

December 2002

WHAT'S WRONG WITH THE BALANCED SCORECARD? CONSIDERATIONS FOR THE DESIGN OF AN IMPROVED ENTERPRISE PERFORMANCE MANAGEMENT SYSTEM

Christian Wagner
City University of Hong Kong

Follow this and additional works at: <http://aisel.aisnet.org/amcis2002>

Recommended Citation

Wagner, Christian, "WHAT'S WRONG WITH THE BALANCED SCORECARD? CONSIDERATIONS FOR THE DESIGN OF AN IMPROVED ENTERPRISE PERFORMANCE MANAGEMENT SYSTEM" (2002). *AMCIS 2002 Proceedings*. 141.
<http://aisel.aisnet.org/amcis2002/141>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2002 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

WHAT'S WRONG WITH THE BALANCED SCORECARD? CONSIDERATIONS FOR THE DESIGN OF AN IMPROVED ENTERPRISE PERFORMANCE MANAGEMENT SYSTEM

Christian Wagner

Department of Information Systems
City University of Hong Kong
iscw@cityu.edu.hk

Abstract

The Balanced Scorecard has emerged as a leading measurement tool for enterprise performance management, with profound impact on enterprise strategic planning. Nevertheless, its empirically derived structure creates some descriptive and procedural inadequacies in modeling and measuring organization performance. To overcome these, a new measurement model is introduced, a “scoring cube” whose three dimensions capture outcome, behavior, and behavior change (initiatives and learning) measures, while its perspectives capture a wider array of organization functions. The model further allows non-hierarchical interactions between perspectives. In its implementation, the scoring cube can be collapsed into a Balanced Scorecard, if desired, and can therefore be compliant with Balanced Scorecard specifications.

Keywords: Enterprise performance management, balanced scorecard, strategic information system, strategic planning

Background and Introduction

Strategic Planning and Role of Strategic Information Systems

Financial performance is the single most important objective for the majority of businesses, frequently expressed in terms such as “maximizing shareholder value”, or simply “profit maximization”. However, company visions and strategies are not statements of financial performance goals, they are statements of the direction and path towards goal achievement in a contextual form. Due to this difference, strategic information systems that attempt to measure successful strategy implementation by means of financial performance are unlikely to achieve their purpose. At the same time, information systems that measure strategy implementation but do not monitor financial performance are bound to fail as well, as they will indicate success when strategic targets are fulfilled, whereas the organization may in fact be close to collapse due to a change in environmental conditions or a poorly thought-out strategy. In other words, a good strategic information system needs both, measurement of performance measurement (which might be largely in form of financial measures) and measurement of strategy implementation. Being tied to the organizational objectives is the most critical success factor for an EIS for strategic management, according to Singh et al. (2002). In this context, the system needs a third component, namely the definition and monitoring of relationships between financials and the mechanisms that produce that performance. This is largely what the Balanced Scorecard sets out to do and has achieved in many implementations, as suggested by Kaplan and Norton (e.g., 2001).

Balanced Scorecard Impact

The Balanced Scorecard has emerged as a leading measurement tool for enterprise performance management, and has had a profound impact on the measurement of strategic performance. At least 20 software companies implement its methodologies, including industry giants such as PeopleSoft, Oracle or SAP. In addition, a variety of consulting companies and accounting firms

have developed practices around this methodology, while the Balanced Scorecard Collaborative serves as a gatekeeper, helping maintain the standard and certifying compliance.

Evidence from the literature also suggests that scorecard implementations have been very successful in guiding companies, and even in focusing company direction towards breakthrough strategies (Robert Kaplan, "Using THE BALANCED SCORECARD to achieve Breakthrough Performance In Challenging Economic Times", http://www.mim.edu/training/IIRKaplan_Malaysia_WEB%20final.pdf). As its inventors state, the Balanced Scorecard has helped organize an otherwise unsystematic collection of metrics, into a well-organized framework (Kaplan and Norton, 2001).

