Use of the Balanced Scorecard in Health Care

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Since Kaplan and Norton published their article proposing a balanced scorecard, the concept has been widely adopted by industry and health care provider organizations. This article reviews the use of the balanced scorecard in health care and concludes that the balanced scorecard: (1) is relevant to health care, but modification to reflect industry and organizational realities is necessary; (2) is used by a wide range of health care organizations; (3) has been extended to applications beyond that of strategic management; (4) has been modified to include perspectives, such as quality of care, outcomes, and access; (5) increases the need for valid, comprehensive, and timely information; and (6) has been used by two large-scale efforts across many health care organizations in a health care sector, which differ, namely in the units of analysis, purposes, audiences, methods, data, and results. Key words: *balanced scorecard, performance measurement, health care organizations.*

THE BALANCED scorecard has been called one of the most important management innovations of the 20th century.[1] Kaplan and Norton published their first article on the balanced scorecard in 1992 and have followed up with several articles that further develop the concept.[2] In the decade since it first appeared in publication, it has been adopted in a broad range of industries from manufacturing to health care, both in the United States and abroad. It has received considerable attention in both the academic and industry press. For instance, a recent search found 142 articles on the balanced scorecard published in the period from 1999 to 2001.[3] In addition, an enormous supporting industry of adopters, consultants, consortia, software developers, and academics has developed to help others adopt and adapt this powerful tool—a recent search found over 100,000 uniform resource locators (URLs).[4]

As with any innovation, the balanced scorecard can be expected to go through a product life cycle: introduction, growth, maturity, and decline.[5] In health care, the balanced scorecard is well into its growth phase. The first refereed article related to health care appeared in 1994[6] and many more have been published since then. Although health care organizations have faced many of the same implementation issues as organizations in other industries, they also have had to meet some unique challenges in adapting the balanced scorecard to health care settings. For example, medical staff relations and quality of care are important attributes of hospital performance that can be difficult to measure, interpret, and compare with other organizations. The professional autonomy of physicians and the importance of long-term outcomes are both aspects of health care

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that have few analogs in other industries. These features of health care have resulted in many innovations and applications that are interesting examples of dissemination of an innovation.

The basic principles of the balanced scorecard are well documented in the health care literature (*e.g.*, Baker and Pink,[7] Chow *et al.*,[8] Zelman *et al.*,[9] and Oliveira[10]). The purpose of this article is to review the use of the balanced scorecard in health care and draw some conclusions about its use.

Health Care Adaptations of the Balanced Scorecard Theory and Concepts

The first task we undertook was the interesting exercise of investigating how authors of health care articles adapted the theory and concepts of the balanced scorecard for health care.

Baker and Pink[11] were among the first to argue that the theory and concepts of the balanced scorecard were relevant to hospitals. Castaneda-Mendez *et al.*,[12] assert that in order to connect practices, outcomes, quality, value, and costs, health care organizations must use a balanced scorecard. They see the theory as a balanced perspective on the organization for senior management to use in designing, developing, deploying, and directing the strategic plan, consistent with total quality management principles. Chow *et al.*,[13] interviewed administrators about the balanced scorecard and conclude that each organization must engage in the full range of strategic management activities, from defining its mission to the selection of goals and strategies, in order to develop its own unique scorecard and to assist progress toward the selected goals. Sahney[14] outlines how the balanced scorecard could be used by a managed care organization. Similarly, Santiago[15] adapts the balanced scorecard for behavioral health care and argues that it can help organizations guide implementation of strategic planning, report on critical outcomes, and offer a report card for payers and consumers to make informed choices.

Zelman *et al.*,[16] investigate the concept of the balanced scorecard in relation to academic health centers and conclude that their unique characteristics may mitigate the full benefit of the approach and, when it is used, some key modifications must be made to account for those unique characteristics. Weber[17] discusses how the balanced scorecard can be used as a framework for managing complex and rapid change. Similarly, Beauchamp[18] recommends the balanced scorecard be used to diagnose and manage the health of physicians' practices and/or related enterprises.

Griffith[19] nests the balanced scorecard in the broader notion of championship management and says that it will allow integrated health systems and their accountable work groups to track performance on several dimensions and establish integrated goals or targets. Similarly, Curtwright *et al.*,[20] opine that leaders of integrated health systems need to develop a balanced scorecard that aligns organizational strategies with performance measurement and management. They recommend that internal stakeholders identify metrics to measure performance in each key category and, through these metrics, the organization links its vision, primary value, core principles, and day-to-day operations.

Jones and Filip[21] emphasize focusing on crucial process and outcome indicators that demonstrate how the work of all team members makes a difference at the point of

clinical services across the continuum. They also stress understanding the implications for leadership development. Oliveira[22] states that coupling the balanced scorecard with data-warehousing capabilities offers a way to measure an organization's performance against its strategic objectives while focusing on building capabilities to achieve these objectives. Weber[23] argues that the balanced scorecard perspectives should be the underpinnings of a "balanced" tool with which leaders can assess corporate performance in the knowledge-based marketplace. Finally, by targeting collaboration, strategic thinking, and continuous improvement, the balanced scorecard has been advanced as a tool to measure nursing performance.[24]

In summary, most authors have asserted that the theory and concepts of the balanced scorecard are relevant to health care, but that modification (and perhaps significant modification) to reflect the industry and organizational realities is necessary.

Types of Health Care Organizations Implementing the Balanced Scorecard

The left hand column of Figure 1 shows the types of health care organizations that have reported some experience with the balanced scorecard. Hospital systems,[25] hospitals,[26] university departments,[27] long-term care,[28] psychiatric centers,[29] insurance companies,[30] pharmaceutical companies,[31] national health care organizations,[32] the federal government,[33] and local government[34] have been included in articles relating to the balanced scorecard. What is striking about the types of health care organizations is the diversity of missions, services, products, and clinical settings. In health care, it appears that the balanced scorecard concept is generalizeable and is not restricted to particular organizational types, such as providers or product-based organizations.

The middle column of Figure 1 illustrates some examples within each type of health care organization and, again, there is great diversity. For example, hospitals cited in the balanced scorecard literature include academic health science centers and community, military, and specialty hospitals. Within each type of health care organization, it appears that the balanced scorecard has been implemented by organizations of variable size, clinical specialty, not-for-profit versus or for-profit status, stand-alone versus system affiliation, and so forth.

In addition to the information in Figure 1, there is an extensive balanced scorecard support industry available to health care organizations. This diverse group includes: (1) health care organizations that have balanced scorecard experience; (2) organizations with balanced scorecard experience in other industries; (3) consulting firms with balanced scorecard experience in health care and other industries; and (4) information system/performance measurement firms with related products. Figure 1 does not include several balanced scorecard anecdotes that have been published in practitioner journals.[35]

Health Care Applications of the Balanced Scorecard

The left hand column of Figure 2 shows the types of applications that the balanced scorecard has been used for in health care. In addition to management of the organization shown in Figure 1, public information,[36] clinical pathways,[37] hospital department performance,[38] quality of care and outcome

Figure 1. Types of Health Care Organizations That Have Implemented the Balanced Scorecard

Organization Type	Examples	Source
Hospital Systems (*see* n.25)	Henry Ford Healthcare System	Sahney
	Ontario Ministry of Health and Ontario Hospital Association	Pink *et al.*
Hospitals (*see* n.26)	Duke's Children's Hospital	Meliones *et al.*
	Sunnybrook Health Science Centre	Gordon *et al.*
	Peel Memorial Hospital	Harber
	Duke Women's Services	Jones and Filip
	University of Colorado Health Sciences Center Burn Center	Wachtel *et al.*
University Departments (*see* n.27)	Department of Anesthesiology, Yale University	Rimar Rimar and Garstka
	Yale Faculty Practice Plan	Rimar
	Baylor	Garson *et al.*
Long-Term Care (*see* n.28)	Ebenezer Social Services	Potthoff *et al.*
	The Sisters of Charity of Ottawa Health Service	Macdonald
Psychiatric Centers (*see* n.29)	Hudson River Psychiatric Center	Hudson River Psychiatric Center Web Site
Insurance Companies (*see* n.30)	Kaiser Permanente	Kaiser Permanent
Pharmaceutical Companies (*see* n.31)	Wyeth Pharmaceuticals	Business Wire
National Health Care Organizations (*see* n.32)	National Women's Health Quality Initiative	Inamdar *et al.*
	JCAHO	Employee Benefit Plan Review
Federal Government (*see* n.33)	US Military Health Services System	Krakauer *et al.*
	Veteran's Administration	VA Web Site
	DHHS for Mental Health Services—"The Evaluation Program"	Department of Health and Human Services
Local Government (*see* n.34)	Department of Health, Washington, DC	Department of Health Web Site

Figure 2. Health Care Applications of the Balanced Scorecard

Type of Application	Examples	Source
Organizational Performance	Organizations Listed in Figure 1	*See* Figure 1
Public Information (*see* n.36)	Patient Care Report Cards	Lowe and Baker Badger
Clinical Pathway (*see* n.37)	Cardiac Prevention	Levknecht *et al.* Schriefer *et al.*
Hospital Department Performance (*see* n.38)	Operating Rooms	Mathias
	Information Technology	Niss Gordon and Geiger
	Medical Rehabilitation	Cohen *et al.*
Quality of Care and Outcome Measurement (*see* n.39)	Breast Cancer	West *et al.*
	Mental Health	Rosenheck
	Renal Transplant	Colaneri
	Renal Dialysis	Peters and Ryan
	Post-Op Nausea	Graumlich *et al.*
Managed Care Evaluation (*see* n.40)	HEDIS	Kenkel
Performance Measurement of a Consortia of Hospitals (*see* n.41)	CRISP	Bergman

measurement,[39] accreditation, managed care evaluation,[40] and performance measurement of a consortia of hospitals[41] have been included in articles relating to the balanced scorecard. In health care, it appears that some health care organizations have found it worthwhile to extend the balanced scorecard concept to applications beyond that of strategic management at the organizational level.

How Has the Balanced Scorecard Been Modified for Health Care?

Although Kaplan and Norton originally posited four key perspectives, they recognized that their formulation is a starting point and that it should be modified to fit the organization's strategy.[42] For example, Provost and Leddick[43] suggested that, in manufacturing and service industries, creating a perspective of "human capital" would give this area additional weight and significance.

A number of organizations in a wide variety of health care sectors also have found it useful to make modifications to Kaplan and Norton's original formulation. Figure 3 shows some examples of additional balanced scorecard perspectives used by health care organizations. Potthoff *et al.*,[44] report a long-term care organization creating a balanced scorecard containing the perspectives of "development and community focus," "human resources," and "quality of care and

Figure 3. Selected Additional Balanced Scorecard Perspectives Used by Health Care Organizations

Domain Modification	Health Care Organization	Source
Development and Community Focus Human Resources Quality of Care and Services (*see* n.44)	Long-Term Care Industry—Ebenezer Society and Board of Social Ministries	Potthoff *et al.*
Clinical Productivity and Efficiency Mutual Respect and Diversity Social Commitment External Environmental Assessment Patient Characteristics (*see* n.45)	Outpatient Operations—Mayo Clinic	Curtwright *et al.*
Outcomes (*see* n.46)	Health Network—Carondelet Health Network Behavioral Health Care	Santiago
Shifted Customer Perspective to Top of Scorecard (*see* n.47)	Physician Practices—Yale Faculty Practice (Yale University School of Medicine)	Rimar
Revision of Domain Questions (*see* n.48)	Academic Medical Centers	Zelman *et al.*

services." Curtwright *et al.*,[45] describe how the Mayo Clinic modified the balanced scorecard in line with its core business principles, including the interesting perspectives of "mutual respect and diversity" and "social commitment." Santiago[46] argues that quality of care and outcomes are important to health care organizations and cites the example of Carondelet Health Network that added outcomes as a perspective.

