new focus on profitable markets and customers prune unprofitable products, redesign products to remove cost, and eliminate non-value added activities. This new focus transformed profitability from “worst in class” to “best in class”.

The trend of the study can be represented in the form of graphical curve which is an inverted S-shaped curve, thus called as, the ABC S- Curve.

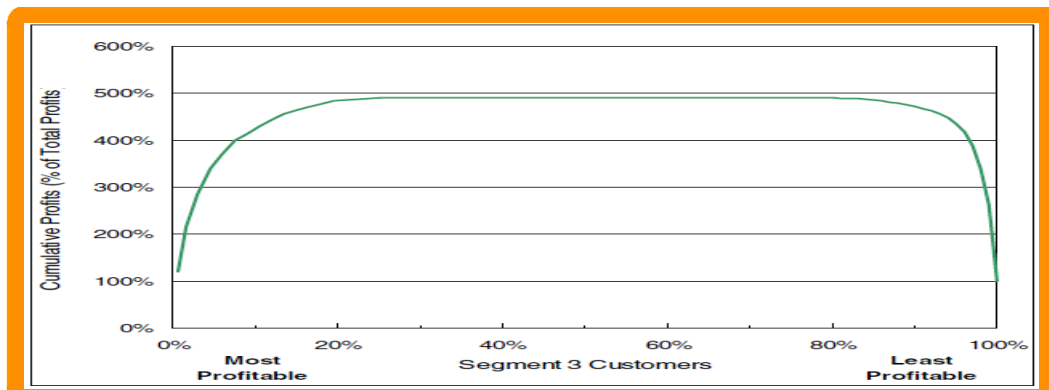


The ABC S-Curve

The study learnt from this period that the value of ABC was its ability to drive change. Early versions of ABC were designed to improve the accuracy of product cost using high level cost pools and cost drivers.

Early ABC implementations were focused on correcting the errors in overhead allocation to products inherent in cost accounting systems. With continued development, however, it was clear that ABC was applicable to areas outside the scope of cost accounting. These areas included administration, sales, marketing, research and development, supply chain, and logistics. The figure shows the impact on profitability from cost-to-serve activities supporting customers using ABC Analysis.

The study was based on understanding the impact upon profitability of the company by using ABC analysis where the company provides after-sale service activities to customers.



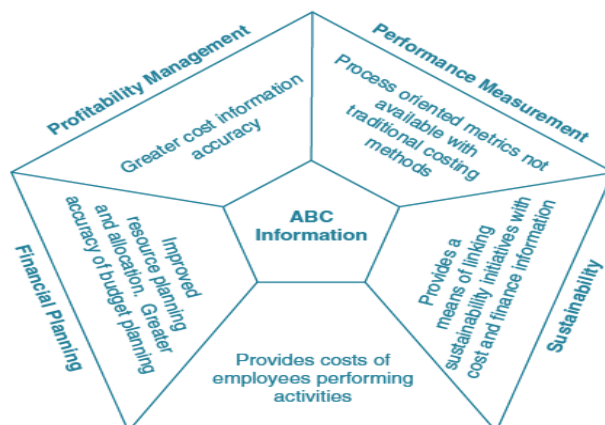
In this example, approx. 20% of the customer base takes profits to almost 500% of what gets finally reported. This figure goes flat for the next 60% suggesting them merely breakeven on cost. The final 20% destroy profit by 400% to arrive at the final figure reported in the income statement. The other interesting observation is that a single customer accounts for 120% of profit.

With this kind of insight, managers are better able to segment customers and adapt process and pricing strategies to deliver more equitable returns – even if that means “firing” the final 20% by increasing price to a point where they churn. A key lesson from this analysis could be that your best customer, based on revenue, could be your worst. Traditional accounting completely hides this kind of information.

Thus, overall the ABC analysis revealed that in a batch of 150 companies the ABC technique received a thumbs-up in the following genres:

S.No	Particulars	% of companies in favour
1	More accurate cost information for product costing and pricing	71%
2	Improved cost control and management	66%
3	Improved insight into cost drivers	58%
4	Better performance measures	46%
5	More accurate customer profitability analysis	25%

Therefore, the overall conclusion with respect to impact of adoption and implementation of Activity-Based Costing Technique on performance management of the companies can be well presented using the following diagram.



This latest iteration in the ABC Analysis is where the full potential of ABC is finally realized. Viewed correctly over 20 years ago as a tool of value, it has taken continuous development, learning and improvements in ABC software and enhancements in systems to solidify ABC’s place at the centre of performance management.

Specific Case Study

G. E. Mustafa (GEM) is a small company with Rs 0.5 million annual turnover. It employs about 20 people and is located in Kanpur, India. The main products of GEM are four types of machines (viz. sander, splitter, shaper and foiler) for the picture framing industry.

They produce machines in standard specifications and according to customers’ requirements. The company manufactures only 22% of parts of the machine in-house and purchases 78% of parts from subcontractors and suppliers. The assembly of all these parts is the main activity of the company.

