

*International Good Practice Guidance*

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## Evaluating and Improving Costing in Organizations

The Professional Accountants in Business (PAIB) Committee of the International Federation of Accountants (IFAC) approved this International Good Practice Guidance, *Evaluating and Improving Costing in Organizations*, for publication in July 2009.

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This publication was prepared by IFAC's PAIB Committee which serves IFAC member bodies and the more than one million professional accountants worldwide who work in commerce, industry, the public sector, education, and the not-for-profit sector. Its aim is to enhance the role of professional accountants in business by encouraging and facilitating the global development and exchange of knowledge and best practices.

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## **Preface to IFAC's International Good Practice Guidance**

A separate document, entitled [\*Preface to IFAC's International Good Practice Guidance\*](#), sets out the scope, purpose, and due process of the PAIB Committee's International Good Practice Guidance series to which this guidance paper belongs. It can be downloaded free-of-charge from the PAIB section of the IFAC online bookstore at [www.ifac.org/store](http://www.ifac.org/store).

**IFAC PAIB COMMITTEE**  
**INTERNATIONAL GOOD PRACTICE GUIDANCE**  
**EVALUATING AND IMPROVING COSTING IN ORGANIZATIONS**

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## Evaluating and Improving Costing in Organizations

### 1. Why the Topic is Important

- 1.1 The creation, operation, alteration, and cessation of every action and function in an organization – whether within the private, public, or voluntary sector – all consume economic resources. Measuring, accumulating, and assigning those resources to the organization’s various processes and outputs allows the structure and operation of the organization to be explained, understood, and improved. Costing, the accounting term that embraces these processes and expresses them using money as a common language, lies at the heart of managerial accountancy and, exercised intelligently, is among the most powerful disciplines available to professional accountants in business (PAIB).
- 1.2 Costing contributes to an understanding of how profits and value are created, and how efficiently and effectively operational processes transform input into output. It can be applied to resource, process, product/service, customer, and channel-related information covering the organization and its value chain. Costing information can be used to provide feedback on past performance, and to motivate and change future performance. Costing is thus an essential tool in creating shareholder and stakeholder value. Given its importance and breadth of scope, it is unsurprising that many different costing methods exist, both in the literature and in practice. This can create confusion and uncertainty for managers, and PAIBs need a sufficient understanding of sound costing principles to be able to select and apply useful approaches.
- 1.3 The basic building blocks of costing are operational measurements of consumed resources (resources include people, space, equipment, and consumables, these being the drivers of cost and levers of change). Such measurements enable managers to draw conclusions and make judgments about why (a) the organization’s results turned out as they did (performance evaluation), (b) what this means for the future (planning), and (c) the probable results of available courses of action (analysis of alternatives) all of which comprise essential information for effective decision making. The principles in this International Good Practice Guidance (IGPG) support the application of judgment in providing good decision support. In turn, this calls for the professional accountant in business to clearly understand why cost information is to be used. For example, improving existing operational performance needs different treatment from that required to develop future strategy, although an ability to effectively relate managerial actions to their effects will be common to both objectives. The inclusion of measurement of resources as an explicit stage in the costing process can also help PAIBs to facilitate communication and interpretation of costing and profitability results, particularly for non-accountants.
- 1.4 Costing for decision support is valuable for performance improvement, value creation, “what if” analysis, and the effective and efficient application of an enterprise’s resources and processes. However, the use of costs for external financial reporting for these decision support purposes can lead to misunderstandings. Examples of cost uses for financial reporting include the valuation of inventories, determination of transfer pricing amounts (for tax optimization purposes), and segmental reporting. Such specific uses of cost assignment are usually mandated by jurisdictions and regulatory authorities, especially where cost assignment affects taxation or the determination of regulated

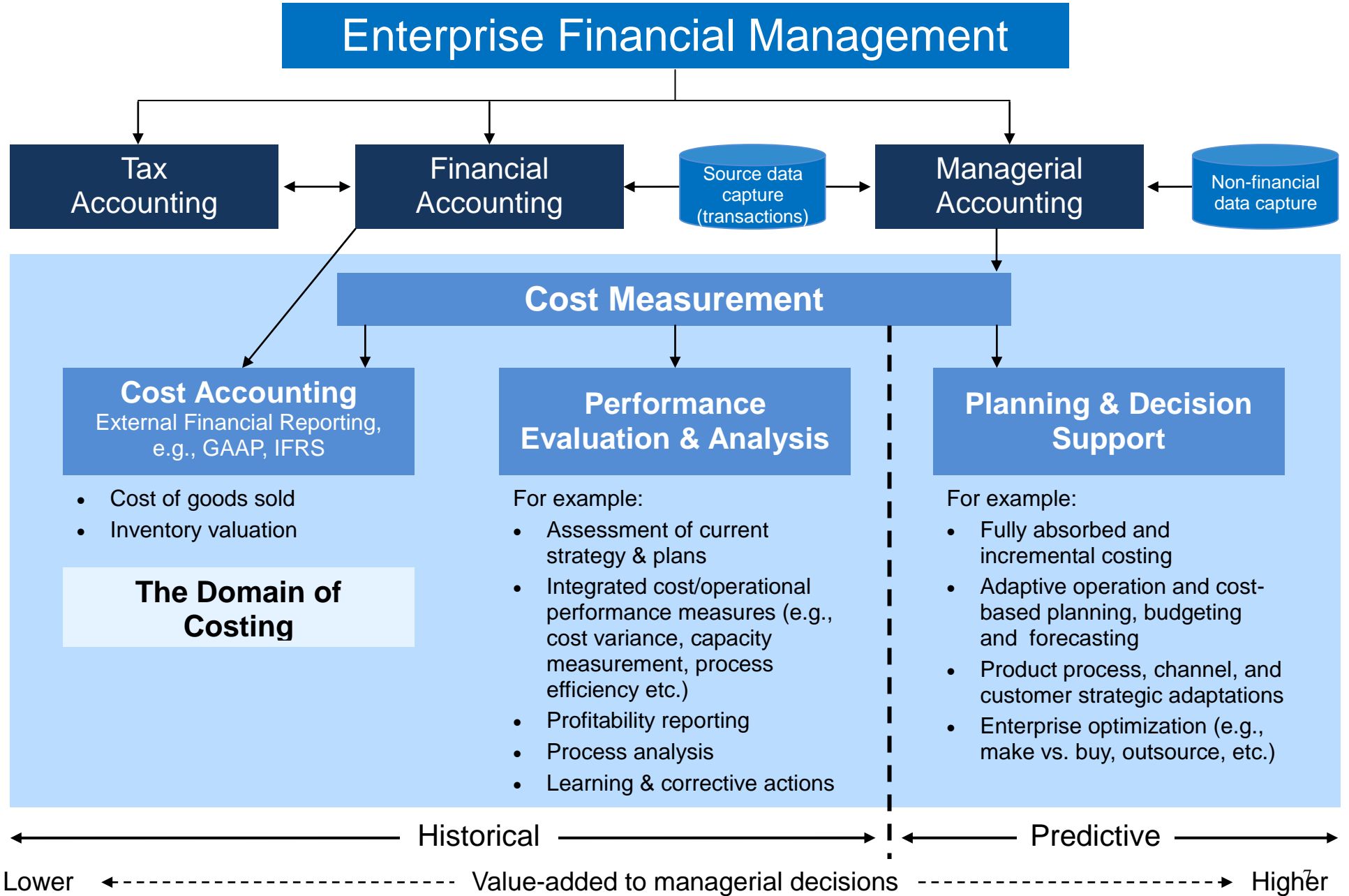
pricing structures. The discipline applied to produce this type of output is usually called “cost accounting.” Financial and tax accounting rules focus cost accounting on primarily historical results (i.e., what has already happened), an exception being when financial reporting standards include fair value-based calculations. The need for decision support usually requires deeper diagnostic insight into the causes of events (why they happened), a clear and direct connection to operations (to evaluate change options), and support to planning for desired future outcomes.

*Why international guidance is needed*

- 1.5 This IGPG encourages professional accountants to distinguish between cost accounting for external reporting, where historical performance is reported within certain prescriptive guidelines, and costing for decisions to drive improved organizational performance. It does not assume that both purposes can never be reasonably served by a single method, but it does expect PAIBs (a) to understand the principles underpinning various costing methods and systems, and (b) to be able to evaluate – and make informed judgments about – their fitness for a range of intended uses. The professional accountant in business is encouraged to consider the issues that bear on a decision, and to apply the costing technique that best illuminates the information needed for effective alternative choices and therefore evaluation.
- 1.6 In light of this discussion, figure 1 shows cost measurement as embracing three broad areas. The first (on the left side), cost accounting, is shown as prescribed by standards for financial accounting (or, where they exist, cost accounting), because of its use in external reporting. The other two areas (i.e., cost evaluation and analysis, and planning and decision support) are clearly significant value-adding aspects of management accounting generally. Therefore, cost measurement as it relates to managerial accounting is divided broadly between:
- (a) Those aspects of costing concerned with evaluating and learning from historical cost data; and
  - (b) The underlying resource and operational information that gives rise to costs, and costing aspects concerned with applying the understanding of cost behavior gained from cost analysis to influence future events.

All three areas are informed by the measurement process (both financial and non-financial) that makes available information for external financial reporting purposes, and internal management decisions.

Figure 1



- 1.7 Using costing effectively for decision making requires understanding clear, timely cause-and-effect relationships between an output and the inputs required to produce it. Conflicts can arise when cost information compiled with prescribed rules for external reporting is used by managers to support decision making. Such rules do not generally require reports to be built up from operational data in the same way or with the degree of detail necessary to reveal the cause-and-effect relationships that help decision makers take appropriate action. These relationships should ideally be determined by users with the help of PAIBs. Appendix E lists some examples of the challenges that result from basing managerial information on financial accounting data designed for mandatory compliance for external reporting.
- 1.8 This IGPG establishes six fundamental costing principles that will help PAIBs and their organizations to evaluate and improve their approach to providing relevant and reliable managerial information. In the context of the [Preface to International Good Practice Guidance](#), which sets out the purpose of IGPGs, the principles provide a *benchmark* to good practice in applying costing systems and methods and using costing information, particularly for managerial decisions. This will enable PAIBs to provide a *descriptive and historical* view of costs and a *predictive forward-looking* view that together provide the basis for analysis, evaluation, planning, and decision support.

### **The Role of the Professional Accountant in Business**

- 1.9 PAIBs draw on a broad base of capabilities in undertaking a variety of roles. They are both suppliers and users of costing information. They can take a front-line business management role as a decision maker, or a role supporting decisions by consumers of costing and operational information. Regardless of their perspective, PAIBs have important roles to play in (a) ensuring that cost data is “fit for purpose,” (b) clarifying decision requirements, and (c) deciding how best to present information and analysis (including method of delivery, e.g., hardcopy, web-based portal, etc). This includes considering the relevance of revenue and cost information to the range of factors and issues pertinent to a particular decision.
- 1.10 Performing such roles usually requires the professional perspectives and skills of other disciplines, such as industrial engineers, operational managers, economists, and systems analysts, all of whom provide valuable insights. PAIBs who design, use, or collect cost information will typically work with many other parts of an organization to analyze and interpret this information for decision making. In most cases, they will need to delve below the level of detail recorded in the financial ledgers and required for external financial reporting.
- 1.11 Management accounting skills focus on the correct modeling of financial and non-financial data to optimize an organization, its use of resources (and their costs), and its revenues. PAIBs need to understand where and why data used for external financial reporting is not usually adequate to support managerial decisions. PAIBs can help their organizations to invest in developing an appropriate decision support model that is not impaired by the deficiencies of a system designed primarily for preparing financial statements. For example, where financial reporting standards typically focus on full cost, most decisions are marginal or incremental, and require robust information on fixed and variable costs throughout the organization. Furthermore, general ledger data is purely financial, yet the cause-and-effect



relationships of operational inputs and outputs – and their cost impacts – are fundamental in identifying the actions needed to improve operational efficiency and effectiveness.

- 1.12 Sustainable value for stakeholders is created through improving the efficiency and effectiveness of an organization's value-creating operations. Recognizing the constraints of looking at organizational performance solely in terms of a financial accounting model is an important step in facilitating change in the quality of managerial decision support provided to employees, supervisors, and managers throughout the organization. This might involve challenging existing barriers to change, for example by abandoning or limiting the use of traditional, highly aggregated standard costing that is easily tied to financial statements, in favor of using costing methodologies that (a) focus on closer ties to operational realities and economics, and (b) can only be reconciled at a high level to financial statement numbers. An awareness of such constraints can contribute to understanding an organization in terms of the cause-and-effect relationships that convert its inputs into outputs and outcomes, and that are essential to the effective use of costing to support business decisions.
- 1.13 In implementing the costing principles presented in this IGPG, PAIBs will be involved in designing, developing, improving, and using costing systems and techniques. The supplier of costing information should ideally have a close dialogue and relationship with those who prepare, analyze, and interpret cost information for users, and with the needs of decision makers. Although the roles of supply of costing information and design/implementation of costing systems can be separated, neither can be done well without appropriate knowledge of the other. Users require advice on (a) identifying needed decisions, (b) what assumptions should apply to the inclusion/exclusion of specific costs, and (c) how costs change relative to changes in output or the quality of delivered outcomes. Supplying cost information involves not only routine calculation of the cost of products, services, and other cost objects, but also the supply of information that supports non-routine decisions such as outsourcing. Many PAIBs also undertake broader roles at a planning and performance evaluation level. These roles involve delivering costing information that supports the preparation of plans and budgets, the accomplishment of strategic objectives, and benchmarking for evaluating performance.
- 1.14 Small and/or less complex organizations also need cost information to manage their business operations. However, their requirements may call for costing systems with less formal procedures and methods, and these systems are likely to develop as a natural consequence of their specific needs for costing information. PAIBs can often be well placed in such organizations to periodically consider the need for more formalized processes to report relevant and routine cost and operational information for management purposes. This will typically require selecting a costing system and appropriate procedures to ensure that the necessary cost information is collected, measured, analyzed, and effectively communicated. In addition, ancillary mechanisms of varying sophistication may be necessary to capture relevant cost information (e.g., reflecting unrecorded opportunity costs) that is not held in any costing system, but is nevertheless necessary for management's consideration.

## 2. Key Principles of Evaluating and Improving Costing in Organizations

2.1 The key principles underlying widely accepted good practice are:

### A *The importance of costing to good financial management*

The ability to identify, measure, interpret, and present costs as they relate to an organization's economic flow of goods and services, both historically and in a forward-looking context, is necessary for an informed understanding of the organizational drivers of profit and value.

### B *Fitness for purpose*

Cost information should be prepared in a manner appropriate to the specific context and purpose of its use, of which there are three principal applications:

- External reporting – historical and descriptive
- Performance evaluation and analysis – interpretative and diagnostic
- Planning and decision support – analytical and predictive

### C *Business model/reality driven*

Cost models should be designed and maintained to reflect the cause-and-effect interrelationships and the behavioral dynamics of the way the organization functions. The information needs of decision makers at all levels of an organization should be taken into account, by incorporating an organization's business and operational models, strategy, structure, and competitive environment.

### D *Materiality/cost effectiveness*

The design, implementation, and continuous improvement of costing methods, data collection, and systems should reflect a balance between the required level of accuracy and the cost of measurement (i.e., cost benefit tradeoff), based on the competitive situation of the organization.

### E *Comparability over time and consistency*

Cost information should be collected and analyzed systematically and in such a way as to ensure comparability over time, whether in a routine information system, or for a specific application and/or purpose.

**F** *Transparency and auditability*

**Definitions and sources of cost data, the operational and other non-financial data underpinning them, and the methods of calculating costs, should be transparent to users and recorded and capable of review, risk analysis, and assurance.**

Note that each principle independently applies; principles should not be seen as steps in a process.

- 2.2 These principles are designed to apply to all organizations. In jurisdictions where special requirements relating to costing (not cost accounting) are laid down by law, compliance with them is a necessary part of local good practice. Examples of specific arrangements are included in Appendix C. Compliance with the law overrides the IGPG, but where local requirements are significantly inconsistent with these principles, PAIBs may wish to bring this inconsistency to the attention of IFAC and their professional body with a view to evaluating the potential for securing change.

### 3. Practical Guidance on Implementing the Principles

#### **PRINCIPLE A**

**The ability to identify, measure, interpret, and present costs as they relate to an organization's economic flow of goods and services, both historically and in a forward-looking context, is necessary for an informed understanding of the organizational drivers of profit and value.**

- A.1 All organizations pursue economic goals. For commercial companies, it is the creation of value for shareholders through the generation of profit; for public sector and not-for-profit organizations, it may be the maximization of service output for a given level of funding. In all cases, the challenge is to create value for stakeholders. Without a comprehensive understanding of (a) the way resources are consumed, and hence how costs are incurred, and (b) how costs respond to changes and are balanced with revenues and risk, it is extremely unlikely that a clear and consistent route to optimizing value creation will emerge. This is why costing is important to supporting managerial decisions and organizational performance.
- A.2 Costing and the many costing methodologies applied in organizations help to measure the consumption of economic resources. Moreover, costing systems facilitate tracing the conversion of inputs to outputs. They also can usefully highlight issues of operational efficiency, pinpoint areas requiring management attention, and assist in measuring and rewarding performance. Cost information should provide insight into (a) the costs of specific activities, goods and services, and (b) the cost of doing business and effecting changes over time.
- A.3 Appropriate understanding and analysis of costs is essential to operational management. Better operational management involves achieving increased efficiency and productivity, understanding the impact of investment decisions, evaluating pricing decisions, and the determination of the profitability of products, services, and customers. Therefore, although costing has historically provided awareness of the cost of operations (what, when, and where) that allows an organization to manage costs, its greater value lies in its forward-looking perspective (how and why) for planning and informed decision making at strategic and operational levels.
- A.4 Costs may be measured, analyzed, and reported in many ways. A particular cost measurement has meaning only in the context of its purpose. How costs are measured can vary depending upon the circumstances and purpose for which the measurement is to be used. For example, in most countries, financial reporting follows generally accepted accounting principles (GAAP), but the use of GAAP measures may distract organizations from the best ways to calculate costs and profit margins to support decisions. To support the predictive and forward-looking activities of planning and decision support, a costing system needs to (a) assign operating costs as resources are consumed, based on the resources' traceability to specific activities or outputs, and (b) measure the costs of individual activities and outputs. Furthermore, planning decisions help organizations to decide how best to use their resources, and therefore require a range of supporting

information. Moreover, organizational control consists of observing and reporting performance and taking remedial action on resources directly – not on their costs.

- A.5 Cost measurement supports all three key purposes of costing (as set out in figure 1 and under principle B). There are usually significant differences in cost measurement between cost accounting for external reporting and costing for managerial purposes, the latter requiring a broader perspective that measures how resource expenses are consumed and reported as costs of the organization’s activities and outputs. For costing purposes, it includes collecting resource data and valuing resource quantities in one of two ways: (a) by breaking down general ledger expenses and matching them with resource information to calculate costs; or (b) by keeping resource quantities and their values (from source documents such as a payroll or accounts payable transaction) together as they pass through consumption relationships in the supply chain.
- A.6 For strategic and shorter term tactical decision making, data sources can therefore be financial and operational (non-financial). Non-financial (resource) data, sometimes referred to as “driver” data, is typically in the form of units such as minutes, square feet, passenger-miles, etc. Factors other than cost, such as capacity, capability, time, quality, service-level, and creativity are often preminent in good economic decision making. The more a costing system and methodology is integrated with other organizational information, the more useful it can be in supporting effective decisions.
- A.7 Costing is inextricably linked to the organization’s flow of resources to produce goods and services. The more accurately a costing model or system represents the operational flow of resources within an organization, the more clarity decision makers will have in using cost data. Costs cannot be impacted without changing the composition and quantity of resources in an organization. When costs are distanced from a clear relationship with an organization’s operations (for example, by being placed in large cost pools allocated by generalized drivers), their effectiveness for good financial management and decision making becomes limited. Highly aggregated cost information may provide adequate insights for comparison of companies within an industry, but provide no relevant insight into how an employee or supervisor should make a marginal decision. PAIBs need to be aware of the close link between costs and the organization’s flow of resources, and use it as a guide to assessing particular cost information to provide a good understanding of an organizational driver of profit and value. The Costing Levels Maturity Model assists professional accountants in this regard – see paragraph D.4.
- A.8 An organization’s context helps to determine the nature and frequency of the types of decisions its managers will take. For example, selecting a new facility location could be strategic to one company (e.g., an automotive company opening a new plant in a new market), and tactical to another (e.g., a retailer opening another store). Similarly, one more unit of output will be an operational decision for one company (e.g., an additional widget), but a strategic decision to another (e.g., developing and manufacturing a new aircraft model). Information needs are related to the magnitude of change that results from a particular decision. More incisive decisions usually require deeper insight into causal relationships and their likely effects. To this end, decision support information should comprise a range of cost concepts to inform required managerial insights. Cost concepts include:

- Throughput costs when deciding to produce one additional unit (where changes in demand levels require proportional changes in any consumed material but not in the worker or equipment level).
- Incremental costs, which are the difference in total costs between two alternatives in a decision.
- Short-term variable/proportional costs, which also allow the consideration of mutually exclusive use of resources.
- Attributable costs that support divestment decisions, such as outsourcing.
- Full costs to support strategic decisions, such as entering a new market.

Some of these cost concepts are considered in more detail under principle B. Other decision cost concepts of avoidable, unavoidable, and opportunity costs are also important, and can apply depending on the context of the particular decision.

- A.9 It is common under many costing methods to regularly produce results for managers, in line with predetermined reporting periods, often aligning with periods used for financial accounting. In reporting on all product/service and customer costs (so as to convey a comprehensive picture of the organization), this practice may require some costs (e.g., processes, or overheads) to be partly disconnected from their operational cause to fit into a reporting period. PAIBs should be aware that this might distort the true costs for some uses, such as evaluating practices and processes that span more than one accounting period. However, the materiality of such distortions declines with period length. Costing reports giving product/service contributions on a quarterly or annual basis may be accurate enough to support decisions that arise only infrequently (e.g., annual pricing adjustments in public services).
- A.10 Costing system design will be driven by the specific use to which the resulting cost information will be put, which in turn will determine the choices to be made on four key interrelated elements, namely:
- (a) What aspect of the organization it measures (a cost object is anything that is separately measured, whether it is a product, service, department, activity, or customer);
  - (b) How the costing system measures the chosen objects;
  - (c) How it manipulates or aggregates the recorded measurements; and
  - (d) How it reports to decision makers.
- A.11 Because costing can support (a) both regular and non-routine reporting for accountability purposes, and (b) specific analyses in support of strategy, planning, and general business decisions, the way it is presented can be as influential as the actual data. Care needs to be exercised in selecting data and how it is reported. Normal principles of presentation, such as relevance, completeness, inclusion of appropriate comparators and related non-financial information, and the use of charts, tables, and commentary, should be followed.

**PRINCIPLE B**

**Cost information should be prepared in a manner appropriate to the specific context and purpose of its use, of which there are three principal applications:**

- **External reporting – historical and descriptive**
- **Performance evaluation and analysis – interpretative and diagnostic**
- **Planning and decision support – analytical and predictive**

- B.1 The context of costing actions ranges from purposes that are primarily concerned with recording past events – external reporting and accountability for past performance – to the support of a wide range of commercial and performance decisions in which the focus is on how to influence future events. Past performance may be a guide to what will happen in the future, but it needs to be reviewed in the light of recent and expected new developments. It is therefore important to ensure that cost data prepared for managerial support is valid for the particular purpose.
- B.2 *External financial reporting* is mainly historical, and therefore descriptive of past performance at an aggregate level. Financial reporting is generally supported by an absorption (or full) costing system that absorbs a share of each of the costs of operating the cost centers working on a job. Cost figures used in financial statements are based on absorption costing, and management can receive cost estimates on that basis. However, cost information calculated strictly for financial reporting is normally non-causal in nature, and does not usually adequately support managerial decisions. This is because there is little indication of how these total costs are likely to respond to marginal decisions leading to increased or decreased production and sales of individual products or services. Cost information provided to management to support performance evaluation, analysis, and planning and decision support can be more effective where that information is based on a clear and timely link between causes and their effects.
- B.3 What constitutes absorption costing can be affected by financial reporting standards, and jurisdictions may differ in their definitions of full cost. Exclusion of certain cost elements from the definition of full cost may adversely affect the utility of full-cost information. Most regulatory agencies and public sector organizations (including government departments) typically favor full absorption costing – in which all historical costs are assigned to products and services, so as to permit comparison with revenues and calculate profitability. They do this for several purposes: (a) pricing regulation (in partially competitive or non-competitive markets); (b) segmental reporting; (c) transfer pricing; (d) inventory valuation; and (e) taxation generally. The advantages of absorption costing are varied, but mainly include the need to make stakeholders aware of the costs of public sector services and programs, and to ensure that appropriate revenues are received from government.
- B.4 Absorption costing can also be a useful approach in businesses, where it is desirable (and necessary) to include fixed costs in stock valuation. Its primary benefit in decision making is for high-level strategic decisions, such as when deciding to enter a new market (by, for example, building a new facility). However, the emphasis on absorption

costing in both private and public sectors can give incorrect signals to management, when, on the other hand, marginal or incremental costing would provide better information for budgeting and decisions. In these types of situations, PAIBs need to be aware of the potential for inappropriate use of full costs for decisions. Ideally, they should consider a costing system design that is capable of providing highly divisible cost information that can be readily disaggregated for decisions requiring marginal or incremental costs. In the absence of such data, they should inform decision makers of the limitations of the full cost data, and initiate a special study or analysis to obtain a valid estimate of the appropriate cost figure.

- B.5 *Performance evaluation and analysis* allows interpretative and diagnostic activities to evaluate and analyze past performance. It requires assignment of costs and revenues to units and to managers with responsibility for them. A causal assignment method enables them to understand how and why the costs are incurred, and to make improvements. Such organizational learning contains both an historical perspective of costing (what happened and why) and a future one (what happens next and with what effect). Therefore, the method clearly calls for an appreciation of the underlying business operational models and the internal and external circumstances that affect them. Insights and learning from historical data is also important for segmented profit analysis. Effective performance measurement, analysis, and learning usually require that cost information be linked to the underlying resources and operations being evaluated. Arbitrary or generalized allocations of costs unrelated to a manager or work unit's resources and operations obscure reality, and may hinder learning and improvement. When costing is used to influence performance it is important that it not only be technically correct, but also carefully considers the motivational impact on the people being measured.
- B.6 *Planning and decision support* covers management actions to be implemented in every aspect of an organization's future operations. Decision support requires the ability to isolate the resources and their costs that will potentially be eliminated, created, or altered by a particular decision, from those that will remain unaffected by it. This calls for a clear understanding of an organization, the commercial or policy rationale for the decision, and the organization's operational models and processes. It also requires clear definition of the status quo baseline costs against which changes will be measured. An organization's decision-making needs will determine the sophistication required for measuring costs. High quality and highly sophisticated cost measurement will provide a high level of resource and cost transparency and divisibility insights.
- B.7 *Decision making* covers every aspect of an organization's operations. The key decisions managers often make to drive organizational performance are about change that requires a deep understanding of fixed and proportional costs and a marginal profit and loss statement. For example, in a distribution business, operational insights are critical to achieving internal efficiency (e.g., receiving, picking, packing, and shipping), and to understand what a profitable minimum order size is. On the other hand, in an outsourcing business, the mix of products and services (e.g., application hosting, infrastructure, and business processes) that are structured and priced for a particular deal is often critical. These examples reveal the importance for decision makers to



understand what is necessary to arrive at an optimum outcome in different contexts. Analysis used for decisions on whether to outsource, to build a new plant, to make or buy a product or component, to discontinue a product or service, to purchase a new machine, or to re-engineer a product/service or process, should include not only all relevant items, but also the value of all the incremental revenue and cost effects of the decision over all the time periods affected by the decision. In this kind of analysis, it is usually appropriate to consider whether costs are avoidable. For example, reducing labor requirements through closing a production line could be affected by labor agreements or legislation protecting employment.

- B.8 Although the evaluation of alternative managerial actions should not generally be sourced from cost accounting data used for external reporting, the professional accountant in business should ensure that the way the outcome will appear in the external financial reports is understood. Tax payments or regulated cost recovery may need to be cycled back into the original analysis. An explanation to users might be required where the impact of the cost accounting rules differ from the decision analysis because of the different costing methods chosen.
- B.9 Variable costing applies an important cost concept to serve specific management needs in support of decision making. It focuses on the rate at which the costs of an output will change (vary) if the level of that output increases or decreases. For example, this concept may be useful if level-of-service decisions are to be made, or the costs of extraordinary non-recurring activities are to be billed. When analyzing cost behavior, it is often useful to provide variable cost per unit information, that is, to analyze the effect of variable costs (in total or by element) in terms of their effect on the unit cost of production. It is, however, important to test whether the variability ratio changes if the output change is large, and over what range a particular value remains valid. Marginal costing calls for the concept of variability to identify the cost difference between the last and next unit of output, at a given volume.
- B.10 The application of the widely used operating concepts of fixed and variable cost in decision analysis can be unreliable for evaluating marginal decisions. Instead, these scenarios require application of the concepts of avoidable and unavoidable costs (see paragraph B.12). Although, over small ranges of output and time horizon, variability could serve as a substitute for avoidability, for clear insight into decisions it is essential to understand avoidability. The existence of opportunity costs may also be highly relevant to some decisions, although most conventional costing techniques do not automatically include this dimension. The planning horizon and other factors (like the ease with which capacity can be adjusted) may also influence the outcome. Whatever costing approach is followed, the safe course is to avoid deciding what costs are relevant to the decision until the context and the issues bearing on it have been detailed.
- B.11 Incremental (differential) costing supports the need to evaluate the cost differentials between decision alternatives, such as in outsourcing (make or buy) decisions. The relevant costs are those that would change depending on which option is selected. Differential costing is closely related to incremental costing used in government decisions to privatize, whereby the costs that are avoided, and those that are incurred by a change in activities, are measured by cost accounting. This change in costs is then compared with

the potential proceeds from the sale to calculate incremental income. Consideration should also be given to additional proceeds (i.e., relevant revenues) represented by the potential future taxes a buyer might pay. The differential costing concept can also be used to determine the benefit from eliminating what appear to be non-value-added activities or the cost penalty of retaining unused or excess capacity. Other types of cost/benefit decisions may be made using the differential costing concept. Cost/benefit analysis in the public sector, used for major infrastructure decisions, is a complex subject with its own literature, and is not covered in this guidance.