In addition to adding or modifying perspectives, some organizations modify the basic structure of the balanced scorecard. Rimar[47] discusses how the physician practice plan at the Yale University School of Medicine demonstrates that it values the customer perspective above others by placing the customer domain at the top of the balanced scorecard. In another approach to tailoring perspectives for an organization, Zelman *et al.*,[48] focus on adapting the balanced scorecard for academic health centers to reflect the research, teaching, and other unique characteristics of this segment of the health care industry.

The Balanced Scorecard and Information Needs of Health Care Organizations

Health care organizations often have poor data warehousing and multiple information systems that are not integrated, making it difficult to obtain desired information in a timely manner.[49] Several articles in the literature have addressed the critical need for valid, comprehensive, and timely information as input to the balance scorecard. For example, Oliveira[50] says that because the balanced scorecard requires substantial amounts of data, it is necessary to establish an organizational data warehouse of clinical, operational, and financial data that can be used in decision support. Meliones[51] discusses how the Duke balanced scorecard required development of a customized information system.

In some cases, the balanced scorecard has actually driven development of new information systems. Gordon and Geiger[52] outline how the balanced scorecard was used

as the basis for strategic management of an electronic patient record project. Niss[53] describes the use of the balanced scorecard in the Model for Investment and Evaluation of Medical Information Systems (MIEMIS). Gordon *et al.*,[54] developed a methodology to help teams define and use important management data and coupled this with an information system that makes this data accessible. Results of their evaluation indicate that a customized decision support system, which integrates multiple measures in a balanced scorecard framework, is a powerful tool for enabling complex decision making by a management team. It also is interesting to note that the balanced scorecard framework has been advocated for evaluation of the information strategy developed by the National Health Service in the United Kingdom.[55]

Applying the Balanced Scorecard to Health Care Sectors

In addition to balanced scorecards for single organizations, the literature also reports experience with health care sector scorecards. Some of these efforts arose from the concern with health care quality.[56] Because of their focus on hospitals and managed care, respectively, two of the best-known multiorganizational scorecards have been developed by JCAHO[57] and HEDIS.[58]

More recently, two large-scale efforts have been undertaken that use the balanced scorecard as the conceptual framework to study many health care organizations in a health care sector. Although both are based on the theory and concepts of the balanced scorecard, they are very different in their approaches and thus make an interesting contrast in application. The first focuses on a wide range of acute care hospitals in Canada, the second on critical access hospitals in the United States (see Figure 4).

Acute Care Hospitals in Ontario, Canada

The first example of a large-scale application of the balanced scorecard was "Hospital Report '99," produced by the University of Toronto.[59] The objectives of the study were to stimulate improvement among Ontario acute care hospitals, achieve a greater level of accountability, and improve the quality of data. It was designed to give feedback to both providers and consumers based on data gathered from 89 hospital organizations with 145 sites, whose participation was voluntary. Data for the 39 indicators in 4 quadrants were collected through routine hospital reports, a survey of discharged patients, and a survey of the hospitals. The four domains were financial performance, patient satisfaction, clinical utilization and outcomes, and systems integration and change. Data were reported both for individual hospitals and in the aggregate.

Since Hospital Report '99 was published, subsequent acute care reports have been issued. The latest version, "Hospital Report 2002: Acute Care," included 123 acute care organizations with 173 sites.[60] In addition, new reports for complex continuing care and emergency have been published and further reports for mental health, rehabilitation, and women's health are in development. All of these reports use the balanced scorecard as the conceptual framework for the analysis.

Critical Access Hospitals in the United States

The second example of a large-scale application was undertaken as part of a large study monitoring the implementation of the Medicare Rural Hospital Flexibility

Figure 4. Two Health Care Sector Applications of the Balanced Scorecard

	A Balanced Scorecard for Ontario Acute Care Hospitals*	Hospital Flexibility Tracking Project—The Balanced Scorecard**
Industry Segment	Acute Care Hospitals in Ontario, Canada	Critical Access Hospitals in the United States
Number	145 Sites, 89 Hospitals	217 CAHs (latest reported data); 538 CAHs (updated number)
Participation	Voluntary	Voluntary
Primary Audience	Providers Consumers	Federal/State Policymakers Providers
Purpose	Increasing Awareness of Performance Variation Stimulating Improvement Ensuring Accountability Improving Quality of Data	Inform Federal, State, and Local Decisionmakers
Financed By	Ontario Hospital Association	OHRP
Data Gathering Methods	Routine Hospital Reports A Survey of Discharged Patients A Survey of the Hospitals	Case Studies (questionnaire) Phone Survey
Data Collected By	University of Toronto	Consortium of 5 US Health Services Research Centers and One Rural Health Policy Institute
Data Sources	Government Cost Data Survey of Discharged Patients Survey of Hospitals	Mailed Survey of Hospitals (participating case study sites) Phone Survey of Hospitals (participating CAHs)
Data Reported For	In Aggregate Individual Hospitals	In Aggregate
Domains	Financial Performance Condition Patient Satisfaction Clinical Utilization and Outcomes System Integration and Change	Financial Customer Process Infrastructure, Governance, and Community Relations
Data	38 Indicators, 4 Quadrants for 89 Organizations	47 Indicators, 32 Hospitals, 4 Quadrants, X Indicators, 217 Hospitals, 4 Quadrants

*All information regarding the balanced scorecard for Ontario Acute Care Hospitals comes from G. Baker, G. H. Ross, George H. Pink, "A Balanced Scorecard for Canadian Hospitals," *Healthcare Management Forum*, 8, 4: 7–13 (Winter 1995); G. H. Pink, I. McKillop, E. Schraa, C. Preyra, C. Montgomery, and G. Baker, "Creating a Balanced Scorecard for a Hospital System," *Journal of Health Care Finance*, 27, 3 (Spring 2001); G. Baker and N. Brooks, "A Briefing Paper for the Ontario Hospital Association," Performance Measurement Systems for Ontario Hospitals (no date), *www.oha.com/oha/6ppreprt.nsf/b8ce0eec787f95b385256792005ba5ba/db5a63c4993c3724852566ad0017619b?OpenDocument* (accessed January 20, 2002).

**All data regarding the Hospital Flexibility Tracking Project–The Balanced Scorecard comes from The Rural Policy Research Institute, Rural Hospital Flexibility Program, Tracking Project, Year Two Report, funded by the Federal Office of Rural Health Policy, Health Resources and Services Administration (Cooperative Agreement #6U27 RH 00235) *www.rupri.org/rhfp-track/year2/introduction.html* (URL found January 22, 2002). *See* in particular, William N. Zelman, Andrew E. Cameron, Scott R. Stewart, and Thomas C. Ricketts, Chapter 3F: Major Strengths, Problem Areas, and Strategic Initiatives: A Balanced Scorecard Perspective.

