

Impact of Cost Management On Firm's Profitability

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CERTIFICATE

This is to certify that the work which is being presented in the thesis titled “**Impact of Cost Management On Firm’s Profitability**” in partial fulfillment of the requirements for the award of the degree of Master of Technology in Civil Engineering with specialization in “**Construction Technology and Management**” and submitted to the Department of Civil Engineering, Jaypee University of Information Technology, Waknaghat is an authentic record of work carried out by **Arun Thakur (142604)** during a period from July 2015 to June 2016 under the supervision of **Mrs. Poonam Dhiman** Assistant Professor, Department of Civil Engineering, Jaypee University of Information Technology, Waknaghat

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Chapter 1 Introduction:

A business objective is the starting point for any business organization to thrive and it provides direction for action. It is also a way of measuring the effectiveness or otherwise of the actions taken by the management of the organization. The main goal or objective of any business organization is to make and maximize profit while other secondary objectives include going concern, growth, corporate social responsibility, benefits to employees and so on. Though other objectives are also considered very important as listed above, but profit maximization is usually the ultimate because it maximizes the shareholders wealth which is the ultimate aim of investing in a business. Cost and profit in business undertakings form part of what determines the financial position of a business concern. Since management is concerned with profitability, which is a measure of business performance, especially in a manufacturing concern, the need for higher sales will arise and this will facilitate the need to increase production capacity, which in turn brings about increase in cost. Bromberg (2008) was of the opinion that corporate bodies should watch the cost and the profit will take care of itself. The implication is that cost should be controlled rather than embarking on unscientific cost reduction that may translate to lowering the quality of product. Management is normally forced to adopt various methodologies and techniques in order to regulate (control) rather than reduce cost. Cost increases as various production activities are embarked upon and the need to keep cost in check arises because standards for production will be set and actual production will be made thereby bringing about variances which can only be reduced or eliminated through effective cost control. Sikka (2003) was of the opinion that cost control system consists of methods and procedures that help to regulate the cost of operating an undertaking and ensures that cost do not go beyond a certain level. As profitability amongst others is the essence of any business, there will be the need to incur reasonable costs and management is to ensure careful and efficient use of resources so as to achieve the set standard or target. Cost control is operated by setting of standards and maintaining the performance according to standard because, as management aspires to increase productivity for more profit, there will be increasing cost and collection of cost will be made by each area of responsibilities. This study aims at discussing how cost control could be effectively administered in order to regulate expenses so as to bring about increased returns in term of profitability and not diminish it.

1.1 THE NEED FOR PROFITABILITY AND COST MANAGEMENT:

Profitability and cost management is not a new discipline; it has a long history. Its predecessors date back to mid-twentieth century Germany, where it was called *Kosten und Leistungsrechnen*, but became more popular worldwide in the late 1980s and early 1990s. Back then it was called activity-based costing (ABC) or, later, more broadly defined as activity-based management (ABM). Over the years, many best practices, and worst practices for that matter, have been uncovered and become useful today. Profitability management can be defined both from a top-down and a bottom-up perspective. From a top-down point of view, profitability management consists of a set of processes and a methodology to bring all costs and revenues together on an operational level, providing operational managers with the insight on how to deploy their resources in an optimal way. Bottom-up profitability management entails the process and methodology of identifying the organization's operational cost and value drivers at a transactional level and aggregating them up to translate their workings into financial results. Although profitability management comprises both the revenue and cost side of the business, there is usually a stronger focus on cost management, particularly indirect costs. Indirect costs are all costs not directly associated with the production and sales of products and services, such as marketing, finance, IT, facility management, HR, and other supporting functions. Allocating revenues to operations is a fairly straightforward process. It is usually clear which product was sold to which customer, and can be counted as revenue in a particular period. However, it is not always easy to attribute revenue to organizational divisions, business units or departments. And it is harder to define a method to allocate overhead and other forms of indirect costs to business processes. Despite its history and available best practices, profitability management remains an elusive goal. According to a 2007 KPMG survey of more than 400 companies worldwide, nine out of 10 cost reduction programs fail to achieve their targets, and gains that are achieved are typically short-lived. One of the most common pitfalls cited is that cost drivers are not clear, and as a result, cost-cutting initiatives are not targeted at the right places¹. As a result, we now refer to profitability and cost management (PCM) to acknowledge this focus. PCM is a core competence within any strategic enterprise performance management initiative. PCM is a key methodology for linking financial and operational management

processes. This allows operational managers to get insight into the financial consequences of their operational business. Further, it allows financial managers to increase financial control and predictability of financial results². PCM is often needed to calculate the right performance indicators that organizations track in their (balanced) scorecards, particularly when scorecards need to be cascaded deeper into the organization. PCM is also a key methodology when introducing rolling forecasts as part of the budgeting and planning processes. Rolling forecasts tend to be operational in nature, and translate changes in an organization's activities and available resources into new financial results.

1.2 Why So Many Projects Failed in the Past:

Although PCM has a long history, unfortunately many initiatives in the days of activity-based costing (ABC) were not successful. There are multiple reasons for that. As with many projects, internal politics caused failure. In many cases, allocated costs were not seen as an instrument to optimize a value chain, but as 'funny money' to shift around managing budgets. This is disconnected from reality and leads to all kinds of budget games. These politics still exist of course, but with increased pressure, organizations can't afford to fail because of internal politics. Another reason for failure was that many initiatives 'went overboard' in looking for precision. Allocating costs and revenues is never a precise exercise. It is based on assumptions and discussion. The goal of PCM is not precision, but accuracy. The cost and revenue structure needs to reflect the cost and revenue drivers within the organization. Transparency of that process is far more important than creating a 'precise black box' that no one understands. From an IT point of view, ABC may have come 10 years too early. There were no ERP systems that could act upon the new insights that an ABC exercise would bring. No changes would be possible, or the cost and effort of change were so big, it was not worth the effort. This made ABC systems disconnected from the actual business processes. Lastly, ABC as taking a pure process, activity, and resource angle may have been too limiting. PCM is by nature a very multidimensional exercise, showing profitability—both revenue and cost—per customer (segment), product (groups), time period, organizational entity, channel, etc. Still, a lot can be learned from previous experiences. PCM used to have a pure financial focus. Now, PCM is often performed in the various business domains. For instance, marketing is interested in customer profitability, and operations would like to know about product profitability. These groups should realize that their colleagues in finance may have

used other terms and called it ABC, but have pioneered exactly the same concepts that marketing and operations need to use. Their best practices should be recognized and copied.

1.3 The Profitability Life Cycle:

Introducing profitability and cost management (PCM) is a comprehensive initiative. It involves mastering a methodology, understanding the business drivers, changing business processes, and introducing a system. The impact of PCM ripples through to all management processes. The way the organization will budget and plan will differ and most likely other, better, performance indicators to report on will appear. It takes a while before organizations reach a certain level of maturity. Most organizations go through a maturity lifecycle for PCM. This profitability maturity lifecycle is largely implicit; organizations go through an evolution without realizing they are moving from one stage to another. The stages, however, are distinct.

Stage 0: So What?

At the macro or company level, profitability is simple and easy to measure and evaluate: revenue – cost (expenses) = profit. For organizations that have experienced unbridled growth, and perhaps have a straightforward set of products and services, this may be enough for a long time. However, when economic circumstances change or if the product and services portfolio grows, a better grip on the cost and contribution of processes, products, and customers is needed.

Stage 1: Know What:

Profitability in the micro environment of the organization, for example at the customer or product level, can easily become complex, difficult to measure, and often leads to multiple interpretations of the data. The first stage—the “know what” stage—in the profitability maturity lifecycle of an organization begins with profitability reporting. In this stage, the organization simply measures the profitability key performance indicators (KPIs) that drive their business. For example, if an organization wants to determine customer/product profitability, profitability reporting would focus on questions such as:

- What is the profitability of each customer/product?

- Who are the most profitable customers/products?
- Which products have the highest margins?
- How much does it cost to serve customers?
- What is the total cost of producing the products?
- What are the ongoing service and support costs?
- What is the direct support cost for each customer?

Most organizations would be happy if they could accurately measure their profitability KPIs. This reporting is often the trigger point in examining the profitability data for accuracy. Thus begins a cycle of analysis to ensure the validity and accuracy of the data.

Stage 2: Know How:

The second stage—the “know how” stage—begins with an understanding of the meaning behind the numbers in an organization’s KPIs, in other words profitability analysis. Most businesses try to manage price, sales volume, variable costs, and overhead to drive their financial performance. Price and sales volume are often not debated. They are pretty straightforward. The variable costs and overhead, however, are not well understood. Why are some customers profitable and others not? Why is there a difference in the profitability of like customers? Why is a particular customer consuming more support resources than another? Comparing the variable costs against all customers in a segment can help provide answers to the variances in profitability of customers in a segment. These variances are not only the key to understanding and developing the core drivers of profitability, but are necessary to developing a plan of action to improve profitability.

Stage 3: Now What?

The third stage—the “now what” stage—begins by developing a plan of action for improving the profitability of an organization’s underperforming assets, i.e. those customers and products that fall below the line. Profitability optimization and profitability planning are introduced, after profitability reporting and profitability analysis. The key drivers of profitability (in the second stage) provide the baseline for the desired profitability

performance of the assets. Improving profitability requires more than just identifying the delta between the plan and the actual results. It requires creating and comparing multiple scenarios to achieve optimal performance. Once a scenario is selected, budgets and plans need to be updated to execute upon the selected scenario. Organizations in this stage often benchmark profitability internally, asking questions such as: What is the profitability today versus a time-period ago? How does the profitability with the new organizational structure compare to the old organization structure? Many organizations in this stage bring in external data to establish benchmarks in order to compare themselves to their competition.

Stage 4: Know Why?

Organizations that have fully matured have built in profitability management in their core business processes. They do not only know where they are profitable, but also why they are profitable. PCM is not an after-the-fact analysis, or a top-down plan. Instead, it is incorporated into every single transaction. Indirect functions know their impact and contribution on the core processes. Operational managers have the information to assess the efficiency and effectiveness of their decisions. The planning process doesn't just focus on financial results, but rather dynamically incorporates resources and activities. Any change in these leads to a new financial forecast. Organizations that have reached this level have extended their 'operational excellence' strategies to include 'management excellence'. Oracle believes there are three pillars to achieving management excellence.

1. Smart: There is no shortage of data and every organization has access to the same data, both internally and externally. The difference is continuous insight in how small internal and external changes can be leveraged to increase profitability.

2. Agile: Being smart is useless if you can't turn insights into action. Organizations are constantly changing through global expansion, product lines, and acquisition. New opportunities to increase profitability need to be implemented immediately and dynamically plug into the evolving enterprise information architecture.

3. Aligned: The third pillar of management excellence is about aligning insights across the value chain and to all the stakeholders of the enterprise. Many of an organization's profit drivers are located outside the organization's firewall. Organizations must evolve from a

command and control approach to a collaborative model incorporating contributions from all stakeholders. Profitability and cost management is at the core of management excellence.

1.4 Key Requirements for Profitability and Cost Management

The journey of profitability and cost management begins with creating a profitability model that can allocate costs and revenues. A flexible allocation engine that can be easily used by the business users is, therefore, a must. A flexible allocation engine provides the basis for granular allocations, leading to more accurate profitability data. In most organizations, allocations are a rather arbitrary process. While the granularity of allocations is the precursor for accuracy, the confidence in the accuracy of the allocations can still be suspect. Therefore, being able to visually trace the path that an allocation takes can quickly turn doubt into confidence, thus empowering users to make effective decisions. While allocations are necessary for accuracy, analyzing profitability data to discover the key drivers of cost and profitability is at the heart of a profitability and cost management solution. Therefore, having a robust analytic foundation is also a necessity. The analytic foundation needs to provide an intuitive user interface for “speed of thought” analysis. Business users must be able to manipulate large profitability data sets to monitor complex scenarios, forecast outcomes, and perform what-if analysis to identify customer/product profitability trends. Profitability and cost management solutions have traditionally focused on reporting and analyzing profitability—generally as an accounting, analysis or operational process. The users could report and analyze the data but there was no integrated or systemic process to execute the decisions stemming from the analysis. With profitability as part of performance management, profitability is not merely reported—it is planned, measured, and interpreted. Profitability and cost management solutions today must provide a systemic process to execute upon and implement best practices discovered as a result of profitability analysis. There must be a closed-loop system between the profitability management system and the budgeting and planning system so that resources can be strategically allocated as a result of the profitability data. Planning ensures that efforts are directed toward the achievement of corporate objectives. Measurement checks and adjusts progress against plans by matching revenue against costs incurred, making adjustments by tweaking processes to align with profitability metrics. Interpretation of profitability data helps identify developing trends that alert management to ask the right questions and take action.

Chapter2: Terminology:

In this section, related literatures on the subject matter are briefly reviewed with a view to showing vividly the gap in knowledge and for easy interpretation of the research result.

2.1 Cost, Revenue and Profitability Behavior: Cost behavior is the study of the ways in which costs vary or do not vary with the level of activity in an organization. They level of activity was described as the amount of work done or the number of events that have occurred. Profitability was however defined as the excess of revenue and cost. In other word, profit is determined by deducting cost from revenue. This shows the linearity of profit and cost. The term “variable” and fixed cost otherwise known as indirect and direct expenses have been traditionally used in the management accounting literature to describe how costs react to changes in activity level.

2.2 Controllable and Non-Controllable Costs: controllable cost as any cost that is primarily subject to the influence of a given responsibility center manager for a given time period. The allocation of costs to products is in-appropriate for cost control, since the manufacture of a product may consist of different operations, all of which are the responsibility of different individual. The product cost will not therefore pinpoint costs to area of responsibility. Non-controllable costs may be controllable at a higher level of responsibility. For example, a responsibility center manager may have no control over the number of supervisors employed in his department, but his superior may make this decision. Hence the supervision costs will be a non-controllable cost on the responsibility manager’s performance report, but it will be a controllable cost on his superior performance report.

2.3 Kaizen Costing System: Kaizen a term with Japanese origin, was launched by Masaaki Imai. The concept is a coinage of two Japanese words: KAI (Change) and ZEN (for better). This concept refers to the process of ‘continuous improvement. .The principle behind Kaizen Costing application is on achieving small, gradual but continuous improvements in the production process at minimal cost. Kaizen Costing ensures that products meets or exceeds customer demands for ‘quality, functionality, and prices’ in order to sustain the product’s competitiveness. This can be achieved through a sequential elimination of all the processes that would increase the product’s cost of production without a corresponding increase in

value. The philosophy emphasizes continuous improvement in our ways of life, social life and home life. This technique has made tremendous changes in management policies not only in Japan, but all over the world. Unlike target costing, Kaizen costing is applied during the production stage of the product life cycle (Target cost is applied during the design stage).

Adenitis (2011), asserted that Kaizen costing is the process of continuous improvement, encouraging constant reductions by tightening the 'standard'. The cost reduction objective is set for each process, and then adopt value analysis and Value engineering to achieve the set objective. With target costing, the focus is on the product, and cost reductions are achieved primarily through product design.

The Kaizen Method has been particularly distinguished as the best methods of performance improvement within companies since the implementation costs were minimal. It is nowadays more than ever that the relationship between manager and employee is crucial and the Kaizen technique has a major contribution to the reinforcement of this relationship since the achievements of a company are the results of the mixed efforts of each employee.

Manufacturing Phase of kaizen costing system:

A primary cause of waste is information deficits-employees simply lack the knowledge to do their jobs efficiently and effectively .After successful finish of pre-production phase manufacturing phase incoming, in this phase company have to search new processes for cost reduction, cost management in manufacturing phase title kaizen costing.

- To serve as a communication tool between companies and consumers^[1]
- To establish from the design stage the re use of some materials,
- To identify which are the recycle materials.
- To compare existing products with planned alternatives.
- To compare existing company products with products of competitors.
- Realize an internal information and training.
- Rew strategies in marketing, advertising policies.

- Joining eco-criteria.
- Environmental cost allocation.
- Assess the gap from eco-label criteria.
- Radical changes in product life cycle.

Menden & Hamada (1991) defined kaizen costing as “The system to support the cost reduction process in the manufacturing phase of the existing model of product and is also relevant to other downstream (non-manufacturing) costs” Kaizen costing can be defined as small improvement in cost of existing products which is slowly performed with succeeding performances and it is maintained by those persons who are participating in activities. Basically in kaizen costing a cost reduction target is set which is then applied with the actual costs of the previous year. In kaizen costing method cost reduction are planned with continuing kaizen activities throughout the life cycle of product. Participation of all members of the organization in kaizen targets can motivate employees toward attaining the cost reduction targets. Kaizen costing forces changes in the ways or production processes and it creates a link between cost reduction activities and manufacturing processes to improve value of product and earnings of firm. Kaizen costing maintains the current production level and further tries to reduce the cost at expected level. Thus, kaizen costing includes two main aspects,

- (1) Maintenance of current production conditions then
- (2) Improvement in current production conditions.

Computation of Kaizen Cost:

Targets Japanese companies computed the kaizen profit or profit improvement on the basis of difference between target profits determined by top managers and estimated profit determined by the lower level managers. Japanese automobile companies considered that cost reduction in variable and fixed cost is necessary for cost savings. They think that kaizen cost reduction can be achieved through the variable cost reduction in mainly manufacturing department and in non-manufacturing departments but kaizen cost amount for fixed costs can also be decided. The kaizen costing takes last year’s actual cost as base for cost reduction,

and then a kaizen costing goal is established for the specific cost reduction rate during the current year. The actual cost which has taken as base now compared with the preset kaizen costing cost reduction goal. At the end of the current year the actual cost of this current year will become the cost base for the next year, and in next year new lower kaizen cost reduction rates are set and cost reduction efforts are continued in the organization. The kaizen cost reduction goals are met through the removal of non-value added activities costs, elimination of wastes and improvement in time management. The improvement suggestions given by employees are also taken sincerely by management, who implement these suggestions or ideas. Kaizen costing provides continually more competent and cost-effective production process. The ratio of cost reduction target is determined in considering kaizen profit and generally it is ten percent. After three months of the start of production of new product after the use of target costing process the next cost is reduced through the kaizen costing method. After this the kaizen cost targets for each plant is decomposed among different divisions and smaller units of the plants and these kaizen cost targets are achieved through daily kaizen activities. The kaizen cost targets are decided in the kaizen cost committee and managers determine policies (mainly non-monetary measures) to achieve the kaizen cost targets. In kaizen costing process through the assignment of kaizen cost targets to different departments company can maintain the accounting control and the quality aspect can be achieved through the shop floor members' activities. The shop floor members are involved in daily kaizen activities through suggestion schemes and quality circles. Therefore, kaizen costing helps in both shop floor control and accounting control. According to previous studies like Tanaka (1990), Menden (1989) the amount of kaizen cost is decided in kaizen costing process and it is determined as under:

(1). Per product actual cost in the previous year = Total actual cost of last year/ Actual production in last year.

(2). Estimated amount of total current year actual cost = Per product actual cost in the previous year (1) × Estimated production for the current year.

(3). Kaizen cost target for the current year = Estimated amount of total current year actual cost (2) × Ratio of cost reduction target.

(4). Assignment cost to each plant = Cost directly controlled in single plant/ Cost directly controlled in all plants.

(5). Kaizen cost target for each plant = Kaizen cost target for the current year (3) × Assignment ratio (4)

Kaizen Costing Vs. Standard Costing System:

Standard Costing	Kaizen Costing
It is cost control system	It is a cost reduction system
Assume to meet cost performance standards	Its goal is continuous improvement in manufacturing conditions or to reduce cost lower than standard costs
Cost variance analysis involving standard costs and actual costs	Assume to achieve cost reduction targets.
It checks the cost deviation and corrections are made when standard costs have not been achieved	Cost variance analysis involving kaizen cost targets and actual cost reduction amounts
In the procedures of standard system standard costs are set for one or two times	It investigates and responds when kaizen cost target amounts are not attained

every year means annually or semiannually.	
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2.4 Life Cycle Costing: Life cycle costing (LCC) is a technique to estimate the total cost of ownership In the building and construction industry, LCC is applied to quantifying costs of whole buildings, systems, and/or building components and materials. A LCC process usually includes steps such as planning of LCC analysis (e.g. definition of objectives), selection and development of LCC model (e.g. designing cost breakdown structure, identifying data sources and uncertainties), application of LCC model, and documentation and review of LCC results.

NS 3454: Life cycle cost for building and civil engineering work – principles and classification:

The Norwegian standard, NS 3454 covers all types of construction projects and building components, and is a tool to facilitate programming and design as well as management, operation, maintenance and development (MOMD). NS 3454 contains the following information:

Scope

Normative references

Terms and definitions

Cost schedule

Main categories

Sub-classification of the main categories

Mathematical models for LCC:

The models elaborated in this chapter make use of NPV, whose generic form for comparing different alternatives. In the models, different costs are grouped according to their types.

LCC calculation methods:

There is available a diverse array of techniques and applications of LCC. In some instances, LCC appears to be little more than a straightforward application of standard economic principles. In other cases, LCC criteria support sophisticated mathematical programming techniques seeking optimal infrastructure maintenance and repair policies. Still other

instances of LCC illustrate some mix of sensitivity, risk, and (or) multi-attribute decision analyses.

To reach a satisfactory classification it is necessary to:

Identify and organize the progressive development of LCC methods in a logical and meaningful way

Separate genuine methodological advancements from sophisticated application of straightforward LCC principles, and

Separate credible from questionable developments in the theory and practice of LCC^[2]

Implementation of Life Cycle Costing (LCC):

Procurers of buildings generally wish to lower costs and increase profits (where applicable). Decisions in all stages of the facility's life (acquisition, operation, maintenance, replacement and disposal as per ISO/DIS 15686-5 (ISO, 2006)) bear economic implications. Designers, engineers, contractors, managers, FM operators and owners, all make decisions which affect economics of the facility/project. Implementation of the economic optimization and evaluation to the whole "cradle to grave" duration of the project's life has identified savings and benefits which are particularly vigorously pursued in public procurement. In the UK, bodies such as OGC (OGC, 2003 & 2005), HM Treasury (2000), NAO (2001) have issued and endorsed several initiatives and policy reviews in order to change the approach of the public sector to procuring construction projects. Other countries like Norway have taken public procurement a stage further and have issued a standard NS 3454 (1998) identifying and detailing the life cycle costs and methods of economic evaluation. It has been widely recognized that private sector uses the LCC calculations in a much unstructured way, for their internal purposes. They rarely rely on it for the environmental or quality choices. The implementation of LCC is driven by public sector and is getting recognition and subsequently support in most EU member countries. The effective implementation of life-cycle costing involves utilizing a thoughtful, comprehensive design along with quality material and construction practices with selected environmental considerations. Level of detail in the LCC calculations and extend of the model can render the LCC process as overcomplicated and laborious which can defeat the ultimate purpose of it being the strategy incorporated into the frequent decision-making process throughout the life of the facility. After all, the ultimate goal for carrying out LCC calculations is to aid decision-making in:

Assessing and controlling costs and identifying cost significant items.

Producing selection of work and expenditure planning profiles.

Deterministic methods of LCC:

The basic deterministic methods are underlying virtually all LCC investigations. The process begins with customer needs and ultimately ends with the customer selecting a preferred option. In this context, the LCC procedure employed exists to support a decision-making process focused on customer satisfaction. The needs of owner (customer) are translated to a set of requirements that the proposed, mutually exclusive options must meet to satisfy certain criteria. Once a set of feasible options emerge, each must be analyzed in the context of life cycle cost, broadly according to following steps:

The first step is to generate cost profiles corresponding to each considered option. Each cost profile is a series of planning, construction, maintenance, support, use, and disposal cost estimates calculated over the intended service life of the corresponding facility option.

Next, each cost profile is translated to an equivalence measure to support a common and credible basis of comparison among considered options. This involves the straightforward application of time value of money factors to convert a forecasted stream of costs to a single comparable index. Common equivalence measures used to compare feasible design options include: e.g. annual worth and present worth, etc. (ASTM 2002).

Third, the results of the time value of money computations are used to rank the options according to life cycle cost, with the least life cycle cost.

Annual or present worth terms) ranking above all other feasible options and is therefore presented as the recommended option.

Finally, the results of the LCC procedure are passed on to the infrastructure owner to support rational decision making.

The deterministic approach assigns each LCC input variable a fixed, discrete value. The analyst determines the value most likely to occur for each input parameter. This determination is usually based on historical evidence or professional judgment. Collectively, these input values are used to compute a single LCC estimate. Traditionally, applications of LCC have been deterministic ones. A deterministic LCC computation is straightforward and can be conducted manually using a calculator or automatically with a spreadsheet. However, it fails to convey the degree of uncertainty associated with the PV estimate. It is important to note that the derivation of cost profiles for each option analyzed within a LCC procedure ranges from straightforward to sophisticated ones. More sophisticated means of deriving cost

profiles for LCC investigations include the combining of optimization techniques and (stochastic) life cycle performance predictions in developing optimal maintenance strategies pertinent to a particular structure. Derivation of cost profiles may be found in (Ehlen, 1999, Mahorais and Jerro, 2002, Maharishi et al. 2002 and Nystrom et al. 2003). Regardless of the computational sophistication involved, however, the derivation of cost profiles pertinent to infrastructure related options within LCC investigations will rely on supporting cost estimating techniques relevant to the options at hand. The deterministic method underlying LCC investigations provides a logical ordering of analytical activities and a credible means of ranking feasible options pertinent to the construction, refurbishment, and on-going management and support of infrastructure see Figure 8.1 below. However, this straightforward deterministic approach provides little guidance to the engineer or designer attempting to adequately represent the complexity and uncertainty inherent to LCC investigations. For this reason, the basic method is typically extended within LCC applications to permit a logical means of addressing these shortcomings (Ehlen 1997; Arrien et al. 2001).

2.5 Target costing: A target cost is the allowable amount of cost that can be incurred on a product and still earn the required profit from that product. It is a market driven cost that is computed before a product is produced. A budgeted cost is a predetermined cost after a product is in production. A budget is an operational definition of an allowable cost broken by items and by periods.

TARGET COSTING AND THE PRODUCT DEVELOPMENT CYCLE

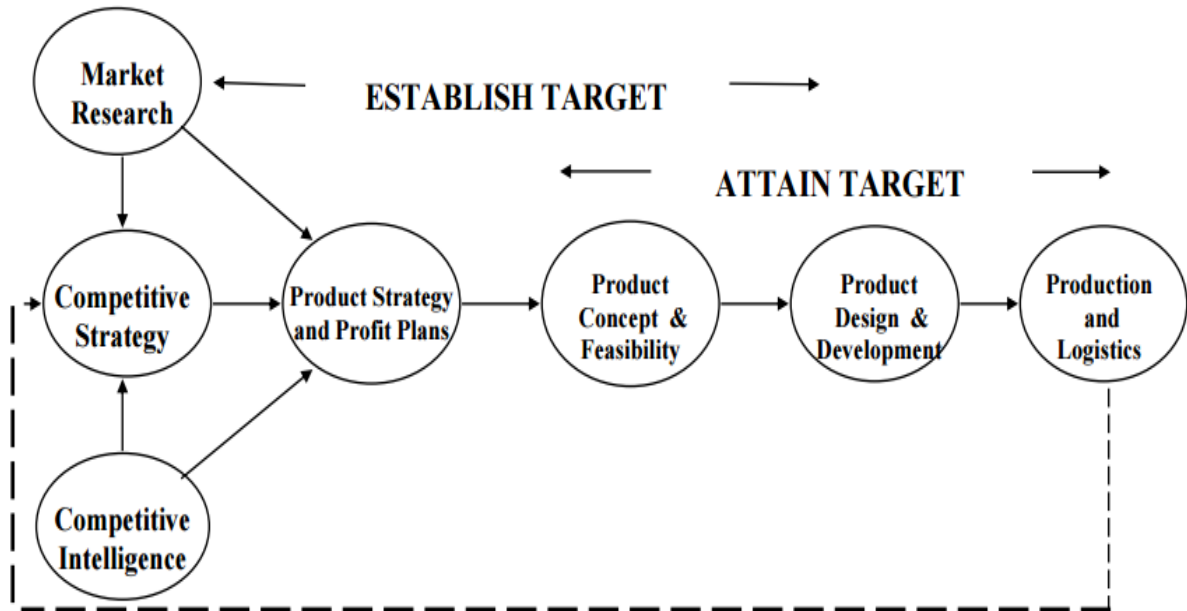


Fig 1: shows target costing cycle

Self-Test Questions:

What is a target cost? How is it different from a budgeted cost?

Ans: A target cost is the allowable amount of cost that can be incurred on a product and still earn the required profit from that product. It is a market driven cost that is computed before a product is produced. A budgeted cost is a predetermined cost after a product is in production. A budget is an operational definition of an allowable cost broken by items and by periods.

Why is it important to manage costs before products have been produced?

Ans: Nearly 80% of the costs of many products are committed at the design stage. Therefore, the best opportunity to reduce costs is during design and not after a product is being manufactured.

At what stage of the product development cycle does target costing play a key role?

Ans: Target costing occurs within the product development cycle. This means it starts when a product is in its concept stages and ends when a product has been released for manufacturing.

What is the difference between an allowable cost and an achievable cost?

Ans: An allowable target cost is the maximum amount that can be spent on a product. An achievable cost is the estimate that tells management whether the product and process design is capable of meeting the allowable cost target.

2.6 Activity based cost management: Activity-based cost (ABC) and activity-based management (ABM) systems emerged to meet the need for accurate information about the cost of resource demands by individual products, services and customers and these system also enabled indirect and support expenses to be driven first to activities and processes and then to products, services and customers. In this way managers have obtained a clearer picture of the economics of their operations and could improve their decisions.

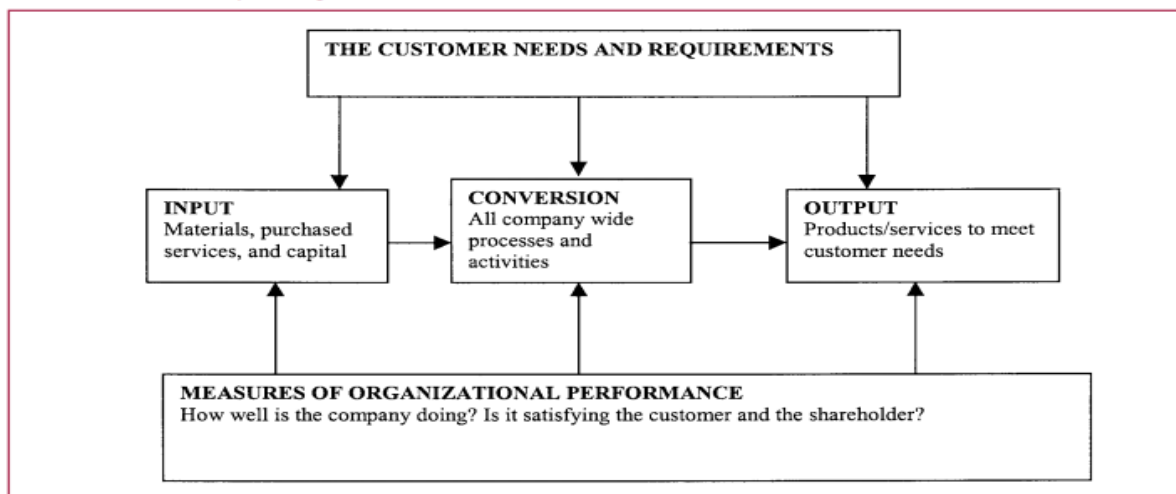


Fig 2 shows ABS system in daily operations

Implementing ABS in daily operations

Activities are the common denominator of the horizontal, process-based view of the organization. Placed at the top of the process-based organization is the needs and requirements of customers. Every company exists to meet these needs and requirements; this is shown at the top of the model. Processes and activities are represented in the middle of the model. At the bottom of the model are the measures of organizational performance. Processes and activities are the central nervous system of the process-based organization and represent the core of what the organization does to create value for its customers and shareholders. How well the organization competes at the activity and process level will ultimately determine its survival. Performance of activities is the cornerstone and common denominator of improvement initiatives. Management must focus on the process/horizontal view of their organizations to remain competitive. Activities represent the horizontal view. Activity-based

management is a tool developed to support the process-based organization by providing information and data needed to plan, manage, control, and direct the activities of a business to improve processes, products and services, to eliminate waste and to executive business operations and strategies. This information takes the form of the outputs of an ABM information system.

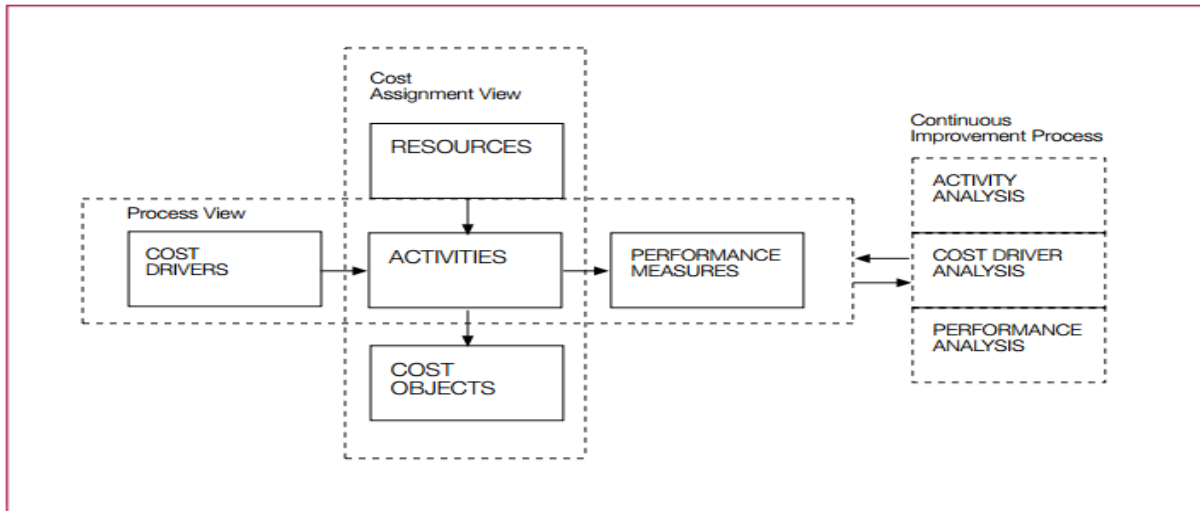


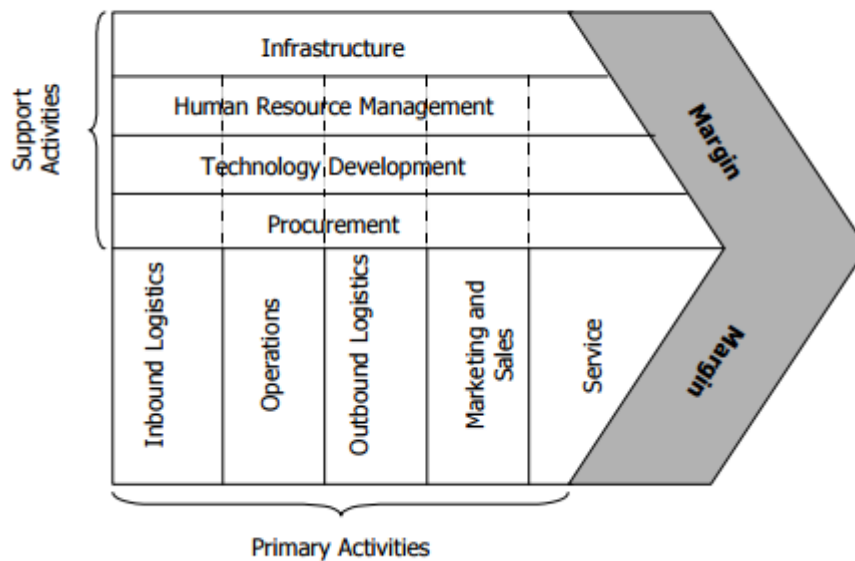
Fig3 shows Activity Based Management models

Activity based management model from activity management daily operations:

The model above is a view of activity-based management. It depicts the key relationship between ABC, on the left, and the management analysis tools that are needed to bring full realization of the benefits of ABC to the organizations. ABC is a methodology that can yield significant information about cost drivers, activities, resources and performance measures. However, ABM is a discipline that offers the organization the opportunity to improve the value of its products and services^[3]

2.7 Value Chain Analysis: The idea of a value chain was first suggested by Michael Porter (1985) to depict how customer value accumulates along a chain of activities that lead to an end product or service. **Porter** describes the value chain as the internal processes or activities a company perform “to design, produce, market, deliver and support its product.” He further states that “a firm’s value chain and the way it performs individual activities are a reflection of its history, its strategy, its approach to implementing its strategy, and the underlying economics of the activities themselves.”

The basic model of Porters Value Chain is as follows:



Porter 1985

Fig4. Shows basic model of value chain analysis

The term 'Margin' implies that organizations realize a profit margin that depends on their ability to manage the linkages between all activities in the value chain. In other words, the organization is able to deliver a product / service for which the customer is willing to pay more than the sum of the costs of all activities in the value chain.

A typical value chain analysis can be performed in the following steps:

A typical value chain analysis can be performed in the following steps:

- Analysis of own value chain – which costs are related to every single activity
- Analysis of customers value chains – how does our product fit into their value chain
- Identification of potential cost advantages in comparison with competitors
- Identification of potential value added for the customer – how can our product add value to the customers value chain (e.g. lower costs or higher performance) – where does the customer see such potential

Chapter3: Cost Management Practices:

Cost management is an overriding consideration in understanding small businesses. Too often, businesses fail before they have a chance to succeed because they run out of cash. Research statistical analysis indicated that the most crucial cause of business failure is due to the lack of planning. The second leading cause next to poor planning is the lack of adequate cash. According to the American Express OPEN Small Business Monitor, a survey was done targeting business owners. The results indicated that more than 60% of business owners showed concern about not having cash available to pay obligations for the future months ahead. Ibarra (1995) indicated that crucial factors for business failure are the restricted access to funds and capital, poor financial planning, unexpected growth and inability to cope with increased sales as well as poor forecasting. Many of these causes of failures could be avoided with implementing planning and forecasting strategies in the business. The majority of small business owners or managers put emphasis on generating large profit margins, a booming growth of sales and strong customer loyalty as being the crucial factors of their business success. The above factors are important contributing factors for the sustainability of businesses. However; a well-adjusted cash flow forecast is just as significant towards the success of any business. The cash inflow of the business is what is used to meet everyday expenses. Any excess after paying off debts can be capitalized to support growth and expansion.

From this discussion it is evident that cost management practices impact on business profitability.

Poor cash flow affects profits:

When a business sells a product, the business profitability increases. However, if there is no cash inflow generated from the sale, the business faces cash flow difficulties and incurs challenges paying creditors and buying more inventory.

3.1. Importance of Cost Management Practices:

1. Managing cost helps in achieving liquidity in a business and proper control.
2. It assists in the planning towards reducing cost expenses and increasing cash receipts to ensure the business is liquid.
3. Proper managed cost is vital as the future cash flow behavior cannot be predicted.

4. Through proper controls of cost, procedure could be implemented to cater for innovations for cost receipts and cash payments in the business.

3.2 Research Methodology: it includes data collection, pilot testing, a discussion of the statistical analysis used and ethical considerations taken into account.

Research Design: A descriptive study is designed to collect data that describes situations, people or events. A descriptive research could either be qualitative or quantitative in nature. It involves the gathering of quantitative data such as ratings, figures and also demographic data. It also entails the gathering of qualitative information such as describing a process or examining procedures.

A descriptive study was used to describe the associations between variables. This research focuses on an investigation on the impact of cash management on the profitability. A correlational study describes the relationship between the variables. A descriptive study was chosen to undertake this research in order to assist in understanding the characteristics of a group of small retail businesses and also assist in the systematical approach to aspects related to cash management practices in businesses.

3.3 Cost management information based on the business:

Financial Information: The respondents were asked to indicate if there were formal records kept in the business, if they handled cash flows easily, and also to stipulate if the business was profitable over the past three months.

Cash flow analysis/forecasting: Respondents were asked about the importance of cash management, their ability to draw up cash budgets and control over the money that comes in and leaves the business.

Sales: They were asked to indicate what portion of their sales comprised of cash.

Debtor management/sell on credit: Aspects of debtors' collection policy and bad debts were included as well as discounts and interest on overdue accounts.

Stock: Respondents were asked to indicate whether they had a monthly stock take and control of stock,

Control of purchases/buy on credit: Questions were based on credit purchases as well as the credit repayment period.

Purchases: They were asked if they received a discount on purchases and if they were charged interest.

Financing/borrowing costs: The respondents had to indicate whether the business had a bank account, how often they deposited money into their bank account.

Chapter4. Questionnaire:

The questionnaire consisted of 3 items. The questionnaire was divided into the following 5 sections which measured various themes:

Section 1 - Biographical data.

Section 2 - Information based on the business.

Section 3 - Cash flow analysis/life cycle cost analysis

Section 4 – Purchases

Section 5 - - Financing/Borrowing costs

The questionnaire was designed with a range of closed-ended questions based on the above cost management sub-topics. An opened-ended question was also included to enable the respondent to elaborate on any other cost management issues that were not covered in the questionnaire.

THESIS QUESTIONNARE

1. Name of the project and brief description.

2. Was the project over schedule or over budget?
 - a) Over schedule. ()
 - b) Over budget ()
 - c) Both ()

3. Have you used cost management framework for your project?

(Yes / No) If yes, then which one:

 - a) Life cycle costing ()
 - b) Target costing ()
 - c) Tear down analysis ()
 - d) Kaizen costing ()
 - e) Activity based cost ()
 - f) Value chain analysis ()
 - g) Bench marking ()
 - h) Just in time philosophy ()
 - i) Total quality management ()

Life Cycle costing questionnaire:

1. Profit earned during construction stage will cover the cost? (Yes / No)

2. Does your organization use salvage value or remaining service life? (Yes / No)

3. Does your organization have any agency guidelines or policies regarding the cost control and cost management process?
(Yes / No)

4. What problems faced when conducting LCC?
 - a) Lack of data.
 - b) It is not easy to predict future costs.
 - c) No software model available.
 - d) Time constraints due to short design and construction period.
 - e) Others

5. What are the costs which have to be included in the application of LCC in Residential buildings? (1: Least important – 5: Most important)

	1	2	3	4	5
Land acquisition					
Construction costs					
Maintenance costs					
Operation costs					
Occupancy costs					
End of life/ end of investment costs					

6. Rate the below costs according to their importance in the calculation of Life Cycle

Costing of residential buildings: (1: Least important – 5: Most important)

Initial Investment Costs

	1	2	3	4	5
Land acquisition					
Planning costs					
Structural design costs					
Architectural design costs					
Excavation					
Foundations					
Structural costs (concrete and steel reinforcement)					
Masonry works					
Mechanical works					
Electrical works					
Plumbing works					
Finishing works					
Transportation charges					
Consultancy fees					
Special client costs					
Water adoption					
Electricity adoption					
Gas adoption					
Light adoption					
Licenses and permits					
Others					

