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Development of an IT Balanced Scorecard

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ABSTRACT

There is a generally acknowledged dearth of metrics for effectively measuring organizational performance. This is particularly true of the IT function, whose contribution to a firm's "bottom line" has been frequently called to question. This paper describes the development of a performance measurement tool called the Balanced Scorecard, which can be used to assess IT performance within the context of overall corporate strategy and financial performance. Data for the scorecard was obtained via a survey of senior IT executives in various organizations. The paper concludes with a set of guidelines for successfully implementing an IT Balanced Scorecard, as well as potential pitfalls to avoid in the process.

INTRODUCTION

Increasingly, more and more organizations are beginning to realize the critical role that information technology (IT) can play in the quest for competitive advantage. Gone are the days when the IT department in most organizations was relegated to a predominantly reactive role, comprising mostly of hardware and software troubleshooting and the automation of routine business processes. Systems developed during this era provided organizations with improvements in internal efficiency and effectiveness, but did not provide them with any sustainable competitive advantage. This is primarily because these systems were easily duplicated by the competition (Gibson and Hammer, 1985; Bakos and Treacy, 1986; Wysocki and DeMichiell, 1997; Stratopulos, 2000).

Information systems are still needed today for internal efficiency and effectiveness improvements. However, there is greater opportunity now to utilize IT for much more than that. Advances in computer and telecommunications technologies have provided organizations with the ability to leverage IT for sustainable competitive advantage. Indeed, IT has permeated the very core of business, helping to create new products or enhance existing lines of products, redesign core business processes, create new distribution channels, enable total quality management and, in more recent times, has ushered in the era of electronic business. Various authors have noted that for many, if not most, organizations today, IT is actually driving strategy formulation and implementation (Earl, 1987; Henderson and Venkatraman, 1993; Venkatraman, 1994; Feeny and Willcocks, 1998; Maas, 1998; Magretta, 1998; Nault, 1998; Applegate, et al, 1999). In a study using firm-level data on IT spending by 370 large firms, Hitt and Brynjolfsson (1996) conclude that "IT has increased productivity and created substantial value for consumers."

Some specific examples of companies that have successfully deployed IT for competitive advantage include Cisco Systems, Inc., which was able to save over \$2 billion over four years by implementing an Internet-based ordering, manufacturing, financial, and human resources system (Business Week, March 20, 2000). After implementing SAP R/3, an enterprise resource planning (ERP) software system, Colgate-Palmolive reduced the number of its global data centers from 75 to 2 (with only 40 employees), reduced its domestic inventories by 33 percent, reduced order acquisition and processing time from 2-7 days to 4 hours while, at the same time, improving on-time deliveries (Kalakota and Robinson, 1999). Dell Computers is almost legendary for its speedy delivery of computers to its customers. Using highly integrated information systems, Dell is able to bypass retailers and ship the products directly to the customers, usually within 48 hours.

With respect to e-business, there is no question that IT is at the heart of this growing phenomenon, providing the necessary tools and infrastructure to ensure success in the new Net economy (Motwani et al., 2001; Venkatraman, 2001). Louis Gerstner, Jr., IBM Chairman & CEO, states the following about e-business:

“It [e-business] really does present CEOs with an extraordinary opportunity to transform their companies’ competitiveness, to change the industries in which they operate, to fuel innovation, to open up alternate distribution channels, and to create entirely new cost structures. It is a fundamental change, one that occurs at the molecular level of business...” (Business Week, March 27, 2000, p.40).

Wen and Yen (1998) perhaps capture the transformation of the IT function best when they state that: “IT has grown from being a means of automating data processing to being the critical infrastructure for doing business today.” It is no wonder, then, that many organizations are investing quite heavily in their IT functions. According to one estimate, about one-third of the annual capital investment by US corporations is in IT (Wen and Yen, 1998). Another states that, on average, it costs a company 2.2 percent of its annual revenue to provide IT services (Axson, 1996). Global IT spending was expected to reach \$3.3 trillion by 2002 (News Report, 2001).

Unfortunately, in spite of the many successes and the heavy investments that many organizations have poured into their IT projects and initiatives, many of these projects and initiatives are unsuccessful. For example, a poorly implemented supply chain management system, which resulted in extreme shortages in raw materials and supplier parts as well as productivity inefficiencies, led Boeing Aircraft to write off \$2.6 billion in 1997 (Kalakota and Robinson, 1999). Also in 1997, Nabisco lost 2 percent of its value on Wall Street as a result of poor integration between its two separate supply chains (one for Nabisco biscuits and another for its Food Groups), which led to gross inefficiencies and, ultimately, to poor business performance (Kalakota and Robinson, 1999).

According to a survey by the Standish Group, 73 percent of corporate America’s IT projects in 1996 were late, over budget, or canceled. Project failures cost an estimated \$145 billion per year (Thorp, 1999). IT project failures have been attributed to a number of factors, including the failure to use appropriate measures (Bharadwaj, 2000 ; Thorp, 1999), ineffective project management (News Report, 2001), lack of alignment of the IT project with the business strategy (Floyd and Woodridge, 1990), lack of organizational readiness (Parker, 1996), and lack of integration of IT into the activities of the people who use it (Bates, M., 1999).

In this paper, we present a technique that can be used to address the problems listed above and, hence, ensure the success of IT projects and applications. The technique is called the Balanced Scorecard, and was first proposed by Kaplan and Norton (1992). Traditional measures of IT performance have focused almost exclusively on financial aspects (such as Return on Investment [ROI]), presumably because these are tangible and, as such, relatively easy to measure. It is becoming increasingly clear, however, that ROI and other similar measures are inadequate since they only look at one piece of the complete performance picture. Additionally, these financial measures are indications of *past* performance (lag indicators). They give no indication of future performance (i.e., no direct linkage to strategy).

With IT now emerging as a significant player in corporate strategy, new measures of performance are needed. IT projects yield many tangible benefits that can be very readily measured (e.g., the cost reduction and/or time saving that can be attributed *directly* to an automated system). However, IT also yields significant benefits that are *intangible* and hence, not so easily measurable. Examples include an information system that provides a major convenience to customers and thus results in a high level of customer satisfaction and loyalty, or a decision support system that provides superior analytical tools and data to management, resulting in better quality decisions. The problem in these examples is: *How do we measure “increased customer satisfaction” or “better quality decisions,” and how do we relate these measures to the overall financial performance of the company?* The situation is further compounded by the fact that the benefits of many IT projects are not realized for several years. Yet, senior management typically requires ROI justification in an annual review cycle.

The Balanced Scorecard not only provides an effective IT performance measurement tool but, also, a means to link the performance to strategy. It is enlightening to note that 45 percent of companies spend no time reviewing or making decisions about strategy but, rather, focus exclusively on performance reviews and operations (Kaplan and Norton, 1996a). The Balanced Scorecard combines the tangible, well-established financial measures of past performance (*lag indicators*) with *intangible* measures of the firm’s drivers of future performance (*lead*

indicators), and shows cause-and-effect linkages among the component measures. This is a very important feature, given the fact that the source of value for most businesses today has shifted from tangible assets (e.g., machinery) to intangible assets (e.g., selling business solutions) as a result of the emergence of a new, knowledge-based economy. More specifically, tangible assets contributed 62 percent to corporate value (i.e., "market cap") in 1982, while intangible assets accounted for 38 percent. By 1998, the relative proportions had reversed considerably, with tangible assets contributing a mere 15 percent, and intangible assets a whopping 85 percent (Norton, 2001).

At the corporate level, many for-profit organizations have used the Balanced Scorecard successfully to revitalize their continuous improvement efforts as well as improve their competitive posture (Hoffecker and Goldenberg, 1994; Kaplan and Norton, 1992, 1996a, 1996b). The Balanced Scorecard has been used in industries ranging from hospitality management to small businesses (Chow et al., 1997). A study by the Gartner Group estimated that at least 40 percent of Fortune 500 companies would have implemented a Balanced Scorecard by 2001 (Schatz, 2000). Therefore, there is mounting evidence that the popularity of performance measures such as the Balanced Scorecard is on the rise. The focus of this paper is to illustrate how a Balanced Scorecard may be developed for the IT function within an organization.

The remainder of the article is organized as follows: In the next section, we present an overview of the Balanced Scorecard and its components. Then we discuss a survey of several IT executives, and the implications therefrom. Next, we present a five-stage approach for implementing an IT Balanced Scorecard, highlighting some pitfalls that must be avoided, as well as some success factors. We conclude with a summary of the study.

THE BALANCED SCORECARD

The Balanced Scorecard measures an organizational unit's (in this case IT) or an entire organization's performance along four main perspectives, namely (a) *Financial* (b) *Customer* (c) *Internal Business Process*, and (d) *Innovation and Learning* (Kaplan and Norton, 1992). Since the specific objectives and measures of a Balanced Scorecard are derived from the organization's vision and strategy, these perspectives and their relative importance will vary among firms or departments. However, it is largely accepted that the framework for a Balanced Scorecard will include at least the four perspectives or components mentioned above (Kaplan and Norton, 1996a, Chow et al., 1997). In employing this multidimensional measurement approach, the Balanced Scorecard provides a more complete, accurate, and balanced assessment of the unit's performance. It also provides a mechanism for linking this performance to strategy.

Balanced Scorecard Components

Component 1 - Financial: How well are we doing financially? The financial perspective serves as the ultimate focus for the objectives and measures in the other scorecard perspectives. This perspective reflects the concern in for-profit enterprises that every action should be part of a network of cause-and-effect relationships that culminate in improving short- and long-term financial performance. In the process of identifying goals and measures, different financial metrics may be appropriate for different units within the organization, linking that unit's financial objectives to the overall business strategy (Chow et al., 1997).

Component 2 - Customer: Customer Satisfaction/How do customers see us? The current wisdom, with respect to achieving corporate financial goals, is that every company needs to pay attention to the needs and desires of its customers because customers pay for the company's costs and provide for its profit. Even in the IT literature, as well as in practice, there has been a major shift in emphasis from product-driven planning to customer-driven planning (Parker, 1996, Kalakota and Robinson, 1999). Companies need to identify the customer and market segments in which they wish to compete. The customer perspective allows companies to align their measures of customer values (i.e., satisfaction, loyalty, retention, acquisition, and profitability) with targeted customers and market segments. In the case of IT, which provides technological capabilities and support to the other departments in the organization, it is important to identify both internal customers and external customers.

Component 3- Internal Business Process: In what business processes must we excel? These are those processes that will deliver the objectives that the financial and customer perspectives have established for customers and shareholders. This component goes beyond merely improving existing operating processes to defining a

complete internal process value chain that includes identifying current and future customer needs and developing solutions for those needs. This will be unique to each organization as it identifies the complete chain of processes that add to the value customers receive from its particular products and services.

Component 4 - Innovation and Learning: Can we continue to improve and create value? Based on the objectives established in the financial, customer, and internal business process perspectives, a company needs to identify objectives and measures to drive continual organizational learning and growth. The objective in this perspective should be to maximize the drivers of successful outcomes in the preceding three perspectives.

In expanding the firm's set of objectives beyond traditional financial measures, the Balanced Scorecard allows managers to demonstrate and measure how their functional units create value for current and future customers. The Balanced Scorecard also helps to determine the need for enhancing internal capabilities and the firm's (or organizational unit's) investment in people, systems, and those procedures necessary to improve future performance. In other words, the Balanced Scorecard is an attempt to capture the essence of the organization's critical value-creating activities. Because of the financial perspective, the Balanced Scorecard retains an interest in short-term performance but, at the same time, clearly reveals those drivers leading to long-term financial and competitive performance (Chow et al., 1997).

IT and the Balanced Scorecard

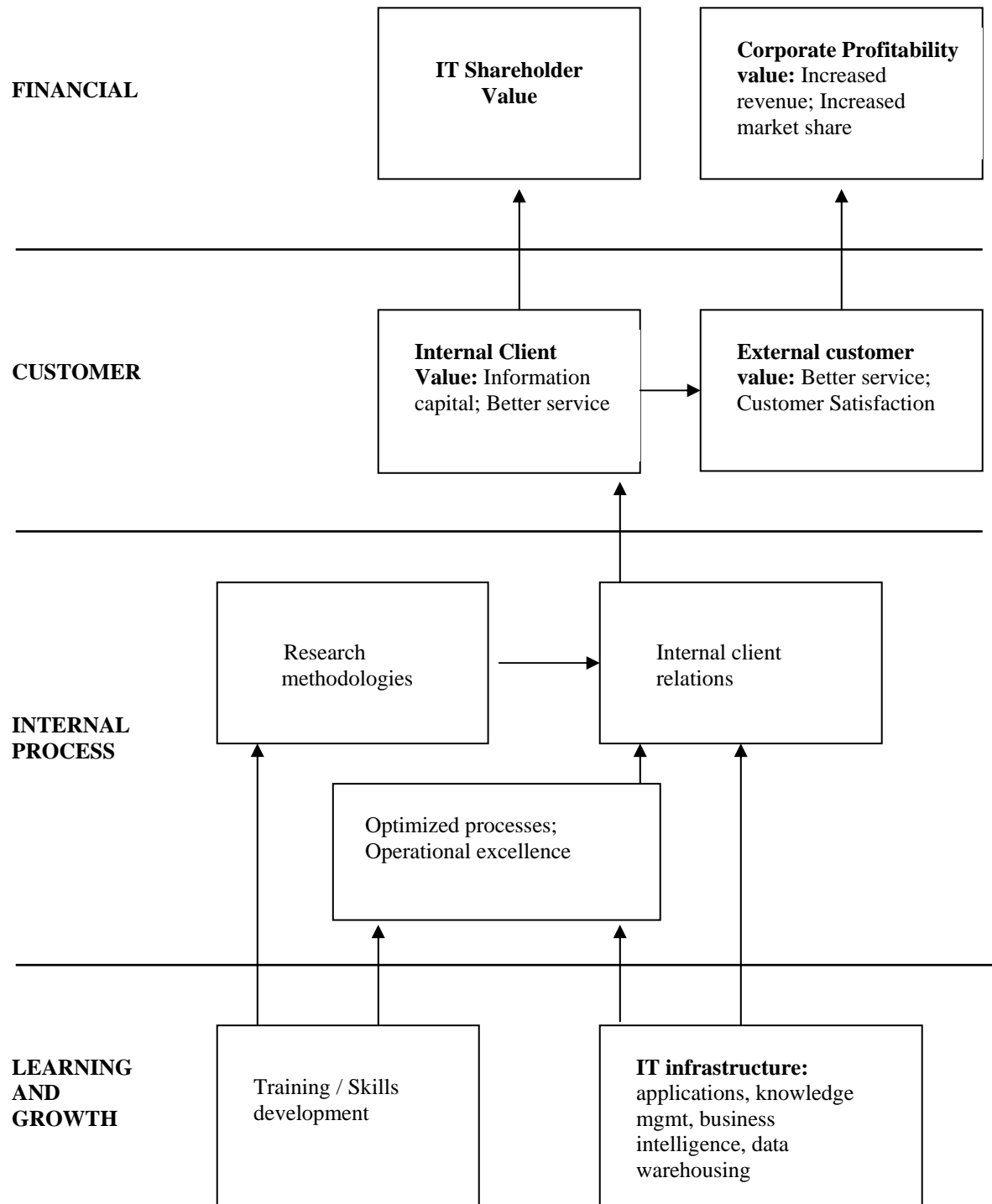
A Balanced Scorecard can be developed for the IT function within an organization in order to assess its performance along the four perspectives of the scorecard. The impact of IT investments can be traced, directly or indirectly, to changes in the *financial* performance of the organization. For example, investments in customer relationship management (CRM) applications, decision support systems (DSS), knowledge management systems (KMS), and/or data warehouse systems can have a positive impact on the quality of service that the IT function provides to the other functional units (i.e., its internal clients). This, in turn, allows those units (e.g., Marketing) to provide better service to the organization's customers, resulting in greater customer loyalty, and leading ultimately to increased market share and profitability for the firm. Figure 1 shows an example of how an IT Balanced Scorecard can be used to link IT performance to its departmental strategic goals (e.g., increasing value to its internal clients), as well as to the overall corporate strategic goals (e.g., increasing market share and stakeholder value). The arrows in the figure show the cause-and-effect relationships among the scorecard's components.

For the IT function, the Balanced Scorecard can also aid in a deeper understanding of corporate goals and can lead to the design and implementation of information systems that are congruent with corporate strategy. It can also aid in identifying and rewarding those employees whose efforts enhance corporate goals, while redirecting the efforts of those whose activities detract from those goals.

THE IT BALANCED SCORECARD SURVEY

For this study, a survey was conducted to determine the actual and potential use of a Balanced Scorecard in the IT departments of several organizations. The survey was in the form of a questionnaire mailed out to selected senior IT executives in various organizations located mostly in southern California, and one located on the east coast of the United States. Prior to mailing out the surveys, the potential participants were each contacted by phone and informed of the pending survey, and were asked if they wanted to participate in it. This approach was taken in order to encourage a high response rate from the relatively small target sample size (logistical considerations precluded a mass mailing to a very large number of organizations). A total of 33 senior IT executives gave their commitment to participate in the study. Of these, 20 actually followed through and completed the surveys that were mailed to them. (Follow-up telephone reminders failed to increase the response rate any further.) The participating executives were from various industries, including high-tech (IT and telecomm), engineering, scientific research, consulting services, healthcare, e-business, and the utilities. The organizations ranged in size from 22 to 45,000 employees (the mean size being 13,238 employees). The respondents had titles such as Chief Information Officer (CIO), Vice President of Information Systems, IT Manager, Chief Technology Officer (CTO), and Director of IT.