- B.12 Opportunity cost is a decision cost concept that should be considered in (a) investment decisions, (b) capacity rationing decisions, and (c) mutually exclusive resource application decisions. This cost concept is based on the value of what must be given up to obtain a specific result (a particular application of resources). Avoidable cost is the cost that can be avoided if a certain decision alternative is selected. Costs (and revenues) that are avoidable with a decision are considered *relevant* to that decision. Costs that will not be avoided by a certain decision are considered *irrelevant* to that decision. Opportunity costs (and revenues) are also relevant costs, and are defined as the next best forgone alternative to the accepted decision. Thus, opportunity costs often become the default method of valuing a particular decision. These decision cost concepts should not be used interchangeably with the operating cost concepts of fixed and variable costs. The fixed and variable distinctions only define the nature of cost behavior in terms of its relationship with output. For a given decision, relevance is determined by avoidability, and for any given decision a relevant cost can be either operationally fixed or variable.
- B.13 A professional accountant in business should be able to interpret and explain the significance of the costing information provided for decisions, and its limitations, and to explain the reasons for differences from the data used for legal purposes. Costing information can be presented in a range of formats, all of which should be reconcilable to each other. Although not covering identical content, as explained above, historical general purpose financial reports should be based on the same underlying sources as cost information provided to managers for decision making. Reconciliation between values generated by a financial accounting system and a costing system can (a) help to avoid confusion, and (b) serve as a system of checks and balances between two independent systems.
- B.14 PAIBs can play a central role in educating users, including for example, advising on the selection of costing methods, cost measurement, classification, allocation, and behavior. PAIBs are also able to explain the different purposes and outputs of costing methods. For example, they might need to clarify that standard product costs reported for costs of goods sold and inventory valuation may differ from product costs calculated using another costing method. PAIBs might also (a) show why variance analysis based on the difference between budgeted and actual data may provide a view of efficiency that differs from operational performance information coming from a separate system, then (b) go on to recommend whether and (if so) how to usefully integrate these information sets.

**PRINCIPLE C**

**Cost models should be designed and maintained to reflect the cause-and-effect interrelationships and the behavioral dynamics of the way the organization functions. The information needs of decision makers at all levels of the organization should be taken into account by incorporating an organization's business and operational models, strategy, structure, and competitive environment.**

- C.1 The principle of causality is vital to a rigorous and flexible approach to understanding the drivers of profit and value, and an overriding one when the objective of costing is supporting managerial decision making. A costing system should be designed to be complete, in that it accounts for all costs (but not fully absorbed to the lowest level product – refer to paragraph C.8), and should assign the costs of a resource to the cost object that consumed that resource. This implies two common characteristics of a causal model, namely: (a) relationships between intermediary cost objects to express resource consumption one or more relations removed from final cost objects, such as the Purchasing Department occupying facility space; and (b) reciprocal relationships where mutual consumption of each other's services form a material portion of the cost of a service, such as relationships between IT and Human Resources or between Facilities and Plant Maintenance. In supporting organizational improvement, cause-and-effect relationships should also be identified between measures of process performance (such as product quality and customer service), and measures of performance on primary objectives (such as profits). The more progressive costing approaches place emphasis on traceability. Relationships between intermediate cost objects in a causal model express traditional indirect relationships in a direct manner by emphasizing input/output cause-and-effect. Cost accounting for external reporting focuses on final cost objects (i.e., for inventory valuation), and therefore creates the need to develop indirect relationships. Generally, it makes sense to design costing systems and methods for internal decision making and then make the necessary adaptations for regulatory reporting.
- C.2 The purpose of cost modeling for decision support is to replicate the essential characteristics of an organization's actual resource acquisition, deployment, and consumption in a series of mathematical relationships, including translating the measured quantities of the resources involved into the common language of money. Models need to be dynamic so that they can describe economic behavior and how businesses change. At the heart of this is the establishment of clear relationships between the organization's component parts (i.e., causality). The nature of a causal relationship can further be described by a concept such as variability or responsiveness. These concepts describe how an input changes in relation to changes in an output. The most common example in a manufacturing environment is how demand for labour and materials rises if the volume of production is increased.
- C.3 Managerial decisions are about influencing how the future will be different from the past. So, costing for decision support should have a predictive capability – the ability to make forecasts. Forecasts rely on projecting past cause-and-effect relationships established between the model components into future periods. This means that, for

each cause-and-effect relationship, it is necessary to establish what change is produced at the effect end over the likely range of changes in the cause variable (the relationship may be in any proportion and not necessarily linear). When using costing information in predictive mode, it is also useful to consider whether the relationships established by past observation and experience can reliably be expected to continue. Predictable changes should be factored into the predictive costing model, and ranges of uncertainty should be taken into account using sensitivity analysis.

C.4 Costing systems should focus on helping an organization achieve its strategic objectives, taking into account the nature of an organization, its business model, its culture, structure, and competitive environment. It is therefore evident that no one costing system design is appropriate for all organizations, and the usefulness of costing methods will vary from organization to organization. Costing systems should be designed to meet individual organizational needs, characteristics, and cost structure. The extent of causal relationship mapping for an organization will generally depend on:

- The organization's business model – its sources of income, its supply chain(s), and ways of creating value.
- How the organization structures itself and holds its managers accountable.
- How an organization measures itself, taking into account its regulatory and/or market context, its competitive situation, the jurisdiction(s) and industry(ies) in which it operates, and what its competitors and equivalent organizations do.
- The specific requirements of the organization's managers to achieve organizational control and the exercise of informed judgment in making strategic and operational decisions (What questions is the system required to answer? Why are we doing this? What types of business decisions are made by managers at various levels of the organization?).

C.5 Organizations designing a cost measurement system will find it helpful to start by building one or more cost models. For internal managerial use, models should (a) reflect the judgments on matters in paragraph C.5, and (b) describe the organization and its resources, their consumption, and costs and income flows and relationships as faithfully as possible, subject to materiality and affordability. The model(s) should be widely discussed and challenged, so that they are understood and agreed to be reasonable and suitable by those who will rely on their outputs. This will include agreeing on areas where relatively less precision is required (where estimates may suffice), and where existing data sources may need to be improved or supplemented. It may also involve investigating whether an apparently joint or common cost is truly attributable to all the products or services that share it. For example, a piece of infrastructure may have been acquired specifically to meet a service specification associated with one product or service using it, but is then shared by others that on their own could have been operated more cheaply without it.

C.6 In any causally constructed cost model, there will be certain input costs for which a clear cause-and-effect relationship cannot be established. Common fixed costs such as the excess/idle capacity costs of a machine fall into this category. The assignment of

these common fixed costs should follow the concept of attributability, that is, the cost should be attributed to a segment level where it will be relevant in decision making. For example, if a machine is acquired to manufacture two or more products that together comprise a product group, there is no causal relationship between the individual products actually produced and the machine's excess/idle capacity. However, in the case of a decision to discontinue the whole product group, the machine's excess/idle capacity costs will clearly be avoidable, and should therefore be attributed to the product group's gross margin in the profit and loss statement.

- C.7 An organization converting to a new costing system and/or management control system should consider whether its strategy and culture supports a new approach, and whether a cost-benefit review might offer the prospect of a subsequent strategic benefit. All organizational aspects (structure, culture, management philosophy, reward strategies, etc.) could require review, as could the way costing information will be supplied and used in support of the new approach, which may be radically different. For example, applying a lean philosophy and lean accounting (see appendices B and D) often does not translate well into a command-and-control hierarchical environment. Factors such as these should be considered in any effort to adopt new costing approaches and systems.
- C.8 The structuring of responsibility centers depends on managers' lines of responsibility and accountability, the outputs they are responsible for, and their funding sources. Responsibility centers could include a department, division, geographic territory, machine group, or operational process. Such segmentation often supports (a) organizational budgetary reporting, and (b) performance measurement, where performance goals or targets are set for each center. It may be necessary to compare the organizational design with the business model to check for any non-alignment.

#### **PRINCIPLE D**

**The design, implementation, and continuous improvement of costing methods, data collection, and systems should reflect a balance between the required level of accuracy and the cost of measurement (i.e., cost benefit tradeoff), based on the competitive situation of the organization.**

- D.1 In theory, every aspect of cost behavior in an organization is capable of being analyzed to determine its causes. Such an exhaustive examination would cause expensive administrative effort, and attempting to model every last cost item would bring diminishing returns on the value of extra accuracy and visibility. Professional judgment should be exercised in determining the point beyond which additional analysis will fail to improve decision making enough to justify the effort and its cost. The professional accountant in business is able to ensure that the costing system or procedures in place provide managers at all levels with sufficient information to meet the organization's strategic objectives. Concerns should be brought to the attention of the board or other body charged with the governance of an organization to ensure their satisfaction with any trade-offs made between (a) system cost, and (b) the qualities and quantity of available information.