	1	2	3	4	5
Rent					
Internal cleaning					
External cleaning					
Water fees					
Electricity fees					
Gas fees					
Property management					
Staff engaged in servicing the building					
Waste management/ disposal					

Property insurance					
Taxes					
Others					

	1	2	3	4	5
Major replacements					
Minor replacement, repairs, and maintenance					
Unscheduled replacement, repairs, and					
Redecorations					
Refurbishment and adaptation					
Others					

Occupancy cost:					
Reception and customer hosting					
Manned security					
Telephones					
Occupant's furniture, fittings and equipment					
Internal plants and landscaping					
Others					

End of investment cost:	1	2	3	4	5
Disposal inspections					
Demolition					
Reinstatement to meet contractual					
Others					

8. In your point of view, which is more preferable for the accuracy of the final result of the life cycle cost?

- a) Deterministic Result ()
- b) Probabilistic Result ()

9. Do you add risk/contingency % in the calculation of the life cycle cost residential buildings?

a) Yes

b) No

Target costing technique questionnaire:

1. What was the target selling price in the market?

2. What was the profit margin you have decided for your project?

3. What was the predicted actual cost?

4. Are you aware of Value Engineering (VE) technique for construction projects :

a) Yes

b) No

5. In your opinion, is Value Engineering :

(Give your views on a scale of 1-5 with 1 being: strongly disagree, 2: disagree, 3: neutral, 4: agree and 5: strongly agree)

	1	2	3	4	5
a) Merely cost cutting technique					
b) Increases functions at same cost.					
c) Increases functions and life					
d) Decreases life cycle costs.					

6. After having understood Value Engineering concept, do you feel that at your organization level, it is some-what practiced by:

- a) Designers, by giving various cost effective options to clients ()
- b) Not practiced at all ()

7. In your view, what are the factors which hinder implementation of value Engineering/Value Management technique: (Give your views on a scale of 1-5 with 1 being: strongly disagree, 2: disagree, 3: neutral, 4: agree and 5: strongly agree

	1SD	2 D	3 N	4SA	5A
a) Lack of local guidelines & info about Value Engineering					
b) Lack of knowledge & practice in Value Engineering					
c) Interruption to normal work schedule :					
d) Too expensive to carry out Value Engineering					
e) Conflict of objectives by different project stake holders:					
f) Not suitable for low cost project :					
g) Lack of trained professionals in Value Engineering					
h) Lack of training opportunities in Value Engineering					

8. Is your predicted actual cost above the target cost? (Yes / No)

9. Have you applied value engineering and fundamental analysis technique? (Yes / No)

If No, then which other method or technique are you using?

If Yes then,

- a) Have you change/modify/imposed design of project? (Yes / No)
- b) Have you eliminate unnecessary functions from your product? (Yes / No)

Kaizen costing questionnaire:

1. Have you used any method to increase efficiency of construction process? (Yes / No)

If Yes, then specify -----

2. Have you improved the efficiency of worker? (Yes / No)

Activity based cost management questionnaire:

1. How did you identify the major activities in your project?

- a) Experience ()
- b) Software tools _____ ()
- c) Evaluation ()
- d) Other ()

2. What are those major activities?

3. What is the cost driver of these major activities?

- a) Man power ()
- b) Material ()
- c) Machinery ()
- d) Other _____ ()

Value chain analysis questionnaire:

1. How did you establish the bench marks for your project?

Just in time questionnaire:

1. For which material you use just in time philosophy?

- a) Cement ()
- b) Aggregate ()
- c) Steel ()
- d) Bricks ()
- e) Others ()

2. Is there any saving in cost by using Just In time? (Yes / No)

Total Quality management:

1. Is there any saving in cost by using total quality management? (Yes / No)

If Yes, then how much:

- e) 0 to 5 % ()
- f) 5 to 10 % ()
- g) 10 to 15 % ()
- h) 15 to 20 % ()

2. Did you apply preventive costing? (Yes / No)

If Yes, then where:

- a) Quality training ()
- b) Supplier review ()
- c) Quality engineering ()
- d) Preventive maintenance ()

3. Did you apply appraisal costing? (Yes / No)

If Yes, then where

- a) Inspection of material received ()
- b) inspection of WIP & completed()
- c) Testing Equipment ()
- d) Quality audits ()

4. Any external failure cost associated with the project? (Yes/ No)

If Yes, then

- a) Handling customer complaints ()
- b) Maintenance and repair ()

5. Link to the questionnaires survey :

https://docs.google.com/spreadsheets/d/1ZQspfUfyjvCQ7gOxNlOdsa7WQIA6v3N5nW80KUoqV_0/pubhtml

CONCLUSIONS:

Cost management discussed the nature of small businesses as well as the importance of accounting for small businesses. Thereafter, the definition of cost management was discussed together with cost management practices relating to inventory management and control, handling debtors, cash budget and the elements of cash flow. The limitations of the study were presented. The rationale for the research and the variables were also described. The aim, objectives as well as the method of research were also outlined. The relationship between cost control and business profitability can be seen from the view point of material utilization, labor and cash, wastage elimination, supervision of cost expended in the course of production, administrative, selling and distribution activities. All these help improve the earnings of an enterprise, thus its profitability and continuity. The requirements for ensuring effective cost control entail complete data collection on cost from all departments, analysis of the cost data, then budgetary control and administration. Profitability and cost management (PCM) is at the core of enterprise performance management, as it represents the bottom line for every company. However, there are multiple reasons why PCM is of particular relevance, especially today, In most organizations, the indirect costs as part of overall costs are growing. And customer self-service business models rule, so that organizations even bear the risk of losing grip on their direct cost in their business processes. Economic pressures complete the picture. In short, to preserve margins and ensure profitability, organizations need to keep their eye on the ball and monitor their business processes continuously. Most organizations go through a maturity lifecycle for PCM. This profitability maturity lifecycle is largely implicit – organizations go through an evolution without realizing they are moving from one stage to another. The stages, however, are distinct. The end-state is part of achieving what Oracle calls ‘management excellence’. PCM drives business performance by discovering drivers of cost and profitability, empowering users with visibility and flexibility, and improving resource alignment.

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