Despite these successes, there are signs that all is not perfect in the scorecarding world. Neely and Bourne (2000) as well as Schroek (2001) point towards difficulties in scorecard implementation, while software vendors are modifying the model components (e.g., Gentia, QPR), and even (Kaplan and Norton, 1996) propose to change the scorecard for organizations where the standard model does not apply. An alarming note comes from Neely and Bourne (2000), who state the claim that 70% of Balanced Scorecard implementations fail. In other words, while being a good structural model, the Balanced Scorecard appears to still have problems with descriptive adequacy and procedural adequacy of its representation. This article sets out to identify the shortcomings of the Balanced Scorecard methodology, and to support its claims through evidence. The article will then contrast the Balanced Scorecard with an alternative method ("Scoring Cube"), which will be argued to have more desirable properties. In discussing its claims, the article will focus both on methodological and implementation issues. After the discussion, conclusions will be drawn concerning the effectiveness of both models, and concerning useful next investigations.

Shortcomings of the Current Balanced Scorecard

Modeling frameworks, including the Balanced Scorecard framework have their "point of view" or "lense". They model the task area with that point of view and make sense of it accordingly. This raises the question whether the framework's point of view adequately captures the relevant aspects of the task area both in descriptive and procedural terms (e.g., Poole et al. 1998). Descriptive adequacy refers to the model's representation of structural, procedural adequacy refers to behavior and performance. This is similar to the casual notion of "look and feel".

The Balanced Scorecard was designed and validated through interviews with executives and through use in numerous companies (Kaplan and Norton, 1996). This clearly suggests a high level of both descriptive and procedural adequacy, but it still raises a number of questions, some of which are already pointed out by Norton and Kaplan (e.g., 1996). For reasons of conciseness, we will focus here on the three most critical aspects, number and choice of measurement perspectives, relationship between measurement perspectives, and role as a strategic information system framework.

Number and Choice of Perspectives

The Balanced Scorecard has four perspectives: financial, customer, internal process, and learning. Why these four? After all, there are many alternatives for selecting perspectives. For example, one might want to differentiate between process measures and outcome measures (descriptive and procedural perspectives). With this differentiation, it might be easier to determine whether poor performance (outcome) is due to poor process or due to adverse external conditions (e.g., good decision-bad outcome). Are these perspectives mutually exclusive and collectively exhaustive? Or is it possible to have financial metrics concerning customers (yes), or learning metrics related to customers or internal processes (yes, again)? Furthermore, **learning**, a separate perspective in the scorecard, is also an internal process and thus not mutually exclusive with the process perspective. Learning is a behavior change process, according to a widely used learning psychology's definition (Kimble 1961), namely a change in (potential) behavior due to reinforced practice, or a second order process (change of change). It appears then that the Balanced Scorecard does not sharply differentiate between outcome, process, and higher-order process measures, or measurement content (i.e., financial, customer). Further, by postulating that *Financial* and *Customer* are the most important domains of measurement, the model becomes less suitable (less descriptively accurate) in organizations where either one of these characteristics is not the most important. For such organizations, more important perspectives might for instance include *Product*, *Core Competency*, or *Core Process*. Other perspectives have been suggested for instance by Kueng (1998), who includes innovation, employee, and social aspects, and removes the learning perspective. Kueng also stresses the process orientation of a performance management framework and provides a 9-step process to compose a process performance management system.

Relationship between Perspectives

One of the powerful features of scorecards, and especially their software implementations is the linking of perspectives. Factors from one perspective are connected to factors from another perspective, depicting causal relationships. This can help in drill-down and causal problem analysis.

As depicted in Figure 1, the Balanced Scorecard framework has a relatively strict hierarchy of relationships between perspectives. *Financial* is the top-level perspective, which can be affected by *Customer*, but by none of the lower level perspectives. There is no “skipping” of perspectives when relationships are defined, nor are any reverse relationships allowed. Figure 1 depicts a scorecard view as one might find it in Gentia’s (now Open Rating’s) scorecard software. A review of the example suggests that there could very well exist direct relationships between for instance *Internal Process* measures and *Financial* measures. Disallowing them appears to be an arbitrary limitation (although one that might improve clarity of the design and implementation).

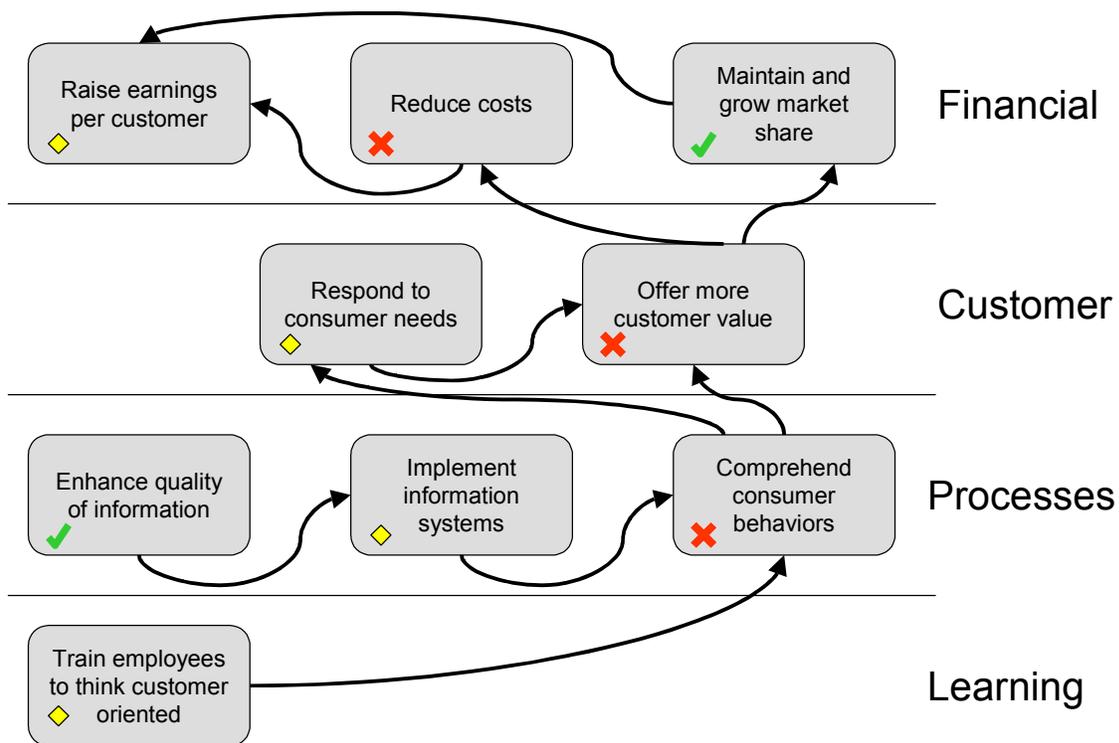


Figure 1. Relationship between Perspectives in a Balanced Scorecard Implementation

Usefulness as Strategic Information System Framework

To judge the Balanced Scorecard’s usefulness as a strategic information system framework, a comparison to strategic planning models is useful. Gluck et al. (1980) formulated a still widely accepted 4-stage evolutionary model of strategic planning. Phase 1 planning was simply single year financial reporting and budgeting, while Phase 4 was described as the organization strategically shaping its environment. According to Wagner and Bergin (2001) the Balanced Scorecard as a framework supports planning Phases 2-3, but not the highest levels of strategic planning.

An enterprise performance management supporting senior executives also faces the challenge that these executives need a strategic *management* system, not just a measurement or just a planning system. According to many strategic management frameworks (e.g., Hax and Majluf, 1996), strategic management involves planning steps, implementation steps, and monitoring steps. A methodology that supports planning only will result in strategic planning as a “ritual” (Carpenter 1986). A methodology that only supports measurement will risk the lack of tie-in with organization objectives, and thus lack of adoption (Poon and

Wagner 2001, Singh et al. 2002). As such, the Balanced Scorecard's focus on Measurement, taking the strategic planning as given, limits its adequacy as a strategic information systems framework.

Scoring Cube: A New Conceptual Structure

Scoring Cube Model

Figure 2 depicts the proposed Scoring Cube model. It is based on a conceptual breakdown of the value chain, types of measures, and relationships between measures. It is also based on the objective to monitor both strategy, and organization performance. The underlying understanding of strategy is that of a goal setting process and therefore a change process. In other words, the resulting performance measurement and management system (the Scoring Cube) is targeted to measure both on-going performance (e.g., staff turnover, return on equity, or average age of accounts) as well as the performance characteristics that are directly tied-in to strategy and strategy implementation (e.g., completion of a new plant, progress in the development of alliances). As such, the model recognizes that any organization has to monitor numerous "routine" measures and recurring activities (including identification of unexpected events or outcomes), yet at the same time has to also inform senior management about the progress towards achieving the organization's vision.

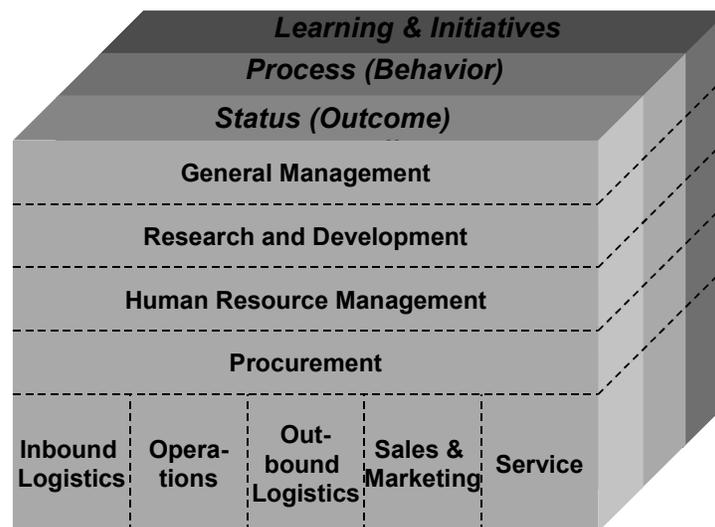


Figure 2. Scoring Cube

Methodology's Point of View: Strategic Management

Enterprise Performance Management tools either explicitly or implicitly embody a point of view on how a strategy should be developed and implemented (strategy process). Figure 3 depicts both the Balanced Scorecard point of view (Hallgärde and Johansson, 1999), and that underlying the Scoring Cube. The two approaches differ significantly in the role of measurement and strategy implementation. The Balanced Scorecard is strongly measurement oriented, thus the definition of critical success factors and measures is carried out early in the process. Creation of action plans follows after identification of measures and evaluations. Consequently, the balanced scorecard does not monitor action-plan-oriented measures well. In contrast, the Scoring Cube process captures strategy implementation around capability gaps, initiatives, and leadership roles. The overriding question is "what capabilities does the organization need to achieve the strategic goals?", which is followed by an analysis of missing capabilities, which then leads to an identification of initiatives (high level, strategic projects) to bridge the gaps, and the assignment of responsibilities for their completion. Only then will the method identify metrics, measures (metric operationalization), and targets (specific tangible values to be achieved).

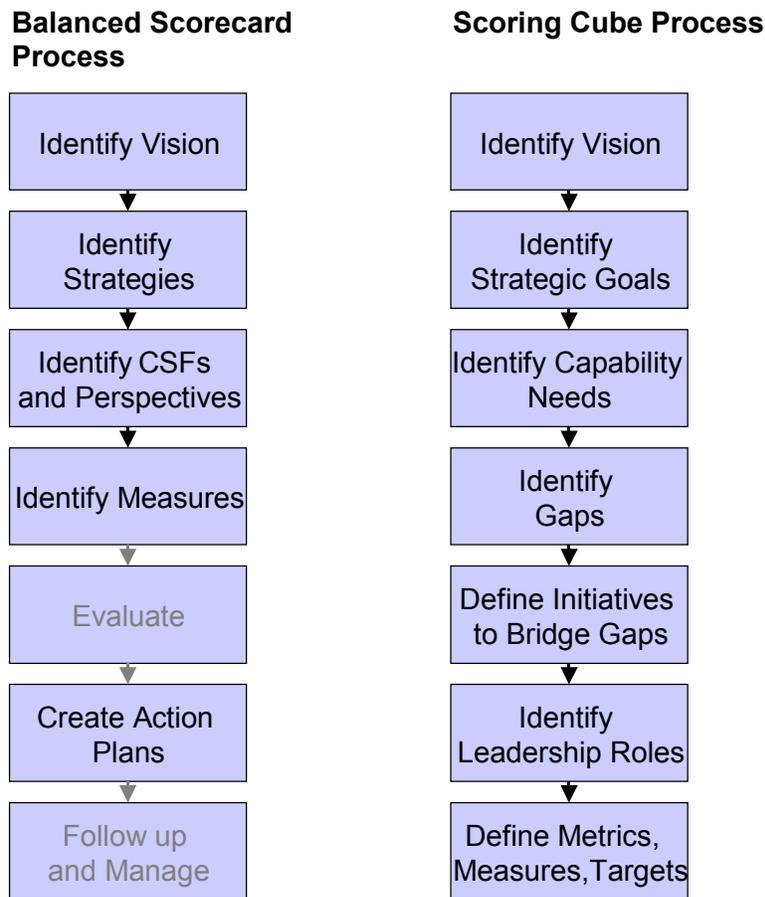


Figure 3. Comparison of Balanced Scorecard Process versus Scoring Cube Process

It should be noted that elsewhere (Mendoza and Zrihen, 2001), a different Balanced Scorecard implementation process is proposed, which lets the definition of indicators follow action plans. Nevertheless, a relatively early definition of high-level metricized objectives (“critical success factors”) is also present in that implementation.

The most significant difference in the two points of view is the role of initiatives as part of strategic management. In the Scoring Cube process, initiatives are a pro-active management vehicle to achieve the strategy. In the Balanced Scorecard, initiatives become an outcome, associated with measures (instead of the reverse). Kaplan and Norton (2000) point out that the action orientation in their approach is not represented by initiatives, but within each perspective’s map of core attributes. This is a reasonable argument, yet it reduces the action orientation of the planning tool. Kueng’s (1998) 9-step process for the composition of a process performance management system has a similar purpose, with the key difference that Kueng’s highest level goals are business process goals, versus the organizational vision orientation of the scoring cube.

Three Orders of Metrics

The Scoring Cube further differs from the balanced scorecard by encompassing three orders of metrics, from zero-order to second-order (see Figure 2). Conceptually, zero-order metrics describe status (outcome), first-order metrics describe process (behavior), and second-order metrics describe change in behavior (including both learning and new initiatives). The logic behind this separation is to provide a means-ends link between outcomes and the factors that create outcomes. If a deviation in zero-order measures is observed, we can drill-down to related first-order determinants to see whether the processes that produce the outcomes have changed. A further drill-down then reveals new initiatives and learning (or un-learning).

With its three orders, the model creates a “scoring cube”, which measures outcomes, process, and process change over a number of perspectives. At the same time, contrary to the Balanced Scorecard, the model does not recognize *Internal Process* or *Learning* as perspectives, as they have become part of the metric dimension.

Outcomes in the Scoring Cubes can be several different items. An outcome can be a capability, a product, a new process, or any other objective item defined within the organization strategy. As such, the perspective focus moves further away from observing predominantly financials in order to assess the success of a strategy implementation.

New Set of Perspectives

Also having “lost” two perspectives versus the Balanced Scorecard, the Scoring Cube allows for the formulation of several additional perspectives, by mapping the entire value chain, with both primary and support activities, into the measurement system (see Figure 2). As a result, the Scoring Cube monitors five primary activities and four support activities. Kaplan and Norton (1996) do consider the value chain as the source of perspectives, and in fact repeatedly refer to it, however, their core process leaves out several primary and support activities.