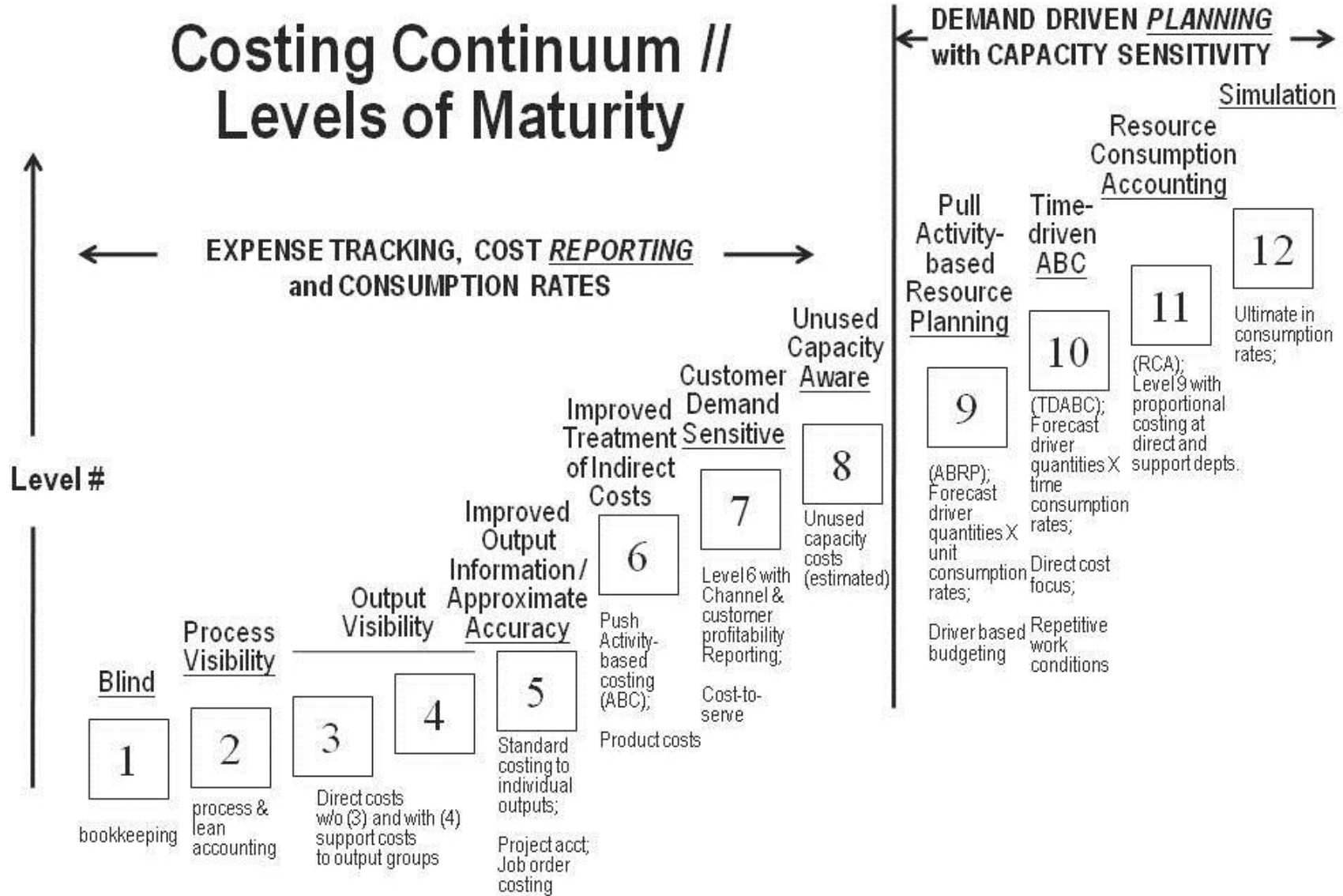
D.2 As with all aspects of costing, the context may dictate different points of balance between cost and accuracy. In a routine system that supports performance reporting and regular decisions about products, channels, and customers, one might aggregate groups of minor purchases (such as administrative expenses) that (a) have no or very little relation to, or (b) relate similarly to, the volume of workload. But if the purpose is to support a budgeting process or a cost reduction drive, the causes of spending on minor items should not be overlooked. The behavior of some costs might be estimated more broadly, if it is judged that to do so will not materially affect the outcome of the decision for which the costs have been reviewed.

D.3 The operating effort and cost of a costing IT system (where a stand-alone system is used) will be heavily influenced by both the amount of data processed and the complexity of the algorithms. It is important to understand what relationships and data are likely to be influential in most decision contexts. Analysis critical to specific but infrequent decisions can be undertaken through ad hoc enquiry and fact gathering. Estimating the cost of such occasional manual costing exercises permits comparison with the cost of maintaining a routine data feed and cost calculations for the same purposes. The sophistication of the costing system's execution will need to take into account, and may be limited by:

- The nature of an organization's operations (see paragraph A.8).
- The precision, accuracy, and visibility of cost information required by users.
- The minimum frequency at which information is needed to support reliable decisions (frequency matters where special data collection methods outside routine reporting systems are required).
- The practicability and administrative level of effort of data collection and its processing.
- The organization's overall information technology strategy, the extent of existing information systems, and the availability of investment funds to develop new ones.

By integrating a cost model with underlying operational or logistic transaction system(s), the costing system can benefit from operational data management processes already in place to update the cost model simultaneously. PAIBs should be aware of this possibility, sometimes referred to as value chain integration, which eliminates some of the problems which might be encountered with a stand-alone system.

D.4 An organization will evolve as it gains greater understanding, and as its complexity increases. Where it is located and chooses to be on this journey will depend on various factors covered in paragraph D.3. One representation of this process is at figure 2, and a more detailed description of the Costing Levels Maturity Model is available at [www.ifac.org/paib](http://www.ifac.org/paib). This Costing Levels Maturity Model has 12 distinct levels of costing techniques along a continuum, where each level can provide greater accuracy, visibility, and insights. Its purpose is to help professional accountants and their organizations to decide which level of maturity is appropriate for its context and stakeholder needs.



- D.5 Broadly, in the early stages of the journey, an organization might have no, little, or scattered and unstructured data usable for costing. Organizations can evolve from having a record only of financial transactions required for external reporting purposes (therefore having costing data that is likely to be highly aggregated). At the simplest level, this is merely bookkeeping. The data is not structured in a format to transform departmental expenses into process costs, and then to further assign these costs into outputs and eventually to final cost objects, such as products or customers.
- D.6 Greater maturity allows the calculation of relevant product costs. Where cost data is used (without supporting operational data), the level of cost accuracy can be compromised by offsetting errors that are masked by overstated and understated product costs. A costing system that arbitrarily allocates the cost of resources to cost objects uniformly rather than proportionately (i.e., based on broad averages such as the number of units produced or direct labor input hours) violates the causality principle. Consequently that system (a) would not reflect the underlying reality if the products consumed resources disproportionately compared to the non-causal broad averages, and (b) could therefore give managers and employees misleading results. Such cost allocations are often a valid complaint of operational managers.
- D.7 Applying activity-based costing principles (see appendix D) can represent a next step up, provided it is correctly implemented to adhere to the causality principle. Activity-based costing substantially expands from having a traditional single cost pool and a single cost allocation factor. Activity-based costing provides traceability between intermediate cost objects (e.g., processing a standard versus special type of order) and the final objects, including broader scope of an organization's resources and its processes to include channel-related and customer-related (i.e., costs-to-serve) costs. A sophisticated approach at the upper levels of the continuum of costing techniques provides the ability to derive costs directly from operational resource data, or to isolate and measure unused capacity costs. For example, in the resource consumption accounting approach, resources and their costs are considered as foundational to robust cost modeling and managerial decision support, because an organization's costs and revenues are all a function of the resources and the individual capacities that produce them.
- D.8 Cost models and supporting systems should reflect the underlying reality of the way the organization works, as far as affordability and materiality allow. The design, implementation, and continuous improvement of costing models, data collection, and systems should be subject to a cost-benefit analysis. Such an analysis should consider how closely a costing system needs to depict the underlying reality to support good quality and valid decisions. Asking questions like: "Is it reasonable, and practical?" can help the analysis. For example, a relatively complex operational and costing model would help to derive the costs of unused and excess capacity from the output (product) cost. However, in some cases, (a) calculating unused capacity might not be worth the extra administrative effort required to isolate and report on it, or (b) the planning horizon might be so short that capacity cannot be easily adjusted. In assessing the costs and effort of implementing costing systems, making spare capacity visible opens up powerful insights about efficiency, not only showing how efficiency can improve



capacity utilization, but highlighting the lost opportunity of utilizing it. PAIBs should weigh not only the costs and effort of implementing and maintaining the system, but also:

- The adverse impact of making poorer decisions and misusing cost data throughout the organization, when the lack of clear cause-and-effect relationships obscure the link between operations or sales and marketing and financial results.
- The extra effort of conducting special studies and analyses needed to overcome the lack of clear cause-and-effect relationships.

D.9 This guidance shows the importance of basing costing information on sound operational data. In some manufacturing environments, operational data may be plentiful, but little used in financial analysis. Here, the PAIB's job is to explore additional insights about the nature of costs, by exploring the richness of operating information. But in other places, for example service and public sector organizations and those with highly labor-intensive processes, operational data may be weaker. In this case, the PAIB can help operators to identify how to fill information gaps. In both circumstances, collaboration between financial and operations managers can ensure greater transparency of the drivers of cost, and better decision support for managers at all levels.

D.10 Specific cost studies – used to analyze costs and their causes outside the system at a particular time to support specific decisions – should also be subjected to a cost-benefit analysis to ensure that the cost of planning, implementing, and using the cost study does not outweigh the potential benefit to the organization.

## **PRINCIPLE E**

**Cost information should be collected and analyzed systematically and in such a way as to ensure comparability over time, whether in a routine information system, or for a specific application and/or purpose.**

E.1 The system of data collection should be (a) systematic, (b) consistent with stated principles over time, and (c) continually adapted to accurately reflect the reality of an organization's operations, functions, and decision support needs. Routine costing analysis can best be made systematic by incorporating it into an information technology (IT) system. The complexity of this will depend on the size, resources, and needs of the organization, and can range from using spreadsheets in a small business or unit to an on-line analytical processing (OLAP) application overlaid on enterprise transaction processing software in a large company or public sector organization. The system's controls should ensure consistent calculation, minimization of errors, and include the application of cause-and-effect relationships where appropriate. Models incorporated in IT systems should be thoroughly documented (see principle F). With familiarity, and with the use of presentation tools such as dashboards, users might effectively receive routine financial and non-financial information from such a system without seeking advice from a costing expert.

- E.2 Another purpose of systematic and generally consistent deployment of a costing model is to ensure comparability between similar decisions in different periods. When, in support of a particular decision, the most suitable data sources and cost model design have been established, future decisions of the same type should generally be supported by the same data sources and model, appropriately updated. An exception to this obviously arises where a deeper understanding or superior method has been identified since the last use. This alters the model or the way source data are collected. But in such cases, it is initially desirable to perform the analysis using both the old and the new methods (where feasible), so as to isolate the effect of the measurement or calculation change from the overall change being measured.
- E.3 In many cases, costing systems rely on using non-financial information, which is likely to be produced by non-accountants. Where the reliability of costing outputs is dependent on such information, the aim should be (as far as possible) to apply expectations of consistent preparation and reliability to the non-financial information in a manner similar to that applied to financial sources of data. Practical considerations may cause the quality of important data to vary. Where this is the case, or where estimates have to be used, the effect on costing outputs should be evaluated and disclosed to users.
- E.4 Different costing methods could also produce different costs for the same item, activity, or entity. This can confuse users, and needs to be taken into account when explaining results. For example, different inventory valuation methods will result in different net income calculations. It can be important to inform users of different methods of measuring, assigning, and allocating costs, and how they can be reconciled with previous methods. Where different methods giving different results are possible, the professional accountant in business should advise what the most appropriate one is, and encourage its consistent application.
- E.5 This principle inherently requires the professional accountant in business to maintain (a) a level of organizational competency in costing, and (b) knowledge of the organization's costing techniques, practices, and systems limitations and strengths. This competency should go well beyond the finance function, since many individual and day-to-day decisions about the execution of production, sales and marketing, and support operations affect the use of resources, and consequently the expenses and costs of the organization. Achieving an organization's strategic objectives requires effective decision making, including the correct and consistent use and interpretation of cost data throughout the organization.

**PRINCIPLE F**

**Definitions and sources of cost data, the operational and other non-financial data underpinning them, and the methods of calculating costs, should be transparent to users and recorded and capable of review, risk analysis, and assurance.**

- F.1 Being systematic, in accordance with principle E, requires documentation of the building of a cost model, and someone to assume responsibility for keeping it up to date. This should include descriptions of (a) the way source data, including non-financial data, are collected, (b) the way cause-and-effect relationships are derived and applied, (c) the construction of the models, (d) the design specification of any IT system, and (e) the procedures for updating all of these. Where models require the collection of data using statistical sampling, or estimated values where measurement is impossible or onerous, the documentation should include descriptions of the methods to be applied and controls over the consistency and reliability of the process. The importance of organizational learning and documentation is often discovered only belatedly, when the originators of a costing model and system depart from the organization, leaving a black box with no one understanding what goes on inside it.
- F.2 PAIBs responsible for decision support cost models should be able to explain how the models work and why they produce the results they do. Transparency requires that users of cost information are able to confirm that data sources, cause-and-effect relationships, and other assumptions built into the models resonate with their understanding of the real operations and processes for which they are responsible. This encourages the inputs of people who understand the reality of business processes, so as to influence the model design, and also ensures that when they use its outputs in their decision making, they do so with confidence, understanding the implications.
- F.3 In the specific case of costing for external reporting purposes, methods and results have to be capable of formal audit. Indeed, some jurisdictions prescribe comprehensive requirements for audit of cost accounting, using cost accounting standards (see appendix C). However, this principle applies more broadly. The nature of decision making in organizations is wide, and the cumulative effect of even small decisions being made on the basis of incorrect analysis will potentially destroy value. Organizations are therefore recommended to subject cost modeling that is to be the foundation for decision analysis to critical review from time to time. In large organizations with complex IT based costing routines, risk management and internal control will make review of costing systems and methods essential.
- F.4 Effective review and assurance require accurate and comprehensive documentation of all major decisions and the reasoning that supported them. Documentation should normally cover decisions and judgments made on: (a) selection of costing methods, (b) cost measurement specifications, (c) bases of cost allocation, (d) system design, and (e) accountabilities. Documentation could take the form of a manual or handbook, which should be periodically updated. Such a reference helps to clarify the scope of a costing system and method, including applicable processes and activities, and provides a centralized record on earlier decisions, for example on data definitions. For cost

accounting for reporting, a manual could also include the list of cost accounts and subsidiary accounts related to the standard general ledger.

- F.5 Costing systems that have been computerized may quickly take on the status of a black box, in that computations are invisible. The system can then attract criticism as users change. Even a thoroughly researched and widely agreed-upon cost model can lose its legitimacy and general acceptance over time, unless the owners of the system (i.e., those accountable for it) and its users are kept regularly informed about the model(s) underlying the system and any changes made to them. Decision supporters must be able to explain why the system's computations produce the results they do.
- F.6 Part of the value of costing information, particularly for external reporting or for regular routine decisions, depends on consistent calculation over time. Therefore, changes to cost assignment methods, cost drivers, etc., need to be applied consistently from the date of change; and at the point of change, figures need to be produced on both the old and improved bases. (See paragraph E.2 above.) Any material discontinuity in a pattern of costs resulting from such a change will need to be recorded and appropriately explained.
- F.7 Cost information should be accompanied by advice on the limitations of its accuracy and applicability, especially where statistical approaches and estimates have been applied. Where forecasts of economic and market variables are used, the period of their validity will likely be limited – this should be made clear to users. Also, where forecast activity levels are used, it is important to consider the capacity of resources to support those levels. Advising on applicability could also include advising on cost behavior patterns, particularly where (a) correctly defining fixed and variable costs, and subsequently gleaning avoidable and unavoidable costs, is crucial for deciding how to use (or whether to eliminate) capacity, and (b) individual costs could be reclassified by their consumption behavior (variable or fixed). Advising on the potential outcomes and likely behaviors that result from choosing a costing method could also be necessary. For example, the choice of cost objects or activity cost drivers can send a particular message that influences subsequent employee behaviors.
- F.8 All assumptions formulated in preparing costing information should be periodically reviewed and updated. Ideally, a wider post-decision review should compare the actual resources consumed with earlier forecasts.

## Appendix A: Resources

This list of resources is not intended to be exhaustive. Use the IFAC KnowledgeNet at [www.ifacnet.com](http://www.ifacnet.com) to search IFAC and many of its member body websites.

Blocher, E, Stout D E, Cokins G and Chen K (2006), *Cost Management: A Strategic Emphasis*, 4<sup>th</sup> edition, McGraw-Hill, New York, ISBN-13: 978-0073128153

Clinton, B. D., and van der Merwe, A (May/June 2008), Understanding Resource Consumption and Cost Behavior—The Blended Cost Concept Error. *Cost Management*, 33-39.

Cokins, Gary (2001), *Activity-Based Costing: An Executive's Guide*, Wiley, ISBN 0-471-44328-X.

Cooper R and Kaplan R S (1998), *Cost and Effect: Using Integrated Cost Systems to Drive Profitability and Performance*, Harvard Business School Press, ISBN-13: 9780875847887

Friedl G, Küpper H and Pedell B (2005), *Combining ABC with German Cost Accounting*, Strategic Finance, Institute of Management Accountants

Hornngren C T, Datar S M, Foster G (2007) *Cost Accounting: A Managerial Emphasis*, Prentice Hall, ISBN-10: 0131495380

Kaplan R S and Anderson S R (2006), [Time-Driven Activity-Based Costing](#), Harvard Business School [web link]

Krumwiede K R and Charles S L (2006), [Finding the Right Mix: How to Match Strategy and Management Practices to Enhance Firm Performance](#), Strategic Finance, Institute of Management Accountants [web link]

Dr Manoj P K (2008), *Cost Competitiveness and the Indian Economy: Significance of Mandatory Cost Audit in the Globalized Regime*, The Management Accountant

Sharman P A and Vikas K (2004), [Lessons from German Cost Accounting](#), Strategic Finance [web link]

Stenzel J (editor) (2007), *Lean Accounting, Best Practices for Sustainable Integration*, Wiley, ISBN-10: 0470087285

AICPA (2004), [Best Practices in Cost Reduction, AICPA MAPs Conference](#) [web link]

Chartered Accountants of Canada (1999), [Costing Government Services for Improved Performance Measurement and Accountability](#) [web link]

Chartered Institute of Management Accountants (2005), [Target Costing in the \(UK\) National Health Service, Reforming the NHS from within](#), CIMA discussion paper [web link]

Chartered Institute of Management Accountants (2001), [Activity-Based Management, Technical Briefing](#) [web link]

[CMA Canada Management Accounting Practices](#) [web link]

Institute of Management Accountants, *Statement on Management Accounting* (2006), [Accounting for the Lean Enterprise: Major Changes to the Accounting Paradigm](#), Kennedy F A & Maskell B H [web link]

Institute of Management Accountants, Statement on Management Accounting (2000), [Designing an Integrated Cost Management System for Driving Profit and Organizational Performance](#), with Arthur Andersen and the Consortium for Advanced Manufacturing-International [web link]

Institute of Management Accountants, Statement on Management Accounting (1998), [Tools and Techniques for Implementing Target costing](#), with Arthur Andersen and the Consortium for Advanced Manufacturing-International [web link]

International Federation of Accountants (2009), IFAC Sustainability Framework – section covering [Improving Information Flows to Support Decisions](#) [web link]

International Federation of Accountants (2008), [Project Appraisal Using Discounted Cash Flow, IGPG](#) [web link]

International Federation of Accountants (2000), [Perspectives on Cost Accounting for Government, International Public Sector Study](#) [web link]

[Management and Accounting Web](#) [web link]

Statement of Federal Financial Accounting Standards (no.4 1995), [Managerial Cost Accounting Concepts and Standards for the Federal Government](#) [web link]

## Appendix B: Definitions

The following definitions help to explain the concepts used in all costing systems. They help to promote use of a consistent and reliable costing terminology to minimize confusion among PAIBs and their organizations. Other cost definitions exist, some of which are included in references in the resources section at appendix A.

- **Absorption (or full) costing:** a method of inventory costing in which all variable and fixed direct and indirect manufacturing costs are included as inventoriable costs, so that all manufacturing costs are capitalized in the inventory and therefore become assets. Closing inventory values include a share of fixed production overhead, and therefore follow the requirements of the international accounting standard on inventory valuation (IAS 2). Absorption costing can lead to perverse incentives and encourage decisions to over-produce, because if inventory levels increase, a higher profit will be reported than under variable costing.
- **Accounting (IT) system:** refers to the ledgers and the collection of financial information for financial reporting, supplemented by information needed for budgetary control. Costing systems draw on the same data, but require the additional ability to break particular ledger code outputs into smaller sums, usually by applying a factor derived from (a) other ledger codes (for example, product revenues), (b) payroll data (for example, timesheets), (c) work study outputs, and (d) sampling schemes. Under the concept of value chain integration, a costing system can be established without depending on financial ledgers for monetary information.
- **Activity:** an event, task, or unit of work with a specified purpose, such as designing products/services, preparing machines, operating machines, and distributing products or channeling services to market.
- **Allocation method:** is used when the cost to trace costs to cost objects is greater than the resulting benefits. Costs are allocated based on a common denominator, such as direct labor hours. Absorption costing typically allocates costs to products on the basis of a production volume-related measurement.
- **Assignment method:** a technique whereby a traceable amount of a consumed resource serves as the basis for attributing that resource's costs to the consuming cost object.
- **Attributable cost:** the amount of cost that can be eliminated if an activity is discontinued and capacity is reduced accordingly. The attributable cost of a final product or service is as close as you can get to full cost, applying causal assignment of costs.
- **Avoidable cost:** the specific cost of an activity or sector of an organization that would no longer be incurred if the activity or sector did not exist.
- **Business model:** a description of the rationale for, and processes by which, an organization selects the markets in which it will operate (or activities it is required to undertake), and delivers required financial and product/service outcomes. It defines where and how it acquires and deploys goods, services, finance, and human resources to create and sell products and/or deliver services through which it creates the value expected by its owners for its customers or other key stakeholders.

- **Cost:** the monetary value of resources used or sacrificed, or liabilities incurred, to achieve an objective, such as acquiring or producing a good or performing an activity or service or making resources available but not using them.
- **Cost allocation:** apportioning a whole item of cost or revenue to a one or more cost units, centers, accounts, or time periods without regard to its underlying causal relations.
- **Cost assignment:** tracing accumulated costs to a consuming cost object, based on a verified direct causal relationship.
- **Cost behavior:** determining how inputs (and hence their costs) change with changes in output. Cost may increase proportionately with increasing activity (the usual assumption with variable cost), or it may not change (a fixed cost).
- **Cost model:** the description of sources, drivers, classification, and organization of costs and their relationship, and the relationship between costs and income. The cost model therefore (a) explains an organization in dynamic financial terms, and (b) aggregates cost and contribution reports for an organization and its subdivisions (geographical, customer, product, etc). A cost model can be used to design a technological solution that supports a costing system.
- **Cost object:** an entity used to represent a discrete part of the organization about which management desires to plan, measure, control, or make decisions. Can include an organizational division, a function, task, product, service, or customer.
- **Cost pool:** a grouping of individual cost items. It is often referred to as a grouping of costs relating to a particular activity in an ABC system.
- **Cost study:** is often used to refer to the development of cost information independently of (or in conjunction with) cost and accounting systems using cost estimates or cost projections.
- **Cost structure:** the pattern of how resources (and hence their costs) relate to each other in an organization. This pattern, in combination with and in relation to the organization's sources of income, serves as the basis for a monetary business model that expresses the way it delivers value.
- **Direct costs of a cost object:** costs that can be specifically identified with an output. Indirect (overhead) costs of a cost object are costs of resources that are jointly or commonly used to produce two or more types of outputs, but cannot be specifically identified with any individual output or traced to a given cost object in an economically feasible way.
- **Externalities:** the costs of an activity that are not included in its price – such as the impacts of greenhouse gases emitted during a car journey (see [EU policy-Making, Counting the hidden costs](#)). The [IFAC Sustainability Framework](#) considers how full cost accounting (FCA) can be used to ensure that the consumption and use of resources are accounted for as part of the full cost of production, and reflected in market prices.
- **Incremental cost:** the increase or decrease in total costs that would result from a decision to increase or decrease output, to add a service or task, or to change any portion of



operations. Incremental analysis analyzes changes in costs and revenues caused by a change in activity.

- **Indirect (overhead) costs:** overhead (such as office expenses, telephone expenses, and R&D) not directly associated with the production of goods or services.
- **Joint and common costs:** the costs of a production process that yields multiple products simultaneously, for example, the distillation of coal, which yields coke, natural gas, and other products. The cost of the distillation is a joint cost. Joint costs are fundamentally allocated (a) based on a measure of the number of units, weight, or volume of the joint product, or (b) based on the values attributed to the joint products. A common cost is a cost of operating a facility, activity, or like cost object that is shared by two or more users. The common cost is lower than the stand-alone individual cost to each user would be, were the facility not shared. Common costs are usually allocated to each user equitably, based on the individual costs of the cost object. Common costs define 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.
- **Lean management (and philosophy):** a management control system in which organizational learning is emphasized over control. This enables lean organizations, such as Toyota, to focus on eliminating waste and creating capacity to satisfy customer demand. The cultural shift in lean organizations extends to improving the consumption and use of costing information, usually by integrating it with operational information to better serve operations. This approach typically emphasizes more real-time non-financial operational feedback performance information targeted at both front-line employees and managers. Operational performance information usually includes data on the cost of quality, throughput, defects, cycle time, and yields.
- **Operational model:** a description in quantitative terms of the resources needed to deliver an organization's outputs, and the processes through which they are converted to outputs, incorporating algorithms for the relationships between inputs and outputs of resources at each stage.
- **Opportunity cost:** the value of the benefit sacrificed when one course of action is chosen over an alternative. The opportunity cost is represented by the foregone potential benefit from the best rejected course of action that has a similar relevant risk profile. [*This is the definition used in IFAC PAIB Committee's IGPG on [Project Appraisal Using Discounted Cash Flow](#)*] [web link].
- **Output:** any specific product or service generated from the consumption of resources.
- **Period costing:** the period for which costs are accumulated. These are fixed time intervals, such as a week, month, or year.
- **Relevant costs:** opportunity costs and/or future net cash flows for (a) a decision alternative's changes in output, and (b) securing the resources required to successfully execute it.
- **Responsibility accounting:** collection, summarization, and reporting of financial information about various decision responsibility centers.

- **Responsibility center:** an organizational unit responsible for its activities.
- **Traceability:** an attribute of a consumed input that allows it to be identified with a specific cost object, based on verifiable transaction records.
- **Value stream:** all the processes required to create value for the customer.
- **Variable costing:** the segregation of costs between those that are fixed, and those that vary directly with volume. Only those costs that are a consequence of production of the product are assigned to a product. Variable costing approaches can also be applied in job and batch environments (as is the case with full absorption costing). When using variable costing, period fixed costs are the same for any volume of sales and production (if the level of activity is within the relevant range). Therefore, by selling an extra item of product or service (a) revenue will increase by the sales value of the item sold; (b) costs will increase by the variable cost per unit; and (c) profit will increase by the amount of contribution earned from the extra item if fixed costs have already been recovered.

## Appendix C: Specific Arrangements in Jurisdictions and Sectors

The principles of costing and the design of costing systems in this IGPG generally apply to all types of organization. For example, cost information is an equally important driver of performance information and reporting in public and not-for-profit organizations. However, some jurisdictions apply legislative expectations to performance. These legislative mandates require reporting entities to develop and report cost information consistently and regularly. Rules in some jurisdictions prescribe the calculation of unit costs to (a) allow comparisons between public authorities, and (b) establish the performance of specific activities. Set out below are examples of jurisdictional obligations or guidelines:

- A number of South Asian countries, including India (since 1965), Pakistan (since 1990) and Bangladesh (since 1994), require a *cost audit*, which involves the audit of the cost accounts of many industries. In Sri Lanka and Nepal, a cost audit is not mandatory. Cost audits help to ascertain whether an organization's cost accounting records are so maintained as to give a true and fair view of the cost of production, processing, manufacturing, and mining of a product. Therefore, cost audits can be used in these countries to the benefit of management, consumers, and shareholders by (a) helping to identify weaknesses in cost accounting systems, and (b) helping drive down costs by detecting wastage and inefficiencies. Cost audits are also of assistance to governments in helping to formulate tariff and taxation policies.
- Although there are no legal requirements on costing in Japan, the Japanese Ministry of the Environment has produced guidelines on Environmental Accounting that define environmental protection/conservation costs and benefits. More than 800 companies in Japan have voluntarily introduced environmental accounting based on these guidelines, and disclose the results in environmental or sustainability reports.

The extent to which cost accounting is used within governments varies from country to country. In 2000, IFAC published [Perspectives on Cost Accounting for Governments, an International Public Sector Study](#) [web link]. This provided useful governmental perspectives on cost accounting.

In a public sector context, it is important to note that using full cost information along with non-financial information on program outputs and outcomes can aid governments, managers, and other stakeholders to make decisions on service delivery. The full costing of public service programs (or the output of a responsibility center) generally involves compiling the sum of direct and indirect costs that contribute to the program or output. This compilation also includes the full costs of intermediate activities, processes, projects, or programs that need to be measured to calculate the full costs of their outputs. This can enable better evaluation of the merits of a public service policy or program (although program outcomes may require separate measurement). The full costs should always be subjected to a causal analysis when used for decision making, budgeting, and costing to ensure that broad cost allocations are not inappropriately skewing the cost information provided. Examples of government requirements and guidelines for costing include:

- USA: The Chief Financial Officers (CFO) Act of 1990 was designed to improve federal management and accountability by gaining financial control of government operations. It required (a) the development of cost information, and (b) agency CFOs to develop and maintain accounting and financial management systems that report cost information. To support CFOs, the Federal Accounting Standards Advisory Board (FASAB) issued

Statement of Federal Financial Accounting Standards (SFFAS) No. 4, *Managerial Cost Accounting Concepts and Standards for the Federal Government*. This standard recognized the importance of information on the full costs of programs and activities to allow proper evaluation of programs' outputs and outcomes. It states that:

*Reporting entities should report the full costs of outputs in general purpose financial reports. The full cost of an output produced by a responsibility segment is the sum of (1) the costs of resources consumed by the segment that directly or indirectly contribute to the output, and (2) the costs of identifiable supporting services provided by other responsibility segments within the reporting entity, and by other reporting entities.*

The reporting of full costs is also required in the FASB Statement SFAS No. 7, *Accounting for Revenue and Other Financial Sources*.

- UK: For significant project proposals, the UK Government expects the use of Full Economic Costing to be a more accurate way of helping to determine whether an activity or a project is worthwhile and sustainable. The UK Treasury's [Green Book, Appraisal and Evaluation in Central Government](#) [web link], applies to government departments, although full economic costing is required in other public sector/not-for-profit organizations, such as in the university sector (from 1 September 2005 Research Councils pay 80 per cent of the full economic costs of research in higher education institutions). The Green Book states that for substantial proposals, relevant costs are likely to equate to the full economic cost of providing the associated goods and services. The full economic cost should be calculated net of any expected revenues for each option.

## Appendix D: Cost and Decision Support Methods and Tools

**Activity-based costing (ABC):** is both a cost object (e.g., product, service-line, channel, customer) costing method, and a resource consumption method that can provide information useful in making strategic decisions about rationalizing products, services, and customers as well as operational process improvements. ABC addresses certain weaknesses of traditional absorption costing, and identifies the most appropriate way of tracing and assigning indirect and shared expenses (commonly referred to as overhead) to final cost objects by (a) identifying work activities performed to produce outputs, (b) assigning or mapping consumed resource expenses to the activities using resource drivers, (c) identifying outputs for which the activities are performed, and (d) assigning activity costs to the outputs. The sophistication of ABC systems varies between organizations. For example, greater sophistication can be associated with:

- A higher number of cost pools to better capture resource consumption by different products/services.
- A variety of cost drivers to more accurately measure resources consumed by cost objects.
- Directly assigning costs to cost pools or using a cause-and-effect resource driver.
- The extent to which transaction and duration drivers are used in the second stage allocation process (a transaction driver, like the number of setups, assumes the same quantity of resources is used every time an activity is performed, whereas a duration driver, like setup hours, represents the amount of time to perform an activity).

**Grenzplankostenrechnung (GPK):** is typically used as both a variable costing and an absorption costing system. Some GPK purists use it primarily as a variable costing system to support short-term decisions, for example a production decision (to accept or reject an additional order based on its contribution margin), or a pricing decision. GPK application varies in complexity depending on an organization's history, culture, and requirements (which in turn are determined by the complexity of its products and processes). It introduced the concept of value chain integration in costing, and pioneered the information technology solution for the concept. Research has revealed high levels of satisfaction by users of GPK information and unequaled levels of sustainability for the approach. GPK focuses heavily on how resources are consumed and the modeling of causal relationships. It does not have the ability to support activity analysis, and assigns resource costs using direct tracing of resource outputs. This practice is one of GPK's weaknesses, in that back office areas generally are not conducive to such direct charging, or only achievable at significant measurement cost. GPK incorporates a number of practices that enhance decision support, but which are contrary to financial accounting's periodic and matching principles. These include (a) imputed interest on capital as part of the cost of resources, (b) cost depreciation (i.e., replacement value divided by economic life), and (c) standard life-cycle charges for research and development to product profit and loss statements or for periodic plant shutdowns for refurbishment.

**Lean accounting:** Lean accounting reports and methods support a lean organization or transformation to a lean organization. The financial and non-financial reporting in a lean accounting method reflects the overall value stream flow, not individual products, jobs, or processes. Implementing a lean approach, as exemplified by the Toyota Production System, focuses on delivering customer value without waste, and this involves identifying value streams.

Cost and profitability reporting is done using value stream costing, a summary of direct costing of value streams. Lean accounting principles ensure that lean thinking is applied to efforts to reduce waste created during transaction processing, during report creation, and during other accounting steps in the organization. Lean accounting principles ensure that lean thinking is applied to waste reduction from the transaction processes, reports, and accounting methods throughout the organization. This recognizes that in a lean organization information required to control operations arises in the flow of work (rather than from outside accounting and production controls, such as standard cost-variance budget reports), thus empowering those at the front line to manage daily operations.

**Life-cycle costing:** involves estimating and accumulating costs over a product's or service's life. The purpose of life-cycle costing (typically used during the product's planning phase) is to allow planners to anticipate a product's costs over each phase of its life. This helps to avoid underestimating a product's total costs, which is often the main cause of unprofitability. Life-cycle costing identifies and estimates the costs in all phases of the product/service life cycle, including planning and development, introduction and growth, maturity, decline, and abandonment or renewal. It is particularly useful for products that create significant cost burdens at discrete points that need to be captured, such as significant planning and development costs and decommissioning costs. Therefore, it is often used to better understand the environmental performance of products and services, and to support sustainable development initiatives. Life-cycle costing is often used to support life-cycle assessments to evaluate the environmental burdens associated with a product, process, or activity, by (a) identifying and quantifying energy and materials used and wastes released to the environment, and (b) identifying and evaluating opportunities to improve environmental performance. Life-cycle costing can also be used with other costing methods. For example, during the planning phase, target costing is used to drive the product and process design so that, at a given market price, the product will be profitable.

**Job order costing:** used to cost a distinct product or service and to help organizations calculate the total cost to produce a specific project. The cost object is a unit or multiple units of a distinct product or service called a job. Costs are traced to individual jobs to the extent economically feasible. A common approach (a) identifies direct costs of the job, then (b) determines a basis for allocating indirect costs, then (c) identifies indirect costs associated with each cost allocation base.

**Kaizen (continuous improvement) costing:** a cost management tool focusing on reducing the cost of an existing production process. Unlike target costing, which is a planning tool, Kaizen costing focuses on improving the existing production and performance of related activities to achieve target cost reductions.

**Process costing systems:** calculate the unit cost of a product or service by assigning total costs to many identical or similar products/services. Such systems separate costs into cost categories, according to when costs begin to be incurred in a process. Process costing is appropriate for production of products or services with the following characteristics: (a) the production involves a regular process pattern; (b) its output consists of homogeneous units; and (c) all units are produced through the same or a similar process.

**Resource consumption accounting (RCA):** is a costing approach that provides decision makers with optimization information by combining learning, proven application, and sound decision support principles. The approach was conceived around the year 2000, primarily as an

amalgamation of the best of GPK and US ABC practices. RCA then spent the next seven years in an incubator environment to validate and refine its principles, concepts, and methods through practical case studies and research. Causality is a first principle in RCA, i.e., reflecting cause-and-effect relationships to enable managers' forward-looking projections.

RCA uses three core elements in operational modeling that allows it to lay a very different foundation for its cost model compared to traditional costing approaches:

- (a) The view of resources – resources and their costs are considered in this approach as foundational to proper cost modeling and decision support. An organization's cost and revenues are all a function of the resources that produce them.
- (b) Quantity-based modeling – the entire cost model is constructed using operational quantities. Operational data is the foundation of value creation, and the leading indicator of economic outcomes.
- (c) Cost behavior – value is added as a veneer to the quantity-based model, and costs/dollars behavior is determined by the behavior of the underlying resource quantities as they are applied to value-creating operations within an organization.

**Standard costing:** constructed or predetermined costs that can be applied to activities, services, or products on a per unit basis. Standard costing supports a control technique that reports variances by comparing actual costs to pre-set cost standards (so that actual information is compared with estimated standard rates). It (a) traces direct costs to output by multiplying the standard prices or rates by the standard quantities of inputs allowed for actual outputs produced, and (b) allocates overhead costs on the basis of the standard overhead cost rates, multiplied by the standard quantities allocated to produce the actual outputs.

**Target costing:** a demand-pull approach of cost management because of its focus on customer requirements for quality, cost, and time. It is often referred to as a strategic planning tool, because it attempts to link cost management to the value perceptions and requirements of customers. It therefore uses prospective and estimated cost information, starting when products/services and processes are designed. Its usefulness depends on involving all disciplines in bringing a product/service to market to ensure an appropriate gap between (a) the target cost, and (b) the estimate of the cost to build the product based on current processes, suppliers, productivity levels, and materials.

## Appendix E: Examples of the Challenges that Result from Managerial Information Being Based on Financial Accounting Data

The following four examples provide a mere sample of the many situations where financial accounting data provides dysfunctional results for management decisions.

- **Depreciation:** Financial accounting's matching principle and periodic principle dictate that pieces of equipment be depreciated on a schedule that does not reflect their economic life or their actual application in producing product. It is therefore common to find fully depreciated machines still being used to produce output. However, such cost information is not useful when the manager must consider a long-term contract during which the machine will likely be replaced.
- **Product life cycles:** Life-cycle profitability of a product is a crucial optimization metric in operational management. Financial accounting usually treats key life-cycle costs such as research and development as period costs, which is a disincentive to invest in research and development from which benefits arise in the future.
- **Incentive Compensation:** A machine is sold for \$14,000 cash that has accumulated depreciation of \$50,000 and an historical cost of \$90,000. The following journal entry would be posted as a consequence.

Cash	14,000
Accumulated Depreciation	50,000
Loss on disposal	26,000
Machine	90,000

The financial accounting book value is \$40,000. However, this book value is meaningless in establishing the market value of the machine (i.e., depreciation is merely the systematic allocation of the cost of an asset over a useful life for the purpose of fulfilling the matching principle). A loss on disposal was recorded as a consequence of the difference between the book value and the cash received for the sale of the machine. A manager would have no incentive to replace the fixed asset since it could lower his/her compensation, regardless of whether it was good or bad for the company.

- **Product/service customization and customers' demands for complementary services that result in ballooning costs-to-serve:** Costs-to-serve are those downstream costs that are excluded from the product cost information provided by financial accounting data. However, these costs are relevant in many of the product, distribution, customer, target market, and market segment decisions managers must consider.





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