

# **CHAPTER TWO**

## **LITERATURE REVIEW**

- 2.1 Introduction
  - 2.2 Evolution of Cost Accounting System
  - 2.3 Traditional Costing System and Activity Based Costing System
  - 2.4 Construction of ABC System
  - 2.5 Activity Based Management (ABM)
  - 2.6 Activity-Based Budgeting (ABB)
  - 2.7 Time Driven Activity Based Costing (TDABC)
  - 2.8 Application of Activity Based Costing System
  - 2.9 Activity Based Costing – In Service Sector
  - 2.10 Survey on Activity-Based Costing
  - 2.11 Activity Based Costing In Banking Sector
  - 2.12 Activity Based Costing In Health Care Sector
  - 2.13 Literature Gap
  - 2.14 Proposed Contribution of the Thesis to Literature
- References

## **Chapter Two: Review of Literature**

### **2.1 Introduction:**

This chapter summarises relevant information for the present research endeavour positing to unfold the various relevant research aspects right from need of new idea felt by the business world, inception of idea, conceptual and practical changes and development that took place at developmental stages right from its evolution till date. The purpose is also to identify areas with paucity of information and further research required to fill the gap in the practice of Activity Based Costing as this idea is still in infancy.

The chapter seeks to provide a backdrop to the research and studies the academic development that took place in the area of cost ascertainment by recognition retrieval and recollection of literature related to historical development in the area of Cost Accounting Theory and practices moving parallel with developments of markets as well as production processes, with increased consumer awareness about the quality and feature of goods and services. These prominent changes in consumer behavior lead to increase in the share of overheads in total cost of products or services, and its impact on decision making process.

This chapter discusses the Traditional Costing System, its short comings, emergence of idea of Activity Based Costing, practical application by retrieving the journey of Activity Based Costing system and its application in the business in general as well as service sector in particular at the national as well as international platforms. Further, this chapter discusses literature review on application of Activity Based Costing in Banking Sector and Health Care Sector. The last section of the present chapter contains the conclusion and explores further research avenues.

## **2.2 Evolution of Cost Accounting System**

The system of keeping accounts had been in its primordial incoherent and muddled state but, it has gradually evolved keeping pace with the dynamic business and technological advancements into a methodical technique of modern accounting. Rome was not built in a day; similarly, this evolution has not been instantaneous. Modern accounting is an outcome of a series of organized and systematic processes that were taking place since the beginning of human civilization and shall continue in future.

History of accounting is as old as the history of civilization. Initially economic activities were restricted to exchange of values in nonmonetary terms. To record such transactions people started recoding in nonmonetary terms considering quantities of items exchanged thus, in those days formal record keeping system was not in practice but, people were keeping accounts of their collected fruits, hunted animals and lent goods to others by marking ticks on the trees and on the walls of the caves as per their need. In this Primitive stage where people kept paperless accounting by marking ticks on the walls and making rope-knots, accounting system was not at all developed and disciplined.

The system of accounting also developed with the increase in volume of economic transactions in barter system. In barter economy, transactions were pre-determined by measurement as well as by exchange values. The poignant limitations of Barter economy Trade was it being characterized by measurement inequality, cumbersome in terms of production variety and coupled with the problem of coincidence of wants, due to absence of common measurement unit. The same is reflected in the study of Perara and Mathew (1966), they opined that difficulties experienced in maintaining the records and other inherent factors associated with barter system coinage was invented probably in Lydia at about 700BC.

During Currency stage agriculture, industry, trade and commerce flourished which increased the volume of business and quantity of transactions that led to development of accounting practices by introduction of system of keeping accounts of every transaction under separate classified heads. However, the development of accounting

theory was to restructure the intrinsic problems encountered in barter economy but, these could not maximize the impetus of monetary economy.

The development in accounting was found in almost all the ancient countries like the people of Mesopotamia relied on primitive accounting methods to record the growth of crops and herds (Accounting in Mesopotamia, circa 3500 B.C.) (Keister, 1965). Later on, emergence of writing led to the invention of a form of bookkeeping using clay tokens representing a huge cognitive leap for mankind (Oldroyd et al., 2008). The next 5,000 years witnessed the advancement of accounting records from simple to complex tokens representing inventory, to clay tablets, to the development of abstract symbols and cuneiform writing in Sumeria (3200 BC) Bronze, abacus, & papyrus (3000 BC) (Friedlob et al., 1996). Recording of complex transactions of grains involving several individuals using a system of record-keeping (accounting) gave a clear demonstration that accounting is socially constructed as was recognized by Goldberg (1949).

Rome fell in the west in the 5th century AD and Europe experienced the Dark Ages for a thousand years. This period was marked with the feudal system and the dominance of the Catholic Church. Powerful feudal Lords with the help of social scientist developed the rules and practices as a viable way to keep records of agricultural trade and to develop the early fiscal system which is also reflected in the study of Fu (1971) and James (1955). Fu (1971) wrote that the feudal lords assigned the responsibilities of supervision of their entire properties to a group of supervisors who were required to submit the statement of income and expenditure and of properties. This resembles elements of responsibility accounting. Medieval economies were largely self-sufficient, but cities developed around crafts and trade. Trade was simple and there was little need for detailed financial records. The book keeping for merchants was however in single entry form. The early Greek and Roman accounts were kept under "charge" and "discharge" principle, comparable to modern day receipt and payment account (James, 1955). The system still reveals that the accounting system at that period was of course fulfilling the societal needs and expectations of the users of financial statements.

Italian merchants developed commercial ties throughout the Mediterranean. With the Crusades, beginning about 1000 AD, demand for exotic Eastern goods developed and Italian merchants expanded trading ties throughout Europe which required money and credit and improved accounting methods. The ability to earn a profit depended on a thorough knowledge of costs and potential revenue opportunities. As the cruder forms of accounting were inadequate for the problems created by a business entity involving multiple investors, leads to emergence of double-entry bookkeeping system in northern Italy.

Mills (1994) acknowledged the innovative Italians of the Renaissance (14th -16th century) as the fathers of modern accounting. The man recognized as the creator of basic accounting and put forward the body of knowledge as well as proposer of systematic Accounting Practices is Luca Pacioli, an Italian mathematician and writer. The formal accounting system is referred in the text book by Pacioli entitled "*Summa de Arithmetica, Geometria, Proportionate Proportionalita*" in 1494. This book defined double entry bookkeeping as the "Venice system", and it was printed as well as spread throughout Europe. This book, however did not lay claims of Pacioli as the originator of double entry bookkeeping as its content described accounting system which was in use by Italian Merchants from more than 200 years, prior to publication of this book. The contemporary evidence identifies that double entry bookkeeping developed in the Genoa-Venice-Florence during 1200-1350 as a part of a vast commercial revolution. Accounting records of Rinierie Fini and Brothers (from 1296-1305) and Farolfi and Company (1299-1300) indicate complete double entry accounting. The accounting system in those days was much developed as each accounting entry had a separate debit and credit, with the equivalent of journals and ledgers. They kept extensive business records and by understanding cost and revenue structures they were in a position to make better decisions than competitors having no formal accounting knowledge and practice. Thus, from about thousand years' practice of systematic accounting recognizing cost and revenue places users in a better position than the competitors without this knowledge base.

The body of accounting knowledge got much systemized in the last two decades of the 15<sup>th</sup> century and at the advent of 16<sup>th</sup> century. Accounting records were made meaningful as reflected in the work of Luca Pacioli. His book entitled "*Summa de*

*Arithmetica, Geometria, Proportionate Proportionalita*” reprinted in 1504 defines his contribution to the development of accounting practices. The third chapter of this reprint discussed and explained the rules of debit and credit, inventory, disposition and preparation of journal, ledger and trial balance. This book contains detailed discussion regarding rules transferring nominal accounts to profit and loss account giving effect of them to capital account. Subsequently this book was translated and published in Scottish, German, French, Russian and English. (Paton and Littleton, 1940). Thus, today’s world recognizes Pacioli as an originator of systematic accounting knowledge and practices in the name of double entry book keeping which he himself never claimed. On the contrary he referred in his book that double entry bookkeeping practices were in use prior to his era.

Until the end of Middle Ages i.e. fifteenth century, accounting was developed in the name of double entry bookkeeping and was also put into practice; the same is reflected in the study of Littleton, A. C. (1933) where he discussed key ingredients’ leading to development and practice of double entry bookkeeping. He identified seven "key ingredients" namely Private Property, Capital, Commerce, Credit, Writing, Money and Arithmetic as important issues to be addressed by bookkeeping system to be fully developed accounting system. He referred existing bookkeeping as underdeveloped accounting system because of not considering all seven identified ingredients together in maintaining books of account. Nonexistence of these factors in recording business transaction was felt by professionals and social scientists which gave an important push for innovation and development in the double entry bookkeeping system.

End of middle ages resonated development in trade embarking on the use of technology in business and increased investments and thereby wealth of traders posing an increasing demand to have systematic record keeping which can address complexities of increased wealth and volume. All these developments triggered invention of abstracts of numbers and writing raising the demand of systematic record keeping which converted Scribes into accountants. Thus, wealth started being recognized in monetary term and also rationalized exchange of values. The coinage of silver and gold standardized the concept of money and enhanced trade. From the prosperity of the Italian merchant states came the Renaissance and the foundations of

the modern world. This marked the modernization and systemization of double entry bookkeeping system contributing led to overall socio economic development. Hence, this period marks the beginning of modern age.

Modern literature presents that development of trade, business, accounting system and use of currency started in Egypt, Europe and Italy from 12<sup>th</sup> century. On the other hand a number of references indicate that development of business and accounting system with systematic record keeping was in use during the time of the *Vedas*, *Sutras* and the *Upanishads*. Thence, a keen business instinct characterized trade and commerce, and industry flourished in ancient India. Indeed, archaeologists have found abundant remains of the ancient commercial records, but the historians have seldom indicated any interest in these embryonic accounting records. Categorically, the accounting or book keeping system in those days does not resembles much with modern accounting record keeping system, but they constitute evidence that commercial record keeping enjoyed its infancy. Indian civilization is considered to be the oldest civilization in the world history and sufficient evidence exists to lead one to conclude that the art and practice of accounting, as a highly developed system, was in vogue in India even during the times of the *Vedas*, *Sutras* and the *Upanishads*.

The discussions in the *Vedas* about matters like the system of land tenure, currency, trade, various occupations as well as the general social and economic conditions in those times are indicative of the existence of a highly developed system of record keeping. “Sale” appears to have regularly consisted in barter in *Rig veda*; 10 cows are regarded as a possible price for an image of *Indra* to be used as a fetish. The haggling of the market was already familiar in the days of the *Rig veda*, and a characteristic hymn of the *Atharvaveda*, is directed to procuring success in trade. Price was referred to as a *Vasna* and the Merchant, *Vanij*. “An arithmetical progression of some interest is found in the *Panchavimsa Brahmana*, where occurs a ‘list of sacrificial gifts’ in which each successive figure doubles the amount of the preceding one... *Vikraya* and *Nirukta* denoting ‘sale’ is found in *Rigveda*. *Sulka* in the *Rig veda* clearly means ‘price’. In the *Dharma Sutras* it denotes a ‘tax’. *Rna* meaning debt is repeatedly mentioned from the time in the *Rig veda*; these were apparently considered normal among the *Vedic* Indians. Reference is often made to debts contracted at dicing. To pay off a debt was *Rnam Samni*. Allusion is made to debit contracted without

intention of payment. The trade and industry of the period were characterised by a highly developed organisation and the institution was called '*Sreni*'. Indian system of keeping record of accounting was known as *Deshi Nama System*. In this system rules of debit-credit and recording the transaction, keeping ledgers, calculation of profits were developed. In India, economists have also propounded rules of accounting system.

Sihag, Balbir S. put forward, (2004) that Kautilya, a 4<sup>th</sup> century B.C. economist, wrote *The Arthashastra* and the book number 15 of *Arthashastra* contains one chapter about 'The Method of Science' in which he recognized the importance of accounting methods in economic enterprises. He emphasised on proper measurement of economic performance which is absolutely essential for efficient and profitable allocation of resources and is considered as an important source of economic development. He developed bookkeeping rules for economic data and the procedures for preparing periodic income statements, budgets and performing independent audits. His contribution to accounting may be classified under four headings: (i) the development of principles of accounting, (ii) the specification of the scope and methodology of accounting, (iii) the codification of financial rules and regulations and the creation of an organizational structure to reduce the potential for conflicts of interest, and (iv) the role of ethics in the restraint of fraudulent accounting (often spawned by excessive greed), in the maintenance of law and order, the efficient allocation of resources, and the pursuit of happiness.

Subramanian (1980) opined that Kautilya was aware that efficient allocation of resources depended on appropriate measurements of profits, which were critical to enhancing economic growth. He not only emphasized the estimation of expected profits for direction but also insisted on strict adherence to the prescribed uniform standards and accurate measurements of actual profits.

On one hand the work of Pacioli's reflects that accounting record keeping was already in practice in Italy right from 12<sup>th</sup> century and he has only compiled the existing practices. On the other hand, Mattessich (1998) has also identified accounting system practiced during Middle Ages was similar to the accounting system suggested by Kautilya. He identified elements of modern principles of accounting in Kautilya's



*Arthashastra* and showed that has more documented facts of accounting theory than Pacioli's *Summa* claiming that Kautilya's *Arthashastra* is at par with Pacioli's *Summa*, thus substantiating the existence of systematic Accounting and recording keeping in practice in India before Christ.

Historical evidences indicate that profits or losses were computed on venture basis during 1500 to 1750. Thence, Nominal Accounts were the part of temporary capital accounts for the purpose of determining profit or loss. "Businessmen in the sixteenth through the eighteenth centuries did not use their book-keeping to keep an accurate check on capital and profits but simply as records of transaction" (Yamey, 1949). "Balancing and Closing of the books were irregular" (Winjum, 1971).

Seventeenth Century, the Britain age in the world heralded the political and economic dominance of Britain for about 400 years. Formation of East India Company with monopoly of trading rights for most of Asia led to rise of England as a mercantile power. In Britain Goldsmiths gradually became bankers. Bank of England was founded in 1694 and began to issues notes for deposit. The legality of notes was confirmed as negotiable with introduction of Promissory Note Act in 1704. This resulted into expansion of trade and commerce, instead of Venture business transaction were expanded and extended on continuous basis. This announced the shift from the trajectory of coins to paper currency.

Modern accounting is an outcome of a series of organized and systematic processes that took place at different times at different regions across the world since the beginning of human civilization and shall continue in future. In Early stages accounting practices served mainly to assist the memory of the business person and the audience for the account was the proprietor or record keeper alone. It is true that almost no historical evidences exist showing that businessmen calculated profit or loss for the entire business enterprise.

Accounting has come a long way from records such as rope-knots, abstracts, papyrus, to media of measurement of transactions i.e. barter to coins, finally to currency. During this period of economic development and sophistication in the society, improvement of life style etc., Social researcher and professionals' continuously put

efforts to contribute in the field of improved system of formalization of business, record keeping and documentation. Accounting base was strengthened with the Publication of explanatory books on accounting methods and Publication of Critical Articles. With the expansion of trade and commerce the going concern concept (in place of short term concept) was introduced in many countries of the world and in the light of this concept revenue and capital nature of accounts was identified. Due to introduction of going concern concept it is presumed that businesses will continue for an indefinite period unlikely for the investor who cannot wait for an indefinite period, so, the necessity of preparing periodic statements of accounts was felt, as a result the concept of periodic accounting was introduced. The names of assets and liabilities are not at all enough to express the financial position of a concern until and unless these are expressed in terms of money. Accounting becomes very much logical if money is considered media of measurement that is the reason why the money measurement concept was introduced which led to development of accounting system. The series of steps involved in initially recording information and converting it into financial statements is called the accounting system. Information required by those who were interested with a business organisation was met by practicing a system of accounting known as financial accounting system. Financial accounting is mainly concerned with preparation of two important statements, viz., income statement (or profit & loss account) and positional statement (or Balance Sheet). This information served the needs of all those who are not directly associated with management of business.

Accuracy of business is measured on the basis of correct amount of profit so, it was felt necessary to have accuracy in valuation of inventory and calculation of cost. Inventory valuation flows as: Material plus labour plus expenses become inventory which is recorded in the balance sheet. The same becomes product cost and is reported as Cost of Goods Sold (COGS) on the income statement. Every business unit must strive hard to obtain maximum output with the available input. In order to ensure the optimum utilization of scarce resources, the value of input is measured against the value of output. This implies matching cost per unit of production against the value of output or selling price i.e. matching cost concept. Scarcity of the available resources led to evolution of Cost accounting. Traditionally, cost accounting was considered as the technique and process of ascertaining costs of product. At that time the main object of cost accounting was to make correct calculation of cost of goods sold for

calculating profit or loss and inventories valuation. Initially, cost accounting was considered as an extension of financial accounting.

It is unfortunate that during 1495 -1799 very little changes took place in terms of socio-economic development and its harsh implications were marked in the concept and application of Accounting. Prior to the industrial revolution, businesses were small and characterized by simple market exchanges between individuals and organizations. During this period accurate book keeping sufficed the needs leaving behind any notable progress in cost accounting. Cost accounting is traceable to the earlier part of the seventeenth century. The earliest reference of cost accounting can be found in Robert Loder's farm accounts 1610-20. Absence of competition was the reason for non-eminence of depreciation and costing concepts before industrial revolution as cottage industries predominated the business. The same was observed by Omolehinwa (2004) in the study where depreciation was not charged, costs were understated, profit overstated and dividends were paid out of capital. Prior to company taxation, the early theories of depreciation including replacement cost accounting contend that there was no need for depreciation if the assets were maintained in good condition.

With the advent of industrial revolution propelled by mechanization the cottage industries took a back seat. Britain having a strong industrial base, nautical power as well as social and legal foundations welcomed the innovators and entrepreneurs to join the process of mechanization for huge production. The same was reflected in the study of Wells (1978) that Industrial revolution in the 18th century brought about extensive mechanization of production system resulting in large scale production and a farsighted change in the economic structure of the European countries. As a result of industrial revolution, mass production started replacing cottage industry with variety of mechanization in the eighteenth century. Although industrial revolution brought about sea change but accounting could not keep pace with the changes in mechanization.

Industrial revolution led to mass production that required distribution on large scale move raw materials to factories and finished goods to market. Britain expanded transportation using first a canal system and then railroads demanding huge capital to

set up factories and carry out production and distribution process. This paved way for Joint stock companies. As industry, mass transportation and capital markets were established, the role of accountants expanded. The British Companies Act of 1844 established the incorporation of business by a formal registration process and required annual appointment of auditors to examine the accounts and balance sheet of all public companies.

Mechanization in production raised the demand for labour and other support system consequently increasing indirect costs. The use of machines led to increase in the life of business and long term continuity gave birth to idea of depreciation. As the business concerns became long term the concept of depreciation and cost-accounting came into force. The same was observed by Stoner, et al, (2002), that the emergence of labour in factories led to the need for the development of systems on how to pay wages, overtime, bonuses, piecework and as well as managing the large number of employees that were necessary for the new industries. Accounting system that could address aggregation of capital, methods of labour remunerations, depreciable assets, production cost, and income determination was developed (Dopuch and Sunder, 1980).

In the first stage of its development, cost accounting was concerned only with the three prime cost elements, viz., direct material cost, direct labour cost and direct expenses. The concept of prime cost was used around 1875 by some industrialists. For recording the transactions relating to materials the important documents like stores ledger, a material requisition note, and materials received note were used. To account for labour cost, employee time card and labour cost card were devised. Later on a distinction between manufacturing and non-manufacturing cost was made.

