Measuring and Improving IT Governance Through the Balanced Scorecard

By Wim Van Grembergen and Steven De Haes

The US Sarbanes-Oxley Act has brought about an enhanced attention to enterprise (corporate) governance. Consequently, IT governance is also on the agenda as corporate governance and IT governance focus on related issues, and IT governance performance greatly impacts the organisation's ability to achieve its objectives. In their publications on measuring the performance of corporate boards, M.J. Epstein and M.J. Roy state that "governance concerns relate to practices of both corporate boards and senior managers" and "the question being asked is whether the decision-making process and the decisions themselves are made in the interest of shareholders, employees, and other stakeholders or whether they are primarily in the interests of the executives."[1] This can be translated into specific IT governance issues. IT governance concerns relate to IT practices of boards and senior managers. The question is whether IT structures, processes, relational mechanisms and IT decisions are made in the interest of shareholders and other stakeholders, or primarily in the executives' interests.

Currently, many enterprises are implementing IT governance structures, processes and relational mechanisms to achieve a better fusion of business and IT. A crucial question is how well are they doing? In other words, how do the implemented IT governance practices rate? Drawing on Epstein and Roy and previous work on the IT balanced scorecard (BSC),[2] an IT governance BSC will be developed in this paper.

To set the context, IT governance issues and balanced scorecard concepts will first be discussed. After that, a balanced scorecard will be introduced as a performance measurement system for IT governance enabling strategies for improvement.

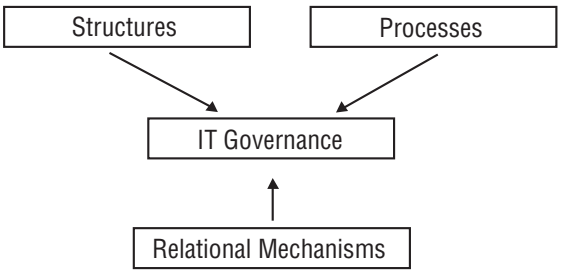
IT Governance Issues

IT governance is increasingly gaining attention in the business and IT arena. In Gartner's *Top Ten CIO Management Priorities for 2003*, "Improving IT Governance" is for the first time included and ranked third. This emerging interest is also shown by recent publications.[3]

IT governance can be defined as the organizational capacity exercised by the board, executive management and IT management to control the formulation and implementation of IT strategy and ensure the fusion of business and IT.[4] Primary focus is on the responsibility of the board and executive management. It is indicated that IT management is also involved in the governance process. However, a clear difference must be made between IT governance and IT management. IT management is focused on the daily effective and efficient supply of IT services and IT operations. IT governance, in turn, is much broader and concentrates on performing and transforming IT to meet present and future demands of the business and the business' customers.[5]

To implement IT governance in practice, an IT governance framework can be deployed composed of a mixture of various structures, processes and relational mechanisms (**figure 1**). Structures involve the existence of responsible functions, such as IT executives and accounts, and a diversity of IT committees. Processes refer to strategic IT decision-making and monitoring such as strategic information systems planning and the balanced scorecard. The relational mechanisms include business/IT participation and partnerships, strategic dialogue and shared learning. When designing IT governance, it is important to recognise that it is contingent upon a variety of sometimes conflicting internal and external factors. Therefore, determining the right mechanisms is a complex endeavour and what works for one company does not necessarily work for another, even if they work in the same sector.[6]

Figure 1—Main Elements of an IT Governance Framework



Balanced Scorecard Approach

The use of the BSC has become widespread as a performance measurement and management system. The fundamental premise of the BSC approach, introduced by R.S. Kaplan and D.P. Norton on the enterprise level,[7] is that the evaluation of a firm should not be restricted to a traditional financial evaluation, but should be supplemented with measures concerning customer satisfaction, internal processes, and learning and growth. Results achieved within these additional perspectives should assure future financial results and drive the organisation toward its strategic goals while

keeping all four perspectives in balance. For this balanced measurement framework, Kaplan and Norton proposed a three-layer structure for each of the four perspectives: mission, objectives, and measures from which targets are to be set and initiatives are to be launched to reach a better rate. To leverage the scorecard as a management instrument, it should be enhanced with cause-and-effect relationships among measures. These relationships are articulated by two types of measures: outcome measures and performance drivers. A well-developed scorecard should contain a good mix of these two metrics. Outcome measures without performance drivers do not communicate how they are to be achieved. Performance drivers without outcome measures may lead to significant investment without a measurement indicating whether the chosen strategy is effective.

BSC concepts have been applied to the IT function and its processes. For IT as an internal service provider, the generic perspectives should be changed accordingly. **Figure 2** displays examples of metrics of an IT balanced scorecard developed and implemented by an international financial group.[8] The corporate contribution perspective evaluates the performance of the IT organisation from the viewpoint of executive management. The customer orientation perspective evaluates the performance of IT from the viewpoint of internal business users. The operational excellence perspective provides the performance of the IT processes from the viewpoint of IT management. The future perspective shows the readiness for future challenges of the IT organisation itself.

Figure 2—Examples of Metrics for an IT Balanced Scorecard

Perspective	Objective	Example Metrics
Corporate	• Business/IT alignment • Value delivery • Cost management • Risk management • Intercompany synergy	• Operational budget approval • Business unit performance • Attainment of expense and recovery targets • Results of internal audits • Single system solutions
Customer	• Customer satisfaction • Competitive costs • Development performance • Operational performance	• Business unit survey ratings • Attainment of unit cost targets • Major project scores • Attainment of targeted levels
Operational excellence	• Development process • Operational process • Process maturity • Enterprise architecture	• Function point measures • Change management effectiveness • Level of IT processes • State of the infrastructure assessment
Future	• Human resource management • Employee satisfaction • Knowledge management	• Staff turnover • Satisfaction survey scores • Implementation of learned lessons

(Adapted from Grembergen, W.; R. Saull; S. De Haes; "Linking the IT Balanced Scorecard to the Business Objectives at a Major Canadian Financial Group," *Journal of Information Technology Cases and Applications*, 2003)

In recent publications, Epstein and Roy have developed a board balanced scorecard. They see the board BSC as "an opportunity for companies and their boards to dramatically improve both governance and corporate transparency."[9] **Figure 3** shows typical examples of metrics for a board balanced scorecard as proposed by Epstein and Roy. The financial perspective demonstrates how the board is contