BANGLADESH COST ACCOUNTING STANDARDS

VOLUME - I

The Institute of Cost and Management Accountants of Bangladesh
(An Autonomous Body under the Ministry of Commerce)

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Volume -I



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PREAMBLE

It is of immense pleasure to present the Bangladesh Cost Accounting Standards (BCAS). This is the first compendium containing ten standards. Cost accounting standards are required to provide guidance to the users to achieve uniformity and consistency in classification, measurement, assignment and allocation of costs to the products and services. The standards can provide a structured approach to measurement of costs in manufacturing process or service industry by integrating, harmonizing and standardizing cost accounting principles and practices. The practicing members can be benefitted through use of Cost Accounting Standards in the attestation of Cost Statements. The standards can also assist in clear and uniform understanding of all the related issues by various user organizations, government bodies, regulators, research agencies and academic institutions.

So long, Bangladesh did not have any cost accounting standards. In absence of generally accepted cost accounting principles and standards these were left to the companies and cost accountants, as they understand or with reference to the explanations given in various text books on the subject. As a result, there was adoption of practices with a lack of uniformity in preparation and presentation of cost statements. Hence there was an urgent need to integrate, harmonize and standardize the cost accounting principles in the context of local and international business practices.

In Bangladesh, in order to ensure proper costing of products and services and to facilitate the practice of Cost and Management Accounting, the government has so far issued Cost Accounting Record Rules and Cost Audit Report rules. Issue of Bangladesh Cost Accounting Standards can take the cost accounting practice one step forward. In order to cater to this need, the Cost Accounting and Financial Reporting Standards Committee (CAFRSC) of ICMAB has taken this maiden venture. These standards can help as a guide for maintenance of cost accounting records and prepare cost audit reports, for the sectors where cost audit has been made mandatory. These can also help application of standard cost accounting practice in other sectors.

The CAFRS Committee of the Institute is entrusted with, among others, the responsibility to develop, issue and update Bangladesh Cost Accounting Standards. In pursuance to this, the committee followed the process similar to that of international financial and cost accounting standards setting. The process followed for setting the BCAS is as below:

a. **Brainstorming Stage:** This is the first stage where the committee members were engaged with extensive research to develop foundation for creating a standard setting environment. Major tasks at this stage were: developing generally accepted cost accounting principles (GACAP), identifying priority areas where cost accounting standards are required, developing a common framework for the standards etc. This functionality required highest level of commitment on the part of the committee members and even at times experts were hired, where felt necessary. The brainstorming sessions paved the foundation for proceeding with the standard setting process.

PREAMBLE .....

b. Drafting Stage: Based on the outcome of the brainstorming stage, the committee formed different sub-groups, comprising of two to three practicing members, to prepare the initial draft of the proposed standard. The choice of the topic was at the discretion of the sub-group members based on their practicing experience on the topic. The sub-groups consulted existing standards on the same topic developed by other international cost and management accounting bodies, relevant books and research papers, and aligned with experts etc. On completion of initial drafting, the sub-groups made presentation before the committee. Experts were also assigned to attend the presentation and provide their comments/suggestions. Based on the comments and suggestions arising out of the presentation, the sub-groups were required to make revision of the draft.

c. Validation Stage: This was a very important stage where a formal validation process was undertaken to ensure the wider applicability and acceptability of the standards. An expert was involved to review so that the disparity that may exist, if any, among different sub-groups may be rationalized. This process ensured the consistency and harmonization of presentation across different standards. Once initial updating is done, all of these standards were circulated among the members, interest groups through the website of the Institute as *Exposure Draft* requesting their comments on them. In order to have more interactive discussion on the Exposure Drafts four workshops were arranged in Dhaka and Chittagong. The drafts were then finalized based on the comments and feedback received from the workshop.

d. Finalization Stage: The finalized standards were further reviewed by experts to ensure conformance with Bangladesh Accounting Standards (BAS), Bangladesh Financial Reporting Standards (BFRS) and other related rules. The standards were then approved by the CAFRS Committee which in turn was approved finally by the Council of the Institute on recommendation of the Committee.

Any standard cannot gain completeness at its first issue. To serve desired purpose it needs to be updated and modified from time to time. The CAFRS Committee would therefore be thankful to receive comments and feedback on the standards to make them more useful and up to date with the fast changing business environment.



M. Abul Kalam Mazumdar FCMA

Chairman
Cost Accounting and Financial
Reporting Standards Committee
ICMAB, Dhaka.

FOREWORD

It gives me immense pleasure that the Cost Accounting and Financial Reporting Standards Committee (CAFRSC) has finalized ten Bangladesh Cost Accounting Standards (BCAS) and published them as a guideline to cost accounting and auditing practitioners. Undoubtedly, the ICMAB has achieved another milestone in its endeavor to develop management accounting profession as a world class profession in Bangladesh.

The ICMAB is striving to reshape and redesign its structure in every aspect so that it can serve the society ever better than the past and actively working to built state of the art capacity that will make others envious towards it. It is bringing world class curriculum in its structure, signing MoUs with world premier professional accounting bodies on different bilateral issues, installing good corporate governance and, in a word, it is working actively to make the ICMAB building a hub of knowledge. This publication is a part of this knowledge dissemination process where ICMAB plays a pioneering role as very few countries around the world have prepared their own cost accounting standards.

On this auspicious occasion, I like to convey my heartfelt thanks to the team who worked hard to bring this master piece for ICMAB and paves a way to proceed further. It signifies our motto 'Together We Succeed' and I believe that gradually we will increase our storehouse of knowledge. Within a short span of time, I believe that the number of standards would increase to a considerable number to reach ICMAB to a commendable professional level.



Mohammad Salim FCMA
President, ICMAB

ACKNOWLEDGEMENT

It is indeed a great pleasure to issue the first ever volume of Bangladesh Cost Accounting Standards (BCAS). This set of ten standards is the outcome of strenuous efforts of a good number of members of the Cost Accounting and Financial Reporting Standards Committee (CAFRSC) of ICMAB who have set a milestone for the profession. As has been described in the preamble, the whole process of setting the standards was a rigorous task and members have voluntarily taken the trouble to be associated with the process. Starting from the drafting to review, modification and editing the members of the CMA profession have worked very hard to bring the standards in its present shape. It is my moral obligation to acknowledge the contributions of those honourable members. The honourable members who have taken the lead in initial drafting of the standards are: Mr. Jamal Ahmed Choudhury (F-0311), Mr. Md. Mamlnul Islam (F-0363), Mr. Md. Mizanoor Rahman (F-0419), Kamal Uddin Ahmed (F-0430), Mr. Md. Zahangir Alam (F-0463), Mr. Roomee Tareque Moudud (F-0490), Mr. Subhasish Adhikary (F-0642), Mr. Saiful Islam (F-0733), Mr. A.K.M. Ashraf Ali (F-0764), Md. Rezaul Haque (A-0768), Mr. Md. Abdul Hannan (A-1008), Mr. Mahmudul Hasan (A-1027), Mr. Md. Oliur Rahman Chowdhury (A-1047), Md. Salfur Rahman Shipon (A-1073) and Mr. Saflul Azam (A-1111).

The honourable members who have contributed in reviewing the draft standards are: Mr. Rafiq Ahmad (F-0002), Mr. Satipati Moitra (F-0042), Mr. Md. Ruhul Amin (F-0050), Mr. Jamal Ahmed Choudhury (F-0311), Mr. Swapan Kumar Bala (F-0328), Mr. Mir Mahbubul Bari (F-0456), Mohammad Nizam Uddin (F-0540) and Mr. Md. Khaliq-uz-Zaman (A-1044).

Mr. Nikhil Chandra Shil (F-0771) has taken the trouble of editing the standards to bring them in standard format. Dr. Mahfuzul Hoque, Professor of Accounting, University of Dhaka has given finishing touches to the final version of the draft.

The committee also acknowledges the valuable contribution of a considerable number of members of ICMAB for offering their comments on the Exposure Draft of the standards through their active participation in the four workshops arranged in Dhaka and Chittagong for this purpose.

The contribution of all the above would be engraved in the history of the Institute.



M. Abul Kalam Mazumdar FCMA
Chairman
CAFRS Committee, ICMAB, Dhaka.

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Conceptual Framework: Generally Accepted Cost Accounting Principles (GACAP)

A conceptual framework is 'a coherent system of interrelated objectives and fundamentals that is expected to lead to consistent standards'. It doesn't refer to any rules rather it gives some overall guidelines. The rules are usually set in standards which are formulated based on the framework. In emerging issues, standards are consulted first and if a desirable reference is not found, the conceptual framework is used to reach to a solution. However, professional judgment always holds a priori in situation where highest level of subjectivity and ambiguity exists. The conceptual framework provides a solid foundation for developing future accounting standards. In a broader sense, it can be seen as an attempt to define the nature and purpose of accounting. Conceptual frameworks can apply to many disciplines, but when specifically related to cost and management accounting, a conceptual framework can be seen as a statement of generally accepted cost accounting principles (GACAP) that form a frame of reference for the evaluation of existing practices and the development of new ones.

Conceptual framework sets the boundaries you want to stay within as you build standards or a model. The framework provides guidelines to reach to a precise conclusion whether there is a specific guideline or not. Thus the **Cost Accounting and Financial Reporting Standards Committee (CAFRSC)** of the ICMAB feels the necessity of formulating a conceptual framework to supplement its standard setting process so that the practitioners may hold a judgmental view while they search for a solution to any cost and managerial accounting related issues. The Framework works as the foundation for building a set of coherent cost accounting standards and is a reference of basic cost accounting theory for solving emerging practical problems. The conceptual framework establishes objectives, scope, principles, constraints, and concepts. Before proposing a framework here, let us have a look at some existing frameworks.

Van der Merwe et al. (2012) presents a framework for managerial costing based on the very initial and basic work of Shillinglaw's management accounting framework which includes concepts, criteria and constraints (**Figure 1**).

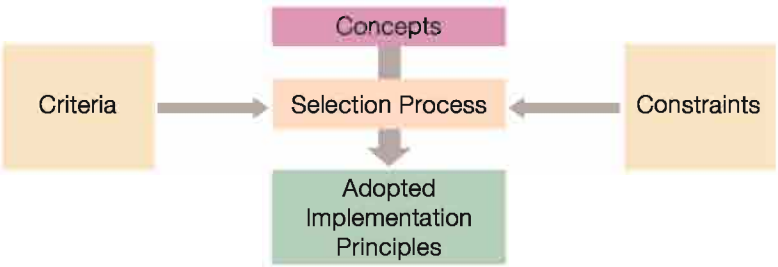


Figure 1: Elements in a Management Accounting Framework (adapted from Van der Merwe et al., 2012)

Here concepts include cost, cost objective, and variability. Criteria refer to two principles, i.e., causality and analogy. Shillinglaw's original framework includes causality. Constraints include what Van der Merwe et al. (2012) refers to as filters such as objectivity, accuracy and materiality. Another conceptual framework popularized under the title 'Management Accounting Concepts'

issued by the International Federation of Accountants addresses four areas of interrelated concepts as figured below:

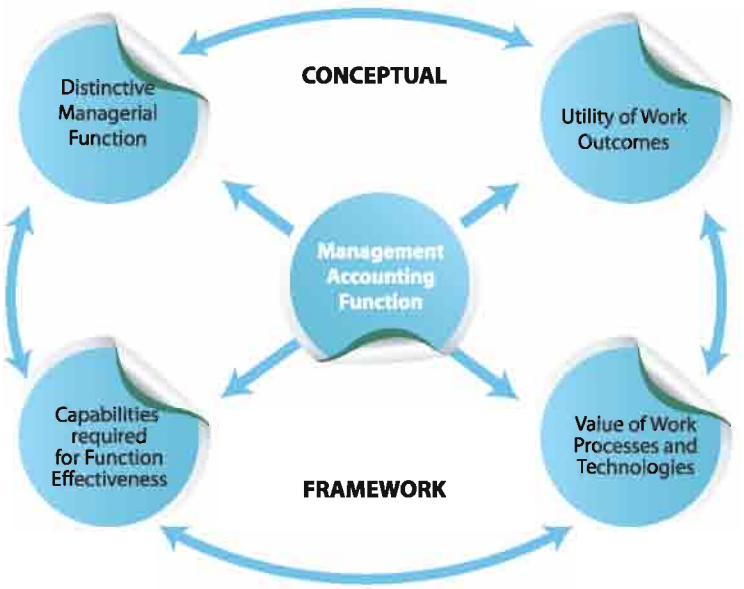


Figure 2: Conceptual Framework as proposed by IFAC in its 'Management Accounting Concepts'

The description of management accounting can be elaborated through a set of concepts categorized in terms of:

a) the distinctive function of management accounting within the management process in organizations;
b) the way in which the utility of the outcomes of the management accounting process can be tested;
c) criteria which can be used to assess the value of the processes and work technologies used in management accounting; and
d) capabilities necessarily associated with the effectiveness of the management accounting function.

Each category of concepts articulates with the others as a conceptual framework for management accounting as per IFAC's Framework.

Based on the above frameworks, a framework is proposed here under the title 'Conceptual Framework of Generally Accepted Cost Accounting Principles' considering the subtle difference between cost accounting with that of management accounting. This framework will have a pure focus on cost accounting for reporting purposes and also intends to guide the selection of measurement principles for establishing a management accounting systems as a supplement to internal decision support systems. The conceptual framework as presented here (Figure 3) takes a wider look that addresses the objectives and scopes along with the foundations of the

framework so that it can help the practitioners to interpret any existing standards, principles and rules and at the same time can guide them to find a feasible and rational solution to the emerging issues.

Level 1: Impression

In this phase, the core objectives of the framework are identified and the broader scope is set so that the practitioner (internal to management) can develop their own understanding regarding the usability of the framework.

Objectives

Objectives set the roof of the conceptual framework which signifies the core targets. The framework caters to fulfill the needs of the practitioners targeting to:

a) Provide a monetary reflection of the utilization of business resources to ensure efficiency;
b) Provide cause and effect insights into economic activities supplementing traceability;
c) Support practitioners in their analysis and decision making, specifically relating to product costing and cost control; and
d) Support optimizing the achievement of an enterprise's strategic objectives.

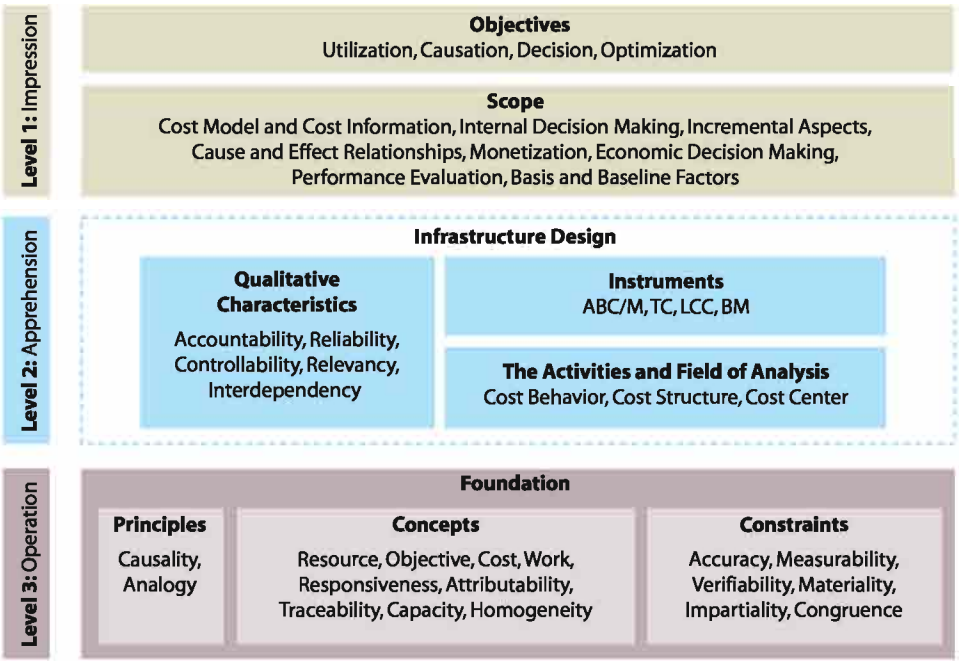


Figure 3: Conceptual Framework of Generally Accepted Cost Accounting Principles at a Glance

Scope

Scope set the boundary of the framework within which the framework will be operative. The scope sets the boundaries of the application of conceptual framework with a target to achieve the stated objectives. Such scope can be spelled out in the following statements:

1. Provide internal management with an accurate, objective ***cost model*** of the organization and ***cost information*** that reflects the best utilization of the organization's resources.
2. Provide timely information to support ***internal decision making*** process in a flexible manner with the proper insights to the decision scenario.
3. Provide decision makers insight into the ***incremental aspects*** of the alternatives they are considering.
4. Identify ***cause and effect relationships*** between outputs and inputs required to produce and deliver final outputs.
5. Guide to ***monetize*** all support and production functions of an entity accurately.
6. Generate information that aids in ***economic decision making*** with a strategic focus.
7. Provide information to measure, assess, and analyze ***performance*** to take any corrective actions.
8. Provide the ***basis and baseline factors*** for exploratory and predictive managerial activities.

Level 2: Apprehension

This level sets the challenge on part of the cost and management accountants in terms of the quality demanded in their information, development of tools as a drive towards continuous professional excellence and sustain themselves as cost analyst.

Qualitative Characteristics

Accountability: Management accounting presents information measuring the achievement of the objectives of an organization and appraising the conduct of its internal affairs in that process. In order that further action can be taken, based on this information, it is necessary at all times to identify the responsibilities and key result areas of the individuals within the organization.

Controllability: Management accounting identifies the elements of activities which management can or cannot influence, and seeks to assess risk and sensitivity factors. This facilitates the proper monitoring, analysis, comparison and interpretation of information which can be used constructively in the control, evaluation and corrective functions of management.

Reliability: Management accounting information must be of such quality that confidence can be placed in it. Its reliability to the concerned user is dependent on its source, integrity and comprehensiveness.

Interdependency: Management accounting, in recognition of the increasing complexity of business, must access both external and internal information sources from interactive functions such as marketing, production, personnel, procurement, finance, etc. This assists in ensuring that the information is adequately balanced.

Relevancy: Management accounting must ensure that flexibility is maintained in assembling and interpreting information. This facilitates the exploration and presentation, in a clear, understandable and timely manner, of as many alternatives as are necessary for impartial and

confident decisions to be taken. The process is essentially forward looking and dynamic. Therefore, the information must satisfy the criteria of being applicable and appropriate.

Instruments

Instruments refer to the tools and techniques applied by cost and management accountants to address different internal decision making needs. These instruments sometimes have their roots in practice and sometimes in academia. However, a close reciprocity of academia and practitioners has matured the instruments with the requirements of the market. Some of such instruments are mentioned below:

Activity based costing (ABC) assigns manufacturing overhead costs to cost objects in a more logical manner than the traditional approach of simply allocating costs on the basis of, say, machine hours. Activity based costing first assigns costs to the activities that are the real cause of the overhead. It then assigns the cost of those activities only to the cost objects that are actually demanding the activities. Activity Based Management supports business excellence by providing information to facilitate long-term strategic decisions about such things as product mix and sourcing. It allows product designers to understand the impact of different designs on cost and flexibility and then to modify their designs accordingly. ABM also supports the quest for continuous improvement by allowing management to gain new insights into activity performance by focusing attention on the sources of demand for activities and by permitting management to create behavioral incentives to improve one or more aspects of the business.

Target costing is the process of translating a customer's view of a product into an engineer's view of a product. To a customer, a product such as a radio is a set of features such as clarity of FM reception, sound quality of speakers, size, portability, alarm-clock, and other features. To an engineer, the radio is a set of functions such as chassis, circuit board, resistors, capacitors, cone, antennae, clock timer, a display panel, a frequency analyzer, and so. For a product to meet customer expectations, we must map how each function to a feature and set a target for that function that an engineer can design.

Life-cycle Costing is a technique used to estimate the total cost of ownership. It allows comparative cost assessments to be made over a specific period of time, taking into account relevant economic factors both in terms of initial capital costs and future operational and asset replacement cost.

Benchmarking is the process of measuring an organization's internal processes then identifying, understanding, and adapting outstanding practices from other organizations considered to be best-in-class. Dimensions typically measured are quality, time and cost. In the process of best practice benchmarking, management identifies the best firms in their industry, or in another industry where similar processes exist, and compares the results and processes of those studied (the "targets") to one's own results and processes. In this way, they learn how well the targets perform and, more importantly, the business processes that explain why these firms are successful.

The Activities and Field of Analysis

Cost Behavior: Cost behavior is nothing more than the sensitivity of costs to changes in production volume. It is the reaction of expenses to alterations in the amount of some

business activity. For example, the cost behavior for aspects of automobile ownership can be variable like gas usage for operating a car, fixed like parking costs or mixed like the depreciation on the car observed over time. Such behavior is a topic of research and very important to control cost. Unless the behavior pattern of each cost is clearly understood, the impact of a firm's activities on its costs will not be known until after the activity has occurred (Porter 1998).

Cost Structure: Cost structure refers to the types and relative proportions of fixed and variable costs that a business incurs. The concept can be defined in smaller units, such as by product, service, product line, customer, division, or geographic region. Cost structure is used as a tool to determine prices, if you are using a cost-based pricing strategy, as well as to highlight areas in which costs might potentially be reduced or at least subjected to better control. A firm's cost structure is directly related to its resources, processes and products (Corsten and Stuhlmann 1996). Thus, a good understanding of the firm's cost structure is critical to search for a sustainable competitive advantage (Shank and Govindarajan 1993).

Cost Center: A cost center is part of an organization that does not produce direct profit and adds to the cost of running a company. Examples of cost centers include research and development departments, marketing departments, help desks and customer service/contact centers.

Level 3: Operation

This level provides operating guidelines as a support to carry out the responsibility smoothly. It sets the principles to be followed, concepts to be understood and constraints to be managed.

The strength of the framework is the foundation that provides conceptual underpinning of the framework with some overall guidelines of the usability of the framework in real life situations. A thorough understanding of the framework and its main conceptual and operating guidelines like principles, concepts, constraints etc. will enhance an organization's insight into its options for designing, developing, and using internal management information to enable achievement of its strategic objectives in an optimal manner.

Principles

Principles are the gatekeepers of the framework. Principles can be thought of as innate laws for which proof is not necessary because they are self-evident. Several guiding principles have been identified to assist in improved and effective cost management (Berliner and Brimson 1988). These principles, in general, are compatible with the conceptual framework. Two such widely accepted cost accounting principles are causality and analogy.

Causality: Causality refers to the recognition of the relation between a cause and its effect. Causality is the basis for all inferences in the scientific method. It embodies the law of rational inference and is a universal principle in inductive logic. It is appropriate, and in fact essential, to apply causality to cost and management accounting, and as a principle it is the basis for discerning truth in cost modeling and its decision support information. Defining truth provides a

benchmark against which one can measure the quality of a model and its assumptions. Truth in cost modeling means reflecting the reality of the operations being modeled. The field of philosophy has many theories of truth. For cost and management accounting applications, the Correspondence Theory of Truth is most applicable. A simple definition is: "A statement or opinion is true if what it corresponds to is a fact."

The following two primary issues arise in applying the principle of causality as defined for cost and management accounting:

1. The strength of causal relationships can vary from strong to weak. Both types of relationships must be modeled in a manner that supports managerial insight and decision making in order to aid achieving the organization's strategic objectives in an optimal manner. The strong form refers to instances where a consumption relationship can be explicitly quantified. That is, a requisite dependency exists between an output (e.g., 250 simulator hours) and an input (that is, 50,000 kilowatt-hours (kWh) required to run the simulator for 250 hours). The weak form exists when the input-output relationship cannot be quantified in this manner but an association nevertheless clearly exists.
2. The collection of operational and financial data to provide a monetary view of the causal relationships is required. Cost and management accounting must provide a monetary view of economic activity, which implies a duality of information. Money serves as a common denominator to weigh and evaluate otherwise incomparable alternatives in decision analysis. Its use in optimization is essential. Managers' information needs are therefore of a dual nature: (1) a quantitative (non-monetary) representation of relevant cause and effect relationships, and (2) the valuation (monetary representation) of those relationships. For example, assume that electricity costs Tk. 0.10/kWh for the simulator training company. This would mean the strong causal relationship defined above can be expanded to reflect both a monetary and a non-monetary view; for example, Output = 250 simulator hours; Electrical Input = 200 kWh/simulator hours; Total Electrical Inputs = 50,000 kWh; and Input Costs = Tk. 5,000.

Analogy: Analogy is the second cornerstone proposed by Van der Merwe et al. (2012) and applies when insights are used and inferences are made based on known cause and effect relationships. The simulator example can be used to illustrate the application of this principle. The causal relationship is known (that is, the simulator consumes 200 kW per training hour). A manager-applying the principle of analogy-can infer that electricity consumption was 200 kWh/ hour a month ago and will also be that amount in the future. Thus, a manager uses known cause and effect insights to make inferences (that is, analogous application of the information) about past or future outcomes.

Analogy serves as a principle for cost and management accounting because it:

1. Governs the way in which cost information is used;
2. Lies at the center of enterprise optimization;
3. Is inherent in all (rational) managerial actions;
4. Is indispensible for organizational learning; and
5. Unequivocally focuses cost and management accounting on its primary users- managers.

Analogy also helps to identify the prime activities and select those that can be used to produce

(or sustain) a competitive advantage. This selection process requires knowledge of the cost and value of each activity. To handle inter-functional complexity smoothly, it is also important to apply analogical inferential techniques. A company's complexity increases as the breadth of its product line expands, as each product uses more unique components, and as more process options are available to manufacture the product (Swenson 1998). The costs associated with this complexity fall as manufacturing processes are simplified and standardized and as companies offer fewer product options.

Concepts

Concepts are defined by Shillinglaw (1979) as understood abstractions of a class of relationships, a trait, or a characteristic. The framework presented here uses concepts in the same way. They constitute relationships, traits, or characteristics that need to exist for effective cost measurement, modeling, and use of the information.

Resource: These are physical or virtual constructs that a firm possesses to drive its revenue generating activities as an outcome of past managerial decision making process. The framework requires the inclusion of the resource concept for at least four reasons:

1. Resources are the cause of all costs and thus demand special attention;
2. Resources have productive capacity, a prerequisite to generate revenue;
3. Resources can bring a qualitative change in decision making ability of decision makers; and
4. Resources are the basic building blocks in optimization analysis.

Objective: Objective is the achievable outcome of the application or provision of resources that management desires to monitor for the purpose of enabling managerial actions. The framework requires the inclusion of objective because:

1. Achieving objectives is the reason for deploying resources to produce output;
2. Establishing and managing discrete objectives is necessary in order to achieve an enterprise's strategic objectives; and
3. Objectives align with managers' responsibilities, need for measurement, accountability, and ultimately incentives (e.g., bonuses).

Cost: Cost is an important concept representing a measure of consuming a resource or its output to achieve a specific goal, or making a resource or its output available and not using it. Cost is included in the framework because:

1. Determining the cost of resource use in the process of producing and delivering products and services is the purpose of costing; and
2. It presents resource consumption in a general monetary form that allows comparability between diverse alternatives.

Responsiveness: Responsiveness concept reflects the impact of certain input over outputs as a part of fulfilling the objectives undertaken. It replaces the conventional concept of variability which refers to a linear relationship between the volume and cost. Responsiveness is included in the framework because:

1. It facilitates accurate marginal cost information;
2. It provides insights into the nature of cause and effect relationships; and
3. It enables the costing of objectives at all levels throughout the organization.

Traceability: Traceability is the quality of an input unit that could be scientifically and objectively identified in its entirety with a specific objective on the basis of verifiable transaction records. Traceability is included in the framework because:

1. It acknowledges the cause and effect relationships between inputs and outputs properly;
2. It is defined to align with the quantitative nature of causality (that is, a certain quantity of resources is needed to produce a certain level of output); and
3. Resource consumption must be connected with specific managerial objectives when a causal relationship exists.

Capacity: Capacity is related to resources and its productivity of earning revenue through work. Capacity must be included in the framework because:

1. It sets the limits of a resource's capability to contribute towards the achievement of objectives;
2. Optimization decision of using a resource effectively is somehow based on capacity; and
3. Excess or idle capacity represents a major optimization opportunity.

Work: These are the functions or actions taken with a purpose of producing a product or generating a service directly or supplementing these types of objectives. Work is included in the framework because:

1. Resources engage in specific work activities or business processes to accomplish managerial objectives;
2. The ability to model work provides decision makers with information that is often important to optimization efforts; and
3. The work concept is also useful for analogous purposes when insight into the nature of work is beneficial to managers' optimization endeavors (e.g., for process improvement).

Attributability: Attributability concept refers to weak form of causality when the consumption of resources results output in such a fashion that the relationship could not be scientifically explained. Particularly the impact of common costs cannot be quantitatively associated with specific outputs in a causal manner and fall within the sphere of the concept of attributability. Attributability is included in the framework because:

1. It addresses weak form of cause and effect relationships;
2. Costs with a weak causal relationship are often relevant costs in decision making; and
3. The costs associated with a resource with a weak causal relationship to an output can distort decision-support information if not modeled and used appropriately.

Homogeneity: It is a characteristic of one or more resources or inputs of similar technology or skill that allow for their costs to be governed by the same set of determinants and in an identical manner. Homogeneity is included in the framework because:

1. Resources need to be grouped around similar capabilities and outputs for managerial purposes; and
2. Organizational elements (e.g., departments and cost centers) must often be divided into homogeneous groupings of resources to be modeled effectively.

Constraints

Constraints function as filters in selecting concepts and also provide boundaries for the application of the selected concepts. They contribute to the system of checks and balances in the overall framework. Constraints include what Van der Merwe et al. (2012) refers to as filters such as objectivity, accuracy, and materiality which are explained below.

Objectivity: Objectivity is a central philosophical concept relating to reality and truth. Generally, objectivity means the state or quality of being true even outside of a subject's individual biases, interpretations, feelings, and imaginings. A proposition is generally considered objectively true when its truth conditions are met and are "bias-free"; that is, existing without biases caused by, feelings, ideas, etc. of a sentient subject.

Accuracy: Accuracy is how close a measured value is to the actual (true) value. It refers to the degree to which cost and management accounting information reflects the intended concepts modeled.

Verifiability: A characteristic of modeling information that leads independent reviewers to arrive at similar conclusions.

Measurability: A characteristic of a causal relationship enabling it to be quantified with a reasonable amount of effort.

Materiality: A characteristic of cost modeling that would allow for simplification without compromising managers' decision making needs.

Impartiality: The unbiased consideration of all resource application alternatives.

Congruence: The interdependence of individual managerial actions to attempt to achieve both individual and enterprise objectives in an optimal manner.

Guidance Note

This note has been issued by the Cost Accounting and Financial Reporting Standards Committee (CAFRSC) as guidance for users of the standards. The purpose of issuing the note is to increase the readability of the standards by the prospective readers. As a first initiative, the CAFRSC has issued a total of ten standards and published the same in Volume One. However, the Committee has taken this job of setting Bangladesh Cost Accounting Standards (BCAS) as an on-going process and in due time new standards will come to make the portfolio rich. These ten standards have been chosen initially considering their importance and priority and lot of other titles are competing to win the selection. While drafting the standards, the Committee has followed a common standardized framework to bring consistency in presentation and harmony in understanding. Some of such points are being highlighted below for supplementing the judgments of the readers:

1. The statements, which have been set in bold italic type, should be read in the context of the background material and implementation guidelines. BCAS is not usually intended to apply to immaterial items.

2. The discussions in every standard are made with reference to some points in fixed order like introduction, objectives, scope, key features, definitions, standards, recording and reporting, effective date followed by appendices. This brings the highest level of consistency in presenting standards across different titles.

3. Every standard follows paraphrasing in ordinal number for easy referencing. For example, paragraph 1.5.6 refers to BCAS 1, point 5, sub-point 6. Appendices are also numbered in a similar way. For example, Appendix 1C refers to the specific appendix C of BCAS 1.

4. This version (2014 version) of the standards will be referred to as the original version and will remain effective until a new version is issued by the Committee superseding this version.

5. Any potential confliction or insufficiency in application will be resolved based on the conceptual framework of Generally Accepted Cost Accounting Principles (GACAP) issued by the Committee along with this volume.

The Committee will be happy to receive any critical assessments, suggestions, prescription for possible improvement of the standards. The Committee can be reached at kalam1227@gmail.com and ad.af@icmab.org.bd.

BANGLADESH COST ACCOUNTING STANDARDS

BCAS - 1

Cost Concepts and Classifications

BCAS 1: Cost Concepts and Classifications

1.1 Introduction

The aim of an efficient and effective cost accounting system is to record costs properly with a view to identifying all the costs incurred in the process of producing a product or providing services. Cost accounting is the process of tracking, recording and analyzing costs associated with the products or activities of an organization, where cost is defined as 'required time or resources'. Cost accounting is also defined as an inseparable part of management accounting, which translates the physical movement of products into financial value in order to support strategic decision making for business and its implementation.

1.2 Objectives

The main objective of the standard is to facilitate better understanding of the classification of costs and will result in uniform meanings being assigned to the terms used, so that there are no ambiguities in their usage. This will in turn promote consistency, comparability and transparency in cost statements. The end result of this standard will be:

a) To have a standard set of terms with uniform meanings assigned to them; and
b) To define the general characteristics of a transparent costing system.

1.3 Scope

1.3.1 This standard should be applied in ascertainment and assessment of the different cost elements which go into the manufacturing of a product or the rendering of a service and the application of costing techniques.

1.3.2 It will also be useful to the management of such enterprises, as the standard will assist in the decision making process.

1.3.3 The standard is to be followed by all public limited companies where cost audit is made mandatory through Government's gazette notification from time to time.

1.4 Key Features

The key features of this standard are pointed below:

a) Costing system identification;
b) Differentiating between direct and indirect cost in terms of accumulation and allocation;
c) Possibility of distortion in costing data due to wrong selection of cost drivers
d) Formulation of homogeneous cost pool; and
e) Presenting formats for different cost statements.

1.5 Definitions

The following terms are used in this standard with the meanings specified -

1.5.1 Cost: It is a measurement, in monetary terms, of the amount of resources utilized

for the production of goods or rendering of services. Resources could be: (i) money (ii) efforts; (iii) materials; (iv) time and utilities consumed; (v) assumed risks; (vi) opportunities foregone in production and delivery of goods or services.

1.5.2 Cost Object: As defined in BCAS 3.5.5.

1.5.3 Cost Driver: As defined in BCAS 3.5.6.

1.5.4 Cost Pool: As defined in BCAS 3.5.4.

1.5.5 Costing System: This is defined as an accounting system established to monitor a company's costs, providing management with information on operations and performance. Any costing system should take the followings into consideration:

a) The object(s) that the system measures;
b) The method(s) employed in measuring the chosen objects;
c) The way it aggregates or manipulates the recorded amounts; and
d) The types of reports which come out of the System.

The primary role of costing systems is to analyze costs that inform and guide rational decision making process of management. There are two broad categories of costing systems: actual costing and standard costing.

1.5.6 Actual Costing: Only an actual amount which has been incurred for the manufacture/production of certain goods or provision of certain services is recorded.

1.5.7 Standard Costing: Estimated or predetermined cost of performing an activity in connection with the production/manufacture of a product or the provision of certain services is also recorded here.

1.5.8 Direct Costs: This is a cost that can be easily and conveniently traced to a particular cost object under consideration. Thus, the cost of a resource that is used only by one cost object is called direct cost. A direct cost would not exist in the absence of the cost object.

1.5.9 Indirect Costs: As defined in BCAS 4.5.1.

1.5.10 Cost Unit: This denotes a unit of product or service for which cost is computed. Costs are set/decided for a particular industry, and are generally adopted on the basis of convenience and practice in the industry concerned. Examples of Cost Unit may be Kilowatt (KW) for Electricity cost, kilogram (kg) or liter for raw material etc.

1.6 Standards

1.6.1 Cost should be assigned to the cost object in such a way that properly acknowledges the cause and effect relationship between the cost and the respective cost object.

1.6.2 Costing system should be capable of incorporating every costs incurred. Direct costs should be traced with the cost object directly that is the result of such cost and indirect costs should be assigned to the cost object based on appropriate allocation bases that comes out of the activity analysis to ensure that appropriate drivers (causes) are identified and used.

1.6.3 A costing system guides to accumulate costs incurred in the process of producing a product or generating services. In such accumulation, it is important to choose the basis of measuring the values for inputs like direct material, direct labor and overheads. A matrix may provide some guidelines in this regard.

Cost Accumulation Method :	Job Order Costing	Process Costing	Activity Based Costing
Input Measurement Basis :	Actual	Normal	Standard
Cost Component			
Direct Material Cost	Actual	Actual	Standard
Direct Labor Cost	Actual	Actual	Standard
Variable Manufacturing Overhead	Actual	Applied	Standard
Fixed Manufacturing Overhead	Actual	Applied	Standard/ Applied

1.6.4 A direct cost is treated as an indirect one if accounting for the direct cost as such is prohibitively expensive. For example, by measuring the amount of office supplies, such as paper and copying, used to complete an engagement, a management consultant could compute the direct cost of office supplies associated with that project. However, treating office supplies as direct costs would be prohibitively expensive. Therefore, office supplies would be treated as an indirect cost.

1.6.5 An indirect cost pool should only include costs with the same cost driver. However, it would be both impractical and prohibitively expensive for all indirect cost pools to meet this criterion. A rule of thumb based on experience suggests that when 80% of indirect costs are in cost pools that meet this criterion the costing system should provide reasonable allocations.

1.6.6 The indirect costs in a given cost pool should be allocated to cost objects using the cost driver for that cost pool, or in the case of a cost pool with mixed indirect costs, the cost driver that best explains the behavior of costs in that pool.

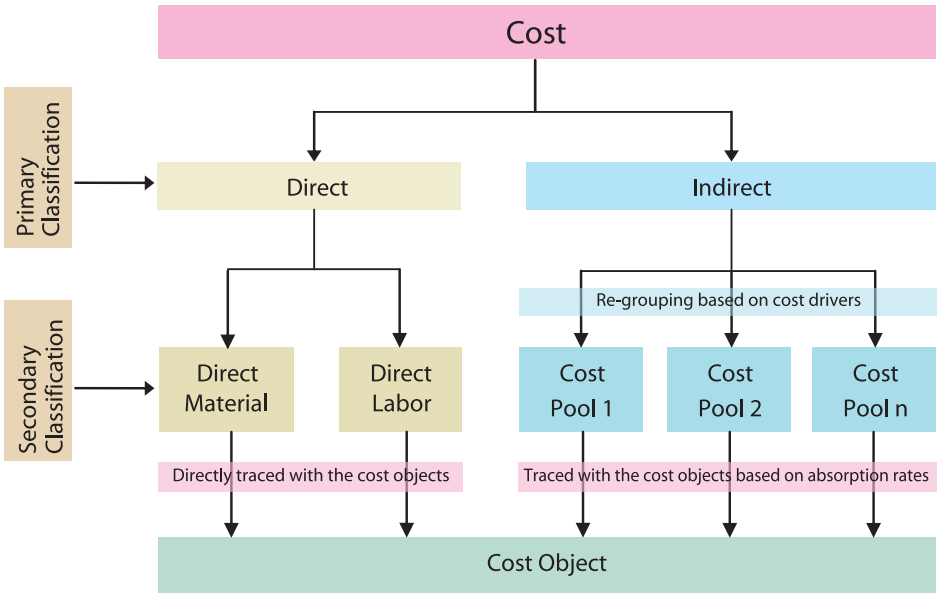
1.6.7 The indirect costs in a given cost pool should be allocated to cost objects in proportion to each cost object's use of the cost driver for that pool.

1.7 Recording and Reporting

1.7.1 Classification of Costs is the process of grouping costs according to their common characteristics. However, cost classification should be guided by the specific requirements and nature of the firm. Direct and indirect classification of cost is important for easy and accurate tracing of cost with cost object.

1.7.2 All indirect costs should be re-grouped into cost pools. A single cost pool usually includes those indirect costs having same cost driver to ensure proper application of cause-effect relationship. However, this re-grouping is restricted to cost-benefit trade off, i.e., cost of this re-grouping should not be higher than the benefits received out of such re-grouping.

1.7.3 A suitable classification of costs is of vital importance in order to identify the cost with appropriate cost centers and cost units. Cost of different cost pools should be allocated to cost objects based on the cost drivers. The following figure exemplifies the whole process.



1.7.4 To identify, classify and control the costs properly; it is important to know the flow of costs. However, cost flow in manufacturing firm and non-manufacturing firm is not the same. Refer to appendix 1A and 1B to have an understanding of cost flows in different firms.

1.7.5 As already mentioned, cost may be classified from different perspectives under consideration. Some important cost classifications are mentioned here that is advised to read in line with the descriptions given hereby.

a) By nature or element of Costs: All similar type of costs should be grouped together under their broad headings, e.g., Direct Material, Direct Labour, Overhead Costs. In order to streamline the calculations, these main headings maybe subdivided into sub headings. For example under Direct Labour one could have the Direct Labour of two production departments, where the product goes through two different processes in those two departments.

i) Direct Material Cost: This is the cost of raw materials which go into the production of a product. It includes the purchase price, cost of transportation, insurance, any applicable duties / levies / taxes. Any rebates, cash or bulk discounts, refunds etc. will be deducted from the Cost.

ii) Direct Labour Cost: This is the cost of wages and other payments made to full time and part time workers. The broad classification includes all payments made to the employees including overtime payments, gratuity, provident fund (employer's contribution), leave encashment and all types of allowances.

iii) Overhead Costs: These are expenses other than Direct Material Cost and Direct Labour Cost, incurred by the enterprise. Examples: Utilities cost, repairs and maintenance, idle time, overtime premium, depreciation, insurance, supplies for operating the production process etc.

b) By functions: All costs need to be categorized by departments or functions. Examples: Production, Selling, Distribution, Administration, R&D, etc.

i) Examples of expenses relating to Production function: Repairs and maintenance cost of factory premises, depreciation of production machinery, security cost of factory building, labour welfare costs, canteen expenses, insurance of factory premises, quality control costs.

ii) Examples of expenses relating to Selling function: Salesmen's salaries, travelling expenses of salesmen, advertisement costs, cost of product used in sales promotion, cost of gifts used in marketing drive, market Research cost, cost of organization of a Sales conference.

iii) Examples of expenses relating to Distribution function: Cost of personnel in the distribution function, cost of hiring vehicles for distribution of the products, either from the factory to warehouse or from the warehouse to the end customer, cost of fuel consumed by distribution vehicles, costs of the outer packing / cartons in which products are packed prior to distribution, cost of loading / unloading of products, promotional expenses.

iv) Examples of expenses relating to Administration function: Salaries of the accounting department, general office maintenance cost, bank charges, repair, and maintenance of the administration premises, depreciation of the premises, cost of security of the premises.

v) Examples of expenses relating to R&D function: All research work connected with a specific R&D project, all field testing, if any, expenses, salaries of employees involved in the R&D work.

c) By traceability: This classification put focus on the capacity of identification of cost with the cost object. If scientific identification is possible, the cost will be direct; otherwise it will be indirect.

d) By variability: This definition put focus on the sensitivity of cost in line with the volume of output. If the amount of cost remains same with a range of output, the cost is fixed. If the amount of cost varies proportionately, the cost is variable. However, if the amount of cost is fixed up to certain level (relatively smaller range) and then varies as volume changes; the cost is semi-variable or mixed.

e) By controllability: This classification put emphasis on the manageability on part of the cost controller. If the cost is manageable, the cost will be controllable;

otherwise, it will be uncontrollable costs.

f) By normality: This definition of the cost is based on predictability. If the cost is predictable with certainty, such cost will be normal; otherwise, it will be abnormal.

g) By hierarchy: This classification is based on the causes of costs following a hierarchy. Unit level drivers are triggered for every unit that is being produced. Batch level drivers are triggered for every batch produced. Product level drivers are triggered for every product regardless of the number of units and batches produced. Facility level drivers are drivers that are not related to the products at all.

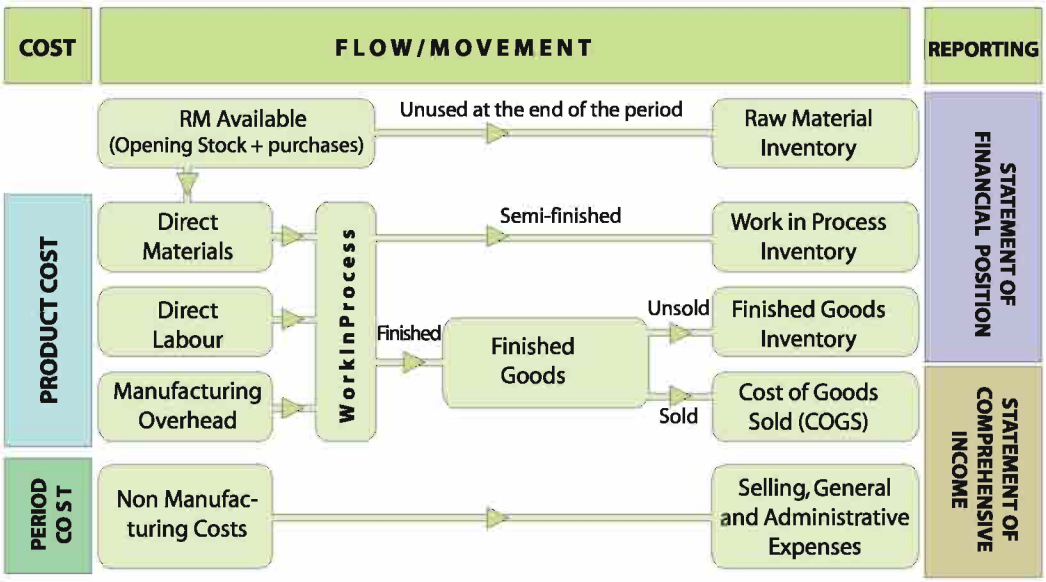
1.7.6 Cost statements are very important for internal decision making process. Appendix 1C, 1D and 1E prescribe formats for three statements: statement of direct costs, statement of cost of goods manufactured and statement of comprehensive income. These statements are prescribed for internal reporting and these are in no case alternatives to the statements as required by IAS/BAS 1, rather these are the supplementary for internal decision making process.

1.8 Effective Date

This standard will be effective from January 1, 2015 onwards.

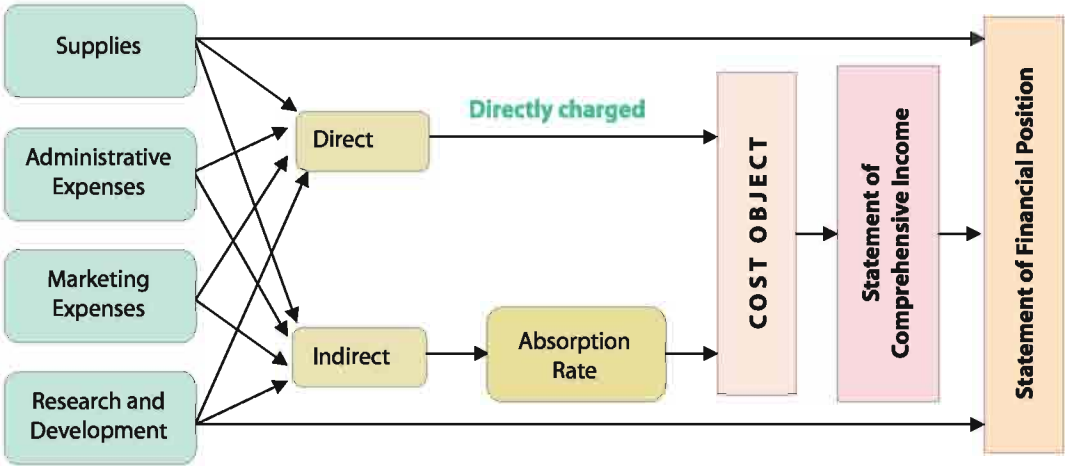
Appendix - 1A

Cost Flow in Manufacturing Organizations



Appendix - 1B

Cost Flow in Service Organizations



Appendix - 1C

A format of Statement of Direct Cost

ABC Manufacturing Ltd.
Statement of Direct Costs
For the period ended on .....

Particulars		Amount (BDT)	Amount (BDT)
(a) Direct Materials Consumed			
Raw Materials, Beginning Inventory		***	
Add: Purchase of Raw Materials	***		
(-) Purchase Returns and Allowances	(***)		
(-) Purchase Discount	(***)		
Net Purchase	***		
(+) Freight / Transportation In	***		
(+) Customs	***		
Cost of Purchase		***	
Cost of materials available for use		***	
Less: Raw Materials, Ending Inventory		***	
Direct Material Consumed			***
(b) Direct Labor (including contribution to RPF and other benefits)			***
(c) Other Direct Expenses			***
Prime Costs			***

Appendix - 1D

A format of Statement of Cost of Goods Manufactured

ABC Manufacturing Ltd.
Statement of Cost of Goods Manufactured
For the period ended on .....

Particulars		Variable	Fixed	Amount (BDT)	Amount (BDT)
(a) Prime Costs					***
(b) Manufacturing / Factory Overhead:					
Indirect Material / Supplies					
Beginning Inventory	***				
(+) Purchase	***				
(-) Ending Inventory	(***)	***	***	***	
Indirect Labor		***	***	***	
Supervisor, Clark, Superintendent, Salary		***	***	***	
Factory Rent		***	***	***	
Factory Depreciation		***	***	***	
Factory Utilities		***	***	***	
Factory Maintenance		***	***	***	
Loss of Production		***	***	***	
Rework/Spoilage		***	***	***	
Any other Factory Related Expenses		***	***	***	
Total Manufacturing / Factory Overhead		***	***	***	***
Cost of Production / Total Manufacturing Costs					***
Add: Work-in-Process, beginning inventory					***
Gross Cost of Goods Manufactured					***
Less: Work-in-Process, ending inventory					***
Cost of Goods Manufactured (net)					***

Appendix - 1E

A format of Statement of Comprehensive Income

ABC Manufacturing Ltd. Statement of Comprehensive Income For the period ended on		
Particulars	Amount (BDT)	Amount (BDT)
Sales		***
(-) Sales Returns and Allowances	***	
(-) Sales Discount	***	***
Net Sales		***
Less: Variable Expenses		
(a) Variable Cost of Goods Sold:		
Finished Goods, beginning inventory	***	
(+) Variable Cost of Goods Manufactured	***	
(=) Variable Cost of Goods Available for Sale	***	
(-) Finished Goods, ending inventory	***	
(=) Variable Cost of Goods Sold	***	
(b) Variable Selling and Administrative Expenses	***	
Total Variable Expenses		***
Contribution Margin		***
Less: Fixed Expenses		
Fixed Manufacturing Overhead	***	
Fixed Administrative and Marketing Overhead	***	
Total Fixed Expenses		***
Net Operating Income (NOI)		***

Appendix - 1F

Choosing appropriate cost driver for cost pool to reduce distortion in costing - an example

Most costing system distortions result from accumulating costs with different cost drivers in the same cost pool. A cost pool is said to be homogeneous if all costs in the cost pool have the same cost driver. Therefore, most costing distortions occur when the cost pool is not homogeneous. For making a good costing system, it is better to form homogeneous cost pool. Otherwise, it may require different drivers for a single cost pool that goes against the norm of an ideal costing system.

Costing distortions arise when the basis used for allocating indirect costs to cost objects is not the cost driver for that indirect cost. Therefore, it follows that if costs with different cost drivers are accumulated in the same indirect cost pool, then, at most, only one of those costs will be allocated using its cost driver, since there can be only one allocation basis from an indirect cost pool to the cost objects. This creates cost distortions.

To illustrate, suppose that the shipping cost is Tk. 1,000 per order plus Tk. 2 per unit shipped. Product A sales are 100,000 units per year shipped in batches of 1,000 units. Product B sales are 100,000 units per year shipped in batches of 10,000 units. There are two cost drivers here: the number of orders and the number of units shipped. There will be 110 shipments (100,000/1,000 + 100,000/10,000) yielding Tk. 110,000 in order costs (110 X Tk. 1,000), and 200,000 units shipped yielding Tk. 400,000 in shipping costs (Tk. 2 X 200,000).Therefore, total costs are Tk. 510,000. If these costs are mixed together in a single cost pool and allocated based on number of units, the allocation rate will be Tk. 2.55 per unit (Tk. 510,000/200,000) and each product line will be assigned Tk. 255,000.

If the costs are allocated based on the number of orders, the allocation rate will be Tk. 4,636.36 per order (Tk. 510,000/110). Product A will be allocated Tk. 463,636 and Product B will be allocated Tk. 46,364. If these costs were accumulated and allocated from two pools, one for order costs and one for shipping costs, Product A would be allocated Tk. 300,000 (100 X Tk. 1,000 + 100,000 X Tk. 2) and Product B would be allocated Tk. 210,000 (10 X Tk. 1,000 + 100,000 X Tk. 2).

The cost distortions caused by mixing costs with different cost drivers are apparent in this example. In general, if costs are allocated from cost pools using units produced, products that place relatively more demands on the system, in this case Product A, will be under allocated and products that place fewer demands on the system will be over allocated.

BANGLADESH COST ACCOUNTING STANDARDS

BCAS - 2

Cost Estimation

BCAS 2: Cost Estimation

2.1 Introduction

All managerial decisions deal with choices among different activity levels. An understanding of cost behavior underlies all decisions that rely on cost information. Managers must estimate which costs will vary with the activity & by how much at the time of evaluating the profitability of an existing product and evaluating the potential profit of a prospective product. In addition, understanding cost behavior provides critical insights in the process of forecasting costs during budgeting and cash flow estimation.

2.2 Objectives

The objective of the standard is to provide guidance on the nature, purpose, and approaches to cost estimation. The standard will also guide the rationale of choosing the appropriate drivers of cost so that the reasons of cost incurrence can be identified properly before deriving or proposing any formula for cost estimation. Indirectly, such estimation technique will provide a hand on technique of keeping the cost under control

2.3 Scope

2.3.1 The standard shall be applied for estimating the cost.

2.3.2 However, knowing the cost in terms of behavior is important for such estimation. Thus the standard also brings the degree of changes in cost for its better understanding and advanced use.

2.3.3 The standard is to be followed by all public limited companies where cost audit is made mandatory through Government's gazette notification from time to time.

2.4 Key Features

The key features of this standard are pointed below:

a) Identifying costs in terms of behavior;
b) Differentiating flexible, capacity-related and discretionary costs;
c) Applying dependent and independent variables in formulation cost function;
d) Cost prediction and forecasting based on cost formula; and
e) Application of multiple regression to identify the most appropriate cost driver.

2.5 Definitions

The following terms are used in this standard with the meanings specified -

2.5.1 Cost estimation: It is a well-formulated prediction of the probable cost of a specific product.

2.5.2 Flexible costs: Costs that vary in the short run in proportion to some underlying level of activity. For example, fuel costs for a courier company vary in proportion to the

distance travelled by trucks.

2.5.3 Capacity-related costs: Costs that vary in proportion with the amount of capacity acquired and used. Depreciation of a machine or wages paid to supervisory labour are some examples of capacity-related costs.

2.5.4 Discretionary costs: Costs result from managers' strategic and tactical decisions, such that the expenditure levels chosen influence the production volume instead of production volume influencing the consumption of activity resources. There is, however, no obvious cause and effect relationship between costs and outputs. In other words, there may exist a remote cause and effect relationship between costs and output. Examples include: advertising, publicity and research and development.

2.5.5 Dependent variable: It is the variable to be estimated. Usually, this is the cost to be estimated.

2.5.6 Independent variable: It is the variable used to explain the behavior of the dependent variable. In cost accounting literature, the independent variable is frequently referred to as the cost driver.

2.6 Standards

2.6.1 Many alternative tools can be chosen to estimate the behavior underlying recorded costs. The method chosen should reflect the application of judgment relating to the sensitivity of the decision to the estimated cost behavior. The more sensitive the decision to the cost estimate the greater the potential loss from using an inappropriate cost estimate, the greater the value of using a formalized cost estimation tool.

2.6.2 Any tool that relies on recorded costs to estimate cost behavior is susceptible to errors arising because of inaccurate cost recording practices. In particular, inappropriate or inaccurate cost accruals can result in inappropriate or biased cost estimates. This will relate not only to accuracy in the original recording of the data but also to ensure that costs have been attributed to the proper period.

2.7 Recording and Reporting

2.7.1 Flexible costs, capacity-related costs and discretionary costs shall be presented separately.

2.7.2 Total capacity-related costs are easily identified since they are recorded in the organization's accounting system. What must be uncovered, and what requires the application of both skill and knowledge is the relationship between capacity-related costs and production.

2.7.3 Capacity-related costs reflect the amount of capacity that exists and not the underlying volume of activity using the capacity. Therefore, in the short run there is no relationship between capacity-related costs and production.

2.7.4 However, there is a need to identify the long run relationship between capacity cost and production so that planners can estimate the product's total cost, including capacity costs. This full cost estimate is needed to determine whether the price of

an existing or a proposed product is sufficient to cover all the costs associated with making the product so that when capacity must be replaced or is required it is with the understanding that the product margins will cover those costs. Therefore, there is a need to allocate capacity related costs to products.

2.7.5 Capacity-related costs are allocated to cost objects using the allocation basis that reflects the best judgment about how the organization's long run capacity-related costs will vary with the underlying volume of activity.

2.7.6 This important point is crucial in understanding how cost estimation should be tackled in practice. To illustrate, suppose that a piece of equipment costing BDT 2,000,000 is acquired and put into production. The equipment is expected to last for 10 years. Therefore, the decision is made to assign BDT 200,000 of the equipment's total cost to each year of its estimated productive life. Suppose the practical capacity is estimated as 2,000 hours per year, yielding an allocation rate of BDT 100 per machine hour because the machinery's total cost is directly related to its machine hours capacity. Therefore, if a unit uses 0.5 machine hours, it would be allocated BDT 50 of that machine's costs.

2.7.7 Note that there are at least four assumptions underlying this cost estimate. First, that the machine life is 10 years. Second, that it is reasonable to assign an equal share of the machine's acquisition cost to each year of its estimated lifetime. Third, that the practical capacity is 2,000 hours per year and that practical capacity is the appropriate number to use to compute the hourly rate. Fourth, that the unit uses 0.5 hours of machine time.

2.7.8 **Therefore, the process of estimating capacity-related costs per unit of a cost object, which is usually a product or service involves:**

a) Identifying the total cost of the resource;

b) Determining the periodic cost to be recognized for that resource;

c) Determining the practical capacity of the resource and the allocation rate per unit of that capacity; and

d) Identifying the units of capacity consumed by a particular cost object and the total allocation of the capacity cost to the cost object.

2.7.9 Therefore, the process of evaluating the capacity-related component of a product cost involves careful consideration of the reasonableness of the allocation rates and allocation bases of various capacities to each product. It should be noted that because of the larger number of variables or elements that can affect costs, it is rarely effective or desirable to estimate costs for the entire organization. Rather the focus of cost estimation is on subgroups or activities within the organization. For example, in the following case the object is to estimate the behaviour underlying customer costs.

2.7.10 Understanding the behavior of customer costs is critical in evaluating whether the gross margin exceeds the other costs associated with dealing the customer. This information can be used to decide whether to consider doing business with that customer or, alternatively, to reduce grocery prices and recover customer-related costs through fees. For example, many utilities now have a two part bill: a constant amount that reflects the underlying metering and billing costs and a variable amount that reflects the amount of use.

2.7.11 The total customer-related costs would be the total amount of costs arising from customer-related activities. The issue is to identify the underlying cause of these customer-related costs.

2.7.12 Any approach to estimating cost behaviour should begin by developing an understanding of the activities that create customer costs. For example, these activities might include the activities of order taking, order filling, shipping, and billing costs. This understanding will guide the process of choosing the variables to explain cost behaviour.

2.7.13 Studies of cost behaviour have identified four classes of costs:

a) Unit level - costs that are proportional to the volume of production,

b) Batch level - costs that are proportional to number of batches,

c) Product level - costs that are proportional to the number of different products, and

d) Organization level - costs that bear no apparent relationship to any of these variables.

2.7.14 There are two general methods to cost estimation with alternatives within each as mentioned below:

a) Analytical methods
   i) account analysis method
   ii) engineering method

b) Empirical methods
   i) visual fit method
   ii) high low method
   iii) regression method

2.7.15 The account analysis method chooses a variable to explain costs based on an understanding of the process for which costs are to be estimated. Traditionally, this variable is almost always a volume measure such as units produced.

2.7.16 Once the variable is chosen, the next step organizes all the costs in the account into two groups: one group accumulates all the costs thought to vary in proportion to the chosen variable. The costs put into the variable pool would be summed and divided by the volume of the chosen variable to get an allocation rate per unit of the chosen variable. This rate would then be used to allocate the cost to the cost object. The other cost group, which accumulates all the costs not deemed to be proportional to the chosen variable, would simply be treated as a fixed (unvarying cost) in the resulting explanatory cost equation.

2.7.17 Clearly this approach can be adapted to include a number of explanatory variables, a cost pool for each variable, and an allocation rate for each pool. In fact, this approach is likely the most widely practiced approach to cost determination.

2.7.18 The advantage of account analysis is that it is simple and straightforward and allows the application of judgment in developing the cost function. The disadvantage is that it is ad hoc and difficult to evaluate the reliability or accuracy of the estimates resulting from this approach.

2.7.19 The engineering method follows the same general pattern as the account analysis method except that the analysis is based on prospective or standard costs rather than actual costs. Proponents of account analysis argue that the primary

advantage of account analysis over the engineering method is that it allows cost estimates to be guided by experience. However, other than issues relating to using standard costs instead of actual costs, the advantages and disadvantages of the engineering method are the same as those for the account analysis method.

2.7.20 The empirical methods use programmed or graphical tools to estimate costs using recorded data. The empirical methods use the term dependent variable, which is the variable to be estimated (in this case customer-related cost), and independent variable, which is the variable used to explain the behaviour of the dependent variable. In cost accounting literature, the independent variable is frequently referred to as the cost driver.

2.7.21 In the high low method two observations are made from the set of cost quantity pairs - one is the highest activity pair and the other is the lowest activity pair. Therefore, the first step in this process is to identify the independent variable to use in the analysis.

2.7.22 **The analyst would choose the variable, based on an understanding of the process that is thought best explains customer-related cost. This understanding may be supplemented by a scatter graph analysis that plots cost against the various candidates for the independent variable.**

2.7.23 In the visual fit method, a trend line is fitted visually to the scatter graph of costs versus the dependent variable. This approach reflects a purely judgmental graphical analysis. Once the trend line has been drawn, an equation can be developed that represents the trend line.

2.7.24 Note that all the approaches described to this point estimate the relationship between cost and a single explanatory variable. As mentioned previously, this single independent variable approach can be amended if the costs accumulated for a function; such as customer-related activities are subdivided into accounts that reflect sub activities (such as order taking, shipping, delivery) and individual cost equations can be estimated for each of these sub activities.

2.7.25 Once the costs have been divided into sub accounts, a number of cost estimates for each pool can be developed based on different independent variables. This approach to cost estimation is useful where different independent variables explain different elements of the total customer-related costs. For example, suppose the objective is to predict the behaviour of support costs in a factory. An observation of factory floor operations suggests that some resources, such as supplies, are consumed in proportion to the number of units made and therefore generate costs that are proportional to the volume of production. Production is undertaken in batches and there appear to be costs, such as moving and set-up costs, that are proportional to the number of batches, and not the number of units made. Finally, there appear to be costs, such as scheduling and supervisory costs that are proportional to the number of different products made. In this setting, costs would be segregated into groups reflecting volume-related, batch-related, and product-related groups and then the appropriate independent variable for each group would be used to develop an estimate of cost behaviour.

2.7.26 While the methods described to this point rely on judgement in allocating costs to pools when using more than one independent variable; statistical models can be used systematically to estimate the nature of the effect of each independent

variable on the dependent variable.

2.7.27 It is important to note that statistical methods replace judgment with an approach that is based on statistical correlation. While some applaud replacing judgment with an objective approach to estimation, others have commented that judgment can often help in estimating cost behaviour as experience with a process may not be incorporated into the regression approach.

2.7.28 **It is important to recognize that statistical cost estimation techniques do not use either knowledge or insight but purely a correlation that fits the data best. This is particularly important to consider when dealing with capacity-related costs.**

2.7.29 Over the time periods during which data is gathered to estimate the cost relationship, changes in flexible costs will immediately reflect changes in the underlying variables that cause flexible costs to vary. However, capacity-related costs behave differently. As mentioned above capacity-related costs only change when the level of capacity changes or when the inter-period allocations of an existing capacity-related cost changes.

2.7.30 In this regard, consider two settings. In the first setting, no capacity-related costs change over the period during which data is gathered to estimate costs. Any changes in costs then will reflect changes in flexible costs and the cost estimate can be interpreted very clearly. In the second setting, some capacity-related costs change during the period as new capacity is acquired. In this situation, some or all of the change will be picked up by the estimates of the coefficient associated with one or several of the independent variables. In this case the estimated coefficient will include both a flexible component and a capacity related cost component, making the estimate one of long run cost rather than short run cost.

2.7.31 However, the way that the statistical analysis allocates the changes in capacity-related costs will not reflect insights into where or how these costs arose. The allocation will reflect the criterion of maximizing the goodness of fit of the resulting equation. It follows that it is crucial to scrutinize cost data carefully. One possible approach is to eliminate all capacity-related costs from the cost estimation process. This would allow the cost estimates to be interpreted as estimates of flexible costs. These estimates could then be combined with estimates of the capacity-related cost component of a product cost, a process described earlier in this standard, to develop the overall estimate of cost behaviour.

2.7.32 It should be noted that one of the advantages of the regression method is that it provides statistics that allow for the determination of the degree of confidence that can be placed in the cost estimates provided. Most spreadsheet packages can perform regression analysis and will provide many of the important statistics associated with the regression method. These statistics also allow for determination of whether the important assumptions that underlie regression analysis have been met by the data. These assumptions relate to the presumed linear relationship between the dependent and independent variables and the lack of correlation among the independent variables. In addition, the regression results provide information about the nature of the forecasting errors (residuals) of the estimated regression equation. Tests on these forecasting errors can be undertaken to identify evidence of regression specification errors.

2.7.33 **The integrity of any estimate depends critically on the data used to develop the**

estimate. In the case of estimating costs, some, or all, of the underlying data is accounting data and therefore is susceptible to all the problems that traditionally underlie accounting data.

2.7.34 The major problem related to the use of accounting data is the accuracy of the accruals that underlie the data. Because all the models of cost estimation rely on identifying the relationship among contemporaneous data, it is critically important that the accounting data accurately record not only the cost but also the period in which the cost was incurred. Moreover, because the data used for the independent variables often relies on nonfinancial information, (in this case the number of customers and the number of orders), that are recorded and accumulated outside the accounting model, the recording and accumulating of non-financial information should reflect the same quality standards that underlie accounting data.

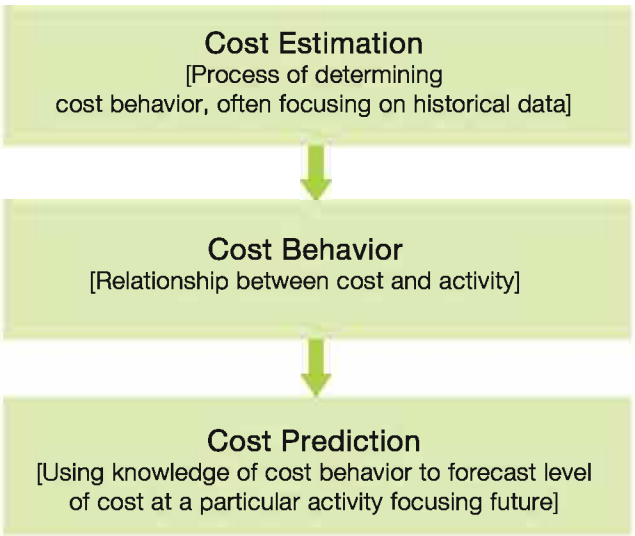
2.8 Effective Date

This standard will be effective from January 1, 2015 onwards.

Appendix 2A

Illustration of Using Different Cost Estimation Methods

This appendix presents a practical illustration of using different cost estimation methods to derive a formula underlying the behavior of cost that gives a closer insight regarding the incurrence of costs, its movement and prediction as well. Let us assume that one of the important costs in ABC Food Services is the Total Customer Cost. An analysis of activity that may cause total customer cost results three activities, viz., No. of Customers, No. of Orders and Total Order Value. The internal database produces relevant information covering 30 periods for analysis. For the analysis, the following process may be observed to derive a scientific conclusion.



The table below presents the dataset used for cost estimation and prediction by understanding its behavior. It is an example that may be replicated for any cost where management feels that the analysis is important.

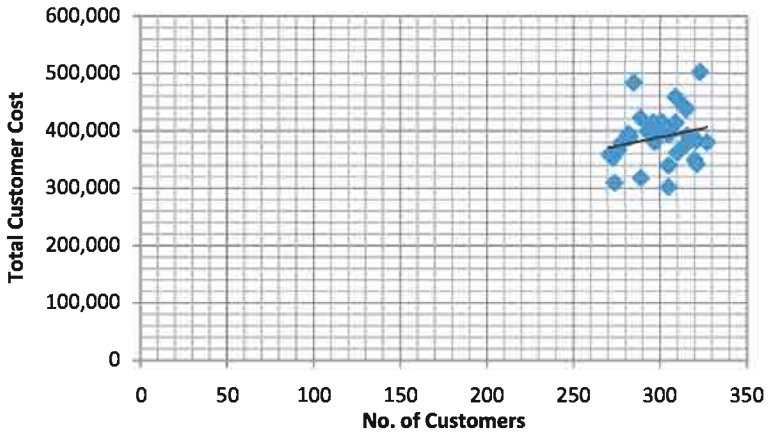
Estimating Flexible Costs
ABC Food Services

Period	Total Customer cost	No. of Customers	No. of Orders	Total Order Value
1	383,033	321	2,860	1,334,382
2	302,108	305	1,970	1,257,612
3	362,276	310	2,634	1,366,747
4	442,372	314	3,665	1,372,284
5	391,748	316	3,130	1,438,974
6	349,628	320	2,119	1,328,535
7	422,204	289	3,599	1,333,275
8	366,119	276	1,947	1,577,919
9	353,950	273	2,155	1,592,663
10	414,743	296	3,917	1,300,329
11	416,003	301	3,985	1,679,742
12	483,744	285	3,920	1,558,465
13	414,326	309	3,781	1,251,256
14	376,703	315	2,569	1,382,006
15	380,658	297	3,190	1,409,192
16	379,022	278	1,638	1,723,060
17	339,683	305	2,234	1,263,240
18	502,070	323	3,876	1,718,860
19	358,695	271	1,517	1,596,210
20	459,132	309	4,102	1,349,977
21	388,959	283	2,921	1,649,054
22	309,504	274	1,694	1,375,391
23	318,133	289	2,035	1,312,764
24	342,162	321	1,940	1,389,102
25	437,542	315	3,021	1,688,716
26	404,756	298	3,705	1,288,482
27	393,032	305	3,761	1,288,128
28	379,759	327	2,021	1,720,479
29	398,609	293	2,748	1,378,900
30	394,936	282	2,032	1,642,686

It is better to start with visual fit method which is very rough in use; however, it provides a first-hand idea regarding the cost behavior. Visual fit may be an easy way of identifying the right activity (driver) out of three which explain the cost better than others.

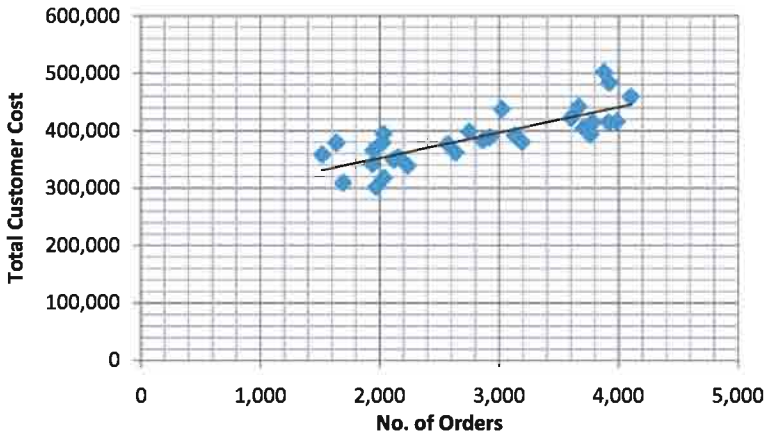
Visual Fit Method

In visual fit method, we need to plot the 30 observations in a scatter diagram. And then a linear line is drawn through the observations visually to fit the data in the plot. As we are having three independent variables (activities) to explain total customer cost, three diagrams are prepared considering each independent variable each time. For example, in first graph below, total customer cost is assumed to be caused by number of customers.



The above diagram results that most of the observations are concentrated. It may be a requirement to draw a line easily that will represent every observations, however, it is not a good symptom of cause and effect relationship between the customer cost and no. of customers.

In the diagram below, total customer cost is traced with number of orders.



The above diagram gives a good insight regarding the suitability of drawing a line visually covering every point and at the same time, the behavior of cost also seems to be properly reflected.
And finally, total customer cost is explained with the help of total order value that results the following scenario

The above diagram also doesn't reflect the true cause of the cost as most of the observations are concentrated to a certain point.

A close observation of the three above graphs concludes that Number of Order is the best explanatory variables for the Total Customer Cost. It means that the movement of cost is properly reflected with regard to the changes in number of order. Thus, number of order is the best cost driver to be used for estimating and forecasting total customer cost. Base on this conclusion, we may derive a formula for total customer cost considering the linear line fitted visually to represent all the 30 observation in second graph. If the line in extended backward to find out the point in Y-axis, we will find the value that is close to BDT 180,000. Thus, this value represents fixed portion of total customer cost. Once the fixed portion is known, we can easily calculate the variable portion by considering the total cost at any number of orders which is given. For example, total customer cost for 2,634 number of order is BDT 362,276. At this number of order, variable cost will be BDT 182,276 (BDT 362,276 - BDT 180,000). Thus, variable portion of total customer cost per order will be BDT 69.20 (BDT 182,276 ÷ 2,634). This estimation results the following formula for total customer cost:

Total Customer Cost = BDT 180,000 + BDT 69.20 X Number of Orders

High and Low Method

High and Low Method of cost estimation is simple in a sense that it is guided by the minimum requirement of drawing a linear line and that is two points. To cover the every dispersion in the observation, high low method relies on the outliers, i.e., the highest and the lowest observations. A line is drawn connecting this two points and behavior is measured based on this two points. For example, from the thirty observations in our example, we have identified the highest and lowest observation and then we have drawn a figure connecting these two observations.

	Number of Orders (X)	Total Customer Cost (Y)
Highest	3,876	BDT 502,070
Lowest	1,970	BDT 302,108



The above graph is very specific and if you compare the graph with the similar graph under visual fit method, you will find that this graph is based on the lowest and highest observations only leaving all other observations from the plot. However, we can mathematically solve the situation to derive the formula explaining the line. Variable portion of the cost can be computed

by using the following equation:

$$\text{Variable Cost} = \frac{\text{Change in Expenses}}{\text{Change in Order}} = \frac{Y_2 - Y_1}{X_2 - X_1} = \frac{502{,}070 - 302{,}108}{3{,}876 - 1{,}970} = \frac{199{,}962}{1{,}906} = \text{BDT } 104.91$$

And now fixed expenses can be estimated by deducting total variable cost from total cost at either the highest or the lowest level of activity.

Fixed Expenses = Total Expenses - Variable Expenses

= BDT 502,070 - BDT 104.91 x 3,876 or = BDT 302,108 - BDT 104.91 x 1,970

= BDT 502,070 - BDT 406,631 = BDT 302,108 - BDT 206,673

= BDT 95,439 = BDT 95,435

Fixed expense at both the highest and lowest level is very close. Based on the above calculation, we can develop the formula as below:

Total Customer Cost = BDT 95,439 + 104.91 x Number of Order

Regression Methods

In visual fit, the linear line is drawn visually to fit every observation which is the roughest method. The accuracy depends on the capability of the analyzer to draw such a line that will make the gap minimal. However, this is completely impossible if the observations in the plot are not concentrated rather erratic. In high low method, an attempt was made to make the calculations more scientific; however, the biggest flaw of the method is that it does everything based on only two observations leaving all other observations outside the focus.

To make the estimation process more holistic, regression method is the best which considers every observation and the line is drawn in such a way that make the dispersion the lowest and error in estimation will be the minimum. It is advised to use the method if the extra complexity of calculation properly compensates the extra benefits derived by predicting cost more accurately.

Least square linear regression is the simplest one to use where the cost is regressed with only one independent measure. For example, we may apply least square linear regression to measure Total Customer Cost due to any changes in Number of Order.

Periods	Total Customer cost (Y)	No. of Orders (X)	X2	Y2	XY
1	383,033	2,860	8179600	146714279089	1095474380
2	302,108	1,970	3880900	91269243664	595152760
3	362,276	2,634	6937956	131243900176	954234984
4	442,372	3,665	13432225	195692986384	1621293380
5	391,748	3,130	9796900	153466495504	1226171240
6	349,628	2,119	4490161	122239738384	740861732
7	422,204	3,599	12952801	178256217616	1519512196
8	366,119	1,947	3790809	134043122161	712833693
9	353,950	2,155	4644025	125280602500	762762250
10	414,743	3,917	15342889	172011756049	1624548331
11	416,003	3,985	15880225	173058496009	1657771955
12	483,744	3,920	15366400	234008257536	1896276480
13	414,326	3,781	14295961	171666034276	1566566606
14	376,703	2,569	6599761	141905150209	967750007
15	380,658	3,190	10176100	144900512964	1214299020
16	379,022	1,638	2683044	143657676484	620838036
17	339,683	2,234	4990756	115384540489	758851822
18	502,070	3,876	15023376	252074284900	1946023320
19	358,695	1,517	2301289	128662103025	544140315
20	459,132	4,102	16826404	210802193424	1883359464
21	388,959	2,921	8532241	151289103681	1136149239
22	309,504	1,694	2869636	95792726016	524299776
23	318,133	2,035	4141225	101208605689	647400655
24	342,162	1,940	3763600	117074834244	663794280
25	437,542	3,021	9126441	191443001764	1321814382
26	404,756	3,705	13727025	163827419536	1499620980
27	393,032	3,761	14145121	154474153024	1478193352
28	379,759	2,021	4084441	144216898081	767492939
29	398,609	2,748	7551504	158889134881	1095377532
30	394,936	2,032	4129024	155974444096	802509952
Total	**11,665,609**	**84,686**	**259,661,840**	**4,600,527,911,855**	**33,845,375,058**

Based on the values calculated on the above table, the fixed component (intercept of the line at Y-axis, a) and the variable component (slope of the linear line, b) can be easily computed by using the formula as given below:

$$b = \frac{n(\sum XY) - (\sum X)(\sum Y)}{n(\sum X^2) - (\sum X)^2} = \frac{(31 \times 33,845,375,058) - (84,686 \times 11,665,609)}{(31 \times 259,661,840) - 84,686^2} = \frac{61,292,863,024}{877,798,444} = 69.83$$

$$a = \frac{(\sum Y) - b(\sum X)}{n} = \frac{11,665,609 - 69.83(84,686)}{31} = \frac{5,752,352}{31} = 185,560$$

Thus, the linear regression results the following formula for explaining total customer costs:

Total Customer Cost = BDT 185,560 + (BDT 69.83 X Number of Orders)

Even regression analysis can be helpful to identify the best activity out of several as in our case where we have three activities selected primarily to explain total customer cost. In that case, one should proceed for **Multiple Regression Analysis** which provides the opportunity of considering more than one independent variable. Any statistical package (like SPSS) or simple spreadsheet analysis can be used for doing multiple regression analysis. For example, if we conduct multiple regression analysis for our example through SPSS, it will provide following result:

1. The value of R and R Square below is the coefficient of correlation and coefficient of determination respectively. These are used to evaluate the strength of the regression model. Here 0.832 R square denotes that about 83.2% of the variability of customer cost is explained by the independent variables which are good enough.

Model Summary				
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.912[a]	.832	.812	20415.180
a. Predictors: (Constant), Customer Value, No. of Orders, No. of Customers				

2. The ANOVA table below indicates the level of significance. The significance level is .000 which is statistically significant.

ANOVA						
Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	5.348E10	3	1.783E10	42.770	.000a
	Residual	1.084E10	26	4.168E8		
	Total	6.431E10	29			
a. Predictors: (Constant), Customer Value, No. of Orders, No. of Customers						
b. Dependent Variable: Total Customer Cost						

3. The coefficient table below results the significance of each independent variables with reference to the dependent variable. The beta value and level of significance results that number of orders and number of customers are statistically significant. However, the beta value of Number of Orders is the highest (0.854) and if we have to choose only one parameter out of three, no. of order is the best.

Coefficients						
Model		Unstandardized Coefficients		Standardized Coefficients	F	Sig.
		B	Std. Error	Beta		
1	(Constant)	11170.108	83590.568		.134	.895
	No. of Customers	165.626	239.501	.059	.692	.495
	No. of Orders	47.701	4.751	.854	10.041	.000
	Customer Value	.133	.024 .460	5.547	.000	
a. Dependent Variable: Total Customer Cost						

Based on the above multiple regression analysis, we can choose the best cost driver and then we can perform linear regression analysis to derive a cost formula that will help us to estimate the cost. To ensure more accuracy and bring versatility in analysis, multiple regression offers different types of analysis where the analyzer is free to accommodate any complexity depending on the requirements.

BANGLADESH COST ACCOUNTING STANDARDS

BCAS - 3

Cost Allocation Bases

BCAS 3: Cost Allocation Bases

3.1 Introduction

The standard deals with the nature and design of the bases used to allocate indirect costs to cost object. In cost and management accounting system, organizations usually accumulate indirect costs in cost pools and then allocate those costs to the final cost objects using the cost allocation bases (cost driver). A specific base is required to be the true cause of costs in a pool which is variable and it is supposed to explain the long run behavior of costs in that pool. Selection of appropriate cost allocation bases for different cost pools is very important as it transforms all indirect costs into direct and eventually helps to determine the total costs of a final cost object. It is, therefore, necessary to follow standard practices to identify and apply the bases used to allocate indirect cost to cost objects.

3.2 Objectives

a) The primary objective of this standard is to identify appropriate cost allocation bases for indirect costs.

b) The standard also caters to standardize and provide guidance on the nature and design of the bases used to allocate indirect costs to cost objects.

c) In addition, the standard will facilitate in taking different commercial and strategic management decisions such as resource allocation, product or service mix optimization, make or buy decisions, price fixation, negotiation etc.

d) The standard aims at ensuring better disclosure requirement and transparency in the cost statement.

3.3 Scope

3.3.1 This standard shall be applied for allocating indirect costs.

3.3.2 In addition, the standard shall also be applied in some pertinent cost and management accounting practices relating to, for example,
- a) Costs of products, services or activities;
- b) Transfer pricing;
- c) Segment performance; and
- d) Cost statements for any other purpose.

3.3.3 The standard is to be followed by all public limited companies where cost audit is made mandatory through Government's gazette notification from time to time.

3.4 Key Features

The key features of this standard are pointed below;
- a) Identifying different types of cost allocation bases (cost drivers);
- b) Presenting a general guideline for choosing appropriate cost allocation base;
- c) Presenting cost allocation in utility generating companies;
- d) Focusing on the wrong choice of cost allocation base for allocating indirect costs; and
- e) Identifying different reporting requirements related to cost allocation bases

3.5 Definitions

The following terms are used in this standard with the meanings specified -

3.5.1 Activity: An activity is an event, task or unit of work with a specified purpose.

3.5.2 Capacity related resources: Capacity related or committed resources refer to those resources which provide capacity and are already installed. Capacity related resource is supplied or provided in advance or before usage.

3.5.3 Cause and Effect relationship: Cause and effect relationship is the relationship between two variables. A cause is why an event happens. An effect is an event that happens because of a cause.

3.5.4 Cost pool: Cost pool is a subset of total indirect costs that can be associated with a distinct cost driver. All indirect costs in a single cost pool are similar in a sense that all of them consume resources with respect to a single cause. There are three types of cost pools: primary, intermediate, and final. A primary cost pool is the initial account to which the cost is assigned. An intermediate cost pool is used to accumulate costs pending their final disposition. A final cost pool is the cost pool corresponding to the cost object. A cost pool that is final for one decision might be intermediate in another decision.

3.5.5 Costs object: A cost object is a segment or an entity for which specific cost information is desired. This segment or entity may include a contract, any customer, a unit of service, a unit of production, a project, any activity, a subdivision etc. For a cost object a separate and independent cost measurement is required. Costing systems are designed to calculate the cost of a cost object.

3.5.6 Cost driver: The activities that are undertaken to produce goods or services and that consequently drive the costs that the costing system records are called cost driver. It drives the cost to incur or may be the true cause of the cost. For example, mileage driven by an automobile should be a driver for fuel expenses consumed by the automobile. Driver may be transaction driver, duration driver or intensity driver.

3.5.7 Transaction driver: Transaction drivers are used to count the frequency of an activity, i.e., the number of times an activity is performed.

3.5.8 Duration driver: Duration drivers represent such drivers which consider the amount of time spent to perform an activity.

3.5.9 Intensity driver: Intensity drivers are hybrid type of drivers and reflect a situation where indirect costs are allocated to a single cost object using a mix of drivers.

3.5.10 Excess capacity: Excess capacity results either from greater productive capacity than the entity could currently plan to use, or from unbalanced equipment or machinery within department.

3.5.11 Idle capacity: Idle capacity results from the temporary idleness of production or distribution facilities due to a slowdown in production because of a temporary lack of orders or any bottleneck. Idle facilities are restored to full use as soon as the need arises.

3.5.12 Indirect cost: As defined in BCAS 4.5.1.

3.6 Standards

3.6.1 ***Organization shall accumulate indirect costs in cost pools and then allocate those costs to final cost objects using appropriate cost allocation base.***

3.6.2 The method used to allocate the indirect costs of a capacity resource to a cost object should reflect the intensity of demand placed on the resource by that cost object. This intensity can usually be reflected by some activity or volume.

3.6.3 When capacity resources have different costs and used by cost objects in different proportions, the method of allocating the indirect costs of those capacity resources to the cost objects should reflect the differential costs and the relative use of the capacity resources by the cost objects.

3.6.4 When there are considerable and predictable costs related to idle capacity, the cost allocation system should reflect an appropriate treatment of those idle capacity costs. Current practice varies from treating idle capacity costs as period rather than product costs to allocating all idle capacity costs to the cost objects that use the capacity resource. The appropriate approach in any given situation should reflect both the circumstances of the situation and the purpose of the cost allocation.

3.6.5 ***Any change in the cost accounting principles applied for the allocation bases of indirect cost shall be made, only if it is required by law or for compliance with the requirements of a cost and management accounting standard, or change would result in a more appropriate allocation of costs of a cost pool.***

3.6.6 ***The cost allocation base used to allocate indirect costs to final cost objects should reflect the presumed cause and effect relationship between resource use and resource cost and the appropriate bases in any given situation should reflect both the circumstances of the situation and the purpose of the cost allocation.***

3.6.7 Appropriate cost allocation base can often be identified by using statistical analysis or by observing the process generating the cost, in some circumstances, the choice of the appropriate cost allocation base will reflect basic economic reasoning about the nature of the cost being allocated.

3.6.8 ***Three types of cost allocation bases can be used to allocate the indirect costs in general. These are transaction driver, duration driver and intensity driver. However, the standard doesn't provide any preference rather it is left to be decided by the practitioners based on the complexity and suitability of underlying situation.***

3.6.9 ***In utility setting, there are three fundamental characteristics of capacity related resources namely; (i) the total capacity related cost is a result of the amount of the capacity acquired, (ii) capacity related costs do not increase with the use of the capacity, and (iii) capacity not used in one period cannot be carried over for use in another period. As such, it demands more sophisticated approaches to cost allocation.***

3.6.10 A variety of bases can be used in utility setting to allocate capacity related costs which is consistent with the underlying notion that costs should be allocated using an allocation base that reflect the cause or nature of those costs. These methods include peak responsibility method, non-coincident demand method and phantom customer method. Under peak responsibility method, capacity related costs are allocated to cost objects in

proportion to their respective use of capacity when system is operating at its peak or capacity. Under non-coincident demand method, the peak demand for each cost object is summed without regard to whether the demands were coincidental. The capacity related costs are then allocated in proportion to these peak demands. And under the phantom customer method, a phantom customer is created so that the system is always seen to be operating at capacity i.e. phantom customer effectively bears the idle capacity costs and eventually phantom customer's cost reallocated to the actual users.

3.6.11 Indirect cost is a capacity related cost and it is logically proportional to the amount of capacity required. Thus, to calculate the allocation rate of an indirect cost, the choice of appropriate level of capacity should reflect both the circumstances of the situation and the objectives sought by the allocation of the capacity related costs.

3.6.12 Unless there is documented evidence that the other level of activity for allocating indirect costs provides a good approximation of the costing results obtained using the available capacity level indirect costs should be allocated using the available capacity level and treat excess and idle capacity cost as a period cost.

3.7 Recording and Reporting

3.7.1 ***Cost allocation bases shall be presented as a supporting for each type of cost pool with the cost statement.***

3.7.2 In addition, the cost statement shall disclose the following:

a) The basis of allocation of cost of each cost pool;

b) Where the rate of allocation bases is disclosed at standard cost, the budgeted cost of each pool and relevant level of activity; and

c) Amount of costs for excess and idle capacity that is treated as period costs.

3.7.3 Any change in the cost accounting principles applied for the allocation bases of indirect cost during the period covered by the cost statement which has a material effect on cost allocation bases shall be disclosed. Where the effect of such change is not ascertainable wholly or partly the fact shall be disclosed.

3.7.4 Any pertinent issues should be disclosed only when it is material and significant.

3.7.5 Disclosures shall be made in the body of the cost statement or as a foot note or as a separate schedule prominently.

3.8 Effective Date

This standard will be effective from January 1, 2015 onwards.

Appendix 3A

Cost Allocation in Utility Regulation Literature

This appendix presents an illustration on cost allocation bases used in utility regulation literature -

Let's assume that Dhaka Electric Supply Authority (DESA) has two classes of customers: commercial and residential. Commercial customers usually consumes more during peak period as compared with off-peak period. In case of residential customers, the situation simply reversed except in holidays. The consumption of the services of DESA is measured in Kilowatts (KWs). For a representative period, the consumption of KWs by commercial and residential customers during peak and off-peak periods are given below:

Customers	Periods	
	Peak	Off-peak
Commercial	80,000	10,000
Residential	20,000	30,000
Total	100,000	40,000

As per the record, total capacity related cost of DESA is for example BDT 100,000,000. How DESA will do the allocation of capacity related cost between commercial and residential customers? It is very important on part of DESA to calculate the cost per KW.

The variable portion of capacity related cost should be allocated between the customers based on the consumption. However, allocation of fixed portion of capacity related cost is difficult and different approaches are proposed for the same. Another issue is the differential pricing where the customers are not charged at a same rate. For accommodating these issues, the cost allocation methods are proposed based on different amount for cost allocation bases.

a) Peak responsibility or coincident demand method

b) Non-coincident demand method

c) Phantom customer method

Peak Responsibility Method

In the **peak responsibility or coincident demand method,** capacity-related costs are allocated to cost objects in proportion to their respective use of capacity when the system is operating at its peak or capacity. For example, in case of DESA, we should consider only 100,000 KWs during the peak consumption. In that case, allocation will be done as following:

Customers	Kilowatts Consumed during Peak Period	Respective Percentage	Allocated Cost
Commercial	80,000	80%	BDT 80,000,000
Residential	20,000	20%	20,000,000
Total	100,000	100%	BDT 100,000,000

The justification provided for the peak responsibility method follows directly from basic economic reasoning. That reasoning argues that since capacity related costs are proportional to capacity

and since the peak level of demand defines the required capacity, it follows that capacity-related cost should be allocated in proportion to peak use.

Non-coincident Demand Method

In the non-coincident demand method, the peak demand for each cost object is summed, without regard to whether the demands were coincidental. The capacity-related costs are then allocated in proportion to these peak demands. For example, in case of DESA, we should consider 110,000 KWs during the peak consumption. In that case, allocation will be done as following:

Customers	Kilowatts Consumed	Respective Percentage	Allocated Cost
Commercial	80,000	72.73%	BDT 72,730,000
Residential	30,000	27.27%	27,270,000
Total	110,000	100%	BDT 100,000,000

The rationale given for the non-coincident peak method is primarily an equity argument that suggests that some consideration should be given to off-peak use in allocating capacity-related costs.

Phantom Customer Method

The **phantom customer method** creates a phantom customer so that the system is always seen to be operating at capacity. In the DESA example, there would be a demand of 60,000 KWs (100,000 - 40,000) attributed to the phantom customer during the off-peak period. In that case, allocation will be done as following:

Customers	Kilowatts Consumed	Respective Percentage	Allocated Cost
Commercial	90,000	45%	BDT 45,000,000
Residential	50,000	25%	25,000,000
Phantom	60,000	30%	30,000,000
Total	200,000	100%	BDT 100,000,000

The initial allocation to the phantom customer (BDT 30,000,000), which is the cost of idle capacity, is then reallocated to the commercial and residential customers based on based on their respective index value. The index value is calculated by dividing that customer's use of capacity at the system peak by that customer's average demand. The calculation is shown below:

Customers [i]	Peak Demand [ii]	Off Peak Demand [iii]	Average Demand [iv=(ii+iii)/2]	Index Value [v=ii/iv]
Commercial	80,000	10,000	45,000	1.78
Residential	20,000	30,000	25,000	0.80
Total	200,000	140,000	70,000	

If the index for any customer group is less than 1, as it is for the residential customers in this case, it means that customer's load on the system is not responsible for driving up the capacity requirement at the system peak. Therefore, the argument is that none of the idle capacity costs arising because of the difference between the average and peak loads on the system should be allocated for a group whose average use falls below the system peak.

Therefore, in this example, all the phantom customer costs would be attributed to the commercial customers and none to the residential customers resulting in a total of BDT 75,000,000 (45,000,000 + 30,000,000) capacity-related costs to the business customers and BDT 25,000,000 (25,000,000 + 0) to the residential customers.

Appendix 3B

Different Types of Cost Drivers

A transaction driver determines the number of times an activity is performed. Duration drivers represent the amount of time required to perform an activity. Intensity drivers directly charge for the resources used each time an activity is performed. It is generally used when duration drivers fail to provide accurate results. The table below provides some example of different drivers.

Indirect Costs	Cost Driver	Types of Driver
Setup Costs	Number of Set-ups	Transaction Drivers
Procurement Costs	Number of Receipts	Transaction Drivers
Supporting Costs	Number of Products Supported	Transaction Drivers
Setup Costs	Set up Hours	Duration Drivers
Inspection Costs	Inspection Hours	Duration Drivers
Repair and Maintenance Costs	Labor Hours	Duration Drivers
Machining Costs	Machine Hours	Duration Drivers
Setup Costs	Direct Charge	Intensity Drivers

A closer look at the above table results a single cost with three cost drivers. To allocate setup cost, a transaction driver (number of setups) may be used if each setup consumes similar amount of resources. However, when different setup requires different time, transaction driver will not be appropriate due to the consumption of resources differently. Duration driver (setup hours) will be more appropriate here when cost objects consuming more set up time will be charged more for set up costs. However, both of this cost drivers will not be appropriate for a special set-up which requires special equipment and uses resources of quality assurance and testing functions, in addition to the uses of resources required for normal setup. Use of set up hours fails to capture the use of additional resources. Therefore, in this situation, it is appropriate to charge activity costs directly to the product. Similar situation we may consider for a customer service manager. The cost drivers may be number of customers handled, number of hours spent to solve customers' complain and charging the customer directly due to the criticality of the activity required by the customers.

BANGLADESH COST ACCOUNTING STANDARDS

BCAS - 4

Indirect Costs

BCAS 4: Indirect Costs

4.1 Introduction

This standard deals with the principles and methods of acquisition, allocation, proportion and absorption of indirect costs of products or services and for the presentation and disclosure in cost statements. Organizations undertake different types of activities within their capacities which create indirect costs. The standard deals with the assignment of indirect cost relating to the capacity related resources which focus on determining the cost of products and services. Indirect costs are of all functional types, including administrative, manufacturing, selling and marketing. The issues related to handling indirect costs are general and independent of the functional nature of the costs. It is generally not possible to compare indirect costs between organizations at the rate level, whether they are a for-profit or non-profit firm. Indirect costs must be compared at the cost level. An indirect cost rate by itself has very little meaning. To be meaningful one need to understand what the rate is being applied to when arriving at the applicable indirect costs for any given period.

4.2 Objectives

a) The main objective of this standard is to ensure proper and effective optimization of principles related to indirect costs.

b) The standard also ensures the methods of identification, classification, distribution and determination of the indirect cost with reasonable accuracy.

4.3 Scope

4.3.1 This standard shall be applied to discuss and define the issues concerned with and related to the design of the costing systems dealing with indirect costs.

4.3.2 The standard shall be applicable to cost statements which require acquisition, allocation, proportion, absorption and presentation of indirect cost as it is authorized.

4.3.3 The standard is to be followed by all public limited companies where cost audit is made mandatory through Government's gazette notification from time to time.

4.4 Key Features

The key features of this standard are pointed below -

a) Identifying indirect costs relating to different resources used;

b) Presenting single stage and multiple stage approaches to charging costs to cost objects;

c) Presenting reciprocal and non-reciprocal approaches to service cost allocations;

d) Identifying and calculating indirect cost rate for charging products with indirect costs; and

e) Identifying different disclosure requirements related to indirect costs

4.5 Definitions

The following terms are used in this standard with the meanings specified -

4.5.1 Indirect Costs: Indirect costs are costs (such as for advertising, computing, maintenance, security, supervision) incurred in joint usage and, therefore, difficult to assign to or identify with a specific cost object or cost center (department, function, product, program). This is the cost of a resource that is used by more than one cost object. These costs are not directly attributable and accountable to a single cost object (such as a particular function or product) and require allocation. Indirect costs are also known as overhead costs. Indirect costs include taxes, administration, personnel and security costs. Indirect costs are usually constant for a wide range of output, and are grouped under fixed costs. However, it may be variable also.

4.5.2 Functional Indirect Costs: Indirect costs are normally related to the functions as follows:

a) Production Costs/ Factory Costs: Indirect Costs included in the production process or in rendering services.

b) Administrative costs: Costs related to general management and administration of an organization.

c) Marketing Costs: Marketing costs are related to sell of products and services and include all indirect costs comprising selling and distribution cost in sales management for the organization.

4.5.3 Behavioral Indirect Cost: Indirect costs may be classified on the basis of behavior as follows:

a) Variable: Variable costs comprise of costs which vary in proportion to the change of activity of production. E.g. cost of utilities, wages etc.

b) Semi-Variable: Semi-variable costs are partly affected by change in the production volume. They are further segregated into variable and fixed costs.

c) Fixed: It comprises of costs whose values do not change with the change in volume of production. E.g. Salaries, Rent etc.

4.6 Standards

4.6.1 **Indirect cost policy deals with everything starting from the identification of cost object, center, indirect costs, allocation of indirect costs, proportion of indirect costs and finally absorption of indirect costs.**

a) Cost object may include a product, service, cost centre, activity, sub-activity, project, contract, customer or distribution channel or any other unit in relation to which costs are ascertained.

b) Cost centre is the organizational unit to which costs are accumulated and used for controlling and effective use of costs. A cost centre includes process function, activities, location and item of equipment, group of persons or any other unit in relation to which costs are accumulated.

c) Acquisition of indirect costs means the acquisition of indirect items of expenses from the sources and records on the basis of their nature and purposes.

d) Allocation of indirect costs means all costs related to a cost centre to be allocated directly to those centre accordingly. For example, depreciation of particular machinery should be allocated to a particular cost center if the machinery is directly attached to the cost center.

e) Proportion of Indirect cost means the distribution of indirect costs to related cost centers on some equitable basis.

f) Absorption of indirect costs is the charging of indirect costs from different cost centers to respective products or services by means of absorption rates for each cost centre.

4.6.2 ***Indirect costs may be allocated considering each case separately if it is feasible and economic to do so.*** For example, long distance telephone bill may be tracked separately to charge with appropriate program when phone bill is paid each month. Similarly, some organizations use a counter or log to track copying expenses for each program and/or function. Time sheets may form the basis for allocation of salaries for the executive director, accountant and staff where their work benefits more than one program or activities. A different method can be adopted for each line item or case.

4.6.3 ***The number of indirect cost pools necessary to provide a reasonable treatment of indirect cost is context specific. However fewer than five cost pools will, in most cases, be insufficient to provide a proper treatment of indirect costs. In most contexts, more than 50 cost pools are likely to be excessive.***

4.6.4 There are two broad approaches to designing a system of indirect cost pools, single stage approach and multistage approach.

4.6.5 In a single stage approach, costs are initially classified as either direct or indirect. All direct costs are attributed to the cost object to which it belongs. And indirect costs are assigned to the final cost object through the indirect cost pools based on appropriate cost allocation base.

4.6.6 In a multistage approach, for each indirect cost pool, an appropriate cost allocation base is chosen to allocate the indirect costs that are accumulated in that cost pool to the activities that consume the services of other activities in that indirect cost pool. This is called a multistage approach because costs are allocated among the indirect cost pools before they are allocated to the cost objects. The single stage approach does not reflect situations where indirect costs related to such activities as Repair and Maintenance provide services to other indirect activities as well as to the final cost objects.

4.6.7 Designing a system to account for indirect costs requires defined judgment and skill for allocating indirect costs based on appropriate cost drivers. The steps required in designing the indirect costing system are:

a) Recognizing the resources which are useful to produce and deliver products and services to customers;

b) Knowing the behavior of costs for all the resources identified above;

c) Identify how the products consume the resources that create indirect cost to develop a cause and effect relationship between production and resource use; and

d) Use the identified relationship among available resources, costs, used resources and product activity to develop an allocation basis for assigning indirect costs to products/services.

4.6.8 When costs are used in contractual settings, such as in cost reimbursement contracts, insurance settlements or transfer pricing where the price is based on cost, the criterion used to judge the adequacy of the costing system is whether its design could be reasonably expected to avoid material cost distortions in handling indirect costs.

4.6.9 ***When costs are using in decision making settings, the criterion that should be used to judge the adequacy of the costing system is whether the estimated benefits of providing additional costing accuracy exceed the estimated costs of designing, implementing, running and maintaining a more complex costing system. Improved costing system accuracy, in itself, is not a sufficient reason to justify the costs of redesigning an existing costing system.***

4.6.10 ***Assignment of indirect costs to the cost objects shall be based on either of the two principles: cause and effect or benefits received.***

4.6.11 In cause and effect principle, cause is the process or operation or activities and effect is the incurrence of cost. In benefits received principle, indirect costs are to be apportioned to the various cost objects in proportion to the benefits received by them.

4.6.12 In a manufacturing company, there are production cost centers and service cost centers. Production cost centers are directly involved with production whereas service cost centers provide services to the production cost centers and other service cost centers. The first step to be followed is to assign the production overheads to the production and service cost centers on an appropriate basis. The second step is to assign the cost of service cost centers to production cost centers on an appropriate basis. The first step is termed as primary assignment and the second step is termed as secondary assignments of indirect costs.

4.6.13 ***When various cost centers provide a significant level of services to themselves and to each other, the design of the costing system should reflect these interactions.***

4.6.14 The basis for primary assignment of indirect cost is to be selected following the two principles: cause and effect, benefits received.

4.6.15 Secondary assignment of indirect costs may be done by following either reciprocal basis or non-reciprocal basis. While reciprocal basis considers the exchange of service among the service departments, non-reciprocal basis considers only one directional service flow from a service cost centre to other service cost centers and production cost centers.

4.6.16 The services rendered by certain service cost centers are also utilized by other service cost centers. In reciprocal secondary distribution, the cost of service cost centers are apportioned to production cost centers as well as other service cost centers.

4.6.17 In non-reciprocal basis of apportionment, the cost of service cost centers are apportioned to the production cost centers. For the details, it is referred to use BCAS 6: Support Department Costs.

4.6.18 Finally, the indirect costs assigned to the production cost centers shall be charged to products or services through an overhead absorption rate for each production cost centre. Common bases for apportionment of production overheads to cost objects are:

Bases	Applicability
Production Units	When single product is produced or multiple products are produced having similar specifications
Direct Material Cost	Where the indirect costs are mostly related to material
Direct Employee Cost	When conversion process is labor intensive, wage rates are substantially uniform
Direct Employee Hour	When conversion process is labor intensive
Machine hour/ Reaction hour/ Vessel occupancy/ Crushing hour etc.	When production mainly depends on performance of the machine, vessel or other facility.

4.6.19 ***A preferred approach for assignment of indirect cost to cost objects is to use multiple drivers instead of a single driver such as machine hour, where feasible.***

4.6.20 An indirect cost rate is simply a mechanism for determining fairly and conveniently within the boundaries of sound administrative principle, what proportions of departmental/organization administration costs each programs should bear. An indirect cost rate represents the ratio between the total indirect costs and benefiting direct costs, after excluding and/or reclassifying unallowable costs, and extraordinary or distorting expenditures. (i.e., capital expenditures and major contracts and sub grants). The indirect costs in the numerator of the equation should bear a reasonable relationship to the direct costs from the denominator. This will allow for each program or activity represented in the direct costs base to assume their fair share of indirect costs when the rate is applied.

4.6.21 The first step in determining an indirect cost rate is to separate all costs into two groups; direct cost and indirect cost. The indirect costs are aggregated into an indirect cost pool and then allocated to the programs on a set of proportion or rate.

4.6.22 ***The way to avoid cost distortions caused by mixing indirect costs with different cost drivers in the same indirect costs pool is to identify the cost behavior patterns for the organizations various indirect costs and to design the system of indirect costs pools to minimize the dissimilarity of costs in a single indirect cost pool.***

4.7 Recording and Reporting

4.7.1 Indirect costs shall be determined and presented separately into cost statements as separate heads under different cost objects like production, administration, selling and distribution in line with BCAS 1.

4.7.2 Element, nature and behavior wise details of indirect costs shall be presented if material.

4.7.3 Any change in the cost accounting principles and methods applied for the measurement and assignment of the overheads during the period covered by the cost statement which has a material effect on the overheads shall be disclosed. Where the effect of such change is not ascertainable wholly or partly the fact shall be indicated.

4.7.4 Disclosure shall be made in the body of the cost statement or as a foot note or as a separate schedule.

4.7.5 The cost statements shall disclose the following:

a) The bases for distribution of indirect cost to the cost objects as required in BCAS 3;

b) Indirect costs related to resources received from or supplied to related parties;

c) Any subsidy or grant or incentive or any amount of similar nature received or receivable reduced from indirect costs;

d) Credits or recoveries relating to the overheads;

e) Any abnormal portion of the overheads; and

f) Penalties and damages excluded from the overheads.

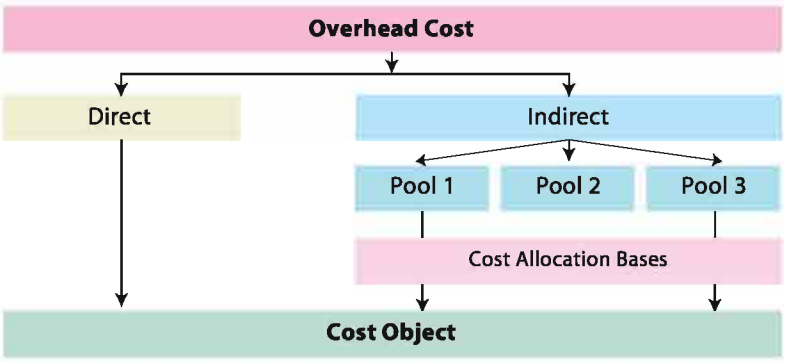
4.8 Effective Date

This standard will be effective from January 1, 2015 onwards.

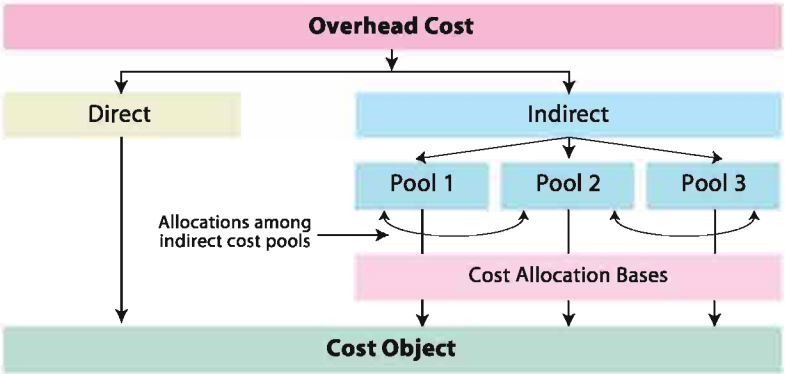
Appendix 4A

Single Stage Approach and Multistage Approach

(a) Single Stage Approach



(b) Multistage Approach



BANGLADESH COST ACCOUNTING STANDARDS

BCAS - 5

Indirect Cost Rates

BCAS 5: Indirect Cost Rates

5.1 Introduction

The standard deals with the procedure, methods, pooling, allocation and distribution of indirect cost for products and services to determine total cost and per unit cost. In cost and management accounting, the costs are usually accumulated by activity or department to identify the costs of activities that the organization undertakes. Activity cost information is used for two purposes: to target activities for improvement or elimination, and to provide an accurate basis for the product or service costing data used in making product or service mix decision. A system of better pooling and distribution of indirect costs can only ensure greater accuracy in determination of cost of products or services. It is, therefore, necessary to follow standard practices of applying indirect cost rate in determining costs for computing per unit cost and preparation of cost statement.

5.2 Objectives

The broad objective of this standard is to provide guidance on computing indirect cost rate that can be used for charging cost object with the indirect cost most accurately. However, specific objectives of this standard are pointed out below:

a) The standardization of allocation of support department costs is to provide a logical basis for determination of per unit as well as total cost.

b) This standard focuses on determination of indirect cost rate.

c) The standard is to facilitate in taking commercial and strategic management decision such as resource allocation, product or service mix optimization, make or buy decisions, price fixation, negotiation etc.

d) The standard aims at ensuring better disclosure requirement and transparency in the cost statement.

e) The standard aims at providing better understanding on `indirect costing rates` for preparation of per unit cost statement as well as` cost of production report for cost control measures and assist to management decision making process.

5.3 Scope

5.3.1 This standard shall be applied in determining unit as well as product cost.

5.3.2 The standard shall also be applied in cost and management accounting practices relating to:

a) Costs of products, services or activities;

b) Transfer pricing;

c) Segment performance; and

d) Cost statements for any other purpose.

5.3.3 The purpose of this standard is to provide guidance relating to the allocation of capacity-related indirect costs.

5.3.4 The standard is to be followed by all public limited companies where cost audit is made mandatory through Government's gazette notification from time to time.

5.4 Key Features

The key features of this standard are pointed below -

a. Proposing a representative predetermined overhead rate;

b. Explaining different levels of capacity and its impact on indirect cost rate;

c. Comparative discussion on different allocation bases;

d. Illustrating the computation of rates and its application; and

e. Identifying and explaining the variances resulting for allocation based on standard.

5.5 Definitions

The following terms are used in this standard with the meanings specified -

5.5.1 Indirect costs: As defined in BCAS 4.5.1.

5.5.2 Capacity: Capacity is very important in choosing the numerator of the allocation rate equation which represents the most appropriate cost driver. Capacity may be theoretical, practical and standard. Theoretical capacity is the maximum capacity whereas practical capacity is computed by deducting provisions required for maintenance from the theoretical capacity. And standard capacity is theoretical capacity less an allowance for required maintenance, less an allowance that reflects the amount of idle time caused by varying demand on the resource, assuming that the resource capacity is efficiently and economically managed.

5.5.3 Allocation rate: This is the rate at which indirect cost is charged over cost object. When the cost used in the numerator of the allocation rate equation is a budgeted or standard one, the allocation rate is called a predetermined allocation rate because it is determined before the actual costs are known. When the actual cost is used as the numerator in the cost allocation rate equation, the resulting allocation rate is called an actual allocation rate.

5.6 Standards

5.6.1 ***This standard recommends that the total capacity related indirect costs used in the allocation rate equation should be based on budgeted or standard cost, rather than actual cost. This results in an allocation rate that can be used during the period to cost output and for control proposes.***

5.6.2 ***This standard recommends that the cost driver activity level used in the allocation rate equation should be based on standard capacity. It is important to note that the deductions from theoretical capacity used to compute standard capacity should be based on best practice relating to the use of that capacity, not the historical experience of an individual organization.***

5.6.3 ***The number of cost driver units of the capacity used to allocate costs to the cost object should reflect the standard for the work done for the cost object, not the number of***

cost driver units of the capacity actually used.

5.6.4 The total allocation to a cost object will equal the number of units of capacity used by the cost object multiplied by the allocation rate developed for that cost object.

Allocation = Units of Cost Driver Used x Rate per unit of Cost Driver

5.6.5 This standard deals with issues that relate to computing the rate per unit of cost driver in the allocation equation. The rate per unit of cost driver, or the allocation rate, is calculated as follows.

$$\text{Allocation Rate} = \frac{\text{Total Capacity Related Indirect Cost}}{\text{Cost Driver Activity Label}}$$

5.6.6 An indirect cost rate is simply a mechanism for determining fairly and conveniently within the boundaries of sound administrative principle, what proportions of Departmental/organization administration costs each programs should bear. An indirect cost rate represents the ratio between the total indirect costs and benefiting direct costs, after excluding and/or reclassifying unallowable costs, and extraordinary or distorting expenditures (i.e., capital expenditures and major contracts and sub-grants). The indirect costs in the numerator of the equation should bear a reasonable relationship to the direct costs from the denominator. This will allow for each program or activity represented in the direct costs base to assume their fair share of indirect costs when the rate is applied.

5.6.7 Indirect costs are usually constant for a wide range of output, and are grouped under fixed costs. Capacity-related indirect costs reflect the cost of capacity that cannot be varied in the short run to meet demand and are used by two or more cost objects.

5.6.8 ***Where an outside party has an interest in the allocation rate developed by the costing system of a firm due to contractual or regulatory issues, the firm and the outside party should negotiate and specify the standards used for cost, standard capacity, and activity units for work done in the contract or during the regulatory process.***

5.6.9 Developing a standard approach to computing allocation rates is a matter of considerable importance due to many costing disputes, particularly between contracting authorities and contractors in cost-plus contract situations, arise over the choice of the numerator and the denominator in the allocation rate equation.

5.6.10 The following table summarizes the seven numerator/denominator pairs that can be used in the allocation rate equation.

Capacity-Related Cost	Cost Driver Activity Level			
Budgeted or Standard	N/A	Budgeted	Average	Capacity
Actual	Actual	Budgeted	Average	Capacity

5.7 Recording and Reporting

5.7.1 'Indirect costing rates' should be done on predetermined objective which is based on activity.

5.7.2 'Indirect costing rates' should be followed consistently from period to period and preparation of cost statements should be made with reference to a period of time.

5.7.3 A change in 'Indirect costing rates' should be made only if it is required by law or for compliance with any Bangladesh Cost Accounting Standard or the change would reset in a more appropriate preparation or presentation of cost statements of an enterprise.

5.7.4 Any change in 'Indirect costing rates' of cost which has a material effect on the cost of the product should be disclosed in the cost statements. Where the effect of such change is not ascertainable wholly or party, the fact should be indicated in the cost statement.

5.8 Effective Date

This standard will be effective from January 1, 2015 onwards.

Appendix 5A

This appendix illustrates the computation and application of Indirect Cost Rate.

The discussion will be based on ABC Company, which has a production machine with a budgeted cost of BDT 300,000 per year plus BDT 400 for every operating hour.

The theoretical capacity of the machine is 3,000 hours per year. The machine's practical capacity (which is theoretical capacity less time allowed for required maintenance) is 97% of its theoretical capacity or 2910 hours. Industry statistics suggest that the most efficient organizations have on average, a further 2% of theoretical capacity idle because of varying demand during the year. Note that this new capacity level, which we will call standard capacity (or 2850 hours) and which amounts to 95% of theoretical capacity, includes no allowance for idle time (such as capacity lost because of improper load balancing, or time lost due to machine failures, or shut downs due to lack of materials) other than that relating to varying demand. The capital budgeting analysis that justified the machine's purchase projected an average use of 2,800 hours per year over the machine's lifetime.

During this year the planned level of activity was 2,700 hours. At the end of the year, however, it was found that the actual activity level was 2,900 hours, the number of hours allowed for the work done was 2,875 and the actual costs were BDT 310,000 plus BDT 390 for each hour that the machine was operated.

Computing a Predetermined Allocation Rate

Computation of predetermined allocation rate is a step by step process. These steps are discussed below considering the above example data.

Choosing the Cost Driver Activity Level

Most organization use a predetermined allocation rate so the cost for the period of jobs can be computed as the job is completed, rather than waiting until the actual cost for the period is known. The predetermined rate approach also tends to produce allocation rates that are less variable.

In ABC Company, a predetermined rate would use the budget cost of BDT 300,000 in the numerator of the allocation rate equation. Note that the flexible cost of the machine of BDT 400 per hour is irrelevant in computing the allocation rate for the indirect costs since BDT 400 per hour cost would be a direct cost to the cost objects using the machine. The next choice in

computing the allocation rate is to select the cost driver activity level. The five alternatives available here are:

a) the planned level of operations of 2,700 hours;

b) the expected average level of operations of 2,800 hours;

c) the theoretical capacity of 3,000 hours;

d) the practical capacity of 2,910 hours; and

e) the standard capacity of 2,850 hours.

Note that 2,900 hours, the amount of capacity actually used is not an option because the predetermined allocation rate calculation must use data that are available before operations begin.

Using the Planned Level of Operations as the Cost Driver Activity Level

The arguments for using the planned level of operations each year as the cost driver activity level to compute allocation rate for that year is that, year by year, if expectation are realized, the amount of indirect costs allocated to cost objects will equal the budgeted cost of the capacity. The argument against using the planned level of operations is that the allocation rate will vary from year to year as the cost in the allocation rate equation remains constant but the cost driver activity level varies. In years when capacity use is high, the cost allocation rate will be lower than in years when capacity use is low. Because of this variability, and because the cost allocation rate falls as the operation approaches capacity (when, presumably, capacity is most valuable), using the planned level of operations as the cost driver activity level in the allocation rate equation is unacceptable.

Using the Expected Average Level of Operations as the Cost Driver Activity Level

Two arguments are advanced for using the expected average level of operations over the lifetime of the capacity as the cost driver activity level in the allocation rate equation.

a) This approach results in a constant cost allocation rate.

b) The expected average demand on capacity is the number that was likely used in the evaluation process that justified the capacity's purchase.

Therefore, the allocation rate reflects the implied effective cost per unit of capacity used to justify the capacity acquisition.

The major disadvantage of using the expected average level of operations as the cost driver activity level is that it obscures the cost of unused or idle capacity and provides no cost incentive for organizations to focus on improving capacity use. This is an argument that is often raised in cost-plus contracting situations where the contractor argues that the cost of excess capacity is buried in the allocation.

Using Capacity as the Cost Driver Activity Level

The primary argument for using a capacity-based number as the cost driver activity level in the allocation rate equation is that the resulting allocation rate supports the process of costing idle facilities and the division of the idle facility cost between what is normal for an efficient organization and what is excessive. This insight is critical for control purposes and contract

costing when the contract price is cost plus. For this reason alone, this standard recommends using a capacity-based cost driver activity level.

The second argument for using a capacity-based cost driver activity level is that capacity is the cost driver for indirect cost. The indirect cost is committed when the capacity is acquired and therefore does not depend upon how much is used.

On the one hand, some observers advocate using theoretical capacity as the cost driver activity level.

The argument is that theoretical capacity provides the most accurate estimate of the cost per unit of acquired capacity, and that an allocation rate based on theoretical capacity provides a continuous message to management, via the unallocated cost of unused capacity, of the need to improve use.

On the other hand, observers argue that, because the difference between theoretical capacity and standard capacity reflects required maintenance and fluctuations in use resulting from unavoidable demand fluctuations, no organization can achieve theoretical capacity. Therefore, basing the allocation rate on theoretical capacity provides an unrealistically low estimate of the effective cost information about idle capacity motivates managers to use capacity more effectively, since that motivation comes when demand on existing facilities exceeds supply.

Practical capacity, which is theoretical capacity less an allowance for required maintenance time, caries the negative features of both the theoretical capacity and standard capacity approaches without providing any advantage.

Practice, which reflects conventional wisdom, widely supports the use of standard capacity as the measure for the cost driver activity level. The difference between theoretical capacity and standard capacity is often called idle capacity.

The predetermined rate used to allocate cost in ABC Company when theoretical capacity is used as the cost driver activity level would be BDT 100 per machine hour as computed in the following equation.

$$\text{Allocation Rate} = \frac{\text{Budgeted Cost}}{\text{Theoretcal Capacity}} = \frac{\text{BDT 300,000}}{\text{3,000}} = \text{BDT 100}$$

The predetermined rate used to allocate cost in ABC Company when standard capacity is used as the cost driver activity level would be BDT 105.2632 per machine hour, as the computed in the following equation:

$$\text{Allocation Rate} = \frac{\text{Budgeted Cost}}{\text{Standard Capacity}} = \frac{\text{BDT 300,000}}{\text{2,850}} = \text{BDT 105.2632}$$

When allocating cost to production, the organization should use the standard amounts of the cost driver allowed for the work done rather than the actual amounts of the cost driver that were used. This avoids allocating favorable or unfavorable cost driver activity use variances to production and provides a solid basis for control and cost-based pricing.

Computing the Actual Allocation Rate

The same argument used to conclude that standard capacity is the appropriate choice for the cost driver activity level applies to calculating the actual allocation rate. Therefore, the actual rate used to allocate cost in ABC Company would be BDT 108.7719 per machine hour.

$$\text{Allocation Rate} = \frac{\text{Actual Cost}}{\text{Standard Capacity}} = \frac{\text{BDT 310,000}}{\text{2,850}} = \text{BDT 108.7719}$$

The following allocations and variance would be the result in ABC Company using this actual allocation rate:

Indirect cost spending variance = Actual cost - Budgeted cost = BDT 310,000 - BDT 300,000= BDT 10,000 (unfavorable)

Total capacity cost allocated to production = Standard hours allowed for work x Allocation rate = 2,875 x BDT 108.7719 = BDT 312,719

Cost saving due to efficient capacity use:

Total capacity cost allocate to production - Budgeted cost = BDT 312,719 - BDT 300,000 = BDT 12,719 (favorable)

Note that using actual cost in this case where there is an unfavorable spending variance has the effect to overstating the cost saving due to efficient capacity use. Part of the overstatement is due to the allocation of unfavorable spending variance for the capacity-related cost to production. In general terms, this overstatement is computed as follows:

Overstatement = Cost driver activity rate x (Rate using actual cost - Rate using standard cost)

= Savings Computed using actual cost - Saving computed using standard cost

In case of ABC Company the amount of overstatement is computed below:

= 2,875 x (BDT 108.7719 - BDT 105.2632)

= 2,875 x BDT 3.5087

= BDT 10,088

Using the actual allocation rate has the effect of allocating production efficiencies or inefficiencies to production and disguising the nature of the efficiency variance by embedding the difference in a capacity use (volume) variance. This is undesirable because this disguises the production efficiencies or inefficiencies and also because organizations should not expect to recover production inefficiencies, nor should they be expected to relinquish production efficiencies when the cost is used for contract purposes.

For this reason, and because the organization must wait until the end of the period when actual costs are known to compute the cost allocation rate and the cost of jobs, the standard recommends the use of predetermined allocation rate method.

BANGLADESH COST ACCOUNTING STANDARDS

BCAS - 6

Support Department Costs

BCAS 6: Support Department Costs

6.1 Introduction

BCAS 6 deals with the procedure and method of pooling, allocating and distributing support department costs over cost objects. In the Cost and Management Accounting system the costs are accumulated by activity or department to identify the costs of activities that the organization undertakes. Activity cost information is used for two purposes: to target activities for improvement or elimination, and to provide an accurate basis for the product or service costing data used in making product or service mix decision. A system of better pooling and distribution of support department costs can only ensure greater accuracy in determination of cost of products or services. It is, therefore, necessary to follow standard practices for pooling and distribution of support department costs for preparation of cost statements.

6.2 Objectives

The objectives of this standard are pointed out below:

a) This standard focuses on allocating costs of support departments.

b) The standardization of allocation of support department costs is to provide a scientific basis for allocation of costs to other departments or activities.

c) The standard is to facilitate in taking commercial and strategic management decisions such as resource allocation, product or service mix optimization, make or buy decisions, price fixation, negotiation etc.

d) The standard aims at ensuring better disclosure requirement and transparency in the cost statement.

6.3 Scope

6.3.1 This standard shall be applied in allocating support departments' costs over cost objects.

6.3.2 More specifically, the standard shall be applied in Cost and Management Accounting practices relating to:

a) Costs of products, services or activities;

b) Transfer pricing;

c) Segment performance; and

d) Cost statements for any other purpose.

6.3.3 The standard is to be followed by all public limited companies where cost audit is made mandatory through Government's gazette notification from time to time.

6.4 Key Features

The key features of this standard are pointed below -

a) Presenting different costs with departmental attachment;

b) Single step and multistep approach;

c) Identifying different decision scenario; and

d) Comparing direct, step and reciprocal method of cost allocation.

6.5 Definitions

The following terms are used in this standard with the meanings specified -

6.5.1 ***Department:*** Department is organizational or responsibility unit which deals with a particular area of job.

6.5.2 ***Activity:*** As defined in BCAS 3.5.1.

6.5.3 ***Support department:*** A support department, which is also called service department, provides the services that assist other internal departments in the company.

6.5.4 ***Flexible cost:*** As defined in BCAS 2.5.2.

6.5.5 ***Committed cost:*** Costs associated with resources that provide the organization with capacity are called capacity related costs, committed costs or fixed costs.

6.5.6 ***Abnormal cost:*** An unusual or a typical cost whose occurrence is usually irregular and unexpected and/or due to abnormal situation of the production or operation.

6.5.7 ***Administration overheads:*** These are the costs of all activities relating to general management and administration of an organization. Administration overheads shall exclude production overheads, marketing overheads and finance cost.

6.5.8 ***Costs object:*** As defined in BCAS 3.5.5.

6.5.9 ***Distribution overheads:*** Distribution overheads are the costs incurred in handling a product/service from the time it is ready for dispatch until it reaches the consumer including the units receiving the product/service in an inter unit transfer. The cost of any non manufacturing operations such as packing, repacking, labeling etc at an intermediate location will be a part of distribution overheads.

6.5.10 ***Finance costs:*** Cost incurred by an enterprise in connection with the borrowing of funds. This will include interest and commitment charges on bank borrowings, other term and long term borrowings, amortization of discounts or premium related to borrowings, finance charges in respect of finance leases, other similar arrangements and exchange differences arising from foreign currency borrowings to the extent they are regarded as an adjustment to the interest costs. The term finance costs and borrowing costs are used interchangeably.

6.5.11 ***Imputed costs:*** Hypothetical or notional costs, not involving cash outlay, computed for any purpose.

6.5.12 ***Marketing overheads:*** Marketing overheads are the expenses related to sales of products and include all indirect expenses in sales management for the organization.

6.5.13 ***Normal capacity:*** Normal capacity is the production achieved or achievable on an average over a number of periods or seasons under normal circumstances taking into account for the lost capacity resulting from planned maintenance.

6.5.14 ***Production overheads:*** These are the indirect costs involved in the production process or in rendering services.

6.5.15 ***Standard cost:*** A predetermined cost of resource input for the cost objective computed with reference to set technical specifications and efficient operations.

6.5.16 ***Standby service:*** Any facility created to safeguard against the future of the main source of service.

6.6 Standards

6.6.1 ***Costing system, cost assignment and principles of measurement should be guided by the following considerations:***

a) Each identifiable support department shall be treated as a distinct cost object for measurement of the cost of services subject to the principle of materiality.

b) The cost assigned to support department should reflect the presumed cause and effect relationship with the cost.

c) The costing system of support department should be designed so that it is complete in that it accounts for all costs. The costing system should be systematic in that costs shall be the aggregate of direct and indirect cost attributable to cost object by such department.

d) Costing system may be designed by following organizational unit (department) approach or activity approach or the system may exhibit characteristics of both approaches.

e) The choice of whether to accumulate costs by activity or organizational unit has no effect on the principles described, and the recommendations made, in this standard. Therefore, while this standard discusses accumulating costs by department, the discussion applies equally to costing systems where costs are accumulated by activity. In the discussion of principles that follow "primary activity" can be substituted for "operating department" and the "secondary activity" can be substituted for "support department."

f) Finance costs incurred in connection with the support department shall not form part of the cost of support department.

g) Cost of support department shall not include imputed costs.

h) Where the cost of support department is accounted at standard cost, the price and usage variances related to the support department shall be treated as part of cost of services. Usage variances due to abnormal reasons shall be treated as part of abnormal cost.

i) Any subsidy/grant/incentive or any payment received/receivable with respect to any support department shall be reduced for ascertainment of the cost to which such amounts are related.

j) The cost of production and distribution of the support department shall be determined based on the normal capacity or actual capacity utilization whichever is higher and unabsorbed cost, if any, shall be treated as abnormal cost. Cost of standby service

shall include the committed costs of maintaining such a facility for the service.

k) Any abnormal cost where it is material and quantifiable shall not form part of the cost of the support department cost object.

l) Credits / recoveries relating to the support department including charges for services rendered to outside parties, material and quantifiable, shall be reduced from the total costs of that support department.

m) Any change in the cost accounting principles applied for the measurement of the cost of support department shall be made, only if it is required by law or for compliance with the requirements of a cost and management accounting standard, or change would result in a more appropriate preparation or presentation of cost statements of an entity.

6.6.2 ***Cost is classified as either flexible or committed and cost driver should be selected logically based on the classification of costs.***

6.6.3 Because decisions to acquire capacity drive committed (fixed) costs and because decisions to use capacity drive flexible (variable) costs, to debar cost distortion support department costs should be classified as committed costs and flexible costs.

6.6.4 ***Because the underlying costs driver or cause of cost behavior, for committed costs is the amount of capacity, committed costs should be allocated based on the planned use of capacity.***

6.6.5 ***Because the underlying costs driver or cause of cost behavior, for flexible costs is the level of activity, flexible costs should be allocated based on the actual use of the activity that creates the flexible costs.***

6.6.6 While assigning cost of support department, traceability to cost object in an economically feasible manner shall be the guiding principle.

6.6.7 In order to provide for an accurate tracing of costs to the final costs object, the cost allocation procedure should reflect logical sequence, considering cause and effect.

6.6.8 ***Cost Allocation is done in a sequence and either single stage or multi stage approach may be used for such allocation.***

6.6.9 In the single stage approach, the costs of support departments are allocated directly to the final cost objects, which are usually product. The multi stage approach to cost allocation involves a series of steps. The steps in the multistage approach are i) the costs of a support department are allocated to support departments and producing departments; ii) the costs accumulated for a support department are then reallocated to the producing departments; and iii) finally, the accumulated producing department costs are allocated to the final cost object.

6.6.10 ***Unless there is documented evidence that the single stage approach to allocating support department costs provides a good approximation of costing, support department costs should be allocated using the multistage approach.***

6.6.11 ***In multistage approach, support department costs may be allocated to producing departments based on any of the three alternatives: direct, step down or reciprocal methods.***

6.6.12 The first step in the direct method is to compute the allocation rate per unit of cost

driver/activity provided. The allocation rate for each support department is then used to allocate the support department costs to production departments. In step method approach, the support department's costs are allocated sequentially beginning with one of support departments. It is most common to begin with the support department that provides the highest proportion of its output to support department. After the first support department's costs have been allocated to other support departments and production departments in proportion to the services provided, that support department is eliminated from the allocation process. The allocation proceeds step by step. At each step the support department costs are allocated in proportion to the services provided to the remaining departments and production departments until all the support departments have been eliminated. The reciprocal method of cost allocation model is the interaction of the support and production departments exactly as they occur. The reciprocal method proceeds in two steps. The first step computes what is called the reciprocal cost for each support department. The second steps uses the reciprocal cost for each support department to allocate that support department's cost to other (both support and production) departments.

6.6.13 ***Support department costs should be allocated using the reciprocal method as the method reduces distortion, unless it is impracticable to use.***

6.6.14 The most appropriate basis of distribution of a cost of a support department to the producing department consuming services is to be derived from logical parameters which could be related to the usage of the service rendered. The parameter shall be equitable, reasonable and consistent.

6.6.15 ***Where the cost of services rendered by a support department is not directly traceable to a cost object, it shall be assigned on the most appropriate basis.***

6.7 Recording and Reporting

6.7.1 ***Cost of support department shall be presented as a separate cost head for each type of service in the cost statement, if material.***

6.7.2 ***The cost statement shall disclose the following:***

a) The basis of allocation of cost of each support department;

b) The cost of purchase, production, distribution, marketing and price of services with reference to sales to outside parties;

c) Where the cost of support department is disclosed at standard cost, the price and usage variances;

d) The cost of services received from / rendered to related parties;

e) Costs of support department incurred in foreign exchange;

f) Any subsidy/Grant/Incentive and any such payment reduced from the cost of support department;

g) Credits/recoveries relating to the cost of support department;

h) Any abnormal cost excluded from cost of support department; and

i) Penalties and damages paid excluded from cost of support department.

6.7.3 Any change in the cost accounting principles and methods applied for the measurement and assignment of the cost of support department during the period covered by the cost statement which has a material effect on the cost of support department shall be disclosed. Where the effect of such change is not ascertainable wholly or partly the fact shall be disclosed.

6.7.4 Disclosures shall be made only where it is material and significant.

6.7.5 Disclosures shall be made in the body of the cost statement or as a foot note or as a separate schedule prominently.

6.8 Effective Date

This standard will be effective from January 1, 2015 onwards.

Appendix 6A

Single Stage vs. Multiple Stage Approach

This appendix deals with the allocation process of service department costs over the ultimate cost object. The pictorial presentation of service department cost allocation may be presented as below:

Figure (a) presents the allocation of support department costs over cost object under single stage approach. In this approach, costs are first accumulated in both service and production departments either through tracing them directly or allocating them to respective departments. Then cost accumulated in different departments (both service and producing) is charged with the cost object directly. In this stage, no difference is made between service departments and producing departments.

Figure (b) however presents multistage approach of service department cost allocation. Costs are initially traced with the departments directly or allocated based on some reasonable bases. In the next step, all cost thus accumulated in service departments are reallocated to producing departments. After such reallocation, service departments left no cost for being absorbed by the cost objects that all cost is accumulated in production departments. And cost objects are charged with the cost of the producing departments. Here cost of the production departments have been increased due to a share of service department. Which production department consumes how much of the cost of which service departments is a question of analysis. If this is not properly analyzed, there is a possibility of distortion in cost allocation. To make the allocation more rational, any one of the three methods may be chosen based on the appropriateness. A short overview of this three methods are presented in next section.

Figure (a): Single Stage Approach

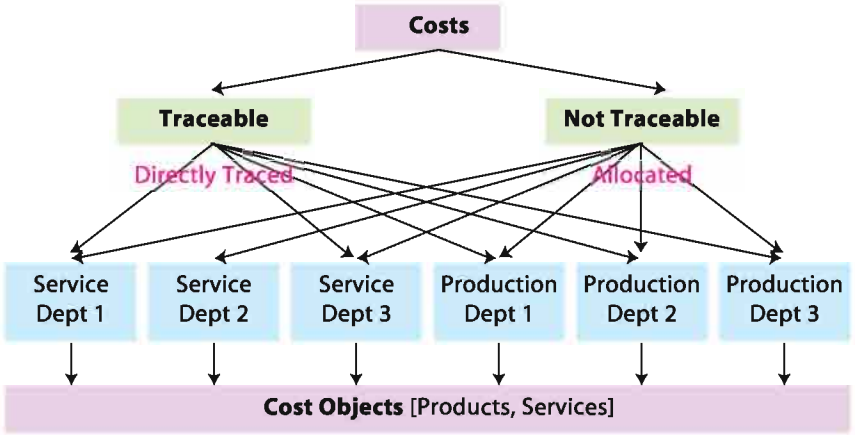


Figure (b): Multi Stage Approach

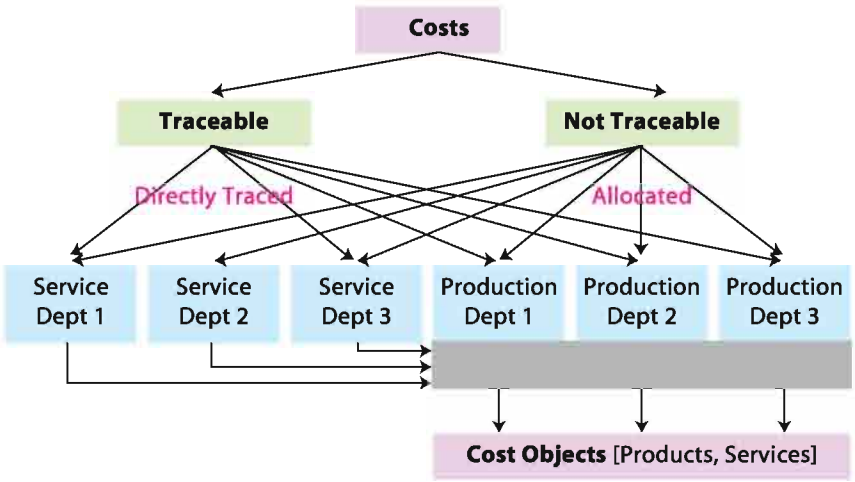


Figure (b1): Multistage Approach - Direct Method

Direct method is named after the process of cost allocation where cost of support department is directly transferred to production departments without considering the fact that one support department may support other support departments. Thus, the allocation under direct method is very much straightforward where the cost of one support department becomes zero after allocation. If one support department doesn't provide any service to other support department(s) in that case direct method is appropriate. At the same time, when support departments do not vary that much in terms of their serviceability to other departments, direct method may produce less distortion. However, as this method doesn't consider the reciprocity of services at all, it is advised to avoid using this method for service department cost allocation.

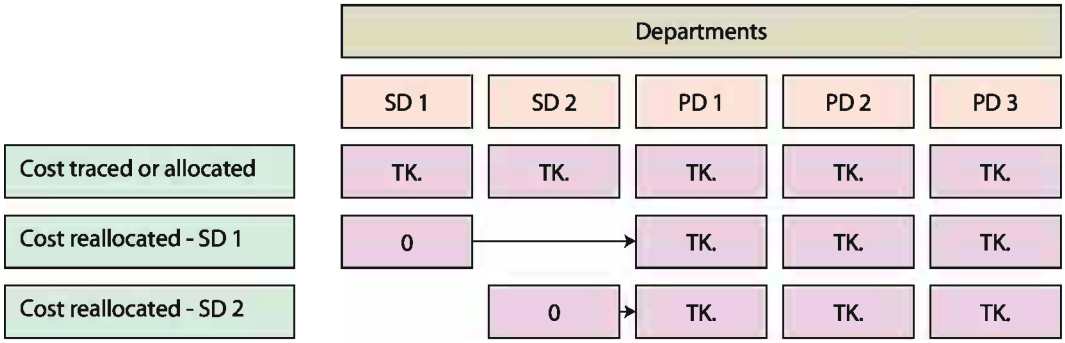


Figure (b2): Multistage Approach - Step down Method

Under this method, the limitation of direct method is recovered partially at least for the first service department. Under this method, service departments are ranked for allocation. This ranking is done based on their importance of providing services. Costs of service departments may be used as a proxy parameter to make the rank, the service department with the highest cost should receive first rank and needs to be allocated first. Under the step down method, once the cost of a department is allocated, the department will not receive any further allocation. Thus the reciprocity is considered partially here. For example, in the following figure, cost of SD1 is allocated to all other departments including service department SD2 resulting the cost of SD1 zero after allocation. In next step, cost of SD2 should be recomputed considering the allocated cost of SD1 and then it should be allocated among the other departments. However, SD1 receives no allocation of SD2 as the cost of SD1 is already zero. One department whose cost has already been allocated should not receive any further allocation from other departments.

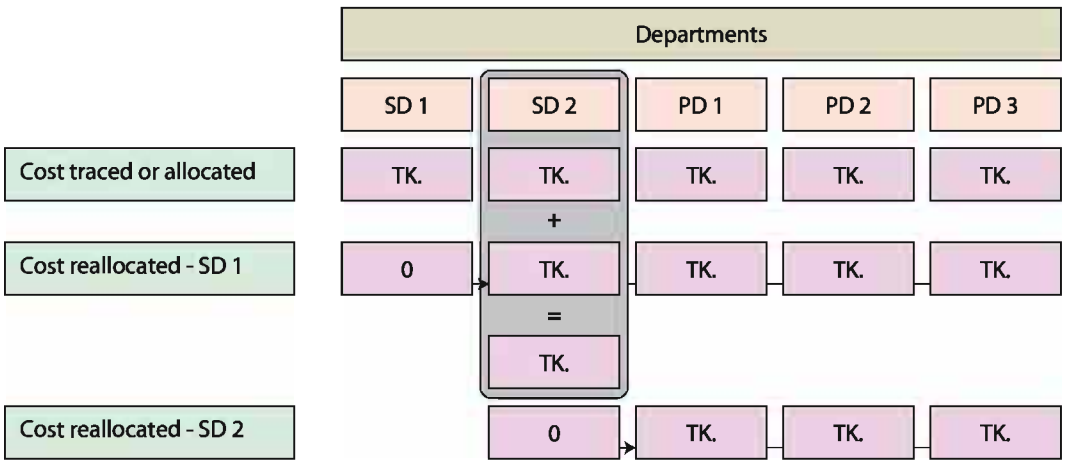


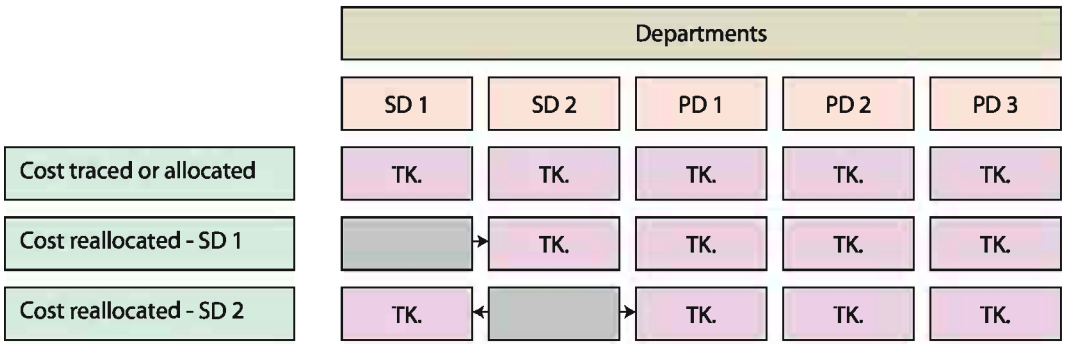
Figure (b3): Multistage Approach - Reciprocal Method

Under this method, service reciprocity is considered to the fullest extent. For example, in the figure below, a portion of cost of SD1 is allocated to SD2 and similarly a portion of SD2 is allocated to SD1 making the allocation process holistic and more rational. This allocation is

supplemented by mathematical formulation that helps to revise the costs for service departments. With two support departments, the mathematical formulation is easy which takes the following form:

$$SD1 = \alpha + bSD2 \text{ and } SD2 = \alpha + bSD1$$

Here, a represents the standalone cost of respective departments and b represents the percentage of services received from the other departments. A simple replacement method will result revised costs for the service departments that will be allocated among all the departments.



However, if the service department becomes more than two, the mathematical formulation will be difficult which calls for advance mathematics like matrix formulation.

BANGLADESH COST ACCOUNTING STANDARDS

BCAS - 7

Job Order Costing

BCAS 7: Job Order Costing

7.1 Introduction

Job order costing is a very important cost accumulation method for product costing. Traditionally, job order costing was used mostly in every situation as it is very easy to use. This standard gives a detail guideline of applying job order costing for cost accumulation and ultimate product costing purpose. Job order costing can also be applied in some special managerial accounting issues like special order decisions, costing for customized products etc.

7.2 Objectives

a) Primary objective of this standard is to provide a guideline for determining the cost of any goods produced or services rendered under job costing environment.

b) In addition to the primary objectives the standard also focuses on -

i) the basis of preparation and presentation of cost of goods sold (COGS) in the income statement under job costing environment;

ii) the application of predetermined overhead; and

iii) the disposal of over- and under-applied overhead.

7.3 Scope

7.3.1 This standard is applicable to such situations where adherence to customers' requirements as specified in work order or proforma invoice is very important.

7.3.2 Some industries where job order costing is the most appropriate one can be listed below, though the list is not an exhaustive one, rather given as example:

a) Large woven, knitting, denim textiles or garments manufacturing industry where goods are being shipped/supplied to customers according to the specification given in order;

b) Small and medium enterprises (SMEs) like furniture or toys making companies; and

c) Service providing organization like dental services, hospitality industries, diagnostic services, audit services etc.

7.3.3 The standard is to be followed by all public limited companies where cost audit is made mandatory through Government's gazette notification from time to time.

7.4 Key Features

The key features of this standard are pointed below-

a) Identifying the elements of costs in delivering a job to customers;

b) Recording different elements of costs in the books of accounts;

c) Visualizing the flow of costs in job costing environment;

d) Prescribing the methodology of charging overheads to jobs;

e) Disposing any difference between applied and actual amount of overheads;

f) Illustrating the application of job order costing in a dummy situation; and

g) Prescribing different formats to bring standardization in practice.

7.5 Definitions

The following terms are used in this standard with the meanings specified -

7.5.1 Job order costing: Job order costing should have the following characteristics:

a) A costing system used for an entity that produces many different types of products in a given period of time and require computing cost of each category of products separately.

b) A method of cost accounting by which the total cost of a given unit or quantity is determined by computing the costs that go into making a product as it moves through the manufacturing process.

c) It is used to compute the cost of an individual job or unit of production. Information about the cost of individual jobs is essential when the consumption criterion of each job is substantially different. The accuracy is very important in job costing environment because the price charged to the customer for the job is often based on the cost computed for the jobs.

7.5.2 Product cost distortion: Distortion in product costing means a situation when product is either over or under-allocated due to the application of wrong product costing methodology. Neither of these is expected and good. In a cost-plus pricing environment, consistently under-costing of a certain type of job can lead to chronic losses because that type of job appears to be more profitable than it is. Similarly over-costing of a job in a cost reimbursement environment can lead to charges of fraud and the loss of future business.

7.5.3 Direct costs: As defined in BCAS 1.5.8.

7.5.4 Indirect Costs: As defined in BCAS 4.5.1.

7.6 Standards

7.6.1 ***The costing system should ensure that a direct cost is properly attributed to the job that consumes the resources.***

7.6.2 ***The primary issue relating to indirect costs is that they should be accumulated and allocated to jobs in a manner that promotes a reasonable basis of cost allocation.***

7.6.3 ***There are secondary issues relating to allocating indirect costs to jobs and these issues include the segregation of flexible and committed costs during the allocation process.***

7.6.4 Flexible costs vary in proportion to the organization's underlying activity levels. These costs reflect the costs of resources that are acquired as needed.

7.6.5 Committed costs, also called capacity-related costs, vary in proportion to the amount of capacity acquired. These costs are committed in advance of the organization's choice or

level of activity, and therefore do not vary in proportion to the activity level.

7.6.6 ***This standard focuses on the issue that the cost of flexible and committed resources should be allocated separately. The reason is that these costs have different drivers.***

7.6.7 The treatment of the cost of idle capacity should be economically justifiable and the role of standard costs in job order costing is properly acknowledged if the market has a norm of doing so.

7.6.8 ***This standard prefers that the cost of idle capacity should be charged to periodic income, not to product cost.***

7.6.9 The costing system can use standard costs to assign both direct and indirect costs to jobs. However, the standard costing system should be justifiable from the perspective of both the organization and the industry.

7.7 Recording and Reporting

7.7.1 At the beginning of production process, a document known as bill of materials is used for a product. Bill of material is a document that lists the type and quantity of each item of materials needed to complete a unit of product.

7.7.2 Every company should have well designed materials requisition form so that the production department can fill up a materials requisition form to pick materials from storeroom and at the same time can record the consumption of material by different jobs. It is an important source document to control the flow of materials into production and also for making accounting entries in specific job.

7.7.3 Direct labor cost is handled in much the same way as direct materials cost. Direct labor consists of labor charges that are easily traced to a particular job. Labor charges that cannot be easily traced to any job are treated as part of manufacturing overhead. One important document used to compute labor cost is the time ticket which includes the hours spent by worker on particular job. This time ticket is also used to pass accounting entries for labor cost.

7.7.4 Manufacturing overhead must be added with direct material and direct labor on the job cost sheet since manufacturing overhead is also a product cost. However, assigning manufacturing overhead to units of product is based on predetermined overhead rates and any adjustment of over or under applied overhead at the end of the period should be made to cost of goods sold (COGS). Predetermined overhead rate is computed by dividing estimated manufacturing overhead by appropriate allocation base.

7.7.5 When a single predetermined overhead rate is used for the entire factory it is called plant wide overhead rate. This is fairly common practice, particularly in smaller companies. When a full job is complete by multiple departments and the resource consumption pattern varies significantly, the multiple overhead rates may be used for a single plant.

7.7.6 Since the predetermined overhead rate is established before a period begins and is based entirely on estimated data, the overhead cost applied to work in process (WIP) will generally differ from the amount of overhead cost actually incurred during a period which is required to be adjusted periodically.

7.7.7 Over or under applied factory overhead will be disposed-off by debiting or crediting of applied factory overhead with cost of goods sold (COGS) or allocating the amount

between cost of goods sold, work in process and finished goods inventory.

7.7.8 For disposal, allocating the over or under applied amount between inventories and cost of goods sold is more sensible as it is equivalent to the application of actual overhead rates. Sometimes, when the amount of over or under applied amount results material, accountants prefer to allocate such amount between inventories and cost of goods sold to avoid any unusual impact of disposal on only cost of goods sold.

7.7.9 Companies typically base their predetermined overhead rates on the estimated or budgeted amount of allocation base for the upcoming period. However, companies must have their own definition of capacity and the choice of allocation base depending on the choice of capacity which usually is a choice between expected actual and normal capacity. Theoretical and practical capacities are used for exceptional situation under the management by exception (MBE) norm.

7.7.10 In addition to manufacturing costs, companies also incur administrative and selling costs. These costs should be treated as period costs and charged directly to the income statement and therefore should not go into the manufacturing overhead account.

7.7.11 When a job has been completed, the finished output is transferred from the production department to the finished goods warehouse. By this time, the accounting department will have charged the job with direct materials and direct labor cost and manufacturing overhead will have been applied using the predetermined overhead rate.

7.7.12 Job order costing is also used in service organizations such as law firms, movie studios, hospitals, and repair shops, as well as manufacturing companies.

7.7.13 Application of information technology to record and process data in job costing environment is highly encouraged. For example, bar code technology can be used to record labor time to reduce the drudgery in that task and increasing accuracy.

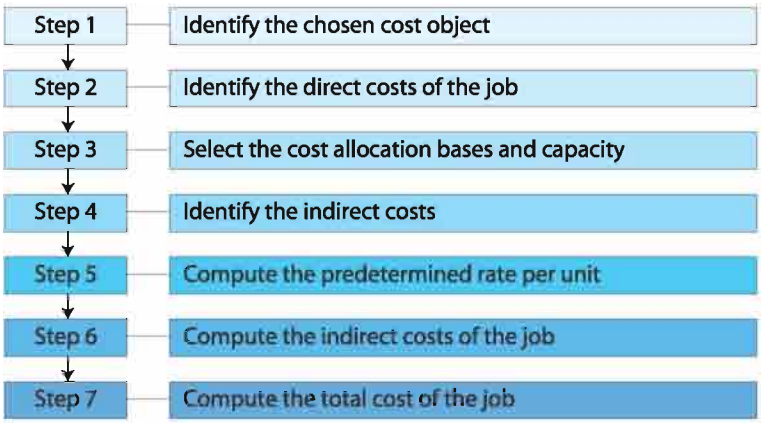
7.8 Effective Date

This standard will be effective from January 1, 2015 onwards.

Appendix 7A

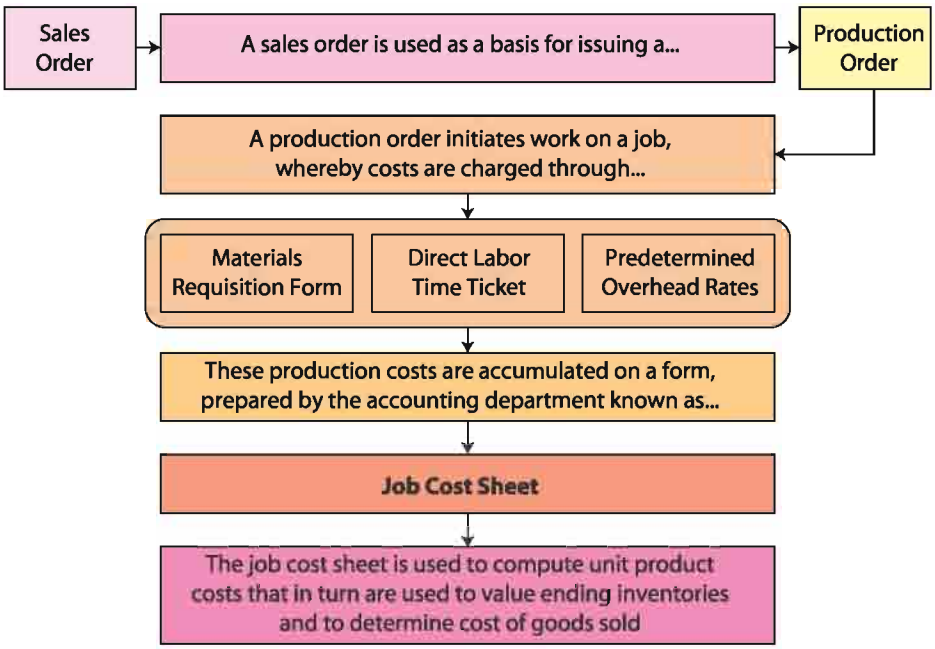
Steps of Job Order Costing

Job order costing is a seven-step process as identified below:



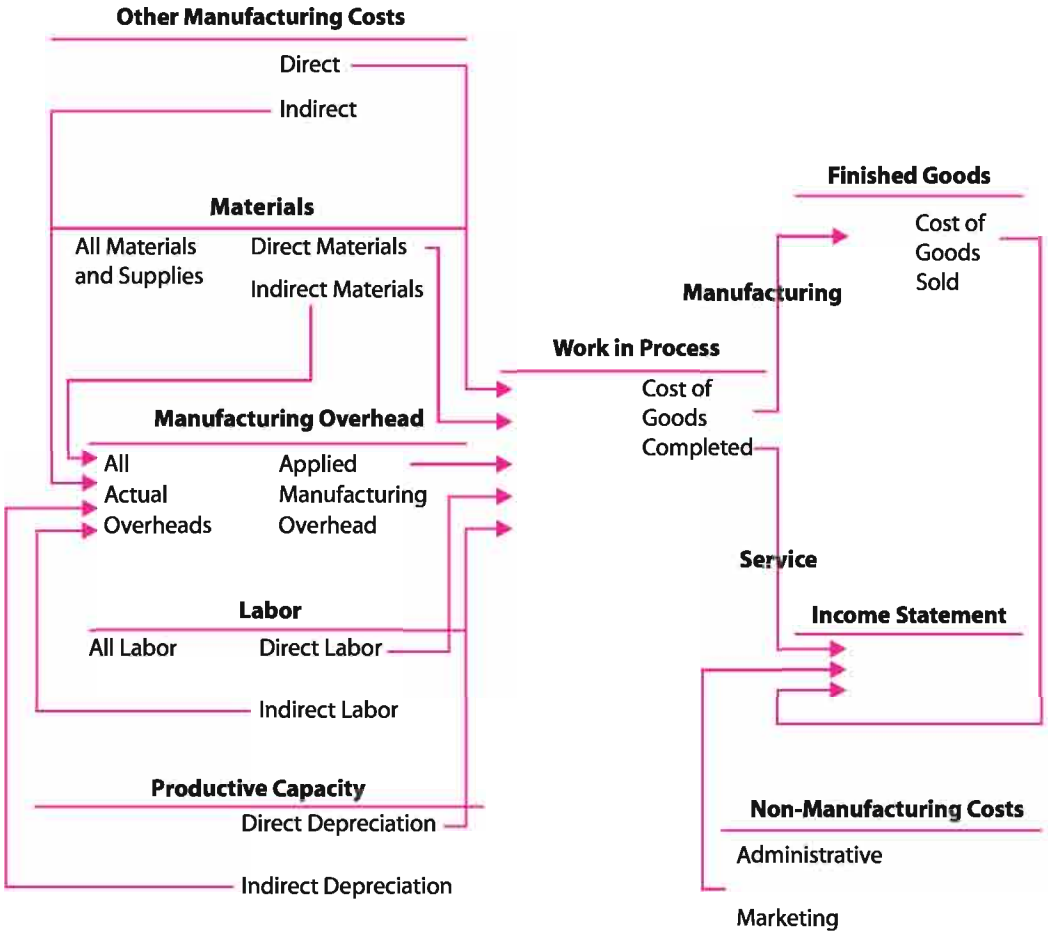
Appendix 7B

The Flow of Documents in a Job Order Costing System



Appendix 7C

Cost Flow in a Job Costing Environment



Appendix 7D

An example of Job Order Costing - Journal Entries, Ledger Accounts and Income Statement

Eureka Denim is a manufacturing industry that uses job order costing system. On January 1, the beginning of its fiscal year, the company's inventory balances were as follows:

Raw materials	TK. 20,000
Work in process	TK. 15,000
Finished Goods	TK. 30,000

The company applies overhead cost to jobs on the basis of machine-hours worked. For the

current year, the company estimated that it would work for 75,000 machine-hours and incur TK. 450,000 in manufacturing overhead cost. The following transactions were recorded for the year:

1. Raw materials were purchased on account, TK. 410,000.
2. Raw materials were requisitioned for use in production, TK. 380,000 (TK. 360,000 direct materials and TK. 20,000 indirect materials).
3. The following costs were incurred for employee services: direct labor, TK. 75,000; indirect labor, TK. 110,000; sales commission, TK. 90,000; and administrative salaries, TK. 200,000.
4. Sales travel costs were TK. 17,000.
5. Utility costs in the factory were TK. 43,000.
6. Advertising costs were TK. 180,000.
7. Depreciation recorded for the year was TK. 350,000 (80% relates to factory operations, and 20% relates to selling and administrative activities).
8. Insurance expired during the year, TK. 10,000 (70% relates to factory operations and 30% relates to selling and administrative activities).
9. Manufacturing overhead was applied to production. Due to greater than expected demand for its products, the company worked 80,000 machine-hours during the year.
10. Goods costing TK. 900,000 to manufacture according to their job cost sheets were completed during the year.
11. Goods were sold on account to customers during the year at a total selling price of TK. 1,500,000. The goods cost TK. 870,000 to manufacture according to their job cost sheets.

Required:

1. Prepare journal entries to record the above transactions.
2. Post the entries in (1) above to T-accounts (don't forget to enter the beginning balances in the inventory accounts).
3. Is manufacturing overhead under-applied or over-applied for the year? Prepare journal entry to close any balance in the manufacturing overhead account to cost of goods sold (COGS). Do not allocate the balance between ending inventories and cost of goods sold (COGS).
4. Prepare a statement of comprehensive income for the year.

Solution:

1. Journal Entries

Eureka Denim General Journal		
	Debit (TK.)	**Credit (TK.)**
1 Raw materials	410,000	
Accounts payable		410,000
2 Work in process	360,000	
Manufacturing overhead	20,000	
Raw materials		380,000
3 Work in process	75,000	
Manufacturing overhead	110,000	
Sales commission expense	90,000	
Administrative salaries expense	200,000	
Salaries and wages payable		475,000
4 Sales travel expense	17,000	
Accounts payable		17,000
5 Manufacturing overhead	43,000	
Accounts payable		43,000
6 Advertising expense	180,000	
Accounts payable		180,000
7 Manufacturing overhead	280,000	
Depreciation expense	70,000	
Accumulated depreciation		350,000
8 Manufacturing overhead	7,000	
Insurance expense	3,000	
Prepaid insurance		10,000
9 Work in process*	480,000	
Manufacturing overhead		480,000
10 Finished Goods	900,000	
Work in process		900,000
11 Accounts Receivable	1,500,000	
Sales		1,500,000
Cost of goods sold	870,000	
Finished goods		870,000

*The predetermined overhead rate for the year would be computed as follows:
Predetermined overhead rate = Estimated total manufacturing overhead cost / Estimated total units in the allocation base

= TK. 450,000 / 75,000 machine-hours
= TK. 6 per machine-hour

Based on the 80,000 machine-hours actually worked during the year, the company would have applied TK. 480,000 in overhead cost to production: 80,000 machine-hours X TK. 6 per machine-hour = TK. 480,000.

2. Ledger Accounts

Accounts Receivable

(11)	1,500,000		

Raw Materials

Bal.	20,000	(2)	380,000
(1)	410,000		
Bal.	50,000		

Work in Process

Bal.	20,000	(10)	900,000
(2)	360,000		
(3)	75,000		
(9)	480,000		
Bal.	35,000		

Finished Goods

Bal.	30,000	(11)	870,000
(10)	900,000		

Prepaid Insurance

		(8)	10,000

Accumulated Depreciation

		(7)	350,000

Accounts Payable

		(1)	410,000
		(4)	17,000
		(5)	43,000
		(6)	180,000

Salaries and Wages Payable

		(3)	475,000

Manufacturing Overhead

(2)	20,000	(9)	480,000
(3)	110,000		
(5)	43,000		
(7)	280,000		
(8)	7,000		
	460,000		480,000
		Bal.	20,000

Sales

		(11)	1,500,000

Cost of goods sold

(11)	870,000		

Sales Commissions Expenses

(3)	90,000		

Administrative Salary Expense

(3)	200,000		

Insurance Expense

(8)	3,000		

Advertising expense

(6)	180,000		

Depreciation Expenses

(7)	70,000		

Sales Travel Expense

(4)	17,000		

3. Under- or Over-applied manufacturing overhead

Manufacturing overhead is over-applied for the year. The entry to close it out to cost of goods sold is as follows:

Manufacturing overhead	20,000
Cost of goods sold	20,000

4. Statement of Comprehensive Income

EUREKA DENIM
Statement of Comprehensive Income
For the Year Ended December 31, YYYY

Sales		TK. 1,500,000
Less: Cost of goods sold (TK. 870,000 - TK. 20,000 over applied O/H)		850,000
Gross margin		650,000
Less: Selling and administrative expenses		
Commission expense	90,000	
Administrative salaries expense	200,000	
Sales travel expense	17,000	
Advertising expense	180,000	
Depreciation expense	70,000	
Insurance expense	3,000	560,000
Net operating income		TK. 90,000

Appendix 7E

Specimen Formats

Materials Requisition Form

Materials Requisition Number :														**Date:** ...../...../.....			
Job Number to be Charged :																	
Department (give ✓) : **Cutting / Mixing / Finishing**																	
Description			**Quantity**	**Unit Cost**		**Total Cost**											
1.																	
2.																	
3.																	
4.																	
5.																	
6.																	
		Total:															
Total (in words):																	
														Authorized Signature			

Time Ticket

Time Ticket No :			**Date** : ...../...../.....		
Employee :			**Station :**		
Started	**Ended**	**Time Completed**	**Rate (TK.)**	**Amount (TK.)**	**Job Number**
9:00	12:00	3.00	15.00	45.00	105
12:30	2:00	1:50	15.00	22.50	202
3:00	5:00	2.00	15.00	30.00	Cleaning

Job Cost Sheet

Job Number :	**Date Initiated** : ...../...../.....
Department :	**Date Completed :**
Item :	**Units Completed :**

Direct Materials		**Direct Labor**			**Manufacturing Overhead**		
Req. No.	Amount (TK.)	Ticket	Hours	Amount (TK.)	Hours	Rate (TK.)	Amount (TK.)

Cost Summary		**Units Shipped**		
Direct Materials	**TK.**	**Date**	**Number**	**Balance**
Direct Labor	**TK.**			
Manufacturing Overhead	**TK.**			
Total Cost	**TK.**			
Unit Product Cost	**TK.**			

BANGLADESH COST ACCOUNTING STANDARDS

BCAS - 8

Process Costing

BCAS 8: Process Costing

8.1 Introduction

Manufacturing concerns devote their resourceful effort to ascertain their product cost using different costing methods which sometimes becomes a dilemma for the cost manager, even entrepreneur. But the nature of business and characteristics of products always play the required role for selecting the costing methods. There are few harmonized costing methods practiced worldwide; among all, the process costing is one of the pioneers in relation to the production process of the products where it is identified as mass production process. A process method is characterized by a large number of homogeneous products passing through a series of processes, where each process is responsible for one or more operations that bring a product one step closer to completion.

8.2 Objectives

The objective of this standard is to select the method and improve the relevance, reliability and comparability with the standard reporting format of the process costing that a manufacturing entity applies in its cost sheet/statement. To accomplish that, this standard establishes principles and requirements for how the entity:

a) Select the costing system (historical or standard cost);

b) Select the method of process costing (FIFO or weighted average or standard costing);

c) Recognize normal & abnormal loss and its treatment in the cost sheet/statement.

8.3 Scope

8.3.1 This standard should be applied to manufacturing entity's cost statement if it fulfills the following conditions:

a) Products should be homogeneous;

b) There should exist mass production; and

c) Products should pass through a series of processes consuming resources at a varying level

8.3.2 The standard is to be followed by all public limited companies where cost audit is made mandatory through Government's gazette notification from time to time.

8.4 Key Features

The key features of this standard are pointed below-

a) Introducing process costing;

b) Presenting the first in first out, weighted average and standard costing methods;

c) Presenting normal and abnormal spoilage with its application;

d) Identifying variances while applying standard costing system; and

e) Introducing a complete cost of production (COP) report.

8.5 Definitions

The following terms are used in this standard with the meanings specified -

8.5.1 Process: A process is a series of activities (operations) that are linked to perform a specific task.

8.5.2 Transferred-in Cost: When goods are completed in one process, they are transferred with their costs to the subsequent process. A cost transferred from a prior process to a subsequent process is referred to as a transferred-in cost.

8.5.3 Cost of Production Report: The cost of production report is the document that summarizes the manufacturing activity taking place in a process department for a given period of time.

8.5.4 Equivalent Units: Equivalent units of output are the complete units that could have been produced given the total amount of productive effort expended for the period under consideration.

8.5.5 Normal Loss: The loss when it is expected called Normal Loss.

8.5.6 Abnormal Loss: The loss; when it is un-expected called Abnormal Loss.

8.6 Standards

8.6.1 ***A cost of production (COP) report should provide information about the physical units processed in a department and also about the manufacturing costs associated with them.***

8.6.2 Thus, a production report should divide into a unit information section and a cost information section. The unit information section has two major subdivisions: units to account for and units accounted for.

8.6.3 Similarly, the cost information section should have two major subdivisions: costs to account for and costs accounted for.

8.6.4 In summary, a production report shall trace the flow of units through a department, identifies the costs charged to the department, shows the computation of unit costs, and reveals the disposition of the department's costs for the reporting period.

8.6.5 There shall be steps unique to prepare the COP report: (i) Analysis of the flow of physical units; (ii) Calculation of equivalent units (iii) Computation of unit cost (iv) Valuation of inventories (goods transferred out and ending work in process) (v) Cost reconciliation.

8.6.6 In regards of determining equivalent units of output for transferred-out units; a unit would not be transferred out unless these were complete. Thus, every transferred-out unit is an equivalent unit. Units remaining in ending work-in-process inventory, however, are not complete. All these units need to be converted into one completed unit ratio.

8.6.7 The process-costing principle requires that the costs of the period be divided by the output of the period. Thus, theoretically, only current period costs and current period output should be used to compute current period unit costs. The FIFO method attempts to follow this theoretical guideline. Under the FIFO costing method, the equivalent units and manufacturing costs in beginning work in process should be excluded from the

current-period unit cost calculation, Thus, the FIFO method recognizes that the work and costs carried over from the prior period legitimately belong to that period.

8.6.8 Excluding prior-period work and costs creates some bookkeeping and computational complexity that can be avoided if certain conditions are satisfied. Specifically, if the costs of production remain very stable from one period to the next, then it may be possible to use the weighted average method.

8.6.9 Weighted average method should not track prior-period output and costs separately from current-period output and costs.

8.6.10 In case of weighted average process costing method preparer should pick up beginning inventory costs and the accompanying equivalent output and treat them as if they belong to the current period. Prior-period output and manufacturing costs found in beginning work in process are merged with the current period output and manufacturing costs. The merging of beginning inventory output and current-period output is accomplished by the way in which equivalent units are calculated.

8.6.11 Under the weighted average method, equivalent units of output are computed by adding units completed to equivalent -units in ending work in process. The equivalent units in beginning work in process are included in the computation. Thus, these units are counted as part of the Current period's equivalent units of output.

8.6.12 The weighted average method merges prior-period costs with current-period costs by simply adding the manufacturing costs in beginning work in process to the manufacturing costs incurred during the current period. The total cost is treated as if it were the current period's total manufacturing cost.

8.6.13 In process manufacturing, some departments invariably receive partially completed direct material for the subsequent process - materials that are added at the beginning of the subsequent process.

8.6.14 The usual approach is to treat transferred-in goods as a separate material category when calculating equivalent units.

8.6.15 Thus, this process costing method have three categories of manufacturing inputs: transferred-in materials, direct materials added, and conversion costs.

8.6.16 In dealing with transferred-in goods, three important points should be considered. First, the cost of this material is the cost of the goods transferred out computed in the prior department. Second, the units started in the subsequent department correspond to the units transferred out from the prior department, assuming that there is a one-to-one relationship between the output measures of both departments. Third, the units of the transferring department may be measured differently than the units of the receiving department. If this is the case, then the goods transferred in must be converted to the units of measure used by the second department.

8.6.17 ***The standard prescribes no choice regarding the methods of process costing rather it views first in first out, weighted average and standard costing as alternatives.***

8.6.18 ***Cost of normal spoilage (or normal rework), which is usually expressed as a percentage of good units made, is deemed to be a part of product cost and thus such cost will be absorbed by good units completed in a period. However, the cost of abnormal spoilage (or abnormal rework) is treated as a periodic efficiency item***

8.8 and charged to periodic income. That is, the cost of abnormal spoilage (or rework) is not deemed to be a product cost rather it will be closed to periodic income statement.

8.7 Recording and Reporting

8.7.1 In process costing method preparer must calculate the cost of goods transferred out and the cost of ending work in process considering all normal and abnormal loss/spoilage.

8.7.2 As an example, if the spoilage is normal (expected), the cost of spoiled units is added to the cost of the good units, in a case, the inspection occurred at the 80 percent point of completion (Appendix 8B). Therefore, none of the spoiled units are from ending work in process (assuming WIP units are only 60 percent complete and have not yet been inspected). Thus, all spoilage cost is assigned to the good units transferred out. Whether ending work in process inventory will share any part of normal spoilage cost depends on the percentage of completion of ending work in process and the percentage where inspection for spoilage is conducted.

8.7.3 Notice the difference between the treatment of normal and abnormal spoilage. When spoilage is assumed to be normal, it is not tracked separately but is embedded in the total cost of good units. As a result, no one knows precisely how much spoilage adds to total manufacturing costs and whether or not an effort should be made to reduce it. The treatment of spoilage as abnormal is more in keeping with an emphasis on total quality management where there is no tolerance allowed for waste. At least the product cost of spoiled goods is tracked in a separate account. Of course, a factory engaged in total quality management would not stop at classifying spoilage as abnormal.

8.7.4 ***If spoiled units can be scrapped at a nominal value, the cost of spoilage should be reduced with the net realizable value of such scrapped units. The notion is to reduce the burden of spoiled units on good units completed.***

8.7.5 ***In case of applying standard costing, variances should be properly accounted for. It is wise to consider the variances as period cost.***

8.8 Effective Date

This standard will be effective from January 1, 2015 onwards.

Appendix 8A

Application of Process Costing

This appendix presents the application of process costing in real life based on the information as assembled in **Table 1** below. The products pass through two consecutive departments: Mixing and Finishing. Usually raw materials are added at the beginning in mixing department. Conversion costs are added evenly throughout the process. At the end of the process, finished goods are inspected and rejected units are spoiled. Industry standards suggest that a normal level of spoilage for this type of operation is 2% of the good units produced. Units that pass inspection are transferred to the finishing department.

	Mixing Department	Finishing Department
Units:		
Units in process, October 1, 60% complete in mixing and 10% complete in finishing	5,000	8,300
Units transferred in	45,000	
Units started	49,000	-
Units completed and transferred out	45,000	49,600
Units spoiled - First Inspection Point	1,000	300
Units spoiled - Second Inspection Point	-	400
Units in process, October 31, 25% complete in mixing and 80% complete in finishing	8,000	3,000
Costs:		
Work in process, October 1:		
Transferred in Costs	-	TK. 597,600
Direct materials	TK. 125,000	0
Conversion costs	150,000	15,770
Total work in process	TK. 275,000	TK. 613,370
Current costs:		
Transferred in Costs	-	TK. 3,291,000
Direct materials	TK. 1,225,000	530,000
Conversion costs	2,160,000	1,033,800
Total current costs	TK. 3,385,000	TK. 4,854,800

Table 1: Process Costing Example Data

In the finishing department, a special ingredient is added to the product at 40% level of completion. Then the products are inspected to check whether the ingredient is properly adjusted with the output. At this point, any rejected units are destroyed and the normal rate of spoilage is 0.5% of good units passing the inspection point. All the units survived at 40% go for the further process. At the end, the products are inspected again and defective units are removed and destroyed. The normal rate of spoilage at this point is 1% of good units made.

General Approach:

To illustrate the calculations under process costing environment, all of the three methods (FIFO, Weighted Average and Standard Costing) are applied here in three sequential steps:

Step 1: Computing physical and equivalent units

Step 2: Computing cost per equivalent unit

Step 3: Assignment of costs to compute cost of output

All of the three steps are applied below under three methods for the two departments.

Process Costing under Weighted Average Method - Mixing Department

Step 1: Physical and Equivalent Units

Flow of Production	Physical Units	Equivalent Units			
		Materials		Conversion	
		Units	%	Units	%
Work in process - beginning	5,000		100%		60%
Started during the period	49,000				
Units to account for	**54,000**				
Units completed and transferred out	45,000	45,000	100%	45,000	100%
Normal spoilage	900	900	100%	900	100%
Abnormal spoilage	100	100	100%	100	100%
Work in process - ending	8,000	8,000	100%	2,000	25%
Units accounted for	**54,000**				
Equivalent units		**54,000**		**48,000**	

Step 2: Cost per Equivalent Unit

Flow of Cost	Total	Material Costs	Conversion Costs
Work in process - beginning	TK. 275,000	TK. 125,000	TK. 150,000
Costs added during this period	3,385,000	1,225,000	2,160,000
Costs to account for	TK. 3,660,000	TK. 1,350,000	TK. 2,310,000
Equivalent units (from step 1)		54,000	48,000
Cost per equivalent unit		TK. 25	TK. 48.125

Step 3: Assignment of Cost

Outputs	Total (TK.)	Material Costs (TK.)		Conversion Costs (TK.)	
Normal spoilage	65,813	900 × 25=	22,500	900 × 48.125=	43,313
Abnormal spoilage	7,312	100 × 25=	2,500	100 × 48.125=	4,812
Work in process - ending	296,250	8000 × 25=	200,000	2000 × 48.125=	96,250
Finished goods	3,290,625	45,000 × 25=	1,125,000	45,000 × 48.125=	2,165,625
Costs accounted for	3,660,000				

Process Costing under Weighted Average Method - Finishing Department

Step 1: Physical and Equivalent Units

Flow of Production	Physical Units	Equivalent Units					
		Transferred in		Material		Conversion	
		Units	%	Units	%	Units	%
Work in process - beginning	8,300						
Started during the period	45,000						
Units to account for	**53,300**						
Units completed and transferred out	49,600	49,600	100%	49,600	100%	49,600	100%
Normal spoilage - Inspection 1	265	265	100%	0	0%	106	40%
Abnormal spoilage - Inspection 1	36	35	100%	0	0%	14	40%
Normal spoilage - Inspection 2	496	496	100%	496	100%	496	100%
Abnormal spoilage - Inspection 2	-96	-96	100%	-96	100%	-96	100%
Work in process - ending	3,000	3,000	100%	3,000	100%	2400	80%
Units accounted for	**53,300**						
Equivalent units		53,300		53,000		52,520	

Step 2: Cost per Equivalent Unit

Flow of Cost	Total	Transferred in Costs	Material Costs	Conversion Costs
Work in process - beginning	TK. 613,370	TK. 597,600	TK. 0	TK. 15,770
Costs added during this period	4,854,800	3,291,000	530,000	1,033,800
Costs to account for	TK. 5,468,170	TK. 3,888,600	TK. 530,000	TK. 1,049,570
Equivalent units (from step 1)		53,300	53,000	52,520
Cost per equivalent unit		TK. 72.96	TK. 10.00	TK. 19.98

Step 3: Assignment of Cost

Flow of Cost	Total	Transferred in Costs @ TK. 72.96	Material Costs @ TK. 10.00	Conversion Costs @ TK. 19.98
Normal spoilage - Inspection 1	21,452.28	19,334.4 0	2,117.88	
Abnormal spoilage Inspection 1	2,833.32	2,553.6	0	279.72
Normal spoilage - Inspection 2	51,058.24	36,188.16	4,960	9,910.08
Abnormal spoilage Inspection 2	-9,882.24	-7,004.16	-960	-1,918.08
Work in process - ending	296,832	218,880	30,000	47,952
Finished goods	5,105,824	3,618,816	496,000	991,008
Costs accounted for	**5,468,117.6**			

Note: Any difference in assignment of cost is due to the fraction in cost per equivalent unit.

Process Costing under First in First out Method - Mixing Department

Step 1: Physical and Equivalent Units

Flow of Production	Physical Units	Equivalent Units			
		Materials		Conversion	
		Units	%	Units	%
Work in process - beginning	5,000		100%		60%
Started during the period	49,000				
Units to account for	54,000				
Units completed and transferred out:					
● From work in process beginning	5,000	0	0%	2,000	40%
● Started and completed	40,000	40,000	100%	40,000	100%
Normal spoilage	900	900	100%	900	100%
Abnormal spoilage	100	100	100%	100	100%
Work in process - ending	8,000	8,000	100%	2,000	25%
Units accounted for	54,000				
Equivalent units		49,000		45,000	

Step 2: Cost per Equivalent Unit

Flow of Cost	Total	Material Costs	Conversion Costs
Work in process - beginning	TK. 275,000		
Costs added during this period	3,385,000	TK. 1,225,000	TK. 2,160,000
Costs to account for	TK. 3,660,000		
Equivalent units (from step 1)		49,000	45,000
Cost per equivalent unit		TK. 25	TK. 48

Step 3: Assignment of Cost

Outputs	Total (TK.)	Material Costs (TK.)		Conversion Costs (TK.)	
Normal spoilage	65,700	900 × 25=	22,500	900 × 48=	43,200
Abnormal spoilage	7,300	100 × 25=	2,500	100 × 48=	4,800
Work in process - ending	296,000	8000 × 25=	200,000	2000 × 48=	96,000
Finished goods:					
● From work in process - beginning					
- Opening costs	275,000				
- Costs added this period	96,000		0	2000 × 48=	96,000
● Started and completed this period	2,920,000	40,000× 25	1,000,000	40,000 × 48=	1,920,000
Costs accounted for	3,660,000				

Process Costing under First in First out Method - Finishing Department

Step 1: Physical and Equivalent Units

Flow of Production	Physical Units	Equivalent Units					
		Transferred in		Material		Conversion	
		Units	%	Units	%	Units	%
Work in process - beginning	8,300						
Started during the period	45,000						
Units to account for	53,300						
Units completed and transferred out:							
● From work in process beginning	8,300	0	0%	8,300	100%	7,470	90%
● Started and completed	41,300	41,300	100%	41,300	100%	41,300	100%
Normal spoilage - Inspection 1	265	265	100%	0	0%	106	40%
Abnormal spoilage - Inspection 1	35	35	100%	0	0%	14	40%
Normal spoilage - Inspection 2	496	496	100%	496	100%	496	100%
Abnormal spoilage - Inspection 2	-96	-96	100%	-96	100%	-96	100%
Work in process - ending	3,000	3,000	100%	3,000	100%	2400	80%
Units accounted for	53,300						
Equivalent units		45,000		53,000		51,690	

Step 2: Cost per Equivalent Unit

Flow of Cost	Total	Transferred in Costs	Material Costs	Conversion Costs
Work in process - beginning	TK. 613,370			
Costs added during this period	4,854,800	TK. 3,291,000	TK. 530,000	TK. 1,033,800
Costs to account for	TK. 5,468,170			
Equivalent units (from step 1)		45,000	53,000	51,690
Cost per equivalent unit		TK. 73.13	TK. 10.00	TK. 20.00

Step 3: Assignment of Cost

Outputs	Total	Transferred in Costs @ TK. 73.13	Material Costs @ TK. 10	Conversion Costs @ TK. 20
Normal spoilage - Inspection 1	21,499	19,379	0	2,120
Abnormal spoilage Inspection 1	2,840	2,560	0	280
Normal spoilage - Inspection 2	51,152	36,272	4,960	9,920
Abnormal spoilage Inspection 2	-9,900	-7,020	-960	-1,920
Work in process - ending	297,390	219,390	30,000	48,000
Finished goods				
● From work in process - beginning	613,370	0		
● Opening costs	232,400	0	83,000	149,400
● Costs added this period	4,259,269	3,020,269	413,000	826,000
Costs accounted for	5,468,020			

Note: Any difference in assignment of cost is due to the fraction in cost per equivalent unit.

Process Costing under Standard Costing Method - Mixing Department

Under standard costing method, cost per equivalent unit is not computed rather the assignment is made on the basis of given standard for each element of cost. For example, let us consider the standard cost for two departments as following:

Cost Element	Mixing Department	Finishing Department
Material Costs	TK. 25	TK. 9
Conversion Costs	TK. 46	TK. 18

Step 1: Physical and Equivalent Units

Flow of Production	Physical Units	Equivalent Units			
		Materials		Conversion	
		Units	%	Units	%
Work in process - beginning	5,000				
Started during the period	49,000				
Units to account for	54,000				
Units completed and transferred out:					
● From work in process beginning	5,000	0	0%	2,000	40%
● Started and completed	40,000	40,000	100%	40,000	100%
Normal spoilage	900	900	100%	900	100%
Abnormal spoilage	100	100	100%	100	100%
Work in process - ending	8,000	8,000	100%	2,000	25%
Units accounted for	54,000				
Equivalent units		49,000		45,000	

Step 2: Cost per Equivalent Unit

Flow of Cost	Total (Tk.)	Material Costs	Conversion Costs
Standard cost per equivalent unit		TK. 25	TK. 46
Equivalent units		49,000	45,000
Standard cost for current period works done	3,295,000	TK. 1,225,000	TK. 2,070,000
Work in process - beginning (5,000 units)	263,000	125,000	138,000
Total cost to account for	3,558,000		

Step 3: Assignment of Cost

Outputs	Total (TK.)	Material Costs (TK.)		Conversion Costs (TK.)	
Normal spoilage	63,900	900 × 25	22,500	900 × 46	41,400
Abnormal spoilage	7,100	100 × 25	2,500	100 × 46	4,600
Work in process - ending	292,000	8000 × 25	200,000	2000 × 46	92,000
Finished goods:					
● From work in process - beginning					
- Opening costs	263,000				
- Costs added this period	92,000		0	2000 × 46	92,000
● Started and completed this period	2,840,000	40,000 × 25	1,000,000	40,000 × 46	1,840,000
Costs accounted for	3,558,000		1,225,000		2,070,000
Summary of Variances:					
Standard Cost			1,225,000		2,070,000
Actual Cost (given)			1,225,000		2,160,000
Favorable (unfavorable) variance			0		90,000

Process Costing under Standard Costing Method - Finishing Department

Step 1: Physical and Equivalent Units

Flow of Production	Physical Units	Equivalent Units					
		Transferred in		Material		Conversion	
		Units	%	Units	%	Units	%
Work in process - beginning	8,300						
Started during the period	45,000						
Units to account for	53,300						
Units completed and transferred out							
From work in process beginning	8,300	0	0%	8,300	100%	7,470	90%
Started and completed	41,300	41,300	100%	41,300	100%	41,300	100%
Normal spoilage - Inspection 1	265	265	100%	0	0%	106	40%
Abnormal spoilage - Inspection 1	35	35	100%	0	0%	14	40%
Normal spoilage - Inspection 2	496	496	100%	496	100%	496	100%
Abnormal spoilage - Inspection 2	-96	-96	100%	-96	100%	-96	100%
Work in process - ending	3,000	3,000	100%	3,000	100%	2400	80%
Units accounted for	53,300						
Equivalent units		45,000		53,000		51,690	

Step 2: Total Cost to Account for (for standard costing, this step is revised slightly)

Flow of Cost	Total	Transferred in Costs	Material Costs	Conversion Costs
Standard cost per equivalent unit	TK. 71	TK. 9	TK. 18	
Equivalent units	45,000	53,000	51,690	
Standard cost for current period works done	4,602,420	TK. 3,195,000	TK. 477,000	TK. 930,420
Work in process - beginning (8,300 units)	604,240	589,300	0	14,940
Total cost to account for	5,206,660			

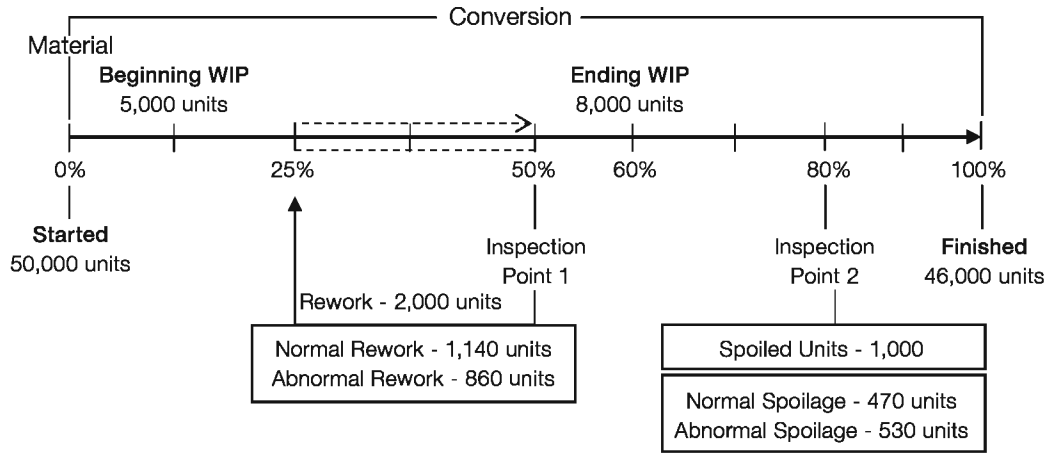
Step 3: Assignment of Cost

Outputs	Total (Tk.)	Transferred in Costs @ TK. 71	Material Costs @ TK. 9	Conversion Costs @ TK. 18
Normal spoilage - Inspection 1	20,723	18,815	0	1,908
Abnormal spoilage Inspection 1	2,737	2,485	0	252
Normal spoilage - Inspection 2	48,608	35,216	4,464	8,928
Abnormal spoilage Inspection 2	-9,408	-6,816	-864	-1,728
Work in process - ending	283,200	213,000	27,000	43,200
Finished goods	0	0	0	0
● From work in process - beginning	0	0	0	0
- Opening costs	604,240			
- Costs added this period	209,160	0	74,700	134,460
● Started and finished this period	4,047,400	2,932,300	371,700	743,400
Costs accounted for	5,206,660	3,195,000	477,000	930,420
Summary of Variances:				
Standard Costs		3,195,000	477,000	930,420
Actual Costs		3,195,000	530,000	1,033,800
Favorable (unfavorable) Variances		0	53,000	103,380

Appendix 8B

Graphical Presentation of a Process Line

This appendix provides a graphical presentation of process costing with normal and abnormal rework and spoilage and their ultimate disposition.



A process starts with 5,000 beginning work in process inventory. Working on an additional 50,000 units started during the period. Raw materials are added at the start of the process whereas conversion costs are added evenly throughout the process. The period completed and transferred a total of 46,000 units into finished goods inventory. However, 8,000 units were remained in ending work in process inventory. The process has two inspection points: one at 50% and another at 80%. Inspection point at 50% is treated as inspection point for rework and at 80% is considered as inspection point for spoilage.

Inspection point at 50%: Any goods rejected at 50% point are sent back to 25% point for rework. 2% of the units inspected at 50% point are considered as normal (expected) rework. During the period, a total of 2,000 units were reworked and the cost of 1,140 units (2% of 57,000) is considered as the cost of normal rework. And the balance (860 units) is considered as abnormal rework. The cost of normal rework should be shifted to all units rightwards proportionately. However, the cost of abnormal rework will be closed to periodic income statement. By this way, cost of normal loss will be borne by the consumer whereas the cost of abnormal rework will be consumed by the manufacturer himself.

Inspection point at 80%: Any goods rejected at 80% point is spoiled and thrown away from the process. 1% of the units inspected at this point are considered normal (1% of 47,000 units) and the balance (530) is considered as abnormal. The cost of normal spoilage should be shifted to all units rightwards (only on finished goods) proportionately and the cost of abnormal spoilage should be closed to periodic income statement with the same logic as it was in case of rework. However, if the spoiled units can be scrapped in that case the cost of spoilage will be reduced by the amount so realized. Such treatment will reduce the burden of the product or the manufacturer to absorb high losses.

BANGLADESH COST ACCOUNTING STANDARDS

BCAS - 9

Joint Costs

BCAS 9: Joint Costs

9.1 Introduction

Joint cost is a cost incurred in a joint process. Joint cost may include direct material, direct labor and overhead cost incurred during a joint production process. A joint process is a production process in which one input yield multiple outputs. Joint costs are the costs of single process, as a series of processes simultaneously produced two or more products of significant sales value. Such costs are not attributable to different individual products until a certain stage of production known as the split off point is reached.

9.2 Objectives

a) This standard focuses on the ways of allocating joint costs among main products and by-products in a manufacturing environment.

b) The standard also tries to standardize the methods of joint costs allocation among the products for the benefit of the practitioners.

c) The standard facilitates in taking different management decisions such as resource allocation, make decisions, price fixation, etc.

9.3 Scope

9.3.1 This standard shall be applied in allocating joint costs among all the products separately identifiable at a point called split-off point.

9.3.2 The standard shall also be applied in cost and management accounting practices relating to:

a) Cost of products;

b) Transfer pricing;

c) Segment performance;

d) Cost statement for any other purpose;

e) By product costing; and

f) Sale or process further decisions.

9.3.3 The standard is to be followed by all public limited companies where cost audit is made mandatory through Government's gazette notification from time to time.

9.4 Key Features

The key features of this standard are pointed below-

a) Identifying joint process, joint costs and further processing costs;

b) Prescribing different methods of allocating joint cost;

c) Incremental analysis to supplement sell or process further decision;

d) Identifying by products and accounting treatment thereof; and

e) Bringing different reporting issues relating to joint cost.

9.5 Definitions

The following terms are used in this standard with the meanings specified -

9.5.1 **Joint costs:** Joint costs are the cost of common facilities or services employed in producing two or more products simultaneously that cannot be traced with each resulting products directly. For example, the cost of acquiring, transporting and refining a barrel of crude oil are joint costs.

9.5.2 **Activity:** As defined in BCAS 3.5.1.

9.5.3 **Abnormal cost:** As defined in BCAS 6.5.6.

9.5.4 **Administration overheads:** As defined in BCAS 6.5.7.

9.5.5 **Costs Object:** As defined in BCAS 3.5.5.

9.5.6 **Production Overheads:** As defined in BCAS 6.5.14.

9.5.7 **Normal Capacity:** As defined in BCAS 6.5.13.

9.5.8 **Standard cost:** As defined in BCAS 6.5.15.

9.5.9 **Joint products:** Joint products are products that are produced simultaneously from a single raw materials input. The primary feature of joint products is that while the proportion may vary, there is no control over the nature of the joint products. For example, processing a side beef produces cuts of beef in varying proportion. However, processing a side beef always produced to basic product like meat and bones.

9.5.10 **By Product:** A by-product is a secondary product whose total sales value is relatively minor in comparison with the sales value of the main product (joint product).

9.5.11 **Split-off Point:** The point at which the individual joint products are recognizable as distinct and separate products is called the split-off point. For example, the split-off point in oil refining occurs when products emerge from the catalytic cracker. Some joint products may be sold as it is at the split off point while others may require additional processing before being sold.

9.6 Standards

9.6.1 ***Joint cost allocation is based on the principle of reasonableness. Such allocation of joint cost should be consistent with reasonable decision making.***

9.6.2 ***Joint cost allocations should be evaluated based on whether they are consistent with sound economic reasoning.***

9.6.3 Jointly produced products should be classified into one of two grow ups based on their value. Jointly produced products that have a positive residual value should be called joint products. Jointly produced products that have a negative residual value should be called waste products.

9.6.4 ***The appropriate treatment of the cost of a reasonable level of waste product is to add the waste disposal costs to joint costs & then to allocate the resulting total joint costs to the joint products.***

9.6.5 ***Joint cost allocations should be proportional to the net realizable value of each joint product.***

9.6.6 Joint costs and common costs are not similar to meaning. Joint cost results in a set of products where the mix, but not the basic elements of the mix, can vary. Common costs provide a general capacity without committing the capacity to a particular product or mix of products. For example, a piece of fiber optic cable allows its owner to provide various services to customers while not committing the owner to provide a specific set of services.

9.6.7 ***Ensuring rationality at the time of allocating joint cost receives extra attention. Here the rationality is guided by the 'capacity to bear' axiom of the resultant products at the split-off point. The product that can fetch the highest value from the market should receive the highest allocation.***

9.6.8 Academics and practitioners prescribe different methods of joint cost allocation. These methods can logically be grouped as following -

a) Based on physical output - Physical/Quantitative method

b) Based on revenue

i) If revenue is known - Sales value at split-off point method

ii) If revenue is unknown - Estimated net realizable value method

c) Based on managerial requirement - Constant gross margin percentage method

9.6.9 Under physical/quantitative method, joint costs are allocated based on the respective weights or volume of the products at split-off point. Such allocation is based on the argument that joint costs are proportional to weight or volume of material proceeds and therefore the joint cost allocation should reflect the cost driver for joint costs. If the joint cost allocation is based on rate per kilogram on material and other costs, each product at the split-off should absorb a proportionate share of joint cost based on the rate calculated in an equation like below:

$$\textbf{Joint Cost allocation rate} = \frac{\textbf{Total Costs}}{\textbf{Total weight in kilogram}}$$

It is assumed that units of measurement of all products at split-off are same and the intrinsic value of the products at split-off point depends on the relative consumption of resources which is properly reflected in chosen units of measurement.

9.6.10 Sales value at split-off point produces the most rational allocation of joint cost which is based on the sales value of respective products. Thus, the product which can recover the highest value in terms of sales revenue from the market will receive the highest allocation. However, this method can only be applied if all the products at split-off point have an active market, i.e., sales value is readily known. Here the allocation rate will be a percentage coming out from the following equation:

$$\textbf{Joint Cost allocation rate} = \frac{\textbf{Total Costs}}{\textbf{Total Revenues}} \times 100$$

9.6.11 If sales value of all the products at split-off point is not known, estimated net realizable value may be used where estimated net realizable value is computed after deducting further processing cost from the final sales value. Estimated net realizable value is used as a proxy to sales value at split-off point. Here, the rate is computed following the equation as stated below:

$$\text{Joint Cost allocation rate} = \frac{\text{Total Costs}}{\text{Estimated Net Realizable Value}} \times 100$$

$$= \frac{\text{Total Costs}}{\text{Firal Sales Value} - \text{Further Processing Costs}} \times 100$$

9.6.12 Constant gross margin percentage method is also considered as a value based approach to joint cost allocation where the main purpose of such allocation is to equate the margins reported by each individual product. For such allocation, average margin is computed in the following equation:

$$\text{Average Margin} = \frac{\text{Total Batch Contribution}}{\text{Total Revenue}} \times 100$$

The average margin as computed above is then multiplied by the sales value for each product to compute the product batch contribution. The joint cost allocation in this case equals to the net realizable value minus the computed batch contribution - that is the allocated joint cost becomes a plugged figure.

9.6.13 ***By-product can be accounted for by following either production method or sales method.***

9.6.14 Under production method of by product costing, by products are valued at the time of production and considered as a reduction of joint cost assuming that all the by-products are sold out. It will reduce cost per unit and any benefit goes to the consumer.

9.6.15 Under sales method of by product costing, joint costs remain same. By products are accounted for only when it is sold out and such revenue is considered as other income and becomes a part of comprehensive income.

9.6.16 Whether a product will be sold at split-off point or should go for further processing to sell at a later stage will be decided based on incremental analysis. Incremental analysis considers only incremental revenue and incremental costs. Incremental revenue is the extra revenue generated due to further process and incremental cost is the further processing cost. If incremental revenue results more than the incremental cost, further processing will be carried out.

9.6.17 ***Incremental analysis is important only when products have active market at both intermediate and final stage. If there is no active market for intermediate products, it must be further processed.***

9.6.18 ***Joint cost is irrelevant in further processing decision.***

9.7 Recording and Reporting

9.7.1 Joint costs need to be allocated to the joint products for various purposes such as:

a) Inventory valuation for financial accounting purpose

b) Measuring profitability of joint products

c) Pricing decision

d) Cost reimbursement etc.

9.7.2 In case joint products are produced, joint costs are allocated between the products on rational and consistent basis.

9.7.3 When the relative importance of individual products changes, the products need to be reclassified and the costing procedures need to be changed. By-products may become more and more important, eventually becoming joint products.

9.7.4 Joint process, joint products and product-wise profitability are very important information for managerial decision. This information should be reported, if required.

9.7.5 Decision of further processing should be backed by a proper incremental analysis that should be properly accounted for so that it can be reproduced anytime if required.

9.7.6 A 'cost of production report' may be generated for each joint process covering the following information:

a) Joint cost;

b) Joint products;

c) Methods of allocating joint costs;

d) By-products, if any;

e) By product costing method;

f) Costing of joint products; and

g) Sell or process further decision backed by incremental analysis.

9.7.7 Recording and reporting pattern should be consistent, and if it is changed for any reason, such reason should be disclosed.

9.8 Effective Date

This standard will be effective from January 1, 2015 onwards.

Appendix 9A

Example of joint cost allocation among different products at split-off point under different methods

XYZ Company produces perfumes from flower petals. The process works in such a way that flower petals are processed up to a point where it results three products; product A is a high grade perfume, product B is a low grade perfume and product C is a lotion.

The company used 10,000 kg of petals last month and costs were incurred in total of Tk. 900,000 with the breakdown as given below:

Direct material	Tk. 450,000
Direct Labor	300,000
overhead	150,000

Other information is bellow:

Particulars	Products		
	A	B	C
Unit Produced (in kg)	1,000	1,000	2,000
Separable Cost (in Tk.)	150,000	100,000	80,000
Selling Price per kg (in Tk.)	500	400	300
Percentage of gross profit	20%	20%	20%
Administrative Cost (in Tk.)	10,000	12,000	5,000

Allocate the joint costs and calculate profit.

Solution:

Allocation of Joint Cost under Physical / Quantitative Method:

XYZ Company
Physical/Quantitative Method

Product	Units Produced and Sold (kg)	Respective Weights of the Products	Allocated Joint Cost (Tk.)	Separable and Administrative Cost (Tk.)	Total Cost (Tk.)	Revenue (Tk.)	Net Profit (Tk.)
1	2	3	4	5	6 = 4+5	7	8 = 7 - 6
A	1,000 25%	225,000	160,000	385,000	500,000	115,000	
B	1,000	25%	225,000	112,000	337,000	400,000	63,000
C	2,000	50%	450,000	85,000	535,000	600,000	65,000
Total	4,000	100%	900,000	357,000	1,257,000	1,500,000	243,000

XYZ Company
Sales/Net Realizable Value Method

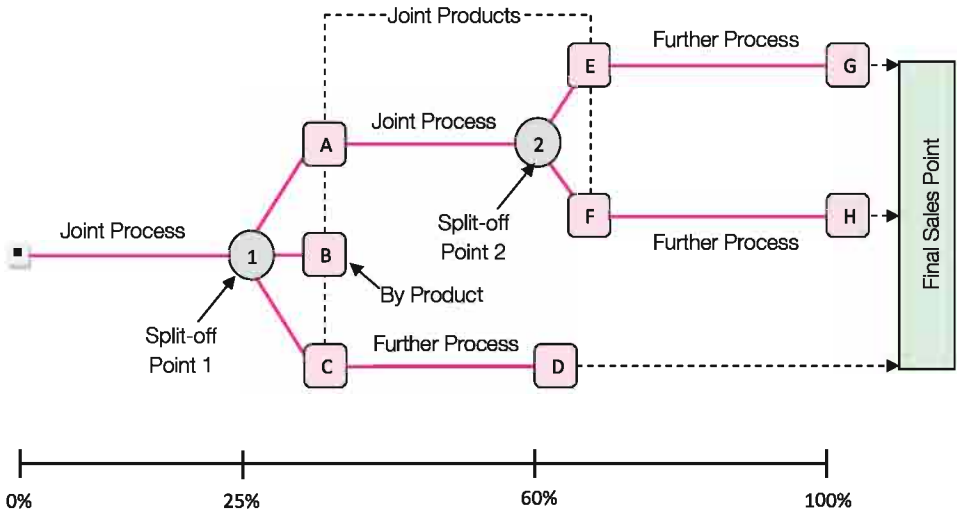
Product	Market Value (Tk.)	Separable Cost (Tk.)	Net Realizable Value (Tk.)	Respective Weights of Products	Allocated Joint Cost	Administrative Expenses (Tk.)	Net Profit (Tk.)
1	2	3	4 = 2 - 3	5	6	7	8 = 2-3-6-7
A	500,000	150,000	350,000	29.92%	269,280	10,000	70,720
B	400,000	100,000	300,000	25.64%	230,760	12,000	57,240
C	600,000	80,000	520,000	44.44%	399,960	5,000	115,040
Total	1,500,000	330,000	1,170,000	100%	900,000	27,000	243,000

XYZ Company
Constant Gross Margin Percentage Method

Products	A	B	C	Total
1. Final Sales Value	500,000	400,000	600,000	1,500,000
2. Gross Profit @ 20%	100,000	80,000	120,000	300,000
3. Cost of Goods Sold	400,000	320,000	480,000	1,200,000
4. Separable Cost	150,000	100,000	80,000	330,000
5. Joint Cost Ratio	250,000	220,000	400,000	870,000
6. Joint Cost	258,621	227,586	413,793	900,000
7. Administrative Expense	10,000	12,000	5,000	27,000
8. Total Cost	418,621	339,586	498,793	1,257,000
9. Net Profit	81,379	60,414	101,207	243,000
10. Percentage of Net Profit	16.28%	15.10%	16.87%	

Appendix 9B

Pictorial presentation of joint production process



The above figure presents a situation of joint process. Production starts at zero percent and continues up to 20 percent where a split-off point identifies three products (A, B and C) separately. Thus, production interval from 0 percent to 20 percent is a joint process where three products are jointly produced. The cost of this process is called joint costs that should be absorbed by all the three products at split-off point. Out of the three products at split-off point 1, product A is further jointly processed up to 60% where it results two more separable products (E and F). Product B is fully processed at split-off point and sold out. It may be joint (mail) product or by product. If it is considered as by-product (having very minimum market value), it will not receive any allocation of joint costs rather either production method or sale method will be applied to account for product B. However, product C is further processed at additional cost to convert in product D and then sold out. Both of the products at split-off point 2 has been further processed and then sold out. Further processing decisions (for example, from C to D, from E to G and from F to H) must be taken based on incremental analysis provided that these products can be sold either at intermediate stage or final stage.

BANGLADESH COST ACCOUNTING STANDARDS

BCAS - 10

Target Costing

BCAS 10: Target Costing

10.1 Introduction

The aim of target costing is to keep the cost within control for ensuring a competitive edge in the market. Cost-plus pricing, a widely used pricing methodology, reined the product costing literature for long; however, lose its rationality in a highly competitive market. If the selling price is set by the market with a selective design and functionality requirement, adherence to that price is the most critical requirement. The product design and development team should work hard to deliver the product at that target price leaving enough profit for the sustainability of the firm in the long run. Thus, the target cost must be achieved after every possible design variations. A target costing methodology brings all of these functions into focus and surely, offers a good number of advantages over cost-plus pricing.

10.2 Objectives

a) The main purpose of target costing, a strategic cost management tool, is to use prospective or estimated cost information during the product and process design phases to reduce a product's life-cycle costs.

b) Target costing also caters to serve as an organizing, coordinating, and communication method among the members of a cross-functional team charged with product development. Since target costing is market and customer oriented it requires that the organization have a market orientation. At the same time, target costing is implemented using multidisciplinary teams which require a strong organizational commitment so that problem-solving can be implemented as a team approach.

c) Target costing is a comprehensive planning and control tool that is market focused and design oriented providing the organization with a cost advantage.

10.3 Scope

10.3.1 The standard shall be applied for determining the target cost of a product considering the target price of that product which a potential customer is willing to pay.

10.3.2 The **target costing approach** is developed in recognition of two important characteristics of markets and costs.

a) The first is that many companies have less control over price then they would like to think that the market (supply and demand) really determines prices. Therefore, the anticipated market price is taken as a given in target costing.

b) The second observation is that most of the cost of a product is determined in the design stage. Once a product has been designed and has gone into production, not much can be done to significantly reduce its cost. Most of the opportunities to reduce cost come from designing the product so that it is simple to make, uses inexpensive parts, and is robust and reliable. If the company has little control over market price and little control over cost once the product has gone into production, then it follows that the major opportunities for affecting profit come in the design stage where valuable features that customers are willing to pay for can be added and where most of the costs are really determined. It is where the effort is concentrated in designing and developing the product.

10.3.3 The standard is to be followed by all public limited companies where cost audit is made mandatory through Government's gazette notification from time to time.

10.4 Key Features

The key features of this standard are pointed below -

a) Defining target cost, target selling price and target profit;

b) Presenting the methodology of applying target costing to price products;

c) Developing a multi-tasking team to develop, design and deliver satisfying products;

d) Demonstrating the benefit of target costing over cost-plus pricing; and

e) Bringing the issue of cost engineering to keep costs within the target.

10.5 Definitions

The following terms are used in this standard with the meanings specified:

10.5.1 **Target:** Target is a fixed goal or objective. It is a person or thing at which an action or remark is directed.

10.5.2 **Target Cost:** This is the maximum cost that the producer is willing to spend to have the product manufactured.

10.5.3 **Target Costing:** Target costing is a pricing method used by many organizations. It is a cost management tool for reducing the overall cost of a product over its entire life-cycle with the help of production, engineering, research and design. A target cost is the maximum amount of cost that can be incurred on a product and with it the firm can still earn the required profit margin from that product at a particular selling price.

10.5.4 **Target Price:** Target Price is the price at which a seller projects that a buyer will buy a product.

10.5.5 **Product:** A good, idea, method, information, object, or service that is the end result of a process and services as a need or want satisfier. It is usually a bundle of tangible and intangible attributes that a seller offer to buyer for purchase. In this standard product refer to goods and services.

10.5.6 **Product Life cycle:** The period of time over which a product is developed, brought to market and eventually removed from the market. The process includes research and development, production, market and rolled out. It encompasses Introduction Stage, Growth Stage, Saturation Stage and Declining Sales Stage.

10.5.7 **Cost center/level:** A cost center is a unit that does not generate revenue.

10.5.8 **Investment center/level:** An investment center is usually found at higher levels in an organization where a unit manager has the responsibility of generating returns on investment capital.

10.5.9 **Satisfying:** Satisfying is an evaluative criterion that looks for decisions that are good enough, in the sense of meeting expectations, rather than optimal.

10.5.10 **Value Engineering:** Value engineering is the systematic evaluation of a function to

identify the lowest possible cost of achieving it. Value engineering is usually accomplished in one of two ways:

a. The planning team might work with component suppliers or redesign the product so that it uses standard components in order to reduce costs and improve quality. This has the effect of reducing flexible costs; or

b. The planning team might consider an alternative way to build the function into the product so that the function's cost is reduced. This has the effect of reducing both flexible and capacity related costs.

10.5.11 **Price Point:** Price points are prices at which demand for a given product is supposed to stay relatively high.

10.6 Standards

10.6.1 ***There are six key principles of target costing; namely, price-led costing, focus on customer, focus on design, cross-functional involvement, value chain environment, and a life-cycle orientation.***

10.6.2 Under **price-led costing** principle, the market prices are used to determine the target costs. Target cost is computed by deducting required profit margin from market price **(Target Cost = Market Price – Required Profit Margin).**

10.6.3 Under **focus on customer** principle, customer requirements for quality, cost and time are included in product and process decisions and these parameters guide cost analysis significantly. The value must be greater than the cost of providing those features and functionality.

10.6.4 The cost control is emphasized at the product and process design stage in case of **focus on design** principle. This results in lower costs and reduced "time-to-market" for few products.

10.6.5 In case of **cross functional involvement**, cross-functional product and process teams are responsible for the entire production from initial to final production.

10.6.6 In **value-chain environment,** the value-chain enabler like the suppliers, distributors, service providers and customers are involved in the process.

10.6.7 In case of a **life-cycle orientation,** a total life cycle cost which includes purchase price, operating costs, maintenance and distribution costs are minimized for both the producer and customer.

10.6.8 It is widely believed that between 60% and 90% of a product's life-cycle costs are committed during the planning stage when planners choose the product and process designs.

10.6.9 Once the product and process designs are in place, there is relatively little opportunity for cost improvement and the cost management focus becomes cost containment.

10.6.10 ***This insight has led to the understanding that the most effective time to control product life-cycle costs is during the planning stage, not during the active stage when the product is being made.***

10.6.11 ***Target costing is market, and therefore customer, oriented. It begins with the***

product's price, quality, and functionality components that customers demand, and works toward designing a product and process that meet those requirements and whose prospective cost provides an adequate return to the organization. For this reason, practitioners call target costing as price-led costing so as to differentiate its perspective from that of conventional cost plus pricing, which is a form of cost-led pricing.

10.6.12 In target costing, the role of the management accountant is very crucial who provides cost information for planning and coordinating the whole process. Three of such important roles that a management accountant performs can be pointed as below:

a) Developing good estimates of the prospective costs needed by the target costing team;

b) Serving in the general management role by reconciling the functional orientations of the target costing team members and focusing them on the organization's financial objectives; and

c) Ensuring that the allocation of cost reduction targets to subgroups on the target costing team is seen as fair and reasonable.

10.6.13 Firstly, the management accountant must ensure the costs used in the planning process are reasonable estimates. There are two types of costs used in target costing:

a) The product's prospective life-cycle cost, which includes the estimated flexible and capacity related costs of designing, making, delivering, servicing, and terminating the product, given some product and process design; and

b) The target profit, which is the opportunity cost of capital tied up in the product.

The estimate of prospective costs will be based both on past experience and on benchmarking with comparable processes that the organization now undertakes. The opportunity costs will reflect the deemed investment in the product multiplied by the organization's cost of capital.

10.6.14 Secondly, the management accountant will often bring the general management perspective to the product design team.

a) Since functional specialists often bring unique views to the product design team, their individual views will often conflict, thus requiring a super ordinate view that subsumes their individual perspectives to the organization's overall financial objectives. For example, engineers must understand that achieving engineering aesthetics that customers neither value nor are willing to pay to have included in the product is inappropriate.

b) Similarly, marketing personnel must understand that adding product features whose costs exceed the price increment that customers are willing to pay is also inappropriate. For example, while an engineer will see the product as an engineering marvel, the manufacturing people might see it as a production nightmare.

The role of the management accountant will be that of an honest broker who reconciles the potentially conflicting views of the functional specialists into a profit-oriented view that coordinates the team's activities. In this sense, the management accountant plays a vital role in the target costing value-added team.

10.6.15 Thirdly, since the primary role of cost reduction standards in target costing is to motivate individual and group performance, the challenge to the management accountant is to develop performance targets that not only are challenging and achievable but are seen by the group members to be challenging and achievable. This will require the management accountant to develop and justify cost reduction targets in such a way that they are perceived to be achievable with a reasonable level of effort.

10.6.16 In addition, and again because the purpose of setting targets is to provide motivation, the management accountant must ensure that the process of dividing the burden of cost reduction among the subgroups of the target costing team is seen by team members as being fair and reasonable. Without a perception of fairness, the motivational effect of target costing will be lost as the team disintegrates into bickering about which group is carrying the largest burden.

10.6.17 Target costing is not so much a cost management technique but rather an overall approach or framework within which a range of different techniques are used for the cost management required to achieve the target costs. The choice of technique or combination of techniques varies from one company to another. The techniques used for target costing are value analysis, value engineering, just-in-time (JIT), total quality management (TQM), materials requirements planning (MRP), kaizen, lean manufacturing, activity based costing and management (ABC/M), cause-effect analysis ('fishbone' diagrams). Many scholars describes target costing as a system for reducing cost and promoting the use of cost-engineering tools as mentioned above.

10.6.18 Once the target costs have been determined, actual costs can be monitored and managed against the targets using the usual budgeting and costing methods such as standard costing.

10.6.19 In implementing target costing, the responsible co-ordination team should be careful about a number of issues as mentioned below to confirm the smooth operation of target costing.

a) In an organization that traditionally uses a sequential design process the elements of the planning process are virtually uncoordinated. For individuals in that organization to move to a concurrent approach to product and process design will require considerable change. Some members of the development team might find it difficult to adjust to the give and take required in the concurrent design approach to product development that is implicit in target costing.

b) Conflictions may arise among members of the project team over the pressure exerted on each member or group to conform the cost reduction and time schedules. This can be particularly problematic when pressure is put on outside suppliers to reduce the cost of purchased materials or components.

c) The manager of the design team must be careful when assigning responsibilities so that each member of the team believes that they are being assigned a fair share of the work.

d) Reports from practice, particularly in Japan where the idea of target costing is originated and where it is most aggressively practiced, indicate the potential for a high level of employee burnout. The manager of the design team must take special care to ensure that while the target work-level chosen should be challenging, it should not be one that creates either alienation or risks to employee health.

10.6.20 ***Since the target selling price is determined by summing what customers will pay for each of the product's functions, one approach to cost reduction is to compare the cost and increment to product price of each of the proposed product's functions. This cost-benefit evaluation of the product's functions is called functional analysis.***

10.6.21 For example, an automobile manufacturer may be evaluating the computer-controlled ride on one of its luxury vehicles. Functional analysis compares the cost of the proposed design to provide the function, in this case the computer and its related systems, with the value of the function to the customer. If the cost of a function exceeds the retail value it adds to the product's target selling price, the planners have three alternatives:

a) Ignore the loss on that function and plan to have the margins of price over cost for other functions recover this loss;

b) Eliminate the function; or

c) Undertake a process to reduce the cost of that function so that it provides a positive margin, a process called value engineering.

10.6.22 ***Target cost, which is the focusing tool used in target costing, is computed as follows:***

Target Cost = Target Selling Price – Target Profit

The target selling price is defined by the marketplace and reflects the product's quality and functionality. The target profit is chosen so that the product's profit margin will provide an adequate return on the invested capital that would be required by the selected product and process design. The target profit reflects the required return on capital invested to make the product and is not simply a percentage of target cost or target selling price.

10.6.23 As the product development team alters the product's functionality and quality, the product's target cost, the target profit, and the target selling price will change. Therefore, the target cost is defined by two givens: what the market will pay for the product with a given functionality and what the organization requires as a target profit.

10.6.24 ***It is useful to contrast the target costing formula with the traditional cost plus pricing formula, which is:***

Selling Price = Projected Cost + Desired Profit

In cost plus pricing, a desired profit is added to the product's projected cost to determine the selling or offering price for the product. While this approach to pricing may have been sustainable in an era with relatively little competition, in the present era of intense global competition most organizations have lost the ability to simply pass on any level of projected cost plus the desired profit to customers.

10.6.24 ***The target cost becomes the focus and organizing medium for the design team's product and process design activities. The idea for the design team is to come up with a prospective cost, which is usually called the as-if cost, that is equal to or lower than the target cost.***

10.6.25 The product design team, including representatives from purchasing, design, engineering, production, and marketing, continues to vary the prospective product's functionality and process design until the products as-if cost is less than its target cost.

10.6.26 In this sense, target costing assumes the underlying behavioral phenomenon of satisfying. This leads to the recognition that any decision can be improved if enough additional time and skill are invested. The idea in target costing is to continue investing time and skill until the prospective cost is less than the target cost.

10.6.27 Since target costing involves simultaneously varying three planning parameters, viz., target selling price, target cost, and target profit; target costing is only feasible if it is undertaken by a planning group that has, within it, the expertise to evaluate all facets of the planning activity. This creates the need for a multifunctional or multidisciplinary planning team.

10.6.28 The multidisciplinary team engages in a process of concurrent design, where the implications go to all the three planning parameters. The changes in product features are evaluated simultaneously by all the members of the team. Concurrent design works to reduce the cycle time of product development while improving the effectiveness of identifying and evaluating tradeoffs among functionality, target price, target profit, and target cost.

10.7 Recording and Reporting

10.7.1 As a practical matter the product's target cost is decomposed into:

a) Final assemblies;

b) Subassemblies; and

c) Individual components.

This decomposition serves three purposes:

a) It allows the delegation of responsibility for cost-cutting;

b) It supports a systematic evaluation of the cost, the functionality, and the value added by different components of the product; and

c) It provides data that can be used to decide whether to make or buy components or assemblies.

10.7.2 Once the operational objective is achieved, the planning team has concluded its task because there is a product and process design that meets the customer's requirements and the organization's profitability objectives.

10.7.3 The management accountant must ensure that estimates of cost and investment levels, which are critical components of target costing, are reasonable.

10.7.4 As a member of the product design team, the natural role for the management accountant is to bring both a financial management and a general management or business perspective to the team. As part of the general management role, the management accountant should ensure that the team's focus is on product profitability and that all decisions are evaluated relative to their estimated effect on profitability.

10.7.5 Since target costing is a collaborative process that requires a high level of effort and cooperation from each discipline on the target costing team, the project team leader must develop and maintain a high level of motivation and commitment to the group goal. To this end, the contribution required by each subgroup on the target costing team in

terms of both the performance targets and cooperation must not only be valid but must be seen to be valid. Therefore, cost reduction targets that are assigned to subgroups within the team and the procedures that allocate cost targets to the product's components should be developed and supported in such a way that each group member believes that the targets are valid and not the result of a political process.

10.7.6 To provide the appropriate motivation, cost reduction targets set during target costing should be achievable with a high level of effort and motivation. It is preferable to set a series of targets that are achievable over a period of time rather than one that may not be achievable within a specific time period. It is inappropriate and damaging to set targets that represent ideal standards that cannot be achieved.

10.8 Effective Date

This standard will be effective from January 1, 2015 onwards.

Appendix 10A

Different stages of setting up target costing method for product costing

There are a number of stages in the process of target costing. These stages may be pointed as below:

a. Establish a selling price for the new product and estimated sales volume from an analysis of the market, and a target profit.

b. Determine the target cost by subtracting the profit from the selling price.

c. Perform functional cost analysis for individual components and processes.

d. Determine the estimated cost for the product.

e. Compare estimate with target.

f. If estimated cost exceeds target cost, repeat cost analysis/value engineering to reduce estimated cost (an iterative process).

g. Make the final decision whether or not to introduce the product once cost estimate is on target.

h. Manage costs during production of the product.

In another way we may emphasis target costing system in the following four phases:

Four Phases of Target Costing Setup	
Phase 1: Get know price points - Market Research	To get know price point, two types of research to be conducted: ● Customers research ● Competitive research Both researches aim to get the followings: ● Customers' requirements ● Product's features
Phase 2: Determine margin and cost feasibility	Two steps to take: Step 1 - Determine margin and cost feasibility Step 2 - Determine initial margin goal and target cost
Phase 3: Meet margin goal and target cost through design improvements	Two steps to take: Step 1 - Finalize value engineering result Step 2 - Finalize design and process information
Phase 4: Implement continuous improvements	It can be achieved by performing two tasks: ● Initiate product production ● Implement continuous improvement

Appendix 10B

Determination of Target Cost

Example 1: XYZ Company estimated that there is a market niche for new innovated Ceiling fan. The marketing department believes that a price of Tk. 3,000 per fan would be the right for the ceiling fan. At that price they estimate 4,000 pieces of fan would be sold annually. To design, develop and production of these fan an investment of Tk. 20,000,000 would be required and the company desires a 15% return on investment (ROI). Given these data, the target cost to manufacture, sell and service one fan is Tk. 2,250 as calculated below:

	Amount (TK.)
Projected Sales (4,000 fans x Tk. 3,000 per fan)	12,000,000
Less: Desired profit (15% on TK. 20,000,000)	3,000,000
Target cost for 4,000 fans	9,000,000
Target cost per fan (Tk. 9,000,000 ÷ 4,000 fans)	2,250

This target cost of Tk. 2,250 would be broken into target cost for the various functions: manufacturing, marketing, distribution, after-sales service and so on. Each functional area would be reasonable for keeping its actual costs within target.

Example 2: A practical business oriented trial and perfect example is given below:

In the automobile industry, the target cost for a new model is decomposed into target costs for each of the elements of the car-down to a target cost for each of the individual parts. The designers draft a trial blueprint, and a check is made to see if the estimated cost of the car is within reasonable distance of the target cost. If not, design changes are made, and a new trial blueprint is drawn up. This process continues until there is sufficient confidence in the design to make a prototype car according to the trial blueprint. If there is still a gap between the target cost and the estimated cost, the design of the car will be further modified. After repeating this process a number of times, the final blueprint is drawn up and turned over to the production department. In the first several months of production, the target costs will ordinarily not be achieved due to problems in getting a new model into production. However after that initial period, target costs are compared to actual costs and discrepancies between the two are investigated with the aim of eliminating the discrepancies and achieving target costs.

Appendix 10C

Target Cost Calculation Worksheet

Price/Cost Element	Estimate	% Factor	Per Unit Factor (Tk.)	Amount (TK.)
Manufacturer's Suggested Retail Price				495.00
Less: Standard Retailer Margin		30%		148.50
Cost to retailer				**346.50**
Less: Distribution/Shipping Cost to retailer		0%	15.00	15.00
Selling Price to Retailer				**331.50**
Less: Distribution Cost/Mark-up		15%		49.73
Less: Shipping/Logistics Cost to Distribution Center				17.00 17.00
Manufacturer's Selling Price				**264.78**
Less: Profit Margin		8%		21.18
Less: Warranty Cost		2%		5.30
Less: Corporate Allocation		10%		26.48
Less: Business Unit Selling, General & Admin Cost		12%		31.77
Non-Recurring Development Cost	1,200,000			
Estimated Production Volume	200,000			
Less: Allocated Non-Recurring Development Cost			6.00	6.00
Business Unit Target Cost				**174.05**
Less: Overhead		45%		78.32
Direct Target Cost (Labor & Materials)				**95.73**

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The Institute of Cost and
Management Accountants of Bangladesh
(An Autonomous Body under the Ministry of Commerce)
ICMA Bhaban, Nilkhet, Dhaka-1205, Bangladesh
Tel: 8615989, 9611799, 9615477 E-mail: icmab@accesstel.net
Web: www.icmab.org.bd