Many of the basic approaches to cost accounting were developed after 1880. The newly formed mass distribution and mass production enterprises adapted the internal accounting reporting system. The Scientific Management analysis of mass production was a major factor for development of cost accounting. These methods of cost reporting and estimation focused exclusively on direct labour and materials paying little attention to overhead and capital costs due to nominal share of overheads in the total cost. The same was noted by Chandler (1977) and Kaplan (1984). The emergence of vertically integrated and multi-divisional firms demanded for a

management accounting system that could facilitate the control and coordination of firm's diverse activities. To increase the production efficiency the management and engineers laid emphasis on the appointment of cost accountants which resulted into the scientific cost management movement in the industry. The focus of the scientific cost management movement was on efficiency increase in the field of production led to introduction of standard costing-system as an effective means of cost control rather than cost determination (Chandler, 1977). Scientific Cost Management is mainly concerned with measurement and allocation of overhead costs. Costs and performance were coordinated using timely cost accounting reports developed over decades with the assistance of Scientific cost Management engineers. Unlike the situation today the cost accounting and financial accounting systems kept separately, with the cost accounting system typically designed for and operated by the manufacturing department. The emphasis was on job and factory efficiency, not on the commercial success of the overall corporation (Kaplan, 1984).

The cost accounting concepts advanced with the beginning of the First World War and the concept of 'cost plus' was introduced in order to avoid delay in executing urgent supplies during war. The contracts were entered on the basis that the supplier would be reimbursed the cost 'plus' a fixed percentage to cover administration and other overhead expenses and profit. This raised the demand for qualified persons to calculate cost and deliberation on cost concepts for identifying the items or elements that enter the cost. As a result of this, the Institute of Cost and Works Accountants was established in U.K.in 1919, which is now known as the Chartered Institute of Management Accountants (CIMA) at London and the National Association of Cost Accountants in U.S.A., which is now known as the National Association of Accountants, in New York. Under the leadership of these two institutes, the profession and the concepts of cost accounting developed significantly. By the late 1920s, cost accounting had reached its pinnacle. There were enough evidences of capacity, activity costs, and the impact of various costing assumptions on the stability and reliability of cost estimates. Both practitioners and academicians understood the importance of cost management practices in providing relevant information for decision making. Thus, by 1925 sophisticated cost accounting theories and practices had been developed (Vadiya et al., 2009).

Furthering the development in cost accounting theories Brignall, S. (1997) propounded that in 1923, J. Maurice Clark coined the phrase 'different costs for different purposes', but most companies have only one costing system for all purposes: stock valuation, planning, control and decision-making. This method of cost calculation of product cost was suitable for single product, the multiple products posed the need of allocation and cost assignment. The need of systematic costing was not felt until the recession. Recession that followed the end of World War I dramatically revealed the shortcomings of the planning and control systems of most industrial enterprises (Chandler, 1997) and Johnson, (1975). The importance of cost techniques and practices declined during the early 1930s. Faced with an apparent failure of capitalism, nations turned toward alternative economic models in the hope of finding a solution (Johnson and Kaplan, 1987).

During depression declining demand of products led to liquidity crises that most firms could not deal with. Surviving firms developed cost accounting systems to determine costs for all phases of their operations, including primitive analysis of overhead costs. The method of charging non-manufacturing cost to the production cost was devised under this stage. Costs could be related to specific products and prices could be set differentially, based on product costs and potential demand for specific products establishing efficient cost accounting practices. During this period it was found that firms practicing advance cost accounting management system could survive in adverse situations by evolving tool of cost management.

Church (1931), was of the opinion that overhead is a cost of production preparedness rather than just a cost of production because overhead is a cost to maintain the plant in a condition ready to process whether there is work going on in the plant. Overhead is merely a collective term for several distinct and separate services, each of which has its separate incidence on production, and that it is possible to waste these services as well as to utilize them for actual production. Four efficiency measurements came into existence owing to the concept of overhead: 1. The cost of preparedness, or the efficiency of the actual as compared with the possible cost of maintaining a required capacity; 2. The efficiency of utilization, or ratio of the actual to the expected or possible use of this capacity; 3. The efficiency of process time, or of the actual as

compared with the possible speed with which any job is done; and 4. The efficiency of direct labour, as expressed in earnings.

Increase in proportion of overheads in the product cost resulted in the increased role of overheads in decision making. In due course of time it was realized that overhead is not in proportion to the production or output and it was charged on the basis of direct labour or prime cost to the product. Rethinking on treatments of overheads persuaded to develop new practices to deal with overheads in cost accounting. The same was reflected by J. Maurice Clark. He notes the lack of proportionate variability of overhead with output, also acknowledges that overhead must be treated differently than direct variable costs suggesting accumulating different costs or measurements in order to find equitable solutions. Clark recognized that most variable costs are not exactly proportionate to an activity and most constant costs do not remain so over a period of time (Frank, W. G., 1990).

Before World War II, markets were producer driven. Producers made customers to bear total cost without taking into account that customer has consumed the product or service. World War II toppled the economic dominance of Europe, with half the wealth and industrial production of the world America emerged as the new economic powerhouse. In the American age the new found focus was on industrialization, mass production, and high productivity triggered need to change the very nature of competition by redefining the relationship between a firm's cost and the market price of its products (McNair C.J. et al., 1997).

Post world war-II witnessed elimination of the geographical boundaries and fierce competition making customer the king of market who demanded more features with more facilities and benefits. On one hand more producers plunged into the market to suffice customer's demand on the other hand customer was not keen to pay for what s/he have not used/ consumed. Hence, there was a compulsion on the producers to manage the cost, and those unable to do so were thrown from the markets.

Revolution in science and technology brought about immense advancements in industry and commerce which further influenced the socio-economic realms. Increased automation, decrease in labour cost corresponded to increases in the

overheads. So, there was considerably increase in the importance of non-manufacturing cost (overheads) subjecting to devise a new method of charging non-manufacturing cost to the production cost. The dangers of full costing methods were very well known by now. Under the changed circumstances traditional system of accounting failed to meet the demands of various interested parties in the society. Various classes of people became interested parties of business organizations directly or indirectly with the change of nature, size and number of business concerns, but traditional accounting system failed to supply this information for taking decisions of day-to-day activities. For this reason attempts were made to update the accounting system.

A need based definition of cost accounting as ‘the application of costing and cost accounting principles, methods and techniques to the science, art and practice of cost control and ascertainment of profitability of goods, or services’ emerged in sixties which came to be known as management accounting. A series of cost codes were created for major industries or business segments. Industry trade associations were solicited to develop these codes, which included recommended price and costing methods. Cost accounting methods were applied to all types of business undertakings. The costing principles and techniques were also extended to important functions of a business. With increase in competition and importance of corporate finance and need of financial management arose. Modern treatment of capital budgeting and The Residual Income (RI) extension to the ROI criteria also emerged.

The early 1970s were characterized by the application of information economies and agency theory to management accounting problems. The early 1980s saw a renewed interest in cost management as industries began to falter faced with an onslaught of ever – intensifying competition and price reduction (H.T. Johnson, 1992). The growing pressures of global competition, automation revolution, and changes in business processes have placed greater demands on Cost management practices. With considerable effort, some cost management practices and theories have gained importance since the publication of *Relevance Lost* by Johnson and Kaplan in 1987. The most notable trend has been the shift in emphasis from product costing to a focus on strategic and operational decision.



The field of cost accounting has thus evolved into the field of cost management. It has moved from a procedural focus on stewardship accounting to a strategic focus on the use of accounting to facilitate the business success. The most significant role of cost accounting is to be accurate in measurement and reporting of costs for decisions. The various cost management techniques, systems and measurements that spur had helped managers to make wiser economic decisions (Horngren, 1995). Throughout 1980s and 1990s, new techniques were proliferating in other areas of business as companies sought ways to reduce their costs and improve the quality of their products and their responsiveness to customer needs. The responses made by the field of cost management to this renewed demand for information resulted in an explosion of new, as well as rediscovered, cost management tools by the late 1990s and early 2000 (McNair C.J., 2007).

In the contemporary business environment, cost management has become a critical survival skill for many organizations. Many authors stressed that the strategic importance of cost management has drastically increased in the recent years due to intense competition. According to Cooper and Slagmulder (1997a) customers in highly competitive markets expect that each generation of products presents improvements. These improvements may include: improved quality, improved functionality or reduced prices. Any of these improvements alone or any combination of them urges a firm to manage its costs to stay profitable. They pointed out that highly competitive markets are characterized by low profit margins, low customer loyalty and low first move advantages. Not only customers ask for cost management, but also the intense competition between well-matched competitors increases the strategic importance of cost management. Finally, Cooper (1995a) compares the strategic importance of cost management with that of quality management and concludes that cost management has to become a discipline practiced by virtually every person in the firm. Summarizing this discussion, in the contemporary business environment, all companies need to strive for cost management on the lines of Darwin's doctrine of survival of the fittest.

The Cost management system can be used by both manufacturing and services organizations since it focuses equally on service and production functions to remove the historical bias towards product costs. Cost management approach can significantly

facilitate the efficient management of costs. The primary goals of cost management can be: Developing reasonable accurate product/ service costs, Assessing product/ services life cycle performance, improving understanding of processes and activities, controlling costs, measuring performance, allowing the pursuit of organizational strategies (Barfield, et al., 2001).

In modern times the development of electronic data processing has occupied significant stature in the growth of cost accounting system. Accounting plays a key role in all planning and control in four key areas: (1) data collection, (2) data analysis, (3) budget control and administration, and (4) consolidation and review (Robert et al, 1999). These stages are also referred to as data processing in business. Today, the scope of cost accounting has enlarged to such an extent that it now refers to the collection and providing all sorts of information that assist the executives in fulfilling the organisational goals. Modern cost accounting is being termed as management accounting, since managers being the primary user of accounting information are increasingly using the data provided by the accounts, setting objectives and controlling the operations of the business. The extensive use of cost accounting techniques has led to a new concept of information technology, operational control and performance measurement. Thus, the above discussion clears that with change in economic and business environment cost accounting has been advanced from ascertainment to strategic aspect for decision making emerging as survival skills in the modern environment.

Rapid evolution in the technology for information processing and the enormous changes for both manufacturing and service operations have created challenging new environment for management accounting system. The role of management accounting continues to undergo major changes. Management accountants are no longer only scorekeeper of past performance. They have become value-adding members of management teams, creating information vital for enhancing operational excellence, and for formulating and implementing new strategies. A significant development in this new role is a great increase in the importance and use of nonfinancial measures and performance. This study provides extensive coverage of activity based costing as a tool of cost management the new management accounting practices being adopted by innovators around the world. The next segment of study gives a detailed

comparative account of Traditional Costing System and Activity Based Costing System.

### **2.3 Traditional Costing System and Activity Based Costing System**

Classification of total cost into direct and indirect cost is very important for costing purposes. If expenditure can be allocated to a cost centre or cost object in an economically feasible way then it is called direct, otherwise the cost component will be termed as indirect (CAS 1). In any system it is very easy to charge direct cost on product or service. Overheads comprise of indirect materials, indirect employee costs and indirect expenses which are not directly identifiable or allocable to a cost object in an economically feasible way (CAS 3).

Overheads are collected on the basis of pre-planned groupings, called cost pools. Homogeneity of the cost components in respect of their behaviour and character is to be considered in developing the cost pool. Variable and fixed overheads should be collected in separate cost pools under a cost centre. An item of expense which can be directly related to a cost centre is to be allocated to that cost centre. When the indirect costs are common to different cost centers, these are to be apportioned to the cost centers on an equitable basis. A great degree of homogeneity in the cost pools are to be maintained to make the apportionment of overheads more rational and scientific.

In case of multi-product environment, there are common service cost centers which are providing services to the various production cost centers and other service cost centers. The costs of services are required to be apportioned to the relevant cost centers. First step to be followed is to apportion the overheads to different cost centers and then, second step is to apportion the costs of service cost centers to production cost centers on an equitable basis. The first step is termed as primary distribution and the second step is termed as secondary distribution of overheads (CAS 3). The main idea of primary and secondary distribution of all the expenses of overheads is to charge the costs to production department and then the total expenses of the production department is charged to different cost units, which pass through the department.

Charging the overheads to cost units or products is known as overhead absorption. As a result of absorption, the cost of each unit of product of the producing department includes an equitable share of the total overhead of that department. When a single overhead rate is computed for the entire factory, it is known as blanket or single rate. Again, when different overhead rates are computed for each department is known as multiple rates. The basic purpose of overhead absorption is to absorb total overhead in products or job manufactured. This method of charging overhead is known as Traditional Costing System of charging overheads.

Brignall (1997) stated that the traditional accounting system allocates the production overhead to the cost objects on the basis of plant wide overhead rate or on two-stage allocation system. The plant wide overhead rate allocates cost on a single activity base for the entire factory but the two-stage allocation assigns production overhead cost based on departmental activities. Under this system, at the first stage, the manufacturing cost is collected into cost pools and then attached to products by a method based on unit volume of production such as direct labour hours.

Criticising Traditional costing system which is based on the assumption that product directly consumes the resources of the organisation, so it is difficult to manage the cost Blocher et al.(1999) and Hansen and Mowen (2000) in their study proffered that the traditional costing systems assume that cost objects consume resources and therefore these systems see the cost objects as cost generating. In this case, it becomes difficult to manage costs because organisation can only manage what is actually being done and as a result costs will change accordingly. However, in traditional costing systems, the underlying assumption is that costs can be managed because they are not aware about the driving factors of cost.

Kaplan's (1988), critical approach towards traditional costing system submits that that no single system can adequately answer the demands made by the diverse functions of the cost systems. Organisation need cost systems to perform three primary functions: inventory valuation for financial reporting purposes, operational control for performance and productivity evaluation, and individual product cost measurement. Kaplan put emphasis on requirement and importance of costing system for performing various functions. Cooper and Kaplan (1998) argued that, inventory

valuation for financial reporting purposes function is arguably fulfilled adequately by conventional costing systems, such systems could not explain what the shop floor manager should do to manage costs, improve performance, and these systems tended to distort product costs for strategic and marketing purposes, particularly in high overhead contexts.

Conventional costing systems are based on a two-stage procedure. Under the two-stage allocation procedure direct costs are traced to products, overhead costs are allocated to cost centers, and then to production outputs. In the second stage, the traditional costing system allocates overhead costs from cost centers to products using volume-based cost drivers. This two-stage allocation procedure, however, fails to provide information that can be applied to cost management and performance improvement (Sakurai, 1996, Cooper and Kaplan, 1998 and Blocher et al., 1999). This is because the Conventional costing systems fails to provide information on the basis of arbitrary base used for allocation of overheads to cost objects.

Hilton (2005) stated that a number of manufacturing companies used traditional costing system called volume- based costing system which used volume-based cost driver such as direct labour hours, direct labour cost, or machine hours. With the help of traditional costing system at most the cost are classified into two main parts that are Product cost which is a cost assigned to goods that were either purchased or manufactured for resale and Period cost where administration and selling are recognized as expenses during the period in which they are incurred. If inventories are manufactured, the product cost is relatively easy to trace to production job but manufacturing overhead is not easily traced to jobs as these costs often bear no direct relationship with individual jobs or units of product.

By classifying cost into product cost and period cost traditional costing creates difficulty in allocation of overheads to cost objects which are not based on volume. At that time major part of the cost was direct cost and overheads were nominal. Traditional costing systems mostly utilize direct labour or other volume related allocation bases for cost assignment purposes and therefore these bases rarely reflect the true cause and effect relationship between overhead costs and cost objects. Cooper and Kaplan (1998) and Cokins (1999) argued that traditional costing system usually

fails to allocate costs on product or service costs. In addition, traditional cost systems are more concerned about the organizational charts than the actual process. These systems are therefore structurally oriented and the process view is completely missing (Emblemsvåg and Bras, 2001).

Traditional costing was adequate in the by gone years because of two major reasons (Andrade et. al, 1999; Cokins, 1999): (1) the fraction of total product cost due to the direct cost component was substantially larger than overhead component. Therefore, imprecise estimate overhead cost would not cause a big distortion in the cost of product. (2) Overhead cost component was nominal and is inherently more expensive to determine than the direct cost component. It is not worth to spend time and money to allocate small amount of overhead.

Traditional costing systems were designed decades ago when most companies manufactured a narrow range of products, and direct labour and materials were the dominant product cost. Overhead costs were relatively small, and the distortions arising from inappropriate overhead allocations were not significant. Information processing costs were high, and it was therefore difficult to justify more accurate overhead allocation methods. Traditional costing system ignores importance of overheads costs by charging it on the basis of volume based. Over the last third of the 20th century, there were considerable changes in the cost structures of companies caused by new conditions of the business environment. These changes have resulted in higher overhead rates; investment in machinery and services has reduced direct labuor costs and simultaneously increased overhead costs.

Many reasons contribute to increase in the portion of overhead costs in the total costs of an organization. There has been a noticeable development in the previous years, in the tertiary sector of industry, also called the service sector or the service industry. (Roofls, 1996). This development points out expansion of the external service sector of the individual enterprise. Müller, (1998) in addition pointed that the strong growth of overhead costs can be attributed to the following overlapping factors of the influence: with increased automation of production activities and indirect activities by rationalization and computer integrated manufacturing overheads have increased as compared to direct costs; increased multiple products and the activities resulted into

complexity of production process and increase in the areas of overhead costs because of reduction in the size of job order numbers and lot sizes in production; increase in plant equipments inventory of parts and components in the procurement and storage; increased demand by customer with more features and facility with more differentiated service requirements; changes in the production process and in the product design; increased demand for quality product and shorter delivery times and reduction in product life cycles. The traditional costing system does not drive many of the above costs to products using volume driven cost driver.

On the other hand, today's companies typically have a wide variety and complexity of products and services, high overhead costs compared to direct labour, an overabundance of data and substantial non product costs that can dramatically affect true product cost (Drury, 2000). The nature of overhead cost has changed from costs which were predominantly influenced by volume-related factors to a composition determined largely by non-volume-related factors (Innes et al., 1994). Thus, overhead allocations using a declining direct labour base cannot be justified, because computer technology has reduced the costs of developing and operating of cost systems that track many activities (Drury, 2000).

Traditional cost and management accounting systems such as those based on standard costing and absorption costing has measured company performance imperfectly because they have not kept up with the developments in production technology and consumerism (Copper and Kaplan, 1987). As traditional overhead cost management is not able to ensure an optimal allocation of resources as well as an effective cost management in the indirect activities and functions, the instruments for the overhead costs reducing and increasing of the productivity within the overhead costs areas are developed (Müller, 1998).

Johnson and Kaplan (1987); Chandler (1977) were of the opinion that Traditional Management accounting systems do not reflect current organizational realities because typical product costing procedures were designed in the late nineteenth and early twentieth centuries. In that era, the "prime costs" consisting direct materials and direct labour, truly were the primary components of production costs while product line diversity was less common. Thus, the allocation of manufacturing cost depends

on the types of resources that the products consume. The greater the products consume the resource, the higher the overhead attached to the products based on one particular activity base such as direct labour hour, machine hour or direct labour cost.

According to Johnson and Kaplan, cost accounting was developed with financial accounting mentality i.e. in this age cost accounting was made for accumulation and reporting of historical cost figures. Thus, cost accounting practices focused on valuation of inventory and cost of goods sold than precise cost information. The mentality was that short-term profit is crucial, but a long-term focus on customers, employees, and suppliers was not. Early in the century direct labour and direct materials often were 90% of total cost and allocating overhead based on direct labour was reasonable. Later in the century, direct labour could represent only 10% of product cost with 60% representing overhead. Therefore, allocating overhead based on direct labour made little sense. And for most of the century there was little or no consideration of total quality control or the goal of zero defects—common practices of Japanese and other foreign producers. U. S. firms began restructuring, focusing on quality and customers, productivity and cost cutting, and inventing new cost and management accounting procedures.