Program (FLEX).[61] The FLEX legislation was originally enacted as part of the Balanced Budget Act of 1997 (BBA), in part to help improve rural areas' access to and quality of health care. It created a new category of rural hospitals—critical access hospitals (CAHs). Conversion to CAH status is voluntary, but must be certified by the state. In exchange for being reimbursed for the costs of their Medicare patients, hospitals agree to meet certain obligations, including 24-hour availability of emergency services, a limit of 15 beds, and an average length of stay of no more than an average of 96 hours. There were 539 certified CAHs as of January 1, 2002.[62]

To help improve/refine both the policy and implementation of the FLEX program, the Federal Office of Rural Health Policy (FORHP) funded a consortium of five health policy research centers to study various

Figure 5. Differences Between Organizational and Sectoral Applications of the Balanced Scorecard

	Health Care Organization-Focused Balanced Scorecard	Health Care Sector-Focused Balanced Scorecard
Units of Analysis	Health care organization Strategic business unit	Health care sector Health care organization
Purposes	Organization mission achievement Strategic management Program and service improvement Quality management	System mission achievement Public accountability Program and service improvement Political needs
Audiences	Organization managers at all levels	Organization board, senior management Public Government Employers
Methods	Comparability over time Organizational benchmarks	Comparability across organizations Health care sector benchmarks
Data	Specific indicators for organization Data for one or a few organizations Idiosyncratic reporting Minor data quality problems	General indicators for sector Data for many organizations Standardized reporting Major data quality problems
Results	Internal feedback mechanisms Internal forces for change	External feedback mechanisms Internal and external forces for change Policy formulation and modification

aspects of the implementation. FORHP also funded one rural health policy center to disseminate the results to the public in general and FORHP, the states, and CAHs in particular. Within this effort, called the Rural Health Program Tracking Project, The University of North Carolina at Chapel Hill focused on understanding the problems, strengths, and strategic initiatives of CAHs from a balanced scorecard framework. In three years, this study employed two methods to gather data: (1) a case study questionnaire; and (2) a larger phone survey. The initial results have been published in report form.[63]

Differences Between Organizational and Sector Applications of the Balanced Scorecard

Although there are only two balanced scorecard related-efforts for a health care sector reported in the literature, it is interesting to contrast sectional balanced scorecards with those for individual health care organizations. Figure 5 identifies some of these major differences that stem in large part from differences in the following factors:

- Units of analysis
- Purposes
- Audiences
- Methods
- Data
- Results

Units of Analysis

Most balanced scorecards for health care organizations are designed for the entity in total and its strategic business units, whereas those for health care sectors are designed for the sector in total and the individual organizations in the sector.

Purposes

The primary purpose of a health care organization's balanced scorecard effort is long-term adaptation and survival. Thus, the

focus is on achievement of the organizational mission, strategic management, program and service improvement, and quality management. On the other hand, the main purposes of the health care sector balanced scorecard efforts focus on achievement of the system mission, public accountability, improvement of programs and services, and perhaps addressing specific political needs and concerns.

Audiences

When a health care organization implements a balanced scorecard, it is usually intended for managers, clinicians, and other staff who can effect change. The audiences of a health care sector balanced scorecard also may include managers and other organizational personnel, but in addition include the board and external audiences, such as the public at large, government, and employers. Other audiences also may include traditional consumers of financial statements, such as banks, third-party payers, unions, donors, and others.

Methods

The methods used to develop and produce a balanced scorecard for a health care organization differ from those for a health care sector. A health care organization usually wants to ensure that its scorecard is comparable across time and compares its performance to its own benchmarks. Occasionally, external benchmarks are included in organization scorecards, but a paucity of such data makes this difficult. For a health care sector balanced scorecard, comparability across organizations is more important and the relevant performance comparison is health care sector benchmarks (which may be averages of the values for the included organizations).

Data

Health care organizations have the freedom to design a balanced scorecard in any way that meets the organization's needs, but a balanced scorecard for a health care sector must attempt to accommodate the needs of many organizations. Thus, health care organizations can choose indicators that reflect their own specific mission, services and programs, and operating environment. For example, an academic health center may include indicators relating to a cardiac transplant program in its balanced scorecard even though there is no other such provider in its state. Indicators in a balanced scorecard for a health care sector have to be relevant for a large number of providers and thus tend to be more general, reflecting common services and programs. For example, a hospital sector balanced scorecard is likely to include indicators about the emergency department because most hospitals have such services. In addition, the data for a health care organization scorecard is assembled internally using a reporting framework and methods determined by the organization. The data for a health care sector is assembled by a third party using data from organizations that may or may not report data in the same manner or use the same methods. Idiosyncratic reporting makes identification of data quality problems easy for health care organizations—they simply check their own data. In contrast, convincing hundreds of different organizations to report data in a standardized format so that comparable indicators may be produced presents some formidable data quality problems.