Information provided by an ABC system is used to find the opportunities of improvement in organization at the activity level. The total cost of a four-head foiler is:

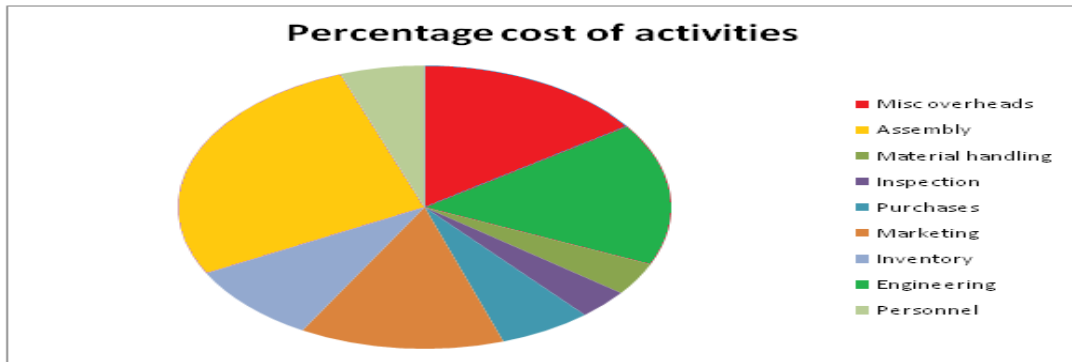
Activity	Cost Driver	Cost Driver Rate	Cost Driver Volume	Cost
Assembly	Labour Hours	10.81	82 hr	886.42
Material Handling	No. of movements	0.2	1020 movements	204
Inspection	No. of inspections	0.41	450 inspections	184.50
Purchasing	No. of orders	20.65	16 orders	330.40
Marketing	No. of products	729.06	1 product	729.06
Inventory Stock	Stock value	0.307	1600 units	491.20
Engineering support	Staff hours	18.5	80hrs	1480
Personal	Labour hours	0.64	470 hrs	300.80
Misc.Overheads	Labour hours	1.6	520 hrs	832
Manufactured Parts				1306
Direct material				9773
Total cost				16518.3

ABC provides detailed information about the company and its activities. This detailed information can be used by the management to initiate improvements and decision-making. The percentage cost of all activities is shown. This shows that engineering support activities carry 22.21% of the total cost of all activities. In the traditional costing system, there is no such information available on this.

Activities, e.g. marketing, personnel and purchasing do not add value to the product, but these are necessary and cannot be eliminated. Therefore, there are three non-value-added activities, viz. inspection, material handling and inventory. These activities can be eliminated without deterioration of product attributes, e.g. quality, performance and function.

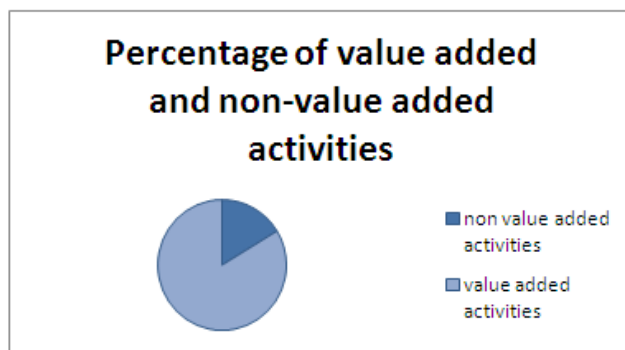
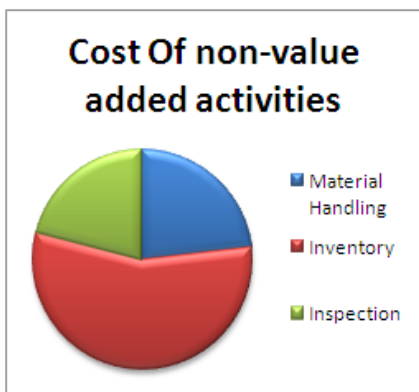
It may not be possible to eliminate or reduce all non value-adding activities at the same time. The key is then to focus on the critical activities which form a major portion of the total cost. The inventory carrying cost is 55.81% of the total cost of non value-added activities. Therefore, activities related to carrying inventory should be eliminated first. The cost driver for inventory carrying activity is the value of stock. The company should not maintain any stock in order to eliminate related activities. This could be possible by the introduction of just-in-time purchasing. At the same time, the cost of purchasing should be closely monitored. The

purchasing department will place more purchasing orders to maintain the minimum stock level. Similarly, the cost of maintaining quality in processes should be considered in eliminating the inspection activity.



Compare Activities With Benchmarking

All activities related to the manufacturing of a four head foiler should be compared to similar activities in other companies or within the organization. Benchmarking should be carried out for both value added and non-value-added activities because value added-activities include non-value-added tasks.