Figure 1: Linking IT Performance to Strategy



These individuals were specifically targeted because their high positions in their respective organizations give them the “big picture” perspective of the role that IT plays within their organizations. This perspective is critical in the development of a Balanced Scorecard, which is intended to tie IT performance to corporate goals and strategy. The professional experience of the respondents in the IT field ranged from 3 to 35 years, while the length of time in their current positions ranged from 4 months to 22 years.

The primary objective of the survey was to elicit responses that might form the basis for developing an effective IT Balanced Scorecard. The questionnaire used for the survey explained the concept of the Balanced Scorecard and gave a brief illustration. The survey asked respondents to specify, for each of the four major Balanced Scorecard components, at least three to four goals that they believe their IT functions should have. For each of these goals, they were to specify one or more appropriate performance measures (please see the Appendix for a copy of the questionnaire). The results are shown in Tables 1 through 4. For purposes of simplicity and focus, only the most popular responses (in descending order) are shown in these tables. There is no implication that every IT department which undertakes a balanced scorecard initiative must necessarily have only, or all of, the goals and performance measures listed in these tables. Each IT department will have to develop and customize its own scorecard. Some scorecards will have a subset, and others a superset, of the goals and performance measures indicated in the tables. The degree of customization will ultimately depend on corporate strategic goals, which should then drive the development of departmental goals and performance measures.

Table 1: IT Balanced Scorecard—Financial Perspective

Goals	Measures
Budget performance	Performance within planned budgets; IT budget as a percentage of revenue; IT budget as a percentage versus total enterprise budget; Changes in IT budget allocations; IT trend lines versus business trend lines; Average development costs vs. industry average
Project ROI	Revenue generation and cost reduction from IT projects and applications; Risk (financial penalty) avoided or mitigated from IT investments; Establishment of total economic impact criteria for new projects
Net income	Subscription rate of services versus operating costs; Positive profitability trend; Percent change in net income
Financial management and performance	Productivity gains due to software and hardware implementations; Reduction in number of outdated/lapsed service and maintenance contracts; Percent savings achieved over prior year for recurring purchases
Recognized by customers for increased value	Revenue trend with increased cost structure (high end); Percent change in new customer revenue
Program efficiency	Cost savings by automation efforts that reduce labor

Table 2: IT Balanced Scorecard—Customer Perspective

Goals	Measures
Overall client/customer satisfaction with IT	Customer feedback; Percent of Master Business Agreements established; Number of new requests; Complaint rate vs. accolades; Number of internal customer service awards received; Number of positive customer references; Number of clients retained for the long term; Percentage of new purchases by existing clients
Quick response to customers/interrupts	Customer satisfaction surveys; Time-to-recover measurements; Number of trouble calls, repeat visits, & complaints; On-time completion of projects within budget and with desired results; Average help request cycle time
Reputation for quality service	Services offered meet or exceed industry standards; Quality of services comparable to, or better than, those offered in similar organizations of comparable size; Award fees (based on contract type); Recognition by top tier services as “consultants of choice”
Availability of services per Service Level	Annual uptime percentage; Use of external monitors to

Agreements	measure success; Measures of system responsiveness; Meeting service level agreements
Application usage	Application usage as a percentage of total process usage; Changes (increase) in system usage; Track usage of “ease-of-use” features
Let customers/users determine own needs	Extent of customer/user involvement in decision and design process; User versus IT time spent per project

Respondents were also asked to indicate, on a scale of 1 to 10, the extent to which their current IT performance measures were similar to the Balanced Scorecard (with 1 being “not at all similar” and 10 “totally similar”). The results indicate that 20 percent of the respondents use a measurement system that is totally similar to the Balanced Scorecard (score of 10), while 10 percent use performance measures that are not at all similar to the Balanced Scorecard (score of 1). Overall, 35 percent of the respondents gave a score of 5 or less on this item, while 65 percent gave a score higher than 5. This indicates that the majority of the performance measures currently in use in the IT departments surveyed bear at least *some* similarity to the Balanced Scorecard.

When asked to indicate the three biggest differences between their current performance measurement system and the Balanced Scorecard (for the 80 percent who reported differences between their performance measurement systems and the Balanced Scorecard), the responses/comments received included the following:

Table 3: IT Balanced Scorecard—Internal Business Process Perspective

Goals	Measures
Quality of service/product	Average time to solve customer support calls; Average number of support calls due to bugs; Number of calls to help desk; Average help request cycle time; Percent downtime versus Service Level Agreement; Demand for new services versus number of errors fixed
Project success	On-time, on-budget project rates (7)
IT enhancement	Number of new IT products/services integrated; Average processing efficiency of systems; Technology changeout time; Extent of automation/reduction in staff
Process and quality improvement	Improvements in turnaround time; Extent of IT process reviews; Extent of IT process improvements; Extent of process automation; Number of new initiatives and/or improved products/upgrades offered in key areas; Increase in competitiveness of products, services, and methodologies; Time to implement new solutions; Average product development time
Effective and open communication	Extent to which all team members are clear on goals and objectives of the team; Extent to which diverse opinions are encouraged and explored
Support business change	Percent reduction in time to incorporate new acquisitions; Shifting of clerical tasks to technology; Extent of IT input to standard business processes

Table 4: IT Balanced Scorecard—Innovation and Learning Perspective

Goals	Measures
Continual technical training and education	No. of technical training courses/certificates; Dollars spent on relevant employee training/education; Review of training log and plans; Periodic assessment of employee knowledge and competence; No. of peer associations & conferences; No. of degrees; Extent to which training targets are met; New technology used as a result of IT personnel development
IT staff job satisfaction and motivation	18-month survey of IT staff satisfaction; Gallup Q ¹² Management

	Survey; Individual interview with staff; Staff/Management interactions; IT staff turnover versus industry averages; Staff retention rate
Keep up with changing technology / replace obsolete technology	Technology life-cycle trend; Dollars spent on latest technology and software; No. of innovations deployed; Time required for implementation; Extent of automation in organization
Clarity of roles, responsibilities, and expectations	Reduction in number of job cards without performance standards; Reduction in number of annual performance appraisals without clear statements of performance/skill expectations
Continuous innovation in project management	Extent of project tracking and post-mortem analysis; Number of new projects offered
Formation of application teams	Ability of team members to back each other up

We use only Service Level Agreements (SLAs)—do not incorporate clients’ needs or views; We rely exclusively on client feedback; We include Personnel as an additional key metric; Not all goals have been previously defined; Some goals are not accurately measured; Unarticulated goals from the top; Metrics are not used combined as an overall measurement; Unavailability of metrics; We have no means of looking at the overall performance of the group; We do not separate out the different areas to see how we’re doing; Our current performance measure is at a lower level—measures individual’s characteristics instead of departmental or company characteristics.