During 1950s -80s Americans were using Traditional Cost Accounting system due to which American industry was not competitive in the face of lower cost and higher quality products from Asia and Europe. In *Relevance Lost* (1987), Johnson and Kaplan criticized American cost accounting of the post-World War II period. Foreign competitors had the ability to dominate U. S. markets and drive American firms toward bankruptcy. Cost and management accounting was part of both American success and failure. Consequently, Johnson called the 1950s-80s the “Dark Ages of American Business”.

After publication of *Relevance Lost* numbers of researches were carried out by American researcher by criticizing Traditional Costing System and highlighting its limitations. Cooper and Kaplan (1987) described the multi-product firms with complex manufacturing processes that rely mainly on direct labour hours to allocate overhead costs to products. They documented how the apportionment of (long term) variable overhead costs on the basis of a single cost driver led these firms to over cost



some high-volume products and under cost most low-volume products. According to Johnson (1992), key components for becoming globally competitive include long-term relationships with customers, process flexibility including employee empowerment and the elimination of constraints, and the refocus on accounting information. Accounting numbers provide almost no information about customers or product quality. Rather than controlling operations, cost data should play a supporting, but significant role.

Cooper and Kaplan (1988) hold that the product cost distortion caused by the commonly used overhead allocation methods is systematic. The result of their use is under-costing of low volume products and over-costing of high volume products (cross-subsidization of product lines). Therefore, the overhead allocation procedure often produces unreliable product and process cost data for management to utilize in their attempts to control costs in the now highly competitive world market. Therefore, to avoid biased cost reporting, the allocation of overheads to cost objects should not be based on a common volume-related measure but, on the groups of activities which generate those overheads. An overhead allocation based on activity centers avoids a common consequence of traditional output-based costing system particularly under cost low volume products. Cooper (1987) argues that such obsolete single cost driver based systems often lead to improper pricing and distorts "the strategy selected by the firm tempting management to focus incorrectly on low-volume, specialty business." Cooper criticized Traditional Costing System for product price distortion. Shank and Govindarajan (1988) consented with Cooper stating that "Volume-based costing can seriously distort the way a firm assesses the profit impact of its pricing and product emphasis decision." This assumption is sub-optimal for firms to persist. In the use of single cost driver systems seems to be an axiom in the cost driver literature, but it has received little attention in the analytical management accounting literature.

Miller and Vollman (1985) in their study "*The Hidden Factory*", preferred Activity based accounting over Traditional accounting by arguing that most production managers understand what drives direct labor and materials costs, but they are less aware of what drives overhead costs. Miller and Vollman explained that the real driving force of overhead costs comes from different transactions, not physical products. These transactions involve exchanges of the materials and/or information

necessary to move production along but not directly result in physical products. Rather, these transactions are responsible for aspects of the "bundle of goods" that customers purchase - such aspects as on-time delivery, quality, variety, and improved design. They assert that a significant portion of manufacturing overheads varies with transactions such as setups, purchase orders, engineering change orders and material movements. Therefore, there are different cost drivers, which stem not only from the production transactions but also from other transactions of the company.

According to Johnson and Kaplan (1987) traditional accounting in today's competitive and continually changing business environment is not appropriate as firms need to be vigilant of the impacts of the changes in the business environment and devise appropriate strategies to survive and prosper. Advancements in manufacturing and communication technologies have drastically changed the ways businesses conduct their activities. Adoption of advanced manufacturing technologies such as robotics and computerized manufacturing have resulted in significant changes in the manufacturing cost structure which have led academics and practitioners to argue that the traditional costing methods are no longer sufficient within this new manufacturing environment.

In adaptability of traditional accounting system in the technologically advanced global market gave birth to the idea of requirement of new costing system which helps in ascertainment of cost for eliminating problems of assignment of overheads by using single cost driver. As Traditional Costing System proved irrelevant for charging overheads, new method of charging overheads on the basis of cause and effect basis is to be needed and the result is Activity Based Costing System. One of the key quality of the instruments of overhead cost management such as activity based costing is the way that assign overhead costs based on volume- and non-volume based measures or cost drivers. This can handle the problem of distorted costing information that may cause undesirable strategic effects, such as wrong product decisions, unrealistic pricing, and ineffective resources allocation.

Many studies in the literature of cost accounting and management stated that contemporary activity based costing was developed to overcome the problem of overhead cost measurement and management caused by traditional costing systems.

The concepts on which ABC is based are not new in the history of cost accounting and management (Johnson, 1992, Innes et al., 1994). For the theory, the ideas on activity costing can be traced back to several decades, for example, Solomons (1968) and Staubus (1971) have been identified as the earliest instances of having referred to activity costing or, at least, mentioning some of the basic concepts on which ABC is based.

The idea of the relationship between the activity and cost was outlined within the context of standard costing in the work of Solomons (1968), where he used the activities rather than simply labour hours in developing overhead rates to improve variable overhead variance analysis (Innes et al., 1994). This is how idea of connecting activity with cost was evolved. Staubus (1971) in the line of Solomons also suggested a conceptual framework for cost accounting, defining activities as the objects of costing. This framework was based on the principle that each major resource used should be identified and measured, and then traced to the objects of costing - activities. He was especially concerned with understanding the fundamental features of activities.

Johnson (1992) in his study traced the origins of ABC to the early 1960s, when General Electric developed a model of activity-based cost analysis to improve the quality of its information on indirect costs. This cost system was apparently based on concepts similar to the present ABC systems. He stated that General Electric during the 1960s was probably the first place where accountants used the term activity to describe and analyze work that causes costs. "General Electric's technique for activity-based cost analysis anticipates virtually everything that is claimed for present-day activity cost management systems".

Initially ABC was developed and used by some of the organisations but it was practiced on occurrence of crisis due to foreign competitors in America. American industry was not competitive against Asian and European firms as Americans were using Traditional Cost Accounting system. This led American firms to bankruptcy and compelled them to search for solution for survival against foreign competition paving way for use of Activity Based Costing system. Despite the fact that the ideas on activity costing can be traced back to the mid of 20<sup>th</sup> century, its current popularity

and contemporary formation emerged in some manufacturing and service companies in USA and Europe during the 1980s and 1990s. The firms became the subject of a series of Harvard Business School cases such as Schrader Bellows, John Deere, and Union Pacific Railroad forming a powerful, so-called “Harvard network” that propounded the term activity based costing (ABC). A second powerful network - the Computer-Aided Manufacturing International (CAM-I) - became allies in promoting new costing methods (Jones and Dugdale, 2002). These two networks have efficiently promoted ABC as a solution to make American and European firms more competitive.

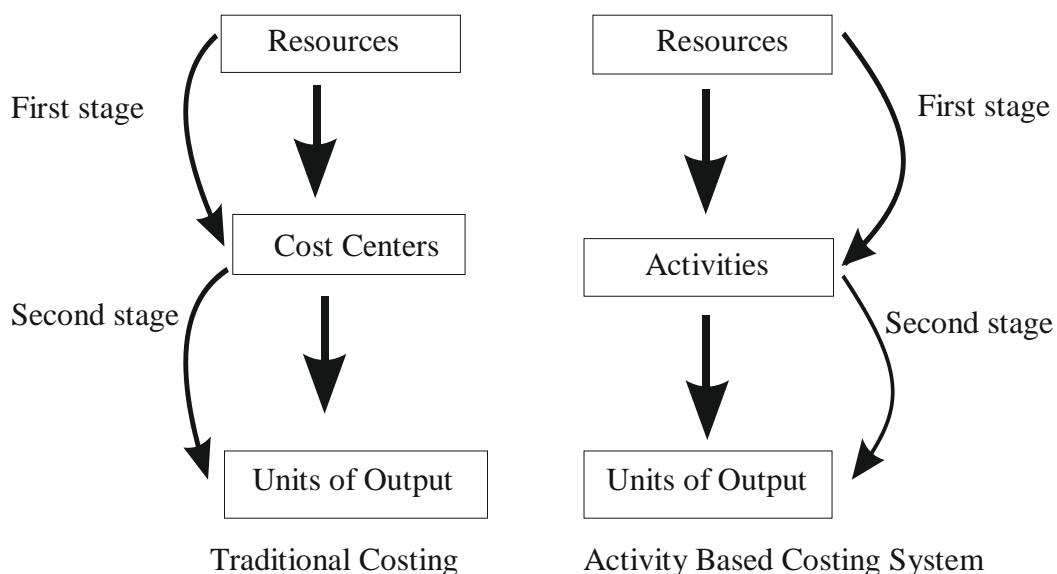
Cooper and Kaplan (1988a) argued that, adoption of ABC in the case of a wide variety and complexity of products and services with high overhead costs, could significantly improve the allocation of overhead costs, and led to a reduction in the distortions in product cost calculations. ABC requires a new kind of thinking. Traditional costing systems are the answer to the question, “How can the organization allocate costs for financial reporting and for departmental cost control?” ABC is the answer to an entirely different set of questions (Cooper and Kaplan, 1998): 1. What activities are being performed by the organizational resources? 2. How much does it cost to perform organizational activities and business processes? 3. Why does the organization need to perform activities and business processes? 4. How much of each activity is required for the organization’s products, services, and customers? From the above discussion it is clear that TCS is not providing detailed insight into occurrence or origin of cost whereas activity thinking ABC does provide accurately.

According to Cooper and Kaplan (1992) ABC system calculates the costs of individual activities and assigns costs to cost objects such as products and services on the basis of activities undertaken to produce each product or service. It is an allocation procedure by which overhead costs were assigned via activities to products and services. The CAM-I Glossary of Activity Based Management provides an elaborated interpretation of ABC: “ABC is a methodology that measures cost and performance of cost objects, activities, and resources, assigns resources to activities and activities to cost objects based on their use, and incorporates causal relationships between cost objects and activities as well as between activities and resources” (Dierks and Cokins, 2001). This justifies that ABC focuses on cause and effect

relationship which is totally ignored by TCS. Activity-Based costing (ABC), is a ‘system that focuses attention on the costs of various activities required to produce a product or service’ (Baird et al., 2004). This system is suitable for many organizations in order to provide “true” cost information for their strategic decision-making.

ABC differs from traditional costing systems in two ways (Innes et al., 1994, Sakurai 1996 and Cooper and Kaplan 1998): First, cost pools are defined as activities or activity centers rather than cost centers. Second, the cost drivers used to assign activity costs to cost objects are activity drivers based on cause-effect relationships. The traditional approach uses a single volume based driver that often bears little or no relationship to either the resource cost or the cost object. Traditional costing system assigns overhead cost to only one cost driver such as direct labour cost or direct labour hour or direct material. Overhead cost was a small portion of the overall product cost, while nowadays overhead cost tend to take up a larger portion as shown in Figure 2.1.

Figure 2.1 Traditional Costing Systems and Activity Based Costing System



Source: Adapted from (Cooper et al. 1992a: pp. 9 - 10)

ABC provides managers with rich information to make better decisions. By allocating overhead costs to activities that the product consumed, activity-based costing provides managers with accurate cost of products and financial information where as

Traditional costing lies in the concept that overhead costs can be allocated from one cost driver. The overhead cost will be calculated by multiplying the direct cost by a mark-up constant, which is assigned by managers depending on their experience.

ABC is not just about allocating overheads. ABC is about managing and controlling activities and consumption of resources that incur cost (Turney, 1996 and Cooper and Kaplan, 1998). By recognizing the causal relationships among resources, activities, and cost objects such as products or customers, ABC allows to identify inefficient or unnecessary activities and opportunities for cost reduction or profit enhancement. ABC helps in identifying value added and non value added activities.

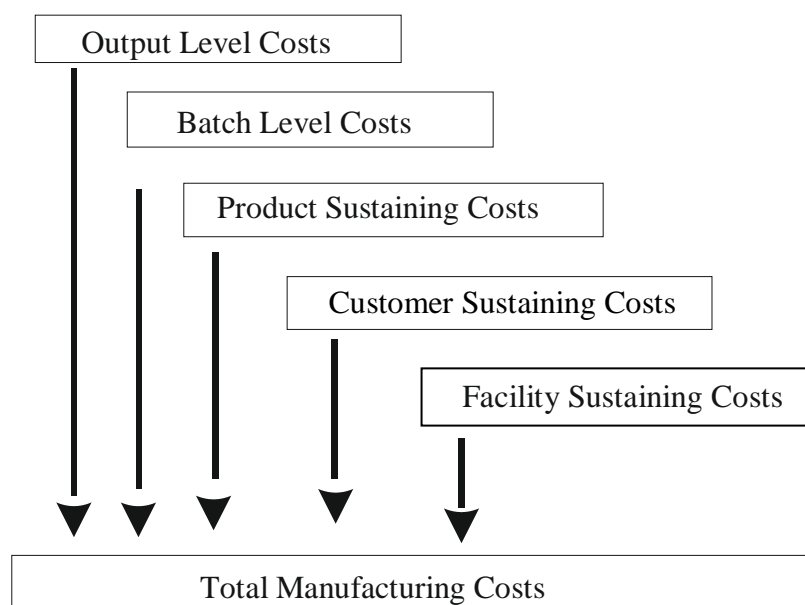
In ABC, the activity itself becomes the main point of the costing process (Sakurai, 1996). Under ABC, the first-stage allocation is a resource cost assignment process and the second-stage allocation is an activity cost assignment process. The basic idea in ABC is: activities consume resources (and so cause cost) and products consume activities. Thus, the original ABC system proposed by Cooper and Kaplan in the mid-to late 1980s is also based on a two-stage procedure. However, ABC differs from traditional costing systems by modeling the usage of a firm's resources on activities performed by these resources, and then linking the cost of these activities to cost objects such as products or services (Sakurai, 1996 and Cooper and Kaplan, 1998). In particular, ABC measures more accurately the cost of activities that are not proportional to the volume of outputs produced.

These modifications to the two-stage procedure allow ABC to report more accurate costs than a traditional costing system because ABC identifies clearly the costs of the different activities being performed in the firm. ABC also assigns the costs of those activities to output cost objects using measures that represent the types of demands individual output products or services make on those activities. The concept of ABC began with the objective of more accurate product costing but in many companies cost management has become as if not more, important than product costing (Innes et al., 1994, Turney, 1996 and Blocher et al., 1999). The reason for this is that once managers begin to think in terms of activities and cost drivers, it is natural to ask questions about whether all the existing activities are required and whether certain activities can be performed efficiently or effectively.

The activity-based system can measure the costs of using resources, not the cost of supplying resources. This leads to accurate product costing and reveals why operational improvements often do not lead to lower spending. In fact, through focusing on resource consumption, measuring unused capacity may be one of ABC's important contributions to some companies; for example, Sanyo Electric in Japan successfully used ABC to find non-value capacity (Sakurai, 1996). ABC focuses on resource consumption not spending. Thus, a major conceptual advance in ABC is that the ABC system should not assign all organizational expenses to cost objects.

ABC provides a framework for achieving the two overhead costing objectives of cost pool homogeneity and a cause/effect relationship between absorption bases and costs (Innes and Mitchell, 1998). Accordingly, ABC has been put forward as the solution for many of the problems of modern businesses in competitive environments such as overhead cost problem. The basic elements of the original ABC system are the cost drivers, activity cost hierarchy (unit, batch, product, facility-sustaining, and customer shown in Figure 2.2.), and resource consumption (Sakurai, 1996 and Cooper and Kaplan, 1998).

Figure 2.2. Cost Hierarchy



Sources: Adapted from (Horngren et al., 1997: pp - 150)

Many resources of the indirect support activities are not used in the proportion to physical volume. Therefore, assigning these costs using unit cost drivers that are proportional to volume creates significant errors in the costs assigned to individual products. Unit level cost is representing cost incurred for every unit and influenced with proportion of production and behave like variable costs, where as batch level cost is related to numbers of batches which is independent of numbers of units in a batch. Product level cost means cost changes as per individual products extending this notes to outside factory is called customer- sustaining cost and facility level cost means cost of providing facility like depreciation and property taxes etc., Application of cost driver should be based on this Cost hierarchy.

These elements of ABC provide significant visibility in the overhead area and accuracy in the generation of product costs. By the ABC cost hierarchy, ABC provides a structure within which cost behavior can be analyzed in a more sophisticated manner than that undertaken with the more conventional spilt into fixed and variable categories (Cooper and Kaplan, 1998). This analysis also emphasizes the level at which decisions must be made if they are to influence costs. It thus not only provides a basis for helping management understand cost behavior but also assists them in identifying the implications of their decisions and focusing upon the potential results of a “what-if” analysis of the situation which confronts them. The discussion so far has provided a broad overview of ABC and next part describes the construction of ABC system.

## **2.4 Construction of ABC System**

By now Activity-Based Costing (ABC) has proved itself beneficial yet there remains to construct a system that will help in calculating accurate cost. This which requires the execution of the following steps: To identify firm resources is to identify all direct and indirect costs of operation. Then these costs will later be attached to specific activities. This suggested that mapping firm activities should be performed at the same time. Activities need to include ones that directly operate to produce products and ones that are indirect such as general management and administrative activities. The second step, after managers have information of resources and activities, trace those costs from resources to activities to identify cost drivers. Identification of proper



cost drivers is one of the greatest challenges of the ABC method. The third step of ABC method is to trace costs from activities to cost objects (Goldsby, and Closs, 2000).

Another scholar Drury (2000) argued that the development of ABC system involves four major steps:

1. Identifying the major activities that take place in an organization;
2. Assigning costs to cost pools/cost centers for each activity;
3. Determining the cost driver for each major activity;
4. Assigning the cost of activities to cost objects.

The first two steps relate to the first stage, and the final two steps to the second stage, of the two-stage allocation process. These steps are normally organized by ABC project team. This team will require various types of expertise and usually involves not only management accountants but also representation from many departments and sections from the organisation. In addition, outside consultants may be involved in the ABC system designing process.

#### Step 1: Activity identification

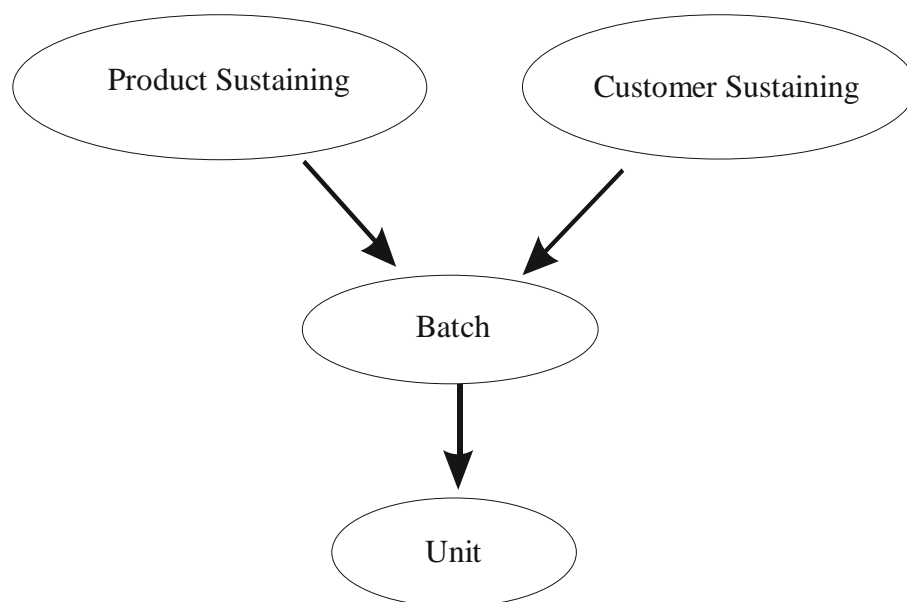
Activity means a task performed with specific objective. The main focus of ABC is on activities. Thus, identifying activities is the logical first step in designing an activity-based costing system (Cooper and Kaplan, 1998 and Hansen and Mowen, 2000). Identifying activities means creating blocks for building ABC system. This step is fundamental to ABC as it determines to a large extent the structure and the scope of the system. It is also beneficial in the way that it forces the accountants to determine what is actually happening in relevant areas of the business and hence ensure the costing system is built on reality (Innes et al., 1994 and Blocher et al., 1999).

Activities are composed of the aggregation of units of work or tasks and are described by verbs associated with tasks (Cooper and Kaplan, 1998 and Drury 2000). For example, purchasing of materials might be identified as a separate activity. This activity consists of the aggregation of many different tasks, such as receiving a purchase request, identifying suppliers, preparing purchase orders, mailing purchase orders and performing follow-ups. Activity identification includes finding out what is

done with the resources committed in the overhead area of an organization. This must be approached in a systematic method to ensure that all relevant activities are represented or described accurately (Innes et al., 1994).

Activities are identified by carrying out an activity analysis. Activity analysis includes gathering data from existing documents and records, and using survey, questionnaires, observation, and ongoing interviews of key personnel. ABC project team members typically ask each key employee or manager questions (Blocher et al., 1999 and MacArthur, 2000): What work or activities do you do? How much time do you spend performing the activities? What resources are required to perform the activities? Which operational data best reflect the performance of the activities? What value does the activity have for the organization? On the basis of importance of cost hierarchy in allocation of overheads, activities can be categorized in four types. Each type of activity behaves differently. These four types of activities are Unit-level activities, Batch-level activities, Product-level activities and or Customer level and Facility-level activities (Kaplan and Atkinson, 1998) as shown in Figure 2.3.

Figure 2.3 ABC Hierarchy of Activities



ABC Hierarchy of Activities

Source: Adopted from (Kaplan and Atkinson, Second edition pp - 106)

(1) Unit-level activities represent work performed for every unit of product or service produce. It assumed that the cost of a unit-level activity changes in direct proportion

to change in the number of units produced. The same amount of cost must be incurred each time an activity is performed and the same amount of activity must be performed for each unit of a product manufactured.

(2) Batch-level activities bases, which assume that cost of a batch-level activity changes in direct proportion to change in the number of batch produced. Each batch contains different numbers of units, the cost of batch-level activities will vary with the number of batches produced, not the number of units like number of components produced after a set up, number of items in a purchase order, or the number of products in customer shipment.

(3) Product-level activities bases, which assume that cost of a product-level activity, is necessary to support the production of each different type of product. Therefore, this type of activity will be assigned as product-level activity like maintaining and updating product specifications, special testing and tooling for individual product or services.

(4) Customer-sustaining activities, which represents work that enables the company to sell to an individual customer.

The cost hierarchy of unit, batch, product-sustaining, and customer sustaining activities show that costs of sustain product may not be related to individual customers and conversely, many customer-related costs may be independent of the products that orgainsation sustains in its product line. Based on the gathered data by interviews, questionnaires, existing documents and records, surveys, and observation and various level of activity, an activity dictionary can be prepared. Activity dictionary lists defines the activities in an organization along with desired attributes (Cooper and Kaplan, 1998 and Hansen and Mowen, 2000). Activity attributes are non-financial and financial information items that describe individual activities. The attributes selected depend on the purpose being served. For example, the activity attributes for product-costing purpose include tasks that describe the activity, types of resources consumed by the activity, amount (percentage) of time spent on an activity by workers, cost objects that consume the activity, and a measure of activity

consumption (activity drivers) (Hansen and Mowen, 2000). Activities are the building blocks for product costing, cost management, and continuous improvement.

Many detailed tasks are likely to be identified in the first instance, but on further examinations the main activities emerged. The activities chosen should be at a reasonable level of aggregation based on costs versus benefits criteria (Drury, 2000). Thus, this step helps in identifying value added activities and non-value added activities which can be eliminated.

#### Step 2: Assigning costs to activity cost centers

After identifying and describing activities, the next task is to determine how much it costs to perform as performance of activity consumes the resources of the organization which need to be identified. Activities consume resources such as labour, materials, energy, and capital. For the cost assignment Company's general ledger is a good starting point to find information about the cost of resources used to perform activities, most general ledger systems report the costs of different resources such as indirect labour, electricity, equipment, and supplies, but do not report the cost of activities performed (Cokins, 1999 and Hansen and Mowen, 2000). Thus, ABC is required to obtain cost of various activities performed in the organisation.

The cost of the resources can be assigned to activities by direct tracing that requires measuring the actual usage of resources by activities. For example, power used to operate a machine can be traced directly to that machine's operation by observing meter usage. If the resource is shared by several activities, then the assignment is driver tracing and the drivers are called resource drivers (Blocher et al., 1999 and Hansen and Mowen, 2000). Resource drivers are used to assign resource costs to activities. An important criterion for choosing a good resource driver is the cause-effect relationship (Drury, 2000). On the basis of cause and effect relationship costs are to be assigned.

Interviews, survey forms, questionnaires, and timekeeping systems are examples of tools that can be used to collect data on resource drivers. Typical resource drivers include (1) meters for utilities, (2) the number of employees for payroll-related activities, (3) the number of setups for a machine setup activity, (4) the number of

moves for a materials-handling activity, (5) machine-hours for a machine running activity, (6) square feet for a building cleaning activity (Blocher et al., 1999).

ABC system restates the general ledger costs and reveals how the resources are being consumed (Cooper and Kaplan, 1998 and Cokins, 2001). The reassignment of resource costs to individual activities contributes to the creation of an ABC database for the organization. The focus on activity and activity cost analysis by ABC provides a novel perspective on detailed insight to cost incurrence within an organization facilitating managerial assessment of spending not only from enhanced visibility which it brings to overhead area but also from the new intra organization and time comparisons which it permits (Cokins, 1999 and 2001). The step 1 and 2 for building an ABC model identify the activities being performed and the cost of performing those activities (Cooper and Kaplan, 1998).

Step 3: Selecting appropriate cost drivers for assigning the cost of activities to cost objects

Cost driver means the factor which drives the cost of an activity. It is the factor which influences the cost of an activity and cost object means anything for which we calculate cost either a product, a service or a job. In order to assign the costs attached to each activity cost center or to cost objects, a cost driver must be selected. (Cooper and Kaplan, 1998). Cost drivers used at this stage are called activity cost drivers. According to Drury (2000) several factors must be borne in mind when selecting a suitable cost driver. First, it should provide a good explanation of costs in each activity cost pool. Second, a cost driver should be easily measurable, the data should be relatively easy to obtain and be identifiable with products. The costs of measurement should therefore be taken into account (Cooper and Kaplan, 1998). Cost is a resource sacrificed (consumed) or foregone (give up opportunity) to achieve a specific objective. It is usually measured as the monetary amount that must be paid to acquire goods and services (Horngren et al., 2000).

All costs incurred by an organization result from activities that are pursued by the organization. "Know your organization's costs" is an essential theme for any manager. Thus, cost concepts are relevant only if they influence a decision, and cost data are relevant only if they are useful to a cost concept. It is known that if a company can

measure then it can manage but some of the companies cannot identify their costs precisely and fail to determine how costs behave. Managers need to understand how costs behave and what cost structure is to make informed decisions about products, processes, and resources, to plan, and to evaluate performance. Organization must be aware of the work performed in the organisation and should understand the underlying cause-and-effect relationship between the work of the organization and the costs of the organization (Harper, 1995).

Cost management requires a good understanding of how the total cost of an object changes as the cost driver change. ABC system designers can choose from three types of activity cost drivers: transaction, duration, and intensity (or direct charging) (Cooper and Kaplan, 1998). Transaction drivers, such as the number of setups, receipts, and products supported, count how often an activity is performed (Drury, 2000). Transaction drivers are the least expensive type of cost driver but they are also likely to be the least accurate because they assume that the same quantity of resources is required every time an activity is performed (Cooper and Kaplan, 1998). However, if the variation in the amount of resources required by individual cost objects is not great, transaction drivers will provide a reasonably accurate measurement of activity resources consumed (Drury, 2000). If this condition does not apply then duration cost drivers should be used. Duration drivers represent the amount of time required to perform an activity (Cooper and Kaplan, 1998 and Hansen and Mowen, 2000) like setup hours and inspection hours. It may be possible that all the products are not required at same duration to perform a particular activity then using duration driver will more accurately measure activity resource consumption than the transaction driver. Intensity drivers directly charge for the resources used each time an activity is performed (Cooper and Kaplan, 1998 and Drury, 2000). Intensity drivers involve direct charging based on the actual activity resources committed to a product. The duration driver would establish an average hourly rate to be assigned to products whereas an intensity driver would record the actual or estimated time for each type of personnel and assign the specific resources directly to the products.

Cooper and Kaplan (1998) stated that these drivers should be used only when the resources associated with performing an activity are both- expensive and variable each time that the activity is performed. They have also suggested weighted index

approach which aims to capture the variation in demands for an activity by products or customers without an over-expensive measurement system.

Thus, ascertainment of potential cost drivers require interviews with the personnel involved with the specific activities. The interviews help to ascertain what causes the particular activity to consume resources and incur costs. Finally, the choice of a cost driver is likely to be based on managerial judgment after taking into account all the above detailed factors.

#### Step 4: Assigning the cost of activities to cost objects

After identifying activities and its cost it is necessary to charge or assign this cost to various cost objects. Thus, the final step involves applying the cost driver rates to cost objects such as products, services, and customers. Therefore, the cost driver must be measurable in a way that enables it to be identified with individual cost object (Drury, 2000). The ease and cost of obtaining data on cost driver consumption by cost objects is therefore a factor that must be considered during the third step when an appropriate cost driver is being selected.

In reality there is no standard ABC system available but these are the standard framework within which various significant judgments can be made as per organizational requirements (Cooper and Kaplan, 1998). Therefore, the construction of ABC system involves a range of aspects where tailoring the ABC system to suit its situation and purpose is necessary. When the design is appropriate, the ABC system will provide a more logical means of generating product costs that reflect resource consumption in a more meaningful way than traditional approach. The potential of ABC to generate information about resources, activities, and cost objects are different from that produced by the conventional means which has been demonstrated in several published studies.

### **2.5 Time Driven Activity Based Costing (TD-ABC)**

TD-ABC was designed to eliminate the problems in ABC systems implementation and operations. As stated by Kaplan and Anderson (2007) this new approach was developed after the following problems with conventional ABC were identified: (1)

the interviewing and surveying process was time consuming and costly; (2) the data for the ABC models were subjective and difficult to validate; (3) the data was expensive to store, process and report; (4) most ABC models were local and did not provide an integrated view of enterprise-wide profitability opportunities; (5) the ABC model could not be easily updated to accommodate changing circumstances as (i) processes and resource spending change, (ii) new activities are added, and (iii) increase occur in the diversity and complexity of individual orders, channels and customers; and (6) the model was theoretically incorrect as it ignored potential for unused capacity. This proves that it is compulsory to make review of activity and cost drivers time by time to time which makes ABC method more complex and time consuming its implementation and operation.

Kaplan and Anderson (2007) stated that “ABC systems were expensive to build, complex to sustain, and difficult to modify” and therefore they made ABC’s shortcomings as TD-ABC’s primary strengths. Furthermore, they state that “It is simpler, cheaper, and far more powerful than the conventional ABC approach”. Kaplan and Anderson describe Time Driven ABC as “a rare example of a free lunch”.

Anderson and Kaplan introduced Time Driven ABC in 2004, a new approach which neutralizes the main disadvantages of the traditional ABC-system. Removal of dependency on the process is the foundation of Time Driven ABC. The main focus is on duration drivers rather than transactional cost drivers. This means that every activity is allocated with the real used time-units, and the relationship with the total time spent is no longer important. If a process takes more or less time than it had taken before, only such process will be adjusted the rest of the parameters remain the same. The advantage is that this method reduces the complexity; the result is that more detailed information of higher quality is made available. Another advantage is that the cost price of one product no longer depends on changes of the production cost of another product. It is also easier to maintain the system and to update it based on changes in processes, which again results in more current and detailed information.

Time driven ABC requires estimates of only two parameters: (i) the unit cost of supplying capacity and (ii) the time required to perform a transaction or an activity. It means Time Driven ABC recognizes two stages. During the first stage, all resources



needed for a certain process or product is determined and in second stage all related costs are divided by the available time. In most cases the available time is determined by availability of employees. This calculation results in the costs per time unit. The next part focuses on the calculation cost price of processes or products based on the cost per time unit based and the use of the resources.

Zohreh & Samad, (2011) building an accurate time-based algorithm in one facility will typically serve as a template that can be easily applied and customized to other plants, or even other companies in an industry. This is to say, service businesses can develop this time equation for some category of services which makes it easier for them to calculate customer service demand of their time. This approach allows for more variety and complexity in services thereby enhancing more accuracy hence, addressing one of the limitations of traditional ABC.

TD-ABC is quite easy to update to reflect changes in a business operating conditions. If a new variety of service is identified or introduced, the simple thing to do is to estimate the unit time required for that new service. This time will be added to the Time Equation algorithm model of each customer characteristics and total time computed. With this equation as a model, it becomes easy to update when more special services are introduced. By updating the model on the basis of events rather than on the calendar (once a quarter or annually), you get a more accurate reflection of current conditions (Kaplan & Anderson, 2004). Small service businesses can estimate this Time Equation for the services they render to varying customers to enhance proper utilization of resources in line with benefits derivable there from.

According to Kaplan and Anderson (2007), TDABC approach overcomes many ABC difficulties and has the following advantages:

- ✓ Easier and faster to build an accurate model.
- ✓ Integrates well with data now available from ERP and customer relationship management systems (this makes the system more dynamic and less people intensive).
- ✓ Drives costs to transactions and orders using specific characteristics of particular orders, processes, suppliers, and customers.
- ✓ Can be run monthly to capture the economics of the most recent operations.

- ✓ Provides visibility to process efficiencies and capacity utilization.
- ✓ Forecasts resource demands, allowing companies to budget for resource capacity on the basis of predicted order quantities and complexity.
- ✓ Is easily scalable to enterprise wide models via enterprise-scalable applications software and database technologies.
- ✓ Enables fast and inexpensive model maintenance.
- ✓ Supplies granular information to assist users with identifying the root cause of problems.
- ✓ Can be used in any industry or company with complexity in customers, products, channels, segments, and processes and large amounts of people and capital expenditures.

Overcoming the difficulties in the traditional ABC through TDABC, its application on various aspects of organizational functions became more fulfilling and fruitful which is the crux of the next discussed segment. The first in the line of discussion is Activity Based Management.

## **2.6 Activity Based Management (ABM)**

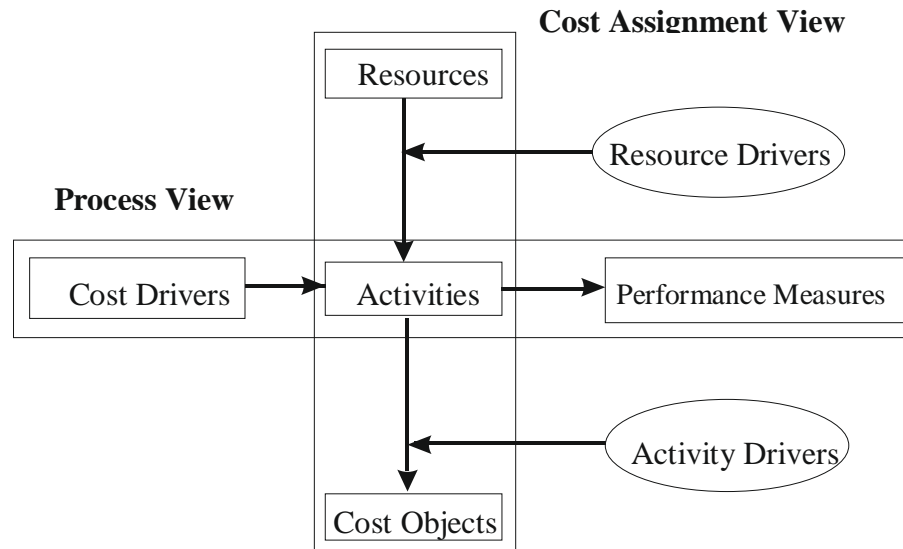
Activity Based Management is all about application of ABC concepts for managing the business performance i.e. to identify strategies, processes, design and elimination of non- value added activities (Turney, 1996).

Activity-based management (ABM) complements ABC by using ABC information in the analyses of processes to identify inefficiencies and non-value added activities (Turney, 1996 and Cooper and Kaplan, 1998). It is known that costs cannot be managed but still one can manage activities and as a consequence costs. The fundamental principle that all ABM approaches have in common is that they focus on managing processes (that consist of activities) rather than costs. The foundation to this novel thinking is based on the “two-dimension” ABC/ABM model (Hansen and Mowen, 2000).

According to Cokins, (1996), the two-dimensional ABC/ABM takes two alternative views or dimensions of the activities performed in an organization – cost view and process view. This idea developed by Turney was first presented to the CAM-I, and

thus is commonly referred to as the “CAM-I Cross”. The second generation of ABC has a framework with two main views: the cost assignment view and the process view. Both these cost and process views are shown in Figure 2.4.

Figure 2.4 Two dimension ABC Model



Source: Adapted from (Turney, 1996, pp. 96)

The vertical dimension of the model depicts the cost assignment view which is comprised of three building blocks: resources, activities, and cost objects. From the cost assignment viewpoint, the system uses two-stage cost allocation to assign the costs or resources to the significant activities of an organization. Activities are then assigned to a cost object that uses the activities such as a product or customer. The cost assignment view provides a better understanding of why resources are used. It supplies the information that can help identify which activities consume the most resources and where cost reduction opportunities may exist. Turney (1996) and Hansen and Mowen (2000) argued that the cost assignment view is useful for product costing, strategic cost management, critical decisions analyzing (e.g. pricing, product mix, sourcing and product design decisions) and determining priorities for improvement efforts.

The horizontal part of the ABC/ABM model according to Turney (1996), contains the process view. Hansen and Mowen (2000) argued that the emergence of a process view could extend ABC beyond product costing to process improvement. The emphasis now is on the activities themselves, the processes by which work is accomplished in the organization. Turney (1996) stated that the process view reflects the need of

organizations for information about events that influence the performance of activities - what is a cause of work and how well is it done. Organizations can use this information to help reducing costs and improving performance and value received by customers.

According to the process view of this model, Dierks and Cokins (2001), defined ABM as “a discipline that focuses on the management of activities within business processes as the route to continuously improve both- the value received by the customer and the profit earned in providing that value.” From this definition, ABM aims directly at two basic goals. The first goal is to improve the value received by customers and the second is to improve profits by providing this value. These goals are reached by focusing on management of activities and ensuring that there is really no conflict, where in the long term, the profitability of an organization is important to its customers because the customers would like to be sure of doing business with their organization in the future. Each activity within the business processes contributes in its own way to this overall goal and makes a measurable contribution to its customers – be it quality, timeliness, reliable delivery, or low cost. It is important to realize that managing activities is not a custodial task (Turney, 1996).

The positive attributes of ABC/M have led Johnson (1990) to describe ABC as: “one of the two or three most important management accounting innovations of the twentieth century”. The above discussion so far provided detailed information about ABM; it focuses on product costing as well as process improvement.

## **2.7 Activity-Based Budgeting (ABB)**

The application of ABC not only transformed management functions but also budgeting functions as the future was of using ABC information in budgeting process and it was conceptualized as Activity Based Budgeting (ABB). It can be defined as application of Activity Based Costing concepts to budgeting.

Cooper and Kaplan (1998) argued that the following steps are needed to build ABB: (1) managers develop an estimate of the production and sales volume for the next period; (2) they forecast demand for activities within the organization; (3) they then

calculate the demand for resources stemming from those required activities; (4) the next step is to determine the actual resource supply based on spending patterns and the activity capacity. The activity capacity may differ from estimated production volume because some resources are lumpy. The major emphasis for activity-based budgeting is estimating the workload (demand) for each activity and the resources required to sustain this workload (Turney, 1996).

According to Hansen and Mowen (2000), the major differences between traditional and activity-based budgeting are found within the overhead and selling and administration expense categories. In the traditional approach, budgets within these categories are typically detailed by cost elements. These cost elements are classified as variable or fixed, using production or sales output measures as the basis for determining cost behavior. Furthermore, the traditional budgets of such categories are usually constructed by budgeting for a cost item within a department (function) and then rolling these items up into the master overhead budget.

Activity Based Costing has been discussed conceptually building the foundation to expound its application on various organizational functions and activities. The following segment deals with the application of ABC as a tool of cost management and its revolutionary impact on decision making.

## **2.8 Application of Activity Based Costing System**

Main focus of Activity-based costing is on overheads which is both changing in composition and growing rapidly in many contemporary organizations leaving traditional approach unreliable. Many ABC researchers argued that ABC offers a means of improving by linking overheads with accurate resource consumption to specific cost objects. This is possible through bringing visibility to the overhead area by generating the type of information that promotes effective cost management in variety of ways and helps management in decision making.

Activity Based Costing charges overheads on causal relationship improving product costing, apparently ABC/ABM extended itself comprehensively to various significant

aspects of cost management such as cost reduction, activity-based budgeting, product planning and design, process improvement, and quality management and control.

An important ABC application is guiding product designs for lower costs (Turney, 1996). The impetus of ABC is on process, process analysis further improves product design. As traditional costing systems based on volume-cost drivers do not provide a clear picture of the true allocation of resources Banker et al (2002) argued that product costs become distorted, leading to a biased analysis of design for manufacturability, product profitability, outsourcing, and make or buy decisions. Without ABC information profitability of the firm and true picture of accurate costs for each product cannot be fetched. And, of course, if evaluating an entire product is difficult, then evaluating specific design characteristics becomes impossible (Gupta and Galloway, 2003). This discussion supports that ABC helps in production planning and improvement in design.

In the competitive environment, success and profitability rely more on cost containment. Today's cost management systems must take account of such non-financial factors such as quality, flexibility, and time to market while designing the process. ABC challenges manufacturing and financial teams to identify, desegregate, and analyze the underlying activities that drive overhead costs (Turney, 1996, Cooper and Kaplan, 1998 and Cokins, 2001).

Cost management systems are a major component of performance management in most organisations, and process performance measurement is a requirement for the ongoing management of an innovated process. ABC systems assign the responsibility to teams rather than individuals. In the continuous improvement environment, employees are empowered with more responsibilities, allowing managers to spend more time as coaches, facilitators, communicators and resources. Management proposes to mitigate risk aversion by encouraging employees to conduct experiments and make suggestions. This is the way to innovative and improve processes (Gupta & Galloway, 2003 and Shields & Young, 1989). Process improvement is usually carried out through team efforts and it is therefore suitable to link rewards to teams in the continuous improvement environment. Hence, the above studies confirm that ABC helps in process improvement.

ABC/M information can also play a role in quantifying the costs of quality (Turney, 1996 and Gupta and Galloway, 2003). There are four categories in which the costs of quality can be quantified: (1) prevention (i.e. costs of activities performed to prevent errors from occurring); (2) appraisal (i.e. costs of inspection such as determining if the product conforms to standards); (3) internal failure (i.e. the costs of correcting errors before they reach the final customer, such as scrap, rework and change orders); and (4) external failure (i.e. costs associated with errors that reach the final customer, such as correcting the error, handling complaints, and customer ill will resulting from the error). Many of these quality costs can be categorized as non-value added costs that would not have been identified by applying traditional cost systems (Schneider, 1992). Thus, ABC contributes in quality management and control by eliminating non-value added activity.

Pricing is one of the vital choices that administration needs to manage painstakingly. The distinctive expenses between TCS and ABC have added to the change of pricing strategy. Daly (2001) is of the opinion that Pricing policies based on “average” cost work well only when “average” products are being priced. Today many manufacturing companies produce a diverse portfolio of products using diverse processes by arbitrary cost allocations to products. Many companies applied common sense methods of cost analysis to avoid arbitrary allocations. This common sense analysis sometimes found that the “real” cost and the “accounting” cost didn’t even reside in the same neighborhood. In the late 1980’s these common-sense techniques gained the respectability of an organized discipline under the name Activity-Based Costing (ABC). Activity Based Costing applied to pricing strategy can provide with a powerful tool for enhancing the top line and the bottom line at the same time, Daly calls it, Activity Based Pricing (ABP). Average price calculated using TCS makes management uncompetitive where as ABC provides accurate measurement for calculation of price of product or service.

ABC provides information that is vital for pricing strategy. Cost information generated by ABC can be used to set the prices of products. Managers may find out that some products are under-priced and some are over-priced. The anticipated action here depends on whether the prices are set by the market or not. If the firm cannot

control the prices, it may be better to focus more on the over-priced products and less on the under-priced products. Moreover, the firm may increase the prices of the latter ones, but customers may not be willing to pay the higher price; they may be lost to competitors. Generally, ABC information guides managers about the desirability to sell at the market price (Turney, 1996).

ABC information plays a significant role in pricing the customized products. Unique products have no prices at the market since they are designed according to customer specifications or requirements. In this situation, customers usually obtain quotations from different producers; accordingly, they select the producer with the lowest price, assuming equality among other factors. It is important for a firm to reduce the product costs, so that a competitive advantage can be achieved (Hicks, 1992). Swenson (1995) found that 72 per cent of the sampled firms use ABC to support pricing decisions. Innes, Mitchell and Sinclair (2000) found that using ABC for the purpose of product/service pricing is significantly associated with the overall success of ABC.

Product mix refers to the suitable combination of products that a firm could produce. A few firms contend on institutionalizing products, some contend on redoing products and others contend on both. Institutionalized items are typically delivered in vast volume, while altered products are generally created in low volume. Dropping unprofitable products is not the only option open to managers.

ABC information reveals different patterns of profitability across products. Some products are produced in high volume and contribute to high profits. These products may be targeted for extra promotion such as quantity discount or extended warranty. In contrast, other products may be produced in low volume for low profits. Firms may drop these products, but even this decision is not always warranted, as in the case of representing a single source of supply. However, some products that are produced in low volume generate high profits. Apparently, these products need price cuts and advertising to elevate the volume. Contrarily, other products may be produced in high volume but generate low profits. These products should be targeted for cost reduction. Indeed, ABC is able to identify opportunities for cost reduction (Turney, 1996).



Traditional costing system is structure oriented in contrast, the heart of ABC is the activity. Cost management focuses on the performance of each activity and its resultant use of resources. Managing activities better is the key to permanent cost reduction. Reducing cost is only one of several focal points of ABC. Improving quality, flexibility, and service - the importance of which vary from one business to another - is also central to ABC. Cost reduction is best achieved by changing the way activities are used or performed, then redeploying resources freed by the improvement.

Activity-based costing (ABC) is a new method for calculating the cost of product thereby replacing traditional cost. Give accurate product cost and provides insight information of operation for managers. For the past two decades, the traditional cost method has failed to provide such accurate costing of products for companies (Tsai, (1995). Whereas Innes and Mitchell (1997) found that overheads based on activity centers facilitate the targeting of unnecessary, wasteful, resource usage and the costly effects of over-complex ways of running a business process.

Cooper and Kaplan (1991) posited that using the information provided by ABC, companies are able to cut costs, review pricing policies, identify opportunities for improvement, and determine a more profitable product mix. This is because of detail activity analysis and using appropriate cost drivers instead of single cost driver for charging overheads.

Competitive conditions dictate that companies must deliver products the customers want, on time, and at the lowest possible cost. That means that an organization must continually strive for cost improvement. Many companies attest to cutting costs “the traditional accounting approach”, but few achieve lasting savings. In some cases costs have gone up, while employees complain about stress and workloads (Turney, 1996). In this context, Turney (1996) and Hansen and Mowen (2000) argued that there are certain guidelines showing how to reduce cost - the activity-based way:

1. Reduce the time or effort required to perform an activity, this can be done with the help of detail activity analysis
2. Eliminate unnecessary activities
3. Select low-cost activities from activity analysis and

4. Sharing of activities wherever possible to various cost objects
5. Redeploy unused resources i.e. through analysis resource can be used fruitfully.

ABC focuses on resource consumption not spending (Cooper and Kaplan, 1992). Thus ABC can be used to determine the type and amount of unused resources. Resource plans based on the ABC information then become the basis for redeployment. These efforts are as likely to improve quality, as they are to reduce cost. ABM and quality management go hand-in-hand in any improvement program. ABC focuses on activity analysis. This can identify non-value added activities which can be removed and cost can be reduced. The above findings support that by managing the activities ABC helps in cost reduction.

Sourcing application concentrates on the determination of supplier costs and the outsourcing choice. Firms may out-source low-volume parts or high-cost activities. Sourcing decisions need precise and important data about firm and supplier costs. The definition of supplier costs under ABC is different from the traditional definition. Traditionally, firms consider only the purchase price as a supplier cost, so purchase managers evaluate suppliers based on this price. In contrast, ABC systems add other costs beside purchase price, which are related to quality, reliability and delivery. ABC, for example, traces rework costs and expediting costs to the appropriate supplier because these costs are usually attributed to parts failure and late delivery. Therefore, ABC considers suppliers as cost objects. ABC assigns supplier costs to products. ABC reveals that unique products have higher costs than commodity products. Product designers may think about alternative designs that affect the relationship with specialty and standard suppliers. Moreover, ABC provides insight regarding the efficiency of internal activities and processes. If the firm is unable to perform a specific activity or manufacture components efficiently, it is better to out-source these. However, the decision to make or buy depends on the ability to fully eliminate the costs associated with the eliminated activity or components (Hansen, Mowen and Shank, 2006 cited in Yousif, D., and Yousif, M., 2012).

The general objective of ABC is to enhance the profitability of the value delivered to customers. A firm needs to know which customer group fortifies its financial position

and which ones weaken the position. ABC empowers managers to pull up a report on customer related costs and order customers as profitable and unprofitable. Managers may find that some customers frequently request small orders and some request less frequent large orders. Moreover, a few customers may cause high expenses in the marketing and distribution services while they represent a small portion of the profits.

Classifying customers as profitable and unprofitable is important since both require different actions. Profitable customers deserve rewards through decreasing prices or increasing the levels of current service or creating new services or a combination of these options. In contrast, unprofitable customers need corrective actions through price increase or decrease in service costs or by encouraging them to leave by lowering the levels of service or a combination of these solutions (Hansen, et. al, 2006 cited in Yousif, D., and Yousif, M., 2012). Innes, Mitchell and Sinclair (2000) indicated that ABC success was very significantly associated with customer profitability in 1999 and significantly associated with customer profitability in 1994. Moreover, Anand et. al, (2005) studied corporate Indian firms and pointed out that ABC has resulted in changes in various management decision areas such as focusing on profitable customers.

In the traditional environment, performance of organizational structure is measured in financial terms. However, under ABC systems, the responsibility domain is changed from the organisational structure to a process. Processes are the sources of value for customers and the key to achieving financial objectives. The process perspective has affected the nature of performance measures. Processes have non-financial attributes that need to be measured. ABC is more focused on non-financial measures than financial measures. Non-financial, process-orientated measures include efficiency, quality, cycle-time and on-time deliveries. It is established that improved processes translate into better financial results (Hansen, et. al, 2006 cited in Yousif, D., and Yousif, M., 2012).

Activity based costing is simply an accounting method that identifies all activities and the costs associated with these activities; it then assigns the cost associated with the activity directly to the pricing of the output of that activity, rather than averaging the cost across all outputs. ABC can be a strong tool for budgeting and costing in some

organisations. Activity-based costing is used to precisely identify cost centres for each product or services offered by a firm and build those costs into the price of the product. The use of ABC allows the firm to precisely price its products in reflection of their actual cost of production. It reduces the potential for over pricing or under pricing and helps the firm to offer more precise prices to its consumers. The process also allows for elimination of waste by identifying areas where there are excessive expenditures and allowing the firm to limit these expenditures. These all provide compelling reasons why a firm might want to use ABC to control its costs and determine prices. The advantages to ABC include careful control of costing, which can be a strong advantage when there is fierce competition, when the products being produced are already very expensive, or when a firm is attempting to gain or maintain a cost-leader position. It can also help to ensure that a firm with a diverse product line can price its products competitively in all cases, which allows for increased competitiveness within each of these areas (Proctor, 2009).

Basic benefits for companies that have ABC in place can be summarized below (Gunasekaran, & Singh, 1999; Cooper, 2000): (1) ABC gives a more accurate product costing. The company then can be aware of the real cost of the product. ABC might reveal the product that company thought was Profitable was actually losing money through activity analysis. (2) ABC provides non-financial information. Besides giving information on a financial basis, ABC gives companies the information on how each activity generates product cost. (3) ABC encourages improvements. Because ABC provides insight information of operation, managers can see where most of the cost comes from, and how much each activity costs when it is performed and how it relates to certain types of products.

## **2.9 Activity Based Costing – In Service Sector**

Service sector is growing by leaps and bounds in the present globalized scenario, with plentitude of organizations venturing in; immense competition is all apparent and obvious. Soaring overhead cost and absence of timely quality information for cost control and decision making condescends service organisations. Moreover, cost and management accounting concepts and techniques are not only used in manufacturing sectors but also in service sectors to provide cost information for decision-making.

ABC focuses on process, consumption of resources and provides insight into cost causation to improve their performance.

ABC cost management system was common in the manufacturing environment where the identification of activities associated with the products was still less complex and in some instances the activities were direct. However, now even the service sectors adopt ABC cost management, acknowledging the importance of cost information for survival in the increased competition. A number of researches revealed successful applications of ABC in private as well in public service sectors such as financial institutions, hotel, health Care, transport, and telecommunication. ABC systems can be customized as per the needs of different organisations. 'Initially, most cases were based on private sector manufacturing companies and later this was extended to services and the public sector' (Bjørnenak and Mitchell 2002). Thus, the service sectors shift the cost management focus from conventional costing system to the ABC system.

During the last few decades, the services sector has witnessed substantial changes due to emerging of new competition as a result of deregulation, which has also given companies greater freedom in setting prices and determining the mix of products to offer. Well managed service firms with a good understanding of their markets, customers and information technologies can become much more profitable in a deregulated and more competitive environment. Conventional cost accounting systems, which emphasize inventory valuation, have neglected the huge investments and expenses in an organization's service functions. Again, conventional cost system cannot accurately assign the costs of non-volume-related overhead activities. Assigning overhead costs by using only volume as a basis can supply management with an incorrect picture of how costs are established. Similarly, products cost can be distributed if the non-volume related overhead costs are significant proportion of total overhead costs. The solution to this problem in service firms, as well as in manufacturing is to implement activity based cost management (Hussain, M. M. and Gunasekaran, A., 2001).

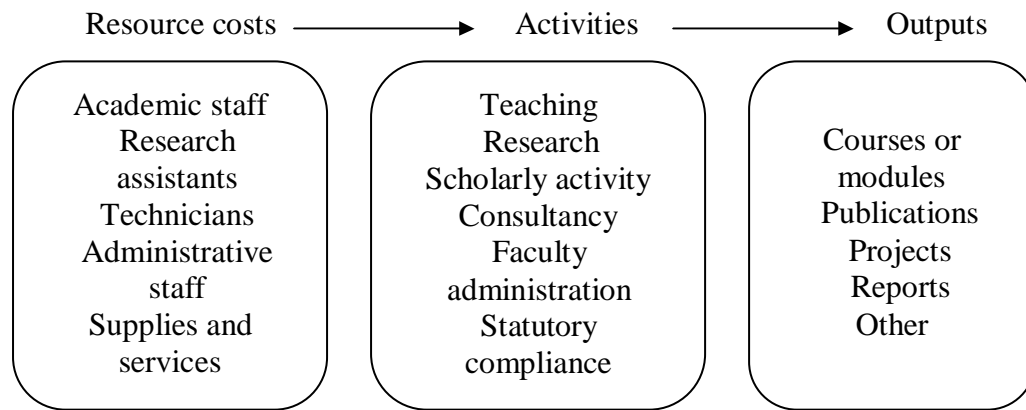
The production system in service organizations is divided into a totally invisible part and a line of visibility. The invisible part consists of such items as systems support,

management support and physical support. The visible part is more or less visible to the customer who usually participates in the production process. In the invisible or interactive part, interactions take place between the service firm's contact persons and customers. The augmented service offer includes the service process and the interaction between the organization and its customers. Because services are activities or processes in which consumption is partly inseparable from production, the service production is a dynamic phenomenon by definition. The service exists as long as the production process goes on. Hence, any model of services, such as the augmented service offering and the creation of such products, must include a dynamic aspect where the basic package facilities' services and goods and support products have to be planned according to the service concept. A service, both in the elements of the basic package and in the accessibility, interaction and customer participation aspects of service production and delivery, include the desired features, which in turn creates the benefits that customers seek. Therefore, facility-sustaining expenses are dealt with best if they can be treated as an expense of operating the facility for the period and not allocated to products (Hussain and Gunasekaran, 2001).

Kock (1995) asserts that customers demand services that often drive business expenses up without a corresponding increase in revenue and, thus, firms that could quantify these costs are in the best position to control them. All in all, the objective is to eliminate any activities that do not add to the service provided and with this, costs can be reduced without compromising the service offered to the customers. ABC is a useful decision making-framework for economic analysis in service sectors, particularly in the areas of planning, control and decision-making.

The role of ABC in service firms does not differ from that in manufacturing firms. Cooper and Kaplan (1991) assert that service firms can benefit from using ABC as they have the same set of issues as manufactures, e.g. analyzing operating expenses and performing service activities that demand resources (cited in Kock, 1995). In service firms, there are resources that are consumed by activities. Activities are performed to produce outputs. Figure 2.5 illustrates the major elements of allocation paths in an academic department, which is an example of a service-based unit.

Figure 2.5: Academic department model



Source: Adapted from (Cropper & Cook 2000, p. 63)

Brignall et al. (1991) studied five service organisations and found that cost systems were not of higher priority in these organisations due to the lack of stock valuation. They found that service organisations use cost information for planning and control and suggested that ABC is useful for such organisations, particularly service shops and mass services, which have the highest level of fixed costs. Service shops and mass services need accurate indirect costing because they face diversity, complexity and a high degree of competitive pressure. They have highlighted five key differences between manufacturing and service sectors: (1) The common attendance of a customer in the time of service rendering (2) Intangibility of many service products (3) Inconsistency of either employees' performance or customers' expectations (4) Simultaneity of service production and service consumption (5) Perishability of many service products. These characteristics have implications on products, cost behaviour and performance.

Dearden (1988) outlines the factors that limit the application of conventional costing: lack of finished goods or inventory, no product costs- costs are mostly period costs, inappropriate assessment of output-financial measure, owing to the lag between deterioration of service quality and reflection on profit and very few variable costs as service firms are labour-intensive and most labour costs are fixed. Change in sales, results into change contribution in almost equal measures, causing extreme profit volatility.

Drury (2008) pointed out that overhead costs are the major element of expenditure in service organisations and these costs are non-volume related. He suggested that ABC is an appropriate system to trace such costs to different business segments. Whitt and Whitt (1988) explained the motivation for professional service firms to have interest in management accounting systems, focusing on two reasons: first, the increased competition made managers more conscious of the need for management accounting systems for planning, control and decision making. Second, professional service firms have grown in size and organisational complexity and therefore require efficient cost systems.

Roztock, et al. (1999) were of the opinion that familiarity with and adoption of ABC was found to be comparable across both the manufacturing and service sectors. In this study, adoption of ABC was found to be significantly related to firm size, with larger firms being more likely to adopt this method than smaller firms. These results may reflect the fact that larger firms are more likely to have the diverse mix of products or services that makes the use of ABC advantageous. Also, smaller firms may be less likely to have specialized staff that are familiar with this method. Accountants and managers working for larger firms were more likely to be familiar with ABC than those working for smaller firms. As small firms develop greater familiarity with ABC, increased implementation would be expected. In addition, adoption of ABC by smaller companies might be supported by implementation procedures customized to their particular needs.

Krishnan (2006) in his study on the application of Activity- Based Costing in a higher learning institution particularly in a University of Malaysia is of the opinion that determining the true cost plays an important role in strategic decision-making. The ABC system provides more accurate cost management and enables the university managers to calculate the 'true' cost of a product i.e. cost per students. The ABC system clearly indicates that it can help the university to understand where the costs are, what drive them to occur, and which costs may be low value- added to the cost object. The system enables the department heads of the university to analyze and see things, through the lens of costs and work activities. This definitely will replace their decision-making behavior through intuition and assertions to fact-based. Therefore, the big opportunities of ABC system predicting planning cost estimation and



elimination of non-added value activities, which are useful for operational strategic decision.

Appah et. al (2013) examined the factors influencing activity-based costing application in the hospitality industry in Yenagoa, Nigeria by analyzing interview and a well-structured questionnaire. The data collected from the questionnaire was analyzed using relevant econometric tests such as unit root, granger causality and diagnostic, ordinary least square and descriptive statistics. On the basis of the findings, the study concluded that for successful adoption of ABC in the hospitality industry, owners and operators should invest on training, software and hardware, man-hour and commitment from all levels of staff.

Competitive environment cause service sector to improve quality of service at lower cost. Nowadays in service firms major amount of cost is overheads and charging overheads on volume based is not proper way as customer are not ready to pay what they have not used or consumed so it is necessary to charge overheads on the basis of consumption of resources. ABC focuses on consumption rather spending; ABC helps service firm to accurately measure cost of service and improve the process.

The degree of adoption and success of ABC in various organisations can be ascertained by taking into account various survey conducted in countries across the globe. The following segment of the study documents these surveys.

## **2.10 Survey on Activity-Based Costing**

Innes and Mitchell (1995) survey of activity-based costing practices in the 251 UK companies listed in The Times 1000 (1994) found that 19.5% of the respondents had adopted ABC and 27.1% were considering its adoption. The extent of its adoption in the non-manufacturing sector had not been found significantly different from that found in manufacturing concerns. The ABC users had considered its applications in the areas of cost reduction, product/service pricing, performance measurement, & improvement, and cost modeling. The inventory valuation use had the lowest adoption rate amongst ABC users.

Dugdale and Jones' (1997) follow-up survey to Innes and Mitchell (1995) questionnaire of large UK firms adopting activity-based costing has found that only three companies used ABC for stock valuation as against reporting of 14 companies, when strong definition of ABC was applied. A survey in UK reported that 51 per cent of financial and service organisations have adopted ABC as compared with fifteen per cent of manufacturing organisations (Drury & Tayles, 2005).

Innes et al (2000) based on the survey of activity-based cost management practices of 177 UK's largest companies had assessed the changes that had occurred in the ABC adoption status over a five-year period. The ABC adoption / under consideration rate has fallen to 17.5% and 20.3% from 21% and 29.5% respectively. The highest adoption rate is in the financial sector. In terms of scale, the median activity-based cost accounting systems design included 40 (1994: 14) cost objects, 52 (1994: 25) activities, 22 (1994: 10) cost pools and 14 (1994: 10) cost drivers. The ABC rejection rate has increased from 13.3% to 15.3% during this period. Cost reduction, pricing, performance measurement / improvement and cost modeling continued to be the most commonly used areas for activity-based costing. The top management support to the ABC implementation initiative and to a lesser extent, with its use to support quality initiative determined its success.

Innes and Mitchell (1995 & 2000) Dugdale and Jones (1997) were of the opinion that the ABC users had considered its applications in the areas of cost reduction, product/service pricing, performance measurement, & improvement, and cost modeling and inventory valuation. Innes et al (2000) reported that the highest adoption rate is in the financial sector.

Foster and Swanson (1997) in a survey of 132 US companies found that all of them were using activity-based cost management, when they responded. The decision use of ABCM, management use of dollar improvement and the overall net benefits as success measure yields the highest explanatory power. Thus, the study by Foster and Swanson (1997) confined that ABC is mainly used for accurate measurement of cost. Groot (1999) survey of US food and beverages industry found that 18% of the respondents had implemented activity-based costing and 58% were considering its implementation.

Dekker, Knight and Zingo (2003) were of the opinion that Activity Based Costing (ABC) addresses internal operating concerns and is an augmentation to the traditional General Ledger based cost management system. It is not a replacement for traditional accounting, but makes use of the source documents provided from standard job costing systems. Instead of being heavily labour based, ABC looks at a business unit's events as cost drivers and ascribes all company resources and accumulated costs against those events in a time-phased sequence. As events and resource consumption are time phased, costs are also time phased. It is important to note that the ABC system provides a methodology to allocate costs on the basis of actual and their projections into the future. ABC provides the ability to track and forecast both expenses and revenues. Thus, the study by Dekker, Knight & Zingo found that ABC system provides methodology allocate costs on the basis of actual and their projections into the future. ABC provides the ability to track and forecast both expenses and revenues.

Activity-Based Costing system is intended to effectively track overhead costs particular to those companies engaged in e-commerce. The output of the ABC analysis is a good basis for revising corporate strategies, especially in cases where the daily business environment changes rapidly, or new competitors appear, or customers are highly demanding. These conditions are typical for companies of the New Economy. Therefore, it appears that ABC would be a good managerial tool for companies involved in e-commerce. The ABC system will lead companies from the New Economy to establish well-founded business strategies. The ABC analysis enables managers not only to more reliably measure costs associated with e-commerce, but also provides them with more of an understanding of how these costs are generated. Managers may then use the ABC analysis to investigate different methods of regulating their business. They can compare different options regarding their handling of customers, product lines, and distribution methods. For many e-businesses, the ABC system may be an important move from management-by-intuition to management by principles (Roztocki, 2003).

Roztocki and Schultz (2003) presented the results of a Web-based survey that gathered evidence about the current status of activity based costing adoption and implementation. The respondents were broadly representative of a variety of firm

sizes, economic sectors, and countries, and represented different job functions within the organization. Of the two-thirds of the respondents who identified the country in which they were domiciled, 35% were from the U.S. and Canada, 22% were from Latin America, and the remaining 43% were primarily from the Europe and Asia. Overall, 42% of the respondents worked for firms with 100 or fewer employees and 58% for firms with more than 100 employees. This proportion was fairly stable across the country groupings, except that 80% of the respondents in the European group were from larger firms. The manufacturing and service sectors were approximately equally represented and there were no significant differences in the economic sectors reported by respondents across the different country groupings. Thus, the study by Roztocki found that the output of the ABC analysis is a good basis for revising corporate strategies.

Akyol et al. (2005) defined Activity-based costing (ABC) as a methodology that measures the cost and performance of activities, resources and cost objects. In their study they illustrated comparative analysis of ABC with traditional costing methods. It can be considered as an alternative paradigm to traditional cost-based accounting systems. ABC utilizes the activity concept and by using the activities, ABC can successfully link the product costs to production knowledge. How a product is produced, how much time is needed to perform an activity and finally how much money is absorbed by performing this task are answered by the help of ABC studies. ABC is capable of monitoring the hidden losses and profits of the traditional costing methods. The results of the application of ABC highlight the weak points of traditional costing methods and an S-Curve obtained and used to identify the undercosted and overcosted products of the firm. The existence of S-Curve shows which ones of the products are under or overcosted. Thus, the study by Akyol et al. concluded that ABC can successfully link the product costs to production knowledge. ABC is capable of monitoring the hidden losses and profits of the traditional costing methods.

Korhan et al. (2005) in their study found that there is a strong positive association between using ABC, JIT or TQM and improvement in financial performance as management accounting continues to evolve and become more involved in the strategic management of the firm, it is important for management accountants to

understand not only how to account for strategic initiatives (e.g., TQM), but also how these initiatives should be implemented and managed to achieve maximum benefit for the firm. Thus, the study by Korhan et al. found strong positive association between using ABC, JIT or TQM and improvement in financial performance.

Yousif and Yousif (2012) found that the major reasons for the implementation of ABC were the need for more accurate cost information that could provide the company with information for correct evaluation of inventories, facilitation of communication with customers, customer/product profitability analysis, and support decisions at strategic level like investments and outsourcing. The study further examined the reasons for abandoning ABC among two former users of ABC. The respondents reported that the important reasons were resistance for implementing new cost accounting system, too expensive implementation, and time and resource requirement. Thus, Yousif and Yousif found importance of ABC for correct evaluation of inventories, facilitation of communication with customers, customer/product profitability analysis, and support decisions at strategic level like investments and outsourcing.

Like other Asian countries, there is a dearth of academic research that examines the prevalence and use of management accounting and control systems in Indian context too (Kallapur & Krishnan, 2008). The Indian companies have also been motivated by the current competitive environment to adopt the ABC system; however, its adoption rate is still low when compared with the developed countries (Joshi, 2001). Joshi carried out a survey of 60 large and medium-sized manufacturing companies in India. He found adoption rate of 20% for activity-based costing, 13% for activity-based management, and 7% for activity-based budgeting. The size in terms of total assets has been found to be significant factor in adoption of these contemporary management accounting techniques. The traditional management accounting techniques have been emphasized more vis-à-vis contemporary techniques because of higher perceived benefits. In general, the Indian management has always been found to be conservative in nature, which might explain the low adoption rate. Further, the perception of exorbitant cost for implementing ABC demotivates the companies from reaping benefits from this system, especially in terms of benchmarking. Other peripheral reasons, lack of expertise, unavailability of training from experts also play

a role in inhibiting ABC use. Joshi conducted a student *t*-test to analyze the differences in mean values for each practice. The results indicated that high benefits were identified with traditional management accounting techniques. Thus, the study by Joshi found very low rate of ABC adoption in India.

Narasimhan and Thampy (2002) designed activity-based costing system for ascertaining service cost for different customers with a case study of two branches of a large Indian private sector bank. The use of activity-based cost information in benchmarking, branch network restructuring, business process outsourcing, and identification of value-added and non-value added activities have been argued. Thus, Narasimhan and Thampy found use of activity-based cost information in benchmarking, branch network restructuring, business process outsourcing, and identification of value-added and non-value added activities.

Vimal Kumar (2002) proved with the help of survey and case study on hospital that ABC seems to be the most appropriate tool in hospitals as they are complex and highly diversified organisations with high support overheads, operating in a competitive environment. In such organisations, ABC would be able to perform an important strategic planning role by furnishing management with information, which would enable them to identify under and over utilization of resources and thereby, to achieve efficiency gains. The results of a survey conducted as a part of this study revealed that a majority of the respondents agreed that due to complex hospital structures and changed hospital environment, there is an urgent need for an accurate cost information system in hospitals for better decision making. Also, majority of them agreed with the view to meet cost information needs of a hospital in the changed environment, ABC system can be the possible answer. Vimal kumar is also of the opinion that in the changing environment, ABC is the possible way for calculating accurate cost in Health care sector.

Anand *et al.* (2005) found in their study that activity-based cost management practices in a value-chain analytic framework are followed by the corporate India. A nationwide survey was conducted to capture the issues in the design and applications of contemporary cost and management tools. The examination of responses conditional on ABC-adoption revealed that the firms who have adopted ABC were

significantly more successful in capturing accurate cost information for value chain analysis and supply chain analysis vis-à-vis the firms who had not adopted ABC. The extent of ABCM adoption in the service sector had not been found significantly different from that in manufacturing sector. To have detailed information on value added and non-value added activities followed by the need to be competitive in the industry in terms of price quality and performance is the major motivation for the introduction of the activity-based costing. The management motivations for adoption of activity-based costing are significantly higher in case of manufacturing sector firms vis-à-vis service sector firms only in case of product/service pricing decisions. The need for customer profitability analysis and budgeting led the corporate India to extend ABC-systems from basic level to advanced level, extending it to facility level and customer level activities.

Shafeq Hamoud Mohammed Al-Saidi (2015) in his study investigated the characteristics and environment of the company and factors that influenced the adoption of ABC system and examined the impact of behavioural and organizational factors on ABC success in the manufacturing companies in Karnataka. In the survey from 186 manufacturing companies the study indicated a positive and significant influence of the level of overheads on the adoption of ABC system. However, the degree of Production complexity, degree of product diversity, and degree of competition were found to have no significant influence on the adoption of the ABC system. The reasons for non-adoption of ABC system were that they face certain inherent problems in the implementation of the ABC system, such as the complexity of ABC system and the lack and high cost of consultants, followed by the confidence in the currently used cost systems. Thus, Shafeq found a positive and significant influence of the level of overheads on the adoption of ABC system.

Various surveys on ABC in manufacturing and service sector have established this as one of the most pertinently accepted tool of cost management. It also remains to study how pertinently it can be used advantageously in the Banking Sector, as one of the two case studies in this research is laid out on banks. The next segment is a detailed review of literature in Banks.

## **2.11 Activity Based Costing In Banking Sector**

The application of traditional costing system in banking assumes that indirect costs are generated by production volume whilst ignoring the effects that the diversity and complexity of operations have on indirect costs (Kimball, 1997; Raihall and Hrechak, 1994; Helimi and Hind, 1996 cited in Phillip C. James 2013). However, as banking organizations develop initiatives to address the needs of the new competitive environment, the burden of indirect costs on their structure increases because the costs of market research, marketing, the introduction of new products, automization of transaction etc are rising (Carenys and Sales, 2008). In addition, the number of cost drivers that have been used to attribute indirect cost to cost object is small, which makes it difficult to determine the difference in the bank' diverse services, (Raihall and Hrechak, 1994 cited in Phillip C. James 2013). Thus, it is almost impossible for banks to trace costs and this makes it difficult to develop initiatives to improve their management.

Lustsik (2004), very categorically remarked that in banking, the information received by means of the ABC technique is essential in a number of fields:

1. Bank service cost – based on this information banks service pricing decisions can be made, also economic consequences of providing specific client fee rates can be evaluated.
2. Bank service cost components – based on this information, cost-increasing components can be identified.
3. Efficiency of bank processes – by analyzing this information, decisions can be made in respect of processes related to bank products (overlapping of processes in different structural units, process inadequacy in certain fields, etc).
4. Input for profitability calculations – product costs calculated with the ABC methodology are applied. Information on product profitability is essential for making decisions on the issue of product vitality and usefulness from the view point of the bank. The knowledge of segment profitability guides the focus to profitable client groups of the bank, enables the evaluation of the profitability of clients in the client manager's portfolio and provides necessary information to segment managers for decision making.



HAO Su-li and DING Ri-jia (2007) stated that with market-oriented interest rate going deeper step by step in China, the power to make a loan price for commercial banks gradually has been transferred to each of the commercial banks themselves. It seems very urgent for the commercial banks how to combine internal with external changes to make the prices of the loan. By analyzing the literates of loan pricing, this paper put forward that one of the key factors of loan pricing “cost” which can be ascertain by ABC (activity-based costing). And then the relative factors were sufficiently considered, except for the cost information. At last, this paper brings forward a commercial bank loan pricing model with the reference of western commercial loan pricing models, combined with present situation of banks in china.

HAO Su-li and DING Ri-jia (2008) for the commercial banks, the exact cost information is the foundation to make a scientific decision. However owing to overheads indirect cost of commercial banks, the traditional costing method is unable to allocate it rationally, therefore it is very difficult to make scientific decisions. The paper designed the ABC (activity-based costing model) of commercial bank based on the business process, and the model analyzed the relations of various activities node in the identical activity center. And the limitation that traditional ABC neglects the relations of various activities node in the identical activity center was been made up. Accordingly the cost accounting of commercial bank will be more accurate, and the decision based on precise cost information become more scientific.

Jordi Carenys Xavier Sales (2008) outlined the characteristics of the cost systems used in banking institutions. It was done so by describing the partial costs and full cost systems in banking institutions. It then looked at the limitations of these approaches to the current competitive conditions and went on to consider the applicability of the activity based costing system in the allocation of indirect transformation costs to branches, products and customers. Finally, findings of a questionnaire to Spanish savings banks were analyzed in order to evaluate how widespread these systems are and how they are used in savings banks and found that direct costs systems predominate in customer and products entries whereas full costs systems are much more widespread in the case of branches. They also found that the use of activity based costs systems is very limited. Therefore, “a full” cost system that allocates indirect cost under a few headings based on business volume may be

acceptable in industries that have relatively small proportion of indirect costs and where output is reasonable homogeneous. This is not advisable in multi-product industries with heterogeneous output which are difficult to measure and with a high percentage of indirect cost.

Banks and manufacturing companies both have labour cost, equipment and facility costs; however the composition of costs is different. The “raw material” of banks is funds, and the cost of funds is interest. Economic cycle and macroeconomic management affect the magnitude of financial credit, thus the volume of services of banks fluctuates intensely. A bank’s cost includes interest costs, claims, overheads or sustaining costs and operational costs etc. While interest costs can be assigned to the relevant products and services directly, operating costs are first grouped by functional departments and then allocated to financial business. In traditional costing, the allocation of overhead or sustaining cost is not accurate. The allocation rates are designed subjectively. Adopting the ABC system would result in this kind of cost being assigned by resource drivers and activity drivers, thus the outcome is more relevant and accurate (Xinjian and Shizhong, 2009).

The ability to identify and understand organization’s “profit zones” is critical for any business that hopes to survive and grow in today’s competitive environment. Without knowing where its’ profit comes from, that is from which products and from which customers and why it comes from, a business will be unable to make the fact-based decisions required to succeed. Therefore, without the ability to associate all of bank’s costs, both the cost of money and the cost of business activities with the various products it provides and customers it serves, a bank’s management will be flying blind when making its most critical business decisions (Hicks, Olejniezak and Curell, 2008).

Commercial banks can be described as a combination of various activities. The theory of ABC states that products and services consume activities and activities consume resources. When the efficiency of activities is enhanced, the cost of a product or service will be decreased. When implementing an ABC system, activities will be divided into two parts, value-added activities and non-value-added activities. It is helpful in banks to focus on eliminating the non-value-added activities by using this

classification method. Therefore reducing the unnecessary resources waste by enhancing the efficiency of activities will improve banks' competitiveness (Xinjian and Shizhong, 2009).

Vazakidis Athanasios et al., (2010) have designed and developed a housing loan costing model for a bank organization, based on the Activity Based Costing (ABC) method. The proposed model identifies and models the involved business processes and the relevant data. It is designed to monitor the flow in the bank housing loan procedure through the involved business entities. It aims to support the decision making process regarding: the costing of the products and services, the separation of the product varieties and services, either by the presentation and promotion of new products, or by the production termination of some of them, and the planning and development of new products and services. A number of Unified Modelling Language (UML) diagrams developed for the design of the data and business processes models comes forward as of immense utility.

Gregory Wegmann (2011) using literature review explained the Activity Based Costing and Management methods applied in France. After analysing the origins of the methods and their diffusion he highlighted the French situation by taking up a case study in a bank. The study showed that the ABC and ABM methods are as developed in France as in the Anglo-Saxon countries and that the methods are strategically oriented.