In selecting Perspectives, “Financial” is removed as a separate perspective, as it describes only a particular operationalization of outcome metrics (namely financial ones). Instead, metrics are chosen based on the type of performance gap that is identified. If the gap is best expressed in financial numbers, then a financial measure will be chosen. However, as few strategic goals are defined in financial terms such as “we want to increase our revenues by 40% within the next two years”, therefore also measurement of strategy should only partially rely on financial numbers. As mentioned earlier, the performance management system will have to capture two types of company processes, however, namely those that are carried out routinely (such as the routine processes that generate revenue), and processes that are designed to generate new capabilities and to implement a new strategy.

Relationship between Perspectives

The relationship in the Scoring Cube is less hierarchical than in the Balanced Scorecard. As depicted earlier (Figure 1), the Balanced Scorecard’s hierarchy lets factors from a “lower level” perspective affect the next higher level, but not vice versa. Nor are there linkages that skip a perspective in between.

No such strong hierarchical order is enforced within the Scoring Cube. Identification of relationships between variables is encouraged and can even be made explicit as part of the Learning attributes. Figure 4 illustrates this point. Figure 4 depicts (2-dimensionally) a Scoring Cube to support a functional strategy (here at the Services department). Measures are both strategic and tactical in nature. Reported in the figure are outcome, process, and process change measures. Among process change measures, the differentiation is between *Learning* and *Initiatives*. One learning measure shown is the strength of the relationship between customer satisfaction and call duration (correlation coefficient), indicating here that longer calls mean more satisfied customers. While such a measure can be displayed on the measurement view, normally it would be more suitable depicted within a measure relationship view (similar to Figure 1).

Service Metrics			
Outcome	Service Satisfaction Level	87%	
	Service Program Earnings	\$ 2.75 M	
Process	Service Call Duration	186 s	
	Avg. number of Handoffs	1.7	
	Telephone Manner Rating	3.7	
Learning	Call Handoff	23%	
	Satisfaction-to-Call Duration	76%	
Initiatives	Telephone Manner Training	42%	
	CRM System Implementation	100%	

Figure 4. Scoring Cube View of Service Measures

Another learning measure illustrated in Figure 4 is the behavior “Call Handoff” (referring to the ratio of calls that are transferred upward to the next higher level of customer support, i.e., from Level 1 to Level 2), demonstrating an increasing behavior of problem shifting instead of problem solving. This is a learned behavior, allowing staff members to shorten their call durations by handing off calls, and to focus on routine situations. Among the initiatives, we see targeted change attempts, both concerning staff skills, and technology infrastructure.

Scoring Cube Advantages and Disadvantages

The obvious question is, what effective advantages the Scoring Cube offers over the Balanced Scorecard, and what disadvantages it creates. Especially in the organizational practice, where it takes a long time to adopt one set of metrics, and an even longer time to discard a set of metrics, the arguments for change have to be convincing.

Table 1. Summary of Advantages and Disadvantages of the Scoring Cube

Feature	Impact	Value
Use of strategy management oriented process	Focus away from measurement per se, and towards measurement of the implementation of strategic initiatives.	+
Use of value chain model to define perspectives	Enables companies who use the familiar value chain in strategic planning to directly translate metrics. Provides a more comprehensive set of perspectives (not all of which <i>have to be</i> implemented). Value chain model is modeled after manufacturing firms and less applicable to service providers (whose definition of operations and inventories are very different).	+ / -
Systematic structure, based on orders of measures, and standard definition of learning	Permits a structured development of the scoring system. Not based on industry practice.	+ / -
Large number of metrics	Allows description of a multitude of measures, both according to value chain activity, and order of measurement (zero to second). Large number creates high possibility of mislabeling and confusion.	+ / -
Relationships between all “perspectives” are possible.	Captures true relationships between different metrics which cannot be directly implemented in the Balanced Scorecard. Larger number of relationships adds to the complexity of the measurement system and may create confusion among users.	+ / -
Multiple points of view can be represented.	While the Balanced Scorecard has a rigid hierarchical structure, the Scoring Cube allows any “perspective” or measure to be a top level measurement item. This facilitates different points of view, but also results in a lack of standardization and user unfamiliarity.	- / +
Initiatives are the most important element, not perspective attributes (measures).	The focus on initiative gives the methodology an action orientation. Linkage of initiatives to competencies and underlying goals differentiates the methodology from a project planning tool. The Balanced Scorecard is more focused on the measurement of strategic planning, instead of its implementation.	+

As Table 1 indicates, the Scoring Cube has a few potential advantages over the Balanced Scorecard, derived from its more systematic and less rigid design. At the same time, it enables scoring systems to become more complex, and therefore more difficult to set up and to understand.

Implementation Considerations

While the preceding section points to some disadvantages of the Scoring Cube model, industrial practice suggests that it will have limited chance of success, if its implementation is not also capable of representing anything the balanced scorecard can represent.

In other words, it needs to be scorecard compliant, in order to be a viable alternative. The framework for this assessment is given in The Balanced Scorecard Functional Standards Release 1.0a (Balanced Scorecard Collaborative, 2000).

Table 2 outlines the elements of the standard and the Scoring Cube's compliance. Noteworthy is the very broad definition of the standard, which does not prescribe for instance the strict hierarchical nature of scorecards, as it is depicted throughout the literature (e.g., Kaplan and Norton, 1996, 2001).

Table 2. Compliance with Balanced Scorecard Functional Standards

Description Element	Explanation	Compliance
Perspectives	At least four basic perspectives must be represented (financial, customer, internal process, learning and growth). Variations in naming and number of perspectives is permissible.	N The Scoring Cube violates this standard in spirit, even though the very broad definition of the standard suggests possible compliance.
Objectives	Objectives to be represented. Objectives must be linkable to at least one perspective.	Y
Measures	Measures to be represented. Reasonable number of measures must be linkable to at least one objective.	Y
Targets	Enabling the definition of quantifiable targets.	Y
Cause and Effect Linkages	Allows objectives to be linked and displayed in cause-effect chains. Links to be easily updated.	Y
Strategic Initiatives	Requires initiatives to be aligned to at least one objective.	Y
Link of Initiatives to Objectives	Allowing the display of linkages between initiatives and objectives. 1:N relationships between initiatives and objectives required.	Y
Base Level Descriptors	Permitting levels of detail and qualitative descriptions	Y
Base Level Reporting	Enabling report of performance data for each measure	Y
Subjective Performance Assessments	Enabling subjective and qualitative assessments of performance.	Y
Visual Status Indicators	Allowing at least two visual status indicators (on and off plan)	Y

The only area in which the Scoring Cube is not compliant with the standard is the definition of perspectives. Clearly, the Balanced Scorecard is built on the foundation of four perspectives. And even though some implementations (e.g., QPR) introduce a fifth perspective (i.e., Employees), the basic structure remains.

In the Scoring Cube, *financial* is not a perspective, but a type of measure that can be associated with objectives for each of the value chain activities, while *learning* is represented as a higher order of measures. As the Scoring Cube allows for the definition of financial measures, as well as learning measures, it is technically in compliance with the standard, but methodologically non-compliant. In summary, the Scoring Cube can be considered to be at least technically compliant, and functionally adequate to describe all the information and rules represented in a Balanced Scorecard.

Conclusions

The article has raised the questions concerning the potential shortcomings of the Balanced Scorecard, in light of contradictory claims of its usefulness versus implementation failures.

There is little doubt that the Balanced Scorecard is one of the most influential performance measurement techniques available. It is a compelling framework that combines financial and non-financial aspects and incorporates causality into its model. Furthermore, it can be easily implemented in software. The framework's success (and therefore implementation in a variety of company environments) has revealed several improvement opportunities, which alternate methods can capitalize on. First, the Balanced Scorecard in its original form is relatively rigid, thus not permitting the creation of full cause-effect diagrams (e.g.,

Schroek, 2001). Second, its focus is largely oriented towards strategy measurement, not strategy management (e.g., Wagner and Bergin, 2001). This is particularly due to the focus on quantitative measures of performance, instead of on quantitative and qualitative measures of initiative implementation.

Although the Balanced Scorecard is relatively rigidly defined in the literature (e.g., Kaplan and Norton, 1996), a review of the underlying standards reveals that the implementation allows numerous flexibilities, and thus more faithful representations of organizational information needs. One such representation is the Scoring Cube, whose design is based on the Value Chain view of primary and support activities, and on a multi-order of measures, which captures outcome, process, and process change. The Scoring Cube results in a seemingly more adequate representation of organization performance, although it can result in higher complexity of scoring models and therefore more user confusion. A comparison with Scorecard standards suggest that the Scoring Cube is by-and-large compliant with the principles of the methodology, and therefore a potentially suitable substitute.

References

- Balanced Scorecard Collaborative. *The Balanced Scorecard Functional Standards Release 1.0a*, Lincoln, MA, May 5, 2000.
- Carpenter, M.A. "Planning vs Strategy – Which Will Win?", *Long Range Planning*, 19, 6, Dec. 1986, 50-53.
- Hallgärde, Ulf and Johansson, Andreas. *Att Införa Balanced Scorecard* (Studentlitteratur). QEM Biblioteket, 1999.
- Hax, A.C. and Majluf, N.S. *The Strategy Concept and Process, a Pragmatic Approach*, Upper Saddle River, NJ, Prentice Hall, 1996.
- Kaplan, Robert S. and Norton, David P. *The Balanced Scorecard*, Harvard Business School Press, 1996.
- Kaplan, Robert S. and Norton, David P. "Having Trouble with Your Strategy? Then Map It", *Harvard Business Review*, September-October 2000, 167-176.
- Kaplan, Robert S. and Norton, David P. "Transforming the Balanced Scorecard from Performance Measurement to Strategic Management: Part 1", *Accounting Horizons*, March 2001, 87-104.
- Kimble, G. A. *Hilgard and Marquis' Conditioning and Learning*, 2nd Edition, New York, Prentice Hall, 1961.
- Kueng, Peter. "Supporting BPR through a Process Performance Management System", in Banerjee, P. et al. (Eds.) *Business Information Technology Management*, Har-Anand Publications, New Delhi, 1998, 422-434.
- Mendoza, Carla and Zrihen, Robert. "Measuring Up", *Financial Management*, April 2001, 26-29.
- Neely, Andy and Bourne, Mike. "Why Measurement Initiatives Fail," *Quality Focus*, 4, 4, 2000, 3-6.
- Poole, David, Mackworth, Alan, and Goebel, Randy. *Computational Intelligence: A Logical Approach*, Oxford University Press, New York, 1998.
- Poon, P. and Wagner, C. "Critical success Factors Revisited: Success and Failure Cases of Information Systems for Senior Executives", *Decision Support Systems*, 30, 4, March 2001, 393-418.
- Schroek, Michael. "The Next Generation of Balanced Scorecards", *DM Review*, December 2001, <http://www.dmreview.com/master.cfm?NavID=55&EdID=4337>.
- Singh, S.K., Watson, H.J., and Watson, R.T. "EIS Support for the Strategic Management Process", *Decision Support Systems*, 33, 3, 2002, 71-85.
- Van Der Zee, J.T.M. and De Jong, Berend. "Alignment is Not Enough: Integrating Business and Information Technology Management with the Balanced Business Scorecard", *Journal of Management Information Systems*, 16, 2, Fall 1999, 137-156.
- Wagner, Christian and Bergin, Richard. "Enterprise Strategy Management: The Next ERP Frontier," *Proceedings of the 6th AMCIS Conference*, Boston, August 2001.