Respondents were also asked to indicate, on a scale of 1 to 10, the extent to which they thought that a performance measurement system similar to the Balanced Scorecard would be beneficial to their department (with 1 being “not at all beneficial” and 10 “extremely beneficial”). Eighty-five percent of the respondents gave this item a score of 7 or higher (with 25 percent scoring it a perfect 10). These results clearly indicate that the majority of the respondents perceive the Balanced Scorecard as being potentially very beneficial to their departments, and point to a strong need for such a performance measurement system. It is interesting to note, parenthetically, that one respondent gave this item a score of 1 (i.e., indicating that the Balanced Scorecard would be “not at all beneficial” to his/her organization). This respondent clearly holds the “traditional” (old-fashioned) view of IT, and sees no need to link IT to overall corporate performance, commenting that “these are issues for the Customer Service department and the Finance department to worry about!”)

When asked to specify the three biggest benefits that they thought an IT Balanced Scorecard would provide, the following responses/comments were obtained:

Forces the inclusion of the client’s view in the measurement system; Provides consistency—baseline metrics for year-to-year/month-to-month measurement and comparison; Expectations are well understood—clearly communicated goals and measures; Provides quantitative assessment of goal achievement; Helps to understand relationships between goals and tradeoffs that often must be made; Ability to proactively manage long-term plans; Focuses on key business initiatives and drivers; Results could lead to quicker organizational change; Easier customer service reports; Emphasis on key metrics; Provides structure; Provides an entire picture, not just parts of the picture; Focuses on higher level items—prevents people from digging into politics/resistance to change.

Respondents were also asked in the survey to indicate, on a scale of 1 to 10, how difficult they thought it would be for their IT departments to implement a Balanced Scorecard (with 1 being “not at all difficult” and 10 “extremely difficult”). Twenty-five percent of the respondents believe that it would be “not at all” difficult to implement a Balanced Scorecard in their IT departments (score of 1). Another 20 percent report relatively low levels of difficulty (scores ranging from 2 to 4). However, 55 percent of the respondents anticipate fairly high levels of difficulty in implementing such a measurement system (scores ranging from 5 to 10), with 10 percent of those indicating that it would be “extremely difficult” to implement the system (score of 10).

The main reasons (or challenges) given for the expected difficulty in implementing a Balanced Scorecard-type measurement systems are captured in the following responses/comments from respondents:

Difficulty in getting user/customer input; Need to develop several scorecards for a heterogeneous community; Difficulty in getting buy-in across decentralized groups; Speed of market; Communication of requirements and providing consolidated rewards; Difficulty and expense in accurately measuring some goals; Time availability for collecting, measuring, and analyzing results; Organizational culture; Resistance to change; Administration time; Actual development of the metrics; Getting people to agree on the measurements; Leadership stability—each leader changes direction.

IMPLICATIONS OF THE SURVEY

A number of implications are readily apparent from the results of the survey. These are briefly discussed below.

1. There is a general need for a comprehensive performance measurement system. Virtually all of the respondents in the survey stated that a performance measurement system, such as the Balanced Scorecard, would be beneficial to their IT functions. Several cited the lack of suitable metrics as a glaring need in the industry. An IT Balanced Scorecard would be an effective tool for meeting this need. In particular, the respondents noted the following benefits that a Balanced Scorecard would bring: the comprehensiveness of the measures (in including all relevant performance drivers), and the fact that the Balanced Scorecard forces a prioritization of, and a focus on, the critical goals and measures. If used consistently across several decentralized divisions of an organization, an IT Balanced Scorecard would assure consistency in focus, and also give the ability to assess the relative performance of the divisions.
2. Performance measures must be flexible. Different organizations have different goals and priorities and, therefore, may need to track and measure different performance factors. This was borne out in this study. While there was some commonality in the responses, there were also many differences in terms of goals and organizational focus. Not every IT organization surveyed listed goals for each of the four major components of the Balanced Scorecard, and at least one (the IT department of a consulting firm) listed an additional component that they use—*Personnel*. The Balanced Scorecard allows for this. It is not a “one-size-fits-all” kind of tool but, rather, one that is customizable to individual organizational needs.
3. Goals are important. Some respondents complained about improperly defined or unarticulated goals in their organizations. This is a critical point. If organizational goals are not well understood or effectively communicated, it is difficult to ascertain what is important and what needs to be measured. (As Forrest Gump said in the movie, “If you don’t know where you’re going, you’re probably not gonna get there.”) Defining and communicating goals are at the heart of the Balanced Scorecard. It is important for corporate goals to be communicated accurately, effectively, and consistently to all departments, including the IT department, so that there would be little doubt as to what needs to be measured, and what measurement criteria need to be developed and used.
4. Implementing a Balanced Scorecard is not easy. More than half of the executives surveyed indicated that it would be difficult to implement an IT Balanced Scorecard in their organizations. This should come as no surprise since the implementation of such a system represents a significant change in the organizational culture (especially for those organizations not used to having such a disciplined measurement system). Additionally, it requires major commitments of time and money (Kaplan and Norton, 1996b, McCunn, 1998; Schatz, 2000). Several respondents mentioned the difficulties of time availability, organizational culture, and change management. Clearly, for an IT Balanced Scorecard implementation to be successful, there must be strong leadership and commitment from within IT and from senior management. Without a strong CIO-CEO relationship that is dedicated to the cause and can effectively manage the accompanying organizational change, the effort is likely to fail. The importance of the CIO-CEO relationship in organizations has received significant attention in the IT literature over the past several years (Parker, 1996; Lundberg, 1997; Turban et al., 2002; Luftman, 2004).

IMPLEMENTATION OF AN IT BALANCED SCORECARD

The strong need for an IT Balanced Scorecard articulated by our survey participants, coupled with the difficulty (real and perceived) in implementing such a system, indicates a need for some implementation guidelines. The findings also confirm the general paucity of metrics in the business world. Kurtzman (1997) reports that 64 percent of American companies have been experimenting with some sort of new performance measurement system. In this section we provide some guidelines for implementing a Balanced Scorecard for the IT function within an organization. It is important to emphasize that such a scorecard should not be developed and implemented in isolation (i.e., based exclusively on what the IT department *wants* to do, with respect to technology). Instead, development of the IT Balanced Scorecard—and hence the IT strategy—must be driven by the overall corporate mission and strategy. Therefore, it should be undertaken only after a thorough understanding of the corporate mission. There are five major stages in our proposed implementation process.

Stage 1: Agreeing on the corporate mission. The crucial first step, as indicated above, is getting agreement on the overall mission of the organization as a whole. This is important because to be effective, the scorecard measures must support the attainment of a common corporate mission. The IT department is in the unique position of having to support all the other functional units within the organization, with respect to IT infrastructure and information needs. Thus, it is imperative for the CIO to be in agreement with the CEO and other senior management on the overall corporate mission. Indeed, for those organizations that rely significantly on IT for their strategic positioning, the CIO *must* be actually involved in setting the overall corporate strategy (Parker, 1996; Wysocki and deMichiell, 1997; Lundberg, 1997).

Stage 2: Translating the vision and gaining consensus. The corporate vision is next translated into IT goals and objectives. Because of IT's support of the other functional units in the organization, these IT goals and objectives will be used to guide the development of IT strategies for the other functional units. To this end, there needs to be strong agreement on goals and strategies between the CIO and the other functional managers.

Stage 3: Communicating objectives, setting goals, and linking strategies. This stage involves the communication of the corporate vision, as well as the goals and objectives of all departments, to the IT staff. It is important for the CIO to understand the cause-and-effect relationships within, as well as between, scorecard components (including linkages to other departments' IT goals) in order to channel departmental efforts in the right direction and, also, be able to identify and justify value-added contributions of the IT function. As Smith (1999) points out, "[t]he Balanced Scorecard should be an exercise in cause and effect." It is particularly important for the IT function to demonstrate these cause-and-effect relationships because the benefits of some information systems are manifested only as second-, third-, or even fourth-order benefits (i.e., they can be linked to corporate financial performance only *indirectly* through other channels). For example, investments in an effective IT infrastructure, together with appropriate training, can lead to the development of systems that improve the quality of customer service and convenience. This, in turn, may result in increased customer satisfaction and retention, which then leads to increased sales and market share (i.e., improved corporate financial performance). Thus, it is imperative for the CIO to be always cognizant of the financial performance of the company as a whole, and be able to demonstrate the contribution of the IT function to this performance through the various causal relationships and linkages.

Stage 4: Setting targets, allocating resources, and establishing milestones. This is the stage at which the IT Balanced Scorecard is actually developed (such as Tables 1 through 4). An implementation team is established to translate the vision of the organization into specific goals and action plans for the IT department along the four (or as many as necessary) components of the Balanced Scorecard. Performance measures are developed for each of the goals specified for each component of the scorecard. The CIO must be a member of this team. The team should solicit feedback frequently from the rest of the IT staff to assure consensus and buy-in. The team also establishes milestones for accomplishing its tasks, reporting periodically to the rest of the department. Most likely, it would be necessary to go through several drafts of the scorecard before a final version is approved.

Stage 5: Feedback and learning. This stage involves learning from the previous stages and continuing to improve. The IT Balanced Scorecard must be a living, organic system that can be modified, as needed, to reflect changes and to incorporate new and relevant information. It should never be a "one-shot deal." As business and market conditions change, strategies will change. This, most likely, would mean a change in goals and performance measures and the need to modify the scorecard. Thus, this stage provides an opportunity for continual post auditing

of the performance measures to see if they are still applicable. It presents the IT department with the opportunity to collect data about the current IT strategy, to reflect on whether the strategy is working and still appropriate (in light of new developments), and to seek ideas concerning new strategic opportunities and directions.

POTENTIAL IMPLEMENTATION PITFALLS TO AVOID

Kaplan and Norton (1996a) identify some common pitfalls that could lead to failure in implementing a Balanced Scorecard. They also offer some suggestions for avoiding these pitfalls. Managerial thought from other scholars, such as Lingle and Schiemann (1996), Chow et al. (1997), Birchard and Epstein (1999), and Smith (1999), provide additional insights that could further guide the development and implementation of a Balanced Scorecard. We now take a look at some of the common pitfalls to avoid in implementing an IT Balanced Scorecard.

Pitfall No.1: Designing the Balanced Scorecard without an articulated vision. The risk of falling into this pitfall is greatly increased when there is little or no executive involvement in the development of the scorecard (Smith, 1999). Without executive guidance to help formulate and articulate a vision and a mission, the IT department may fall into the temptation of acquiring and/or implementing technology simply because it is the latest on the market, regardless of whether or not it contributes significantly to the organization's mission. Kaplan and Norton (1996a) caution prospective adopters of the Balanced Scorecard to *not* regard the scorecard as merely a performance measurement system, but also as an aid in communicating the organization's goals and its strategies toward attaining those goals. Designing the performance measures should be an integral part of the entire strategic planning process. Thus, incorporating the corporate mission, goals, and strategies into the IT Balanced Scorecard is critical in motivating IT-related actions that are congruent with these goals and strategies, and also give feedback and guidance about progress toward the goals.

Pitfall No.2: Blindly copying another Balanced Scorecard. Each organization has a unique set of circumstances that makes it different from any other organization. This unique set of circumstances, ideally, would be incorporated into *that particular organization's* IT Balanced Scorecard, and may be completely inappropriate for another IT department. Thus, while another organization's IT Balanced Scorecard may be useful for reference purposes, each IT department needs to develop its own (Chow et al.1997). Even more important, the development process is perhaps the most important aspect of effectively implementing the balanced scorecard, because it leads to mutual understanding and acceptance. No single IT Balanced Scorecard can serve as a universal model that is applicable to all IT departments. Because the development of a Balanced Scorecard requires the commitment of significant amounts of time and money, each organization needs to make the decision as to its readiness and commitment to take on a balanced scorecard implementation project.

Pitfall No.3: Data Overload. A common temptation in Balanced Scorecard development is to attempt to identify and measure every single item that one can think of. However, having too many measures leads to difficulties in prioritization, as well as a dilution of attention on the part of employees—not to mention difficulties in assigning responsibilities. Lingle and Schiemann (1996) call for a balance in this regard. They advocate having enough detail to be actionable, but only enough to be meaningful. Kaplan and Norton (1992) suggest that an effective way to develop the performance measures is to start with a blank page and generate ideas of the fewest and best measures to use for each goal. This approach forces prioritization, and can lead to very fruitful discussions (Birchard and Epstein, 1999). Smith (1999) goes so far as to say that the total number of measures for the scorecard should not exceed 20 to 25.

Pitfall No.4: Failure to heed the results. Design and implementation of an IT Balanced Scorecard should be a total commitment, which includes a willingness to accept whatever the outcome of a performance assessment (Chow et al, 1997). For example, if it is determined, from scorecard measurements, that a manager's pet IT project is not contributing significantly to the corporate mission—and, perhaps, even detracting from it—there should be a willingness to either redesign the project or scrap it completely and focus resources on more value-adding projects.

Pitfall No.5: Failure to link Balanced Scorecard performance to reward systems. It is very important for the IT Balanced Scorecard to be tied to the departmental reward systems. It is a further demonstration of commitment to the process. IT staff would thus be rewarded for focusing their talents and efforts on those projects that are in line with the corporate mission and which yield significant strategic benefits to the company. According to Norton (2001), 75 percent of middle managers currently do not have incentives linked to strategy. Smith (1999) asserts,

“Talking about strategy while basing compensation on short-term financial performance leaves little doubt what managers will focus on.”

Pitfall No.6: Failure to treat the IT Balanced Scorecard as an ongoing activity. Development and implementation of the IT Balanced Scorecard should not be viewed as a typical project, with definite “start” and “end” points. As has been emphasized throughout this article, the IT Balanced Scorecard should reflect the organization’s mission. Changes in business conditions could result in changes in business strategy and goals (Parker, 1996; Luftman, 2004), and the IT Balanced Scorecard should be adaptable to these changes. If the scorecard is seen as a one-time, static document that does not change with changing conditions, it could end up measuring the “wrong” (i.e., irrelevant) things over time, rendering it completely ineffective.

Pitfall No.7: Failure to institutionalize the IT Balanced Scorecard. This is somewhat related to Pitfall No.6 above. Unless the IT Balanced Scorecard concept becomes institutionalized as an accepted way of life by the staff, it runs the risk of becoming “just another fad” after a couple of years, and all the initial effort and investment put into the process would have been wasted.

FACILITATING IMPLEMENTATION SUCCESS

In addition to the recommendations incorporated in the preceding section, there are a number of actions that an organization can take to further increase the chances of success in implementing an IT Balanced scorecard. For the critical first stage of articulating the corporate mission and goals, a one- or two-day retreat is highly recommended (Chow et al., 1997). This gets staff away from their short-term day-to-day concerns and tasks during the early part of the scorecard development stage and can sharpen their focus when identifying the long-term issues related to mission, objectives, and strategies. Senior management commitment to the process should be strong and very evident at this stage. Fogg (1997) calls for managers and “champions” who not only understand the purposes of the Balanced Scorecard, but also have the mental toughness to lead the change.

After developing a generally accepted mission statement, a set of objectives, and strategies for meeting these objectives at this retreat, it is recommended that the CIO also hold a similar retreat specifically for the IT department. The objective would be to translate the corporate goals and strategies into corresponding IT goals and strategies which would help in the attainment of the corporate goals and objectives. In addition to sharing the corporate vision, it is also important for the IT staff to share a common IT vision for the organization (Parker, 1996). A committee can be formed, consisting of representatives from all major interest groups. These interest groups would not only be those internal to the organization (i.e., IT staff, functional managers and their staff) but, also, those external to the organization (i.e., external clients and business partners with whom the organization shares information and procedures). This committee's task would be to identify specific IT goals under each of the major Balanced Scorecard perspectives agreed to by the organization's constituency in the more broadly defined mission statement (Smith, 1999). Another task for the committee is to establish the relevant linkages within, as well as between, the balanced scorecard components, and demonstrate the cause-and-effect relationships to the overall financial performance of the organization. Frequent and open communication between the committee and the general constituency is necessary to ensure agreement with, and acceptance of, the final product. Employee buy-in is very important at this stage.

SUMMARY

The Balanced Scorecard methodology holds tremendous promise as an effective tool for measuring IT performance in organizations. It can help translate the IT department’s strategy into specific goals, action plans, and performance measures. More importantly, it can help link IT performance to overall corporate strategy by demonstrating causal linkages between IT systems and overall corporate goals. This paper has described the essential elements of a Balanced Scorecard and provided a set of goals and performance measures that can serve as a basis for the development of an effective IT Balanced Scorecard. Additionally, it has provided some useful guidelines to assure successful implementation of such a scorecard. If properly implemented, a Balanced Scorecard can be invaluable to an IT organization, insofar as demonstrating its contribution to overall corporate financial performance is concerned.

APPENDIX

Survey of IT Managers

This survey seeks the insights of IT managers relating to performance measurement. Your assistance is deeply appreciated.