Maiyaki A. A. (2011) opined that the rapid growth and development of information and communication technology leads to a keen competition in the business environment globally. This compels businesses to discover more efficient ways of doing business. Maiyaki assessed the practicability of implementing ABC in First Inland Bank Plc of which three branches using non-probability method were selected as the sample size. The study revealed that ABC can be implemented as an effective costing method in the bank. It was recommended that accounting professional bodies should educate management staff of banks about the importance of the new accounting system.

Financial institutions are increasingly operating in a highly competitively environment and therefore cost management has become an imperative. Phillip C. James (2013) has investigated the factors influencing the adoption of activity-based costing (ABC) within the financial sector in Jamaica. Qualitative analysis was done using the generalized linear logistic regression model. The results show that certain factors: companies perception of the ability of ABC to assist in cost control, the proportion of overhead to total cost and finally, the action of competitors, that is, whether a competitor adopts the ABC methodology are statistically significant in the decision to implement an ABC system.

Liyanageet al., (2014) examined why and how a Central Bank of a South Asian Country (CBSAC), the monetary authority and the regulatory body of finance and banking sector, adopts and implements Activity Based Costing (ABC) practices. The primary data were collected by conducting semi structured interviews and observing organizational processes. Secondary data were collected through reviewing various documents such as guidelines to activity wise time recording sheets, annual reports and online sources including the CBSAC web site and CBSAC intranet. In the data collection process, higher emphasis was placed on data triangulation. Data analysis was carried out following an explanation building approach. The study identified that the appointment of the new Governor in 2006 was the major driver for moving towards ABC method at the CBSAC. Currently through time recording sheets, activity wise cost of each department is being tracked and assigned to the CBSAC functions. The CBSAC has taken several initiatives to improve the ABC system which has propelled it towards a more time driven ABC.

The literature review on the Banking Sector has consolidated the efficacy of ABC as a tool of cost management being applied to various functional trajectories of an organization and brings forth the advantages of its applicability. The part of the study below represents various surveys of ABC in the Health Care Sector.

## **2.12 Activity Based Costing In Health Care Sector**

Health care sector is one of the most resources consuming that is always exploring ways in order to stay competitive environment where the share of indirect costs increased in the cost structure. In the 1990's, Finnish hospitals introduced the

implementation of ABC and this study by Janne Jarvinen aims to analyse the motivations and rationale of this implementation in the light of three longitudinal case studies. In the first archival case study documents produced between 1996 and 2002 were considered. The second case study incorporates data mainly of research diaries and personal observations and a hospital district activity-based costing and pricing project of 2000–2001. The third case study is of budgeting and costing development in a private, non-profitable hospital which analysed documents and field notes. Here institutional theory was used to interpret the findings and analysing the data based on Roberts and Greenwood's (1997) concept. This concept states that an organisation's rational and efficiency-seeking actions are constrained by both economic and institutional factors. The results of these case studies indicate that different constraints imposed on efficiency-seeking behaviour may lead to different solutions for implementation. (*Janne Järvinen, 2005*).

A survey of all hospitals was conducted to investigate the current state of adoption of activity based systems in Ireland. The findings show that 55% of respondents have adopted activity based costing. This rate of adoption is significantly higher than reported in previous studies of ABC/M adoption in other sectors in Ireland, namely manufacturing, service and financial sector organisations. The survey revealed that those respondents who have adopted activity based costing have done so in particular areas (laboratory and radiology departments) within the hospital and are not using activity based costing across all areas of the hospital. Only two sites have adopted activity based costing in the entire hospital. The survey investigated the reasons for adopting activity based costing, its' the perceived and achieved benefits and the reasons for non-adoption. The reasons for adoption were more accurate costing and better use of resources required to achieve more accurate and relevant patient cost data, so as to allow a more efficient response to rising healthcare costs. However, many sites reported problems with implementation, the under-development of information technology systems to effectively implement activity based costing being the main reason. 45% of respondents who have not adopted activity based costing cited the cost and complexity involved with implementation as the main factors in non-adoption. Consistent with prior findings in Ireland and elsewhere, 45% of the responding hospitals have not given any consideration to the possible implementation of activity based costing to date (*Gerardine Doyle et. al, 2008*).

Technological developments and increase in competition forced healthcare organizations to enhance the variety, quality and accessibility of healthcare services. These efforts resulted with the interest in exploring and efficiently using scarce resources which were reflected by gaining popularity. This study presented a very practical ABC model developed and used in a urology department of a university hospital to get information on resource consumption and costs in order to reach objective decision making. Another advantage of the model is its adoptability to the other departments of the hospital. The costs of treatments and surgeries calculated by ABC show great differences according to resources consumed. ABC model improved allocation of indirect costs and more sensitive calculation of direct costs by time and motion studies and interviews. (Evren AĞYAR et. al, 2007).

Another study considered in the literature review is of Radiology Department of Penang General Hospital, Malaysia. This study identified detailed resource consumption for chest X-ray procedure. Human resource cost was calculated by on the basis of mean time spent by employees doing specific activity to their per-minute salaries. The procurement section of the Radiology Department provided the costs of consumables and clinical equipment. The cost of the building was calculated on the basis of the area of space used by the chest X-ray facility and the unit cost of public building department. Straight-line depreciation with a discount rate of 3% was used for calculation of equivalent annual costs for building and machines. Cost of electricity used by electrical appliances in the year 2010 was compared with electricity tariff for Malaysian commercial consumers on the basis of kwh (MYR 0.31 per kWh). By applying ABC approach, one can have detailed and accurate estimation (Muhammad Atif et al., 2012).

This study is conducted the aim of proving the excellence of ABC approach in the health sector by implementing activity-based costing in a private hospital in Istanbul, Turkey by comparing superior ABC results with those of traditional costing and it raised the attention of the practitioners, government, and academics to the superiority of the ABC method for the “health sector” (Mehtap Al doga, 2014).

The aim of this study conducted in the laboratory of Imam Ali Health Clinic in Dezful in 2014 was to review the results of TDABC in health centers in comparison to the

traditional costing method. Accounting records were used to collect the required data. Interviews and observations were used to determine the cost allocation basis. The results indicated an unused capacity of 3.3% in the relevant sector. According to the results, the costs estimated by TDABC were less than those estimated by the traditional costing method (Rezvan Hejazi, Fatemeh Karmozzi, Samira Rahimi, 2015).

Zohreh et. al (2015) used ABC method for calculating cost price of remedial services in Valieasr Hospital. They suggested steps to be followed in hospital procedures: 1. Defining activity centers, 2. Activity analysis in activity centers, 3. Determining output for each center, 4. Calculating activity center costs, 5. Allocating costs of administrative centers to activity centers, 6. Calculating cost price of services and 7. Cost price of remedy activity was calculated. Hospital costs are predominantly determined by personnel cost. Because of the differences in tariffs and the cost price of hospital services, most parts of the hospital are at losses and government is forced to subsidize them. Activity-based costing model is a practical tool to evaluate the actual cost structure of hospital. (Zohreh Kazemi and Hassan Amirabadi Zadeh, 2015).

Dwivedi and Chakraborty, (2015) conducted an ABC based study in Bihar, India to quantify its various public health related services. This study is important because it elucidates about various obstructions and difficulties encountered during the implementation phase of ABC model in an Indian healthcare setting.

Bayati M et al. (2015) in the study calculated the unit-cost of MRI services using activity-based costing (ABC) in Shiraz Shahid Faghihi hospital to calculate unit-cost of all different MRI services. As a public hospital, there are considerable limitations in both financial and administrative databases of Shahid Faghihi hospital where labor cost has the greatest share of total annual cost. With the settlement of a reliable cost accounting system such as ABC technique, hospitals would be able to generate robust evidences for financial management of their overhead, intermediate and final ACs.

The above studies have further consolidated efficacy of ABC but at the same time a few studies also revealed limitations and adjustments to be made in a customized manner to achieve desired objectives in the Health Care Sector.

### 2.13 Literature Gap

The idea of ABC has come a long way since 1980s with plentitude of social scientists contributing to the conceptual evolution and practical application of idea of Activity Based Costing in various sectors of economy. The entire literature review has profusely advocated the strategic importance of ABC amidst the changing dynamics of factors like global competition, automation revolution, changes in business processes and business environment.

The literature review has unfolded certain imparities in terms of the scope and application of cost management techniques. The major literature gaps as revealed in this study are as follows:

- ✓ Lack of systematic compilation of history of cost accounting and its development.
- ✓ Unawareness of ABC and its application and the consequent non acceptability and impopularity among organisations at large.
- ✓ Despite of significant growth in economic activities in the non-manufacturing sector literature review revealed that ABC is more rooted in the manufacturing sector.
- ✓ Acknowledging the fact that 2004 to 2015 has witnessed an increase in the number of studies on use of application of Activity Based Costing in the Banking sector and in the Health Care sector. These studies discuss the advantages of ABC but seldom disclose the details of an ABC calculation and its comparison with the traditional method. This hampers the reach, understanding and application of ABC concept to organisations at large.
- ✓ The review revealed that quantitative methods such as questionnaire survey were comparatively more in use than the qualitative method such as case study.
- ✓ Most of the Activity Based Costing research was done in developed countries and very few in developing countries.
- ✓ In India very few studies were carried out on Activity Based Costing particularly in the service sector.



This research endeavor is a pursuit to bridge the gap unfolded during the literature review. It also acts as a link between objectives of keeping cost accounting system and its effectiveness to provide information for various business applications. This study will help practitioners and academia to grasp the importance of ABC in the service sector as a tool of cost management. The novel contribution is that it attempts to use both quantitative and qualitative methods.

## **2.14 Proposed Contribution of the Thesis to Literature**

The research tries to contribute towards evaluation of cost accounting, objectives of keeping cost accounting system in the organisation and its importance in cost management practices by providing relevant information for decision making. This research has established that Cost Accounting System (CAS) can be customized as per the requirements of the organization. Yet another contribution is that with this research the conceptual comparison between the traditional costing system and ABC is tested. Further, it compares the application of traditional costing system and ABC and their suitability as a tool of cost management for various business functions. This can be used by other researchers to understand the process of creating Activity Based Costing Model for Service Sector which professionals can use to keep a competitive edge.

The process of literature review was carried out by recognition, retrieval and recollection of literature related to historical development in the area of Cost Accounting Theory and practices with special reference to increase in the share of overheads in total cost of products or services, and its impact on decision making process. This chapter created theoretical development of cost accounting and Activity Based Costing System and reviewed academic reports, articles written by eminent social scientists who have examined various aspects of Activity Based Costing as a tool of Cost Management.

## References:

- Abd Ibrahim El Mageed Ali El Kelety (2006), Towards a conceptual framework for strategic cost management - The concept, objectives, and instruments - Von der Fakultät für Wirtschaftswissenschaften der Technischen Universität Chemnitz
- Ağyar Evren, Ersoy Ayten, Baykara Mehmet, Uçar Murat (2007), A Practical Application Of Activity Based Costing (ABC) In An Urology Department 7th Global Conference on Business & Economics ISBN: 978-0-9742114-9-7.
- Akyol, GoncaTuncel, and G. MiracBayhan (2005), A comparative analysis of activity-based costing and traditional costing DeryaEren World Academy of Science, Engineering and Technology, pp 44 -47.
- Al doga Mehtap (2014), The Excellence of Activity-Based Costing in Cost Calculation: Case Study of A Private Hospital in Turkey Journal of Health Care Finance [www.HealthFinanceJournal.com](http://www.HealthFinanceJournal.com) . retrieved on 18-6-2015
- Al-Saidi Shafeq Hamoud Mohammed (2015), Phd Thesis Activity Based Costing System in Manufacturing Industry in Karnataka. July 2015.
- Anand, M., Sahay, B.S. & Saha, S. (2005), "Activity-Based Management Practices in India: an Empirical Study", *Decision (Social Science Research Network)*, 32(1), pp 123-152.
- Anbalagan Krishnan (2006), An Application of Activity Based Costing in Higher Learning Institution: A Local Case Study, *Contemporary Management Research*, Vol.2, No.2, September 2006, pp 75-90.
- Andrea C, Filho P, Espozel M, Maia A. and Quassim Y (1999), Activity-based costing for production learning, *International Journal of Production Economics*, 62(3), 1999, pp 175–180.
- Appah, Ebimobowei and Bariweni Binaebi (2013), Analysis of Factors Influencing Activity-Based Costing Applications in the Hospitality Industry in Yenagoa, Nigeria, *Asian Journal of Business Management* 5(3): 284-290, 2013ISSN: 2041-8744; e-ISSN: 2041-8752© Maxwell Scientific Organization, 2013.
- Baird, K.M., G.L. Harrison, and R.C. Reeve (2004), Adoption of activity management practices: a note on the extent of adoption and the influence of organizational and cultural factors. *Management Accounting Research*,. 15(4), pp. 383-399.
- Baker, W. (2002), Eliminate Non-Value-Added Costs. *Industrial Management*, May/June 2002, Vol.44, Issue 3, pp.22-27.
- Barfield J. T., C. A. Raiborn and M. R. Kinney (2001), *Cost Accounting Cincinnati, Ohio: Traditions and Innovation*, Cincinnati, Ohio: South Western Colleges Publishing.
- Basil, Yamey (1949), "Scientific Bookkeeping and Rise of Capitalism", *The Economic History Review*, 1949.
- Baxendale, S. J., and Dombusch, V. (2000), Activity-based costing for a hospice. *Strategic Finance*, 81(9), 64-71.

Bayati Mohsen; Ahari Alireza Mahboub; Badakhshan Abbas; Gholipour Mahin; Joulaei Hassan (2015), Cost Analysis of MRI Services in Iran: An Application of Activity Based Costing Technique Iran J Radiol. 2015;12(4):e18372.

Blocher, E., Chen, K. and Lin, T. (1999), Cost Management: A Strategic Emphasis. The McGraw-Hill Companies, Inc., New York.

Blocker John G. and Weltmer W.Keith (1984), Cost Accounting, ed.3, Tata Mcgraw hill

Brignall, S. (1997), A contingent rationale for cost system design in service. Management Accounting Research, 8, 325-346.

Carenys Jordi and Sales Xavier (2008), Costing the Banking Services: A Management Accounting Approach Journal of Money, Investment and Banking ISSN 1450-288X Issue 6 (2008) © EuroJournals Publishing, Inc. 2008  
<http://www.eurojournals.com/finance.html>. retrieved on 18-6-2013

Carmona, J. Salex, X. (2008), Costing the Banking Services: A Management Accounting Approach. Journal of Money, Investment and Banking, Issue 6.

[cga.nic.in/writereaddata/management\\_accounting.pdf](http://cga.nic.in/writereaddata/management_accounting.pdf)

Chandler A. D. (1977), The Visible Hand: The Managerial Revolution in American Business, Boston; Harvard University press, pp.272-283.

Chandler, A. D. (1962), Strategy and Structure. MIT Press, Cambridge, MA.

Church Alexander Hamilton (1931), Overhead: The cost of production preparedness. Journal of Cost Management (Summer): 66-71. (Reprint of Church, A. H. 1931. Overhead: The cost of production preparedness. Factory and Industrial Management (January), pp 38-41.

Clark's book, "The Economics of Overhead Costs" as an "accounting classic."

Cokins, G. (1999), Learning To Love ABC. Journal of Accountancy, Vol.188, Issue 2, pp.37-39.

Cokins, G. (2001), Activity-Based Cost Management: An Executive's Guide. John Wiley & Sons, New York.

Cooper and R S. Kaplan (1987), "How Cost Accounting Systematically Distorts Product Costs." Chapter-9 In W. Bruns and R Kaplan (Eds.), *Accounting & Management Field Study Perspectives* (Harvard Business School Press, 1987), pp. 204-228.

Cooper, R (1987), "Does Your Company Need a New Cost System?" *Journal of Cost Management* (Spring 1987), pp. 45-49.

Cooper, R. (1995a), When Lean Enterprises Collide: Competing Through Confrontation. Harvard Business School Press, Boston, Massachusetts.

Cooper, R. and Kaplan, R. (1988a), Measure Costs Right: Make the Right Decision. Harvard Business Review, Vol.66, Issue 5, pp.96-103.

Cooper, R. and Kaplan, R. (1998), Cost and Effect: Using Integrated Cost Systems to Drive Profitability and Performance. Harvard Business School Press, Boston, MA.

- Cooper, R. and Kaplan, R. (1999), *The Design of Cost Management Systems: Text and Cases*. 2nd ed., Prentice Hall, Upper Saddle River, New Jersey.
- Cooper, R. and Kaplan, R. S., (1991), "Profit Priorities from Activity-Based Costing," *Harvard Business Review*, Vol. 69, No. 3, pp. 130-135.
- Cooper, R. and Slagmulder, R. (1997a), *Target Costing and Value Engineering*. Productivity Press, Portland, Oregon pp. 108
- Cost Management: Control and Profitability  
media.wiley.com/product\_data/excerpt/4X/.../047122734X.pdf retrieved on 21-3-2011
- Daly John L. (2001), *Pricing for Profitability: Activity-Based Pricing for Competitive Advantage* 2001 John Wiley & Sons, Inc. ISBN: 978-0-471-41535-0.
- Davenport, T. (1993), *Process Innovation: Reengineering Work Through Information Technology*. Harvard Business School Press, Boston, MA
- Dearden, J (1988), *Management Accounting: Text and Cases*, Prentice Hall, New Jersey.
- Dekker, Knight & Zingo, (2003), *Activity Based Costing: A Concept Whose Time Has Come*.
- Dierks, P. and Cokins G. (2001), The CAM-I Glossary of Activity-Based Management. Version 3.0, *Journal of Cost Management* (January/February): pp.34-43.
- Dimitrios, Vazakidis Athanasios Hatzis Anastasios Folinas K. (2010), Proposing a Housing Loan Costing Model for a Bank Organization *Middle Eastern Finance and Economics - Issue 6* ISSN: 1450-2889 Issue 6 (2010)© Euro Journals Publishing, Inc. 2010  
<http://www.eurojournals.com/MEFE.html> . retrieved on 24-1-2011
- Dopuch, N. and Sunder, S. (1980), FASB's Statements on Objectives and Elements of Financial Accountings; a review (1980), *The Accounting review*, Vol. LV, No. 1, January.
- Drury, C & Tayles, M (2005), 'Explicating the Design of Overhead Absorption Procedures in UK Organizations', *The British Accounting Review*, vol. 37, no. 1, pp. 47-84.
- Drury, C (2008), *Management and Cost Accounting*, 7th edn, South-Western, London.
- Drury, C. (2000), *Management and cost Accounting*. 5th ed., International Thomson Business Press, London.
- Dugdale, David and T Colwyn Jones (1997), "How many companies use ABC for stock valuation? A comment on the Innes and Mitchell's questionnaire findings," *Management Accounting Research*, vol. 8 (2), June, pp. 233-240.
- Dwivedi Rishi and Chakraborty Shankar (2015), Development of an activity based costing model for a government hospital *Uncertain Supply Chain Management* 3 (2015) 27–42 Growing Science Ltd.
- Emblemsvåg, J. and Bras, B. (2001), *Activity-Based Cost and Environmental Management: A Different Approach to the ISO 14000 Compliance*. Kluwer Academic Publishers, Boston.

- Foster, George and Dan W Swanson (1997), "Measuring the success of activity-based cost management and its determinants," *Journal of Management Accounting & Research*, vol. 9, pp. 109-141.
- Frank, W. G. 1990. Back to the future: A retrospective view of J. Maurice Clark's Studies in The Economics of Overhead Costs. *Journal of Management Accounting Research* (2): pp. 155-166
- Friedlob, G. Thomas & Plewa, Franklin James, Understanding balance sheets, John Wiley & Sons, NYC, 1996, ISBN 0-471-13075-3, p.1
- Fu P (1971), Government Accounting in China, during the Chou Dynasty (1122BC - 256 BC), *Journal of Accounting Research*. Vol 9(1) pp. 40-51.
- Gerardine Doyle Lisa Duffy Melissa Mc Cahey (2008), An Empirical Study of Adoption/Non-adoption of Activity Based Costing in Hospitals in Ireland Working Paper
- Goldberg (1949), The Development of Accounting in Gibson, Accounting Concepts Reading, Cassell.
- Goldsby, Thomas J. and David J. Closs (2000), "Using Activity-Based Costing to Reengineer the Reverse Logistics Channel," *International Journal of Physical Distribution & Logistics Management*, Vol. 30, No 6, pp. 500-514.
- Groot, T. (1999), "Activity-based costing in US and Dutch food companies," in Epstein, M. J.; J Y Lee; and K M Poston (eds.) *Advances in Management Accounting*, No. 7, Elsevier, Jai, pp. 47-63.
- Gunasekaran, A (1999), 'A Framework for the Design and Audit of an ActivityBased Costing System', *Managerial Auditing Journal*, vol. 14, no. 3, pp. 118-26.
- Gupta, M & Galloway, K (2003), 'Activity-Based Costing / Management and its Implications for Operations Management', *Technovation*, vol. 23, pp. 131- 138.
- Hansen, R. and Mowen, M. (2000), Cost Management: Accounting and Control. 3rd ed., South-Western College Publishing, Ohio.
- Hansen, R. and Mowen, M. (2006), Cost Management: Accounting and Control. 5th ed., Ohio, South- Western College Publishing.
- Hao sulì, Ding rijia(2007), The Research on Loan Pricing of Commercial Bank Based on Activity- based Costing.2007 International conference on management Science and Engineering, ISTP,2007.08.22.
- Hao, S. L., and R. J. Ding (2008), "The costing of commercial banks based on ABC." 2008 *International conference on management science and engineering*. 2008.
- Harper, W. M. (1995), Cost and Management Accounting. Pitman, London.
- Helmi, M., Hindi, N. (1996), Activity based costing in banking: A big Challenge. The Journal of Bank Cost and Management Accounting, Vol.9. No. 2, pp. 5-19.

Hicks D. T.(1992), "Activity Based Costing for Small and Mid-Sized Business", 1992, New York: John Wiley & Sons Inc.,.

Hicks Douglas T., (2008), Measuring Customer and Product Profitability at Community and Regional Banks.

Hicks, D.T.,Olejniczak, E.J., and Curell, B.A. (2008), Measuring Customer and Product Profitability at Community and Regional Banks. *Journal of Performance Management*, Vol.22.

Hilton,R.W.(2005),*Managerial Accounting –Creating value in a dynamic business environment*. New York: McGraw-Hill Irwin.

*History of Accounting Profession in India- Volume I*1526 The Chartered Accountant April 2006

Hoda Shahri, Saied Aghasi (2015), Feasibility of the implementation of activity-based costing (ABC) in operational budgeting of government agencies (case study: office of Behzisty of Isfahan)WALIA journal 31(S1): pp. 94-99, 2015Available online at [www.Waliaj.com](http://www.Waliaj.com)ISSN 1026-3861© 2015 WALIA. retrieved on 12-4-2016

Horgren, C.T. (1995), Management accounting: this century and beyond. *Management Accounting Research*, 6, pp. 281-286.

Horngren, C., Foster, G. and Datar, S. (2000), *Cost Accounting: A Managerial Emphasis*. 10th ed.,Prentice-Hall, Inc., New Jersey.

<http://acct.tamu.edu/giroux/Americanbigbusiness.html> retrieved on 12-4-2011

<http://edunote.info/history-evolution-of-accounting> retrieved on 18-4-2011

<http://www.svtuition.org/2011/01/accounting-in-vedas.html> retrieved on 18-4-2011

Hussain, M. M. and Gunasekaran, A. (2001), Activity- Based Cost Management in Financial Services Industry. *Managing Service Quality*, Volume II, No.3 pp.213-226.

[icmai.in/upload/CASB/CAS3\\_Revised.pdf](http://icmai.in/upload/CASB/CAS3_Revised.pdf) retrieved on 12-4-2015

[icmai.in/upload/CASB/icwaicas1.pdf](http://icmai.in/upload/CASB/icwaicas1.pdf) retrieved on 27-8-2012

Innes, J. and Mitchell, F. (1990), Activity Based Costing: A Review with Case Studies. CIMA Chartered Institute of Management Accountants, London.

Innes, John, and Falconer Mitchell (1995), "A survey of activity-based costing in the UK's largest companies," *ManagementAccounting Research*, vol. 6(2), pp. 137-153.

Innes, John; Falconer Mitchell; and Donald Sinclair (2000), "Activity-based costing in the UK's largest companies: a comparison of 1994 and 1999 survey results," *Management Accounting Research*, Vol. 11(3), September, pp. 349-362.

James M.E. (1955), *Estate Account of the East of Northumberland (1562-1637)*, London, Surtes Society.

James Phillip C. (2013), An Analysis of the Factors Influencing the Adoption of Activity Based Costing (ABC) in the Financial Sector in Jamaica, *International Journal of Business and Social Research (IJBSR)*, Volume -3, No.-7, July, 2013.

Janne Järvinen (2005), Rationale for Adopting Activity-Based Costing in Hospitals Three longitudinal case studies Academic Dissertation to be presented with the assent of the Faculty of Economics and Business Administration, University of Oulu, for public discussion in Auditorium TA105, Linnanmaa, on December 10th, 2005, at 12 noon ISBN 951-42-7947-6 (nid.) ISBN 951-42-7948-4 (PDF) <http://herkules.oulu.fi/isbn9514279484/ISSN1455-2647> <http://herkules.oulu.fi/issn14552647/>. retrieved on 12-4-2015

Johnson H. Thomas (1975), The Role of Accounting History in the Study of Modern Business Enterprise *The Accounting Review* Vol. 50, No. 3 (Jul., 1975), pp. 444-450 American Accounting Association, : <http://www.jstor.org/stable/245003>. retrieved on 28-3-2011

Johnson H.T. and R.S. Kaplan (1987), *Relevance Lost: The Rise and Fall of Management Accounting* Boston: Harvard Business School Press.

Johnson H.T. (1975), Management Accounting in an Early Integrated Industrial: E.I. duPont de Nemours Powder Company, 1903-1912, *The Business History Review*, Vol 49, No.2 Summer, pp 184-204). The President and Fellows of Harvard College, <http://www.jstor.org/stable/3113699> retrieved on 28-3-2011

Johnson H.T. (1992), *Relevance Regained*, New York: The Free Press

Johnson, H. (1992), *Relevance Regained: From Top-Down Control to Bottom-Up Empowerment*. The Free Press, New York.

Johnson, H.T. and R.S. Kaplan (1987), *Relevance Lost: The rise and fall of management accounting 1987*: Harvard Business School Press.

Jones, T. C. and Dugdale, D. (2002), The ABC Bandwagon and the Juggernaut of Modernity. *Accounting, Organizations and Society*, Vol.27, Issue 1-2, pp.121-163.

Joshi, P. L. (2001), "The international diffusion of new management accounting practices: the case of India," *Journal of International Accounting, Auditing & Taxation*, Vol. 10(1), pp.85-109.

Kallapur, S., & Krishnan, R. (2008), *Management Accounting in India. Handbooks of Management Accounting Research*, 3, 1399-1410. DOI: 10.1016/S1751-3243(07)03011-8.

Kaplan R.S (1984), the Evolution of Management Accounting Review, Vol.59, No.3, July, pp. 390-418.

Kaplan R.S., Anderson S.R. (2004), Time-driven activity-based costing. *Harv Bus Rev* 82:131–138, 150, 2004.

Kaplan, R. (1988), One Cost System isn't Enough. *Harvard Business Review*, January/February 1988, Vol.66, Issue 1, pp.61-66.

Kaplan, R. and Atkinson, A. (1989), *Advanced Management Accounting*. 2nd ed., Prentice Hall, Inc., New Jersey.



Kaplan, R.S. and Anderson, S.R. (2007), *Time-Driven Activity-Based Costing*, Harvard Business School Press, Boston, Mass, USA.

Kazemi Zohreh and Zadeh Hassan Amirabadi (2015), Activity based Costing: A Practical Model for Cost Price Calculation in Hospitals Indian Journal of Science and Technology, Vol (27), DOI: 10.17485/ijst/2015/v8i27/81871, October 2015 ISSN (Print) : 0974-6846ISSN (Online) : 0974-5645.

Keister O.R (1965), The Mechanics of Mesopotamian Record-keeping. The National Association of Accountants Bulletin. II.

Kimball, R. (1997), Innovations in Performance Measurement in Banking, New England Economic Review, pp.23-38.

Kock, S. (1995), Implementation consideration for activity-based costing system in service firms: the unavoidable challenge. Management Decision, 33 (6), 57-63.

Korhan, Feridun & Ozakca.(2005), impact of Total Quality Management (TQM), Activity Based Costing (ABC), and Just-In-Time (JIT) on corporate financial performance: an empirical analysis on the turkish textile industry. *European Journal of Economics, Finance and Administrative Sciences*, Vol 3, No 2, 2005.

Krumwiede, K. (1998), ABC: Why it's Tried and How it Succeeds. Management Accounting: Official Magazine of Institute of Management Accountants, Vol.79, Issue 10, pp.32-38.

Littleton, A. C.(1933), Accounting Evolution to 1900.New York: American Institute Publishing Co., 1933. Cited in History of Accounting by John R. Alexander at Net Gain.2002

Liyanage M L M D, Noopehewa P U, Perera S A D C U, GunarathneNuwan (2014), Implementing Activity Based Costing: The Case Of A Central Bank in A South Asian Country; International Journal of Information Technology and Business Management 29th May 2014. Vol.25 No.1.

Lueg, Rainer (2015), "Customer Accounting with Budgets and Activity-Based Costing: A Case Study in Retail Banking." *Journal of Academy of Business and Economics* 15.2 pp. 41-48.

Lustsik, O. (2004), Can E-Banking Services be Profitable? Working Paper No.30, University of Tartu, Faculty of Economics and Business Administration.

MacArthur, J. (2000), Activity-Based Costing and Activity-Based Management: An Introduction. In:Brinker, B. (ed.): Guide to Cost Management, John Wiley & Sons, Inc., New York, pp.397- 410.

Maiyaki A. A(2011), The Practicability of Activity-Based Costing (ABC) in the Nigerian Retail Banks Business Intelligence Journal July 2011 pp. 351 -354.

Major, M., and Hoque, Z. (2005), Activity-Based Costing: Concepts, Processes and Issues. In: Hoque, Z. (ed.): Handbook of Cost and Management Accounting. Spiramus, - London, pp.83-104.

Management Accounting: Study Material Prepared By ICWAI for Junior Accounts Officer (Civil) Examination Conducted By Controller General of Accounts.pp-2.



- Mattessich, R. (1998), "Review and Extension of Bhattacharya's Modern Accounting Concepts in Kautilya's Arthashastra," *Accounting, Business & Financial History*, Vol. 8, No. 2: 191-209.
- McNair C.J. (2007), *Beyond the Boundaries Cost Management*, January – February, Vol.21, No. 10, pp.1-21.
- McNair C.J. and Vangermeersch R. (1997), *The Fall of Management Accounting : The NIRA and the Homegenization of cost practices in the United state in A. J. Richardson (ed.), Disorder and Harmony 20<sup>th</sup> Century Perceptions in Accounting History* (Vancouver: CGA-Canadian Research Foundation, 1966).
- Miller and Vollman T. E. (1985), "The Hidden Factory," *Harvard Business Review* (September-October 1985), pp. 142-150.
- Mills, Geoffrey T (1994), "Early accounting in Northern Italy: The role of commercial development and the printing press in the expansion of double-entry from Genoa, Florence and Venice" *The Accounting Historians Journal*, June 1994
- Muhammad Atif,&, Syed Azhar Syed Sulaiman, Asrul Akmal Shafie, Fahad Saleem, Nafees Ahmad(2012), Determination of chest x-ray cost using activity based costing approach at Penang General Hospital, Malaysia *Pan African Medical Journal* – ISSN: 1937- 8688 ([www.panafrican-med-journal.com](http://www.panafrican-med-journal.com)) Published in partnership with the African Field Epidemiology Network (AFENET). ([www.afenet.net](http://www.afenet.net)). retrieved on 18-6-2013
- Müller, A. (1998), *Gemeinkostenmanagement: Vorteile der Prozesskostenrechnung*. 2nd ed., Gabler, Wiesbaden.
- Nara Medianeira Stefano and Nelson Casarotto Filho Stefano and Filho (2013), *Activity-based costing in services: Literature Bibliometric Review* Springer Plus 2013, 2:80 <http://www.springerplus.com/content/2/1/80>.
- Narasimhan, M. S. and Ashok Thampy (2002), "Activity Based Costing in Banking Service: A case study of a large Indian private sector bank," *Prajnan*, Vol. XXXI (2), pp. 95-110.
- Narczyz Roztockki (2003), *Activity-Based Costing for E-Commerce, WeB 2003 Proceedings*, Seattle, WA, Decemeber 13-14, 2003, pp. 121-129.
- Narczyz Roztockki Sally M. Schultz (2003), *Adoption and Implementation of Activity-Based Costing: A Web-Based Survey, , Proceedings of the 12th Annual Industrial Engineering Research Conference (IERC 2003)* , Portland, OR, May 18-20, 2003.
- Oldroyd, David & Dobie, Alisdair (2008), *Themes in the history of bookkeeping, The Routledge Companion to Accounting History*, London, July 2008, ISBN 978-0-415-41094-6, Chapter 5, p.96
- Omolehinwa Eddy (2004), *Coping with Cost Accounting*, Lagos, Pumark Ltd.
- Paton and Littlelon (1940), *An Introduction to Corporate Accounting Standards*, AAA.
- Perera M.H.B and Matthew MR, (1996), *Accounting theory and Development Australia*, International Thomson Publishing Company.

Proctor, R. (2009), *Managerial accounting for business decisions* (3rd ed.). London: Financial Times/Prentice Hall.

Raihall, D., and Hrechak, A. (1994), Improving financial institutions performance through overhead cost management. *The Journal of Bank Cost and Management Accounting*, Vol.7, No. 1. pp. 44-57.

Rezvan Hejazi, Fatemeh Karmozi, Samira Rahimi (2015), Application of time-driven activity-based costing (TDABC) in the laboratory of Imam Ali Health Clinic in Dezful *New York Science Journal* 2015;8(9) <http://www.sciencepub.net/newyork>. pp39 – 43. retrieved on 24-1-2016

Robert, G.M. Joesl, E.R. and James, R.C. (1990), *Information Systems for Modern Management*, 3rd Edition, New Delhi, Prentice Hall of India Ltd.

Roofls, G., (1996), *Gemeinkostenmanagement unter Berücksichtigung neuerer Entwicklungen in der Kostenlehre*. Bergisch Gladbach, Köln.

Roztock, N., Valenzuela, J. F., Porter, J. D., Monk, R. M., and Needy, K. L., (1999), "A Procedure for Smooth Implementation of Activity Based Costing in Small Companies," *Proceedings from the 1999 ASEM National Conference*, American Society for Engineering Management, pp. 279-88.

Sakurai, M. (1996): *Integrated Cost Management: A Companywide Prescription for Higher Profits and Lower Costs*. Productivity Press, Portland, Oregon 518.

Schneider, A. (1992), TQM and the Financial Function. *Journal of Business Strategy*, September/October 1992, Vol.13, Issue 5, pp.21-25.

Shank, J. K. and V. Govindarajan (1988), "The Perils of Cost Allocation Based on Production Volumes." *Accounting Horizons* (December 1988), pp. 71-79.

Shields, M. and Young, S. (1989), A Behavioural Model for Implementing Cost Management Systems. *Journal of Cost Management*, Winter, pp.17-27.

Sihag, Balbir S., (2004), *Kautilya on the scope and methodology of accounting, organizational design and the role of ethics in ancient India* Publication: Accounting Historians Journal.

Solomons, D. (1968), The Analysis of Standard Cost Variances. In: Solomons, D. (ed.): *Studies in Cost Analysis*. Sweet and Maxwell, London, pp.426-443.

Staubus, G. (1971), *Activity Costing and Input-Output Accounting*. Richard D. Irwin, Homewood, Illinois.

Stoner J, Freeman R. and Gilbert, D Jr. (2002), *Management*, Sixth Edition, India, Prentice Hall.

Subramanian, V. K. (1980), *Maxims of Chanakya* (New Delhi: Shakti Malik, Abhinav Publications), 2000 reprint.

Suresh B K (2015), Activity Based Costing & Traditional Cost Accounting System: A Comparative Study of Overhead Cost Allocation, *International Journal in Management and Social Science* (Impact Factor- 3.25) Vol.03 Issue-04, (April, 2015) ISSN: 2321-1784.

- Swenson, D. (1995), The Benefits of Activity-Based Costing Management to the Manufacturing Industry. *Journal of Management Accounting Research*, Vol.7, pp.167-180.
- Tsai, Wen-Hsien (1998), Quality cost measurement under activity-based costing *International Journal of Quality & Reliability Management*, Vol. 15 No. 7, 1998, pp. 719-752.
- Turney, P. (1996), *Activity-Based Costing: The Performance Breakthrough*. Kogan Page Limited, London
- Vadiya S. C., Suveera Gill (2009), *Cost Management A Strategic Approach*, 2009 First Edition, India. Macmillan India Ltd. ISBN10: 0230-63661-6, ISBN13: 978-0230-63661-3.pp-4-5.
- Vernonkam (1990), *Accounting Theory* Second edition, Jhon Wiley and Sons. ISBN13: 9780471507048
- Vimal Kumar (2002), *Designing Of An Activity Based Costing System For Hospitals - A Case Study* PhD thesis, University Business School, Panjab University, Chandigarh.
- Wegmann Gregory (2011), Activity-based Management in France: A focus on the information systems department of a bank *Proceedings of the EBMM 2011 International Conference*, IEEE Catalog Number: CFP1149M-PRT ISBN: 978-1-4244-9543-6, Shanghai, March 11-13, p. 144-148, 2011. Electronic copy available at: <http://ssrn.com/abstract=1858710>. retrieved on 25-3-2011
- Wells M.C. (1978), *Accounting for Common Costs* (University of Illinois Press,).
- WHELDON H.J. (1975), *COST ACCOUNTING AND COSTING METHODS* ED.12, The English Language Book Society and Macdonald and Evans Ltd., London. ISBN. 0712103317
- Whitt , S & Whitt , J (1988), 'What Professional Services Firms Can Learn From Manufacturing', *Management Accounting*, November, pp. 39-42.
- Winjum J. (1971), "Accounting and the Rise of Capitalism: An Accountant's View," *Journal of Accounting Research*, Autumn 1971, p.343.
- [www.cga.nic.in/pdf/management\\_accounting.pdf](http://www.cga.nic.in/pdf/management_accounting.pdf) retrieved on 14-7-2013
- [www.icwai.org](http://www.icwai.org) retrieved on 14-7-2013
- Xingian, S., and Shizhon, Y. (2009), *The Implementation of Activity-Based Costing in Chinese Commercial Banks*. Research Essay. Capital University of Economics and Business, China School of Accountant.
- Yousif, D., and Yousif, M., (2012), *Activity Based Costing: Is It Still Relevant? A Qualitative Study of Seven companies from the benefit perspective*. Degree project in business administration, Umea University.