Results

The results of a balanced scorecard for a health care organization are usually provided

Figure 6. Uses of Balanced Scorecard Results by Policymakers

Policy Level	Data Yield	Utilization
Federal	• Provides snapshot of overall industry strengths, weaknesses, and strategic initiatives • Provides information regarding the depth and distribution of strengths, weaknesses, and strategic initiatives	• Informs policy directives/decisions • Provides data to supports funding decisions • Captures one or multi-year industry trends for forecasting
State	• Provides snapshot of health care organization performance within a state • Provides health care employment base information • Provides access and admissions data	• Allows for networking opportunities among health care organizations • Aides maintenance of health employee base within state • Aides state to ensure its social responsibility to provide health care to underserved
Local	• Provides snapshot of organizational performance with current and future indicators	• Aides executive decision making by quickly identifying organization's strengths, weaknesses, and initiatives

as an internal feedback mechanism to senior and front-line managers. Organizational change occurs if the senior and front-line managers and staff decide that such change is desirable. In contrast, the results of a balanced scorecard for a health care sector are provided by an outside party. Because the results are known outside of a health care organization, there may be external forces of change present, as well as internal. Indeed, it is possible that the senior and front-line staff are opposed to change, but external parties force it because they know the scorecard results. The results of a balanced scorecard for a health care sector also may serve as an input or even catalyst for policy formulation and modification. Figure 6 lists some potential uses of balanced scorecard results by policymakers.

Recent Innovations

As the balanced scorecard has disseminated throughout health care, recent attention has focused on improvements in application. One study develops an incremental approach for decision making using a balanced scorecard with an index of non-financial as well as financial measures. The author argues that this approach may prove to be useful in evaluating the existence of causality relationships between different objective and subjective balanced scorecard measures.[64] Another study surveys executives in nine provider organizations that were implementing the balanced scorecard about issues relating to its implementation and effect. The authors develop several guidelines for the successful application of the balanced scorecard, including: (1) evaluation of the organization's ability and readiness to apply the balanced scorecard; (2) management of the balanced scorecard development and implementation process; (3) management of the learning before, during, and after implementation; (4) expectation and support of role changes among different parts of the organization; and (5) taking a systems approach.[65]

Finally, a study examines the content validity, reliability and sensitivity, validity of comparison, and independence of nine multidimensional hospital performance measures derived from Medicare reports and concludes that cash flow, asset turnover, mortality, complications, length of inpatient stay, cost per case, and percent of revenue from outpatient care represent a potentially useful set for evaluating most US hospitals.[66]

Conclusion

Our review suggests that the following conclusions may be drawn about the balanced scorecard in health care:

- The theory and concepts of the balanced scorecard are relevant to health care, but modification to reflect the industry and organizational realities is necessary.
- The balanced scorecard has been adopted by a wide range of health care organizations.
- Health care organizations have extended the balanced scorecard concept to applications beyond that of strategic management.
- Perspectives that are commonly added to balanced scorecards for health care organizations include quality of care, outcomes, and access.
- Adoption of a balanced scorecard increases the need for valid, comprehensive, and timely information.
- Two large-scale efforts have been undertaken that use the balanced scorecard as the conceptual framework for comparison of many health care organizations in a health care sector.
- There are key differences between application of the balanced scorecard for a health care organization and for a health care sector, namely in the units of analysis, purposes, audiences, methods, data, and results.
- Recent innovations focus on improvement of the application of the scorecard through measurement and evaluation.

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