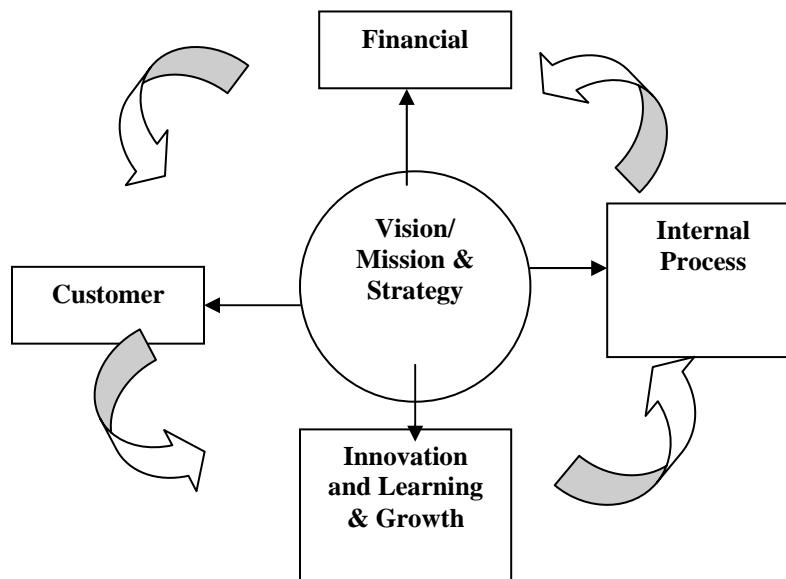
This entire survey can be completed in no more than 40 minutes.

Increasingly, companies in the for-profit sector are extending and refining how they measure and track performance. A tool that is gaining acceptance is called the "Balanced Scorecard." This scorecard, or set of performance measures, is referred to as being "balanced" because it encompasses several interrelated dimensions of performance which together assure the current and future success of the organization.

Since companies have different circumstances, the exact contents of balanced scorecards also differ across adopters. Nevertheless, a typical scorecard generally contains at least four major components:

- 1) **Financial Component:** How well are we doing financially?
- 2) **Customer Component:** Customer satisfaction/How do customers see us?
- 3) **Internal Process Component:** What must we excel at?
- 4) **Innovation and Learning Component:** Can we continue to improve and create value?

The diagram below illustrates the four components, their relationships to each other and to the organization's vision/mission and strategy.



Since organizations and industries have different circumstances and strategies, some organizations would include other components, such as ones related to employees or the community, into their balanced scorecards. For each component that an organization chooses to include, it would establish several key goals. Then, it would select measures for tracking performance with respect to each goal over time. Through the balanced scorecard, an organization monitors both its current performance (finance, customer satisfaction, and business process results) and its efforts to improve processes, motivate and educate employees, and enhance information systems--its ability to learn and improve.

The following page presents a sample balanced scorecard for a manufacturing department. In later pages, we seek your insights into how an effective balanced scorecard may look for your IT *department*. **We would appreciate your returning your completed survey at your earliest convenience. (A postage paid return envelope is provided.)**

A Sample Balanced Scorecard for a Manufacturing Department

Customer Perspective: How do customers see us?	
Sample Goals	Sample Measures
New products	Percent of sales from new products
Responsive supply	On-time delivery (defined by customer)

Internal Process Perspective: What must we excel at?	
Sample Goals	Sample Measures
Manufacturing excellence	Cycle time Yield
Productivity of our design	Engineering efficiency Defect or error rate
New product introduction	How actual new product introduction schedule compares to plan

Innovation and Learning Perspective: Can we continue to improve and create value?	
Sample Goals	Sample Measures
Technology leadership	Time required to develop next generation of products or services
Time to market of new products	Time required to introduce new product as compared to our competition

Financial Perspective: How do we look to providers of financial resources? (Or: How well are we doing financially?)	
Sample Goals	Sample Measures
Survive	Cash flow; Breakeven
Succeed	Steady increase in demand
Prosper	Budget allocation Return on assets

Survey of IT Managers

In the spaces provided below, please share with us your thoughts about what major goals, and associated performance measures, might form the basis for an effective balanced scorecard for your IT department. Please focus on the specific department where you work.

We have listed the four major Balanced Scorecard components that are commonly used. Please use only those components that you consider to be relevant to your department. For each component, please write in three to four goals that you believe your department should have, and for each goal, one or more relevant performance measures. If you feel that there are more applicable components than those listed, please feel free to cross out the current labels and write in ones that you consider to be appropriate.

Thank you for your valuable input.

Customer Perspective: How do customers see us?

Examples of possible goals: Client satisfaction; Client engagement in IT projects and operations; High quality service.

Examples of possible performance measures: Client satisfaction surveys; Number of clients engaged in projects.

Goals	Measures
1.	_____ _____
2.	_____ _____
3.	_____ _____
4.	_____ _____

Internal Business Perspective: What must we excel at?

Examples of possible goals: Service excellence; Efficiency.

Examples of possible performance measures: Complaint rate; Cycle time.

Goals	Measures
1.	_____ _____
2.	_____ _____

3.	<hr/> <hr/>
4.	<hr/> <hr/>

Innovation and Learning Perspective: Can we continue to improve and create value?

Examples of possible goals: Continuous innovation; IT personnel development. .

Examples of possible performance measures: Number of new projects/products or programs offered in past year; Expenditures for IT personnel development.

Goals	Measures
1.	<hr/> <hr/>
2.	<hr/> <hr/>
3.	<hr/> <hr/>
4.	<hr/> <hr/>

Financial Perspective: How do we look to providers of financial resources (such as investors and banks)? (Or: How well are we doing financially?)

Examples of possible goals: Succeed; Survive; Increased revenue generating activities.

Examples of possible performance measures: Cash flow; Return on investment; Budget allocation; Revenue trend.

Goals	Measures
1.	<hr/> <hr/>
2.	<hr/> <hr/>
3.	<hr/> <hr/>
4.	<hr/> <hr/>

1. _____
2. _____
3. _____

- 7) What is the primary industry of your company? _____
- 8) How long have you worked in the IT area? About _____ years.
- 9) What is your current job title? _____
- 10) How long have you worked in your current position? About _____ years.
- 11) Approximately how many employees does your company have in total? _____

This is the end of the survey.

Please return your completed survey (a pre-stamped envelope is attached for your convenience and confidentiality).

Thank you again for sharing both your time and your valuable insights.

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