Performance Measurements

From the analysis of activities, the value-added and non-value-added activities are clearly identified. In GEM, the inventory carrying activity is the major non-value added activity which should be eliminated. However, it is difficult because the purchasing cost of the present system will increase as the company places more purchased orders with the objective to reduce inventories. Therefore, it indicates that the purchasing activity should also improve. The comparison of this purchasing activity with the best practice indicates the scope for improvements. ABM uses ABC information to motivate the people in improving and monitoring the performance of their activities.

VI. Recommendations

ABC provides accurate cost information and ABM uses this information to initiate improvements. ABC systems produce a large amount of information that is used by the ABM. The analysis of activities to identify value-added and non-value-added activities and benchmarking at the activity level direct improvement efforts in the right direction.

In this paper, an attempt has been made to study the application of ABM in a small company. The benefits of ABC and ABM can only be achieved if it is applied for the whole organization. Therefore, GEM should use activity-based analysis to identify non-value-added activities (e.g. inventory carrying, material handling and inspection) , and then try to eliminate these activities by using the number of available management methods and techniques. Also, there are possibilities to improve value-added activities. The cost driver of activities should be used to measure the performance of activities.

VII. Conclusion

Like most technologies, ABC’s life cycle is marked by changing attitudes and increasing diffusion into the marketplace over time. Intense interest at the beginning of its life gave way to criticism and lowered

visibility, followed by a longer, unpublicized period of steady growth in adoption rates and functionality. It has now reached maturity and acceptance in the marketplace for management ideas and methods.

ABC evolved greatly over more than two decades. Evolving from early experiments in costing, ABC emerged as a tool for profit improvement and ABC was adapted for use in the extended value chain and multiple industries, and enhanced for resource and capacity planning. In its most recent iteration, ABC is a multi-faceted algorithm and database of financial and organizational information. It supports performance management systems where business users can access ABC-derived decision relevant information from their desk top.

From the above researches we can conclude the following with respect to their objectives:

Indian companies have started employing ABC costing systems. However, some sectors still seem averse to adopting ABC. Basically, In India the primary use of ABC is for improving organization performance and management. However, India Inc continues to experiment with the application of ABC. As such the future use of ABC will be varied from customer analysis and market performance.

Contrary to the traditional technique, the successful installation and implementation of ABC in the global conglomerate requires high initial investment and expenditure. Thus, the companies have to chuck off a large share of their revenue for recovery of the installation cost. But relying only on this, the benefit could not be over-looked. ABC has been successful in escalating the profits and creating an avenue of choices for the company to select the customer base so that profit contribution per customer is increased. Compounding this effect, the performances of the companies improve as time passes by.

Bibliography

Authors:

- [1]. Berliner, c., and Brimson, J. A. Cost Management for Today's Advanced Manufacturing The CAM-I Conceptual Design (Boston, MA: Harvard Business School). (1988)
- [2]. Boris Popesko, Utilization of Activity-Based Costing System in Manufacturing Industries – Methodology, Benefits and Limitations (February, 2010)
- [3]. Brimson J A, Antos J., Activity-based Management for Service Organizations, Government Entities, and Nonprofit Organizations. (1994)
- [4]. Coburn, S., Grove, H., and Fukami, C., Benchmarking with ABCM. Management Accounting, January. (1995)
- [5]. Cokins, G. "Activity Based Costing: Optional or Required?" (2002).
- [6]. Cooper Robin, "Cost Classification in Unit-based and Activity-based Manufacturing Cost Systems". (1990)
- [7]. Cooper R, Kaplan R S., The Design of Cost Management Systems: Text, Cases, and Readings. (1991)
- [8]. Cooper & Kaplan, Activity based competition (1997 & 1998)
- [9]. Cooper, Robin and Kaplan R. S., The Design of Cost Management Systems. (1998)
- [10]. Dean Hubbard, Quality, Cost, and Value-Added in Comprehensive Institutions of Higher Education: Toward New, Testable Approaches. (1998-2002)
- [11]. Finley Gary, Approaches to activity based costing-long term competition perspective. (2009)
- [12]. G.L. Sharma and P.K. Sharma, Activity Based Costing: Strategic Implications for Indian Companies. (2010)
- [13]. Porter, Michael E., Competitive Advantage. (1985)
- [14]. Panda N.M., "Cost Reduction via Activity based Cost Management". (1999)
- [15]. Vries, W.T. de and M. Pholbud:, Enhancing Cost Implications of Mapping by Activity Based Costing (ABC) - Case Study for National Mapping Agency in Thailand (2009)
- [16]. DAVID, E. K., and ROBERT, J. L., 1995, Departmental activity based management. Management Accounting, January.

Journals:

- [17]. The Chartered Accountant, ICAI, Delhi.
- [18]. The Management Accountant, ICWAI, Calcutta.
- [19]. Harvard Business Review, Harvard Business School, Harvard.
- [20]. Journal of Cost Management, CIMA, London.
- [21]. Journal of Accounting Research, ICAI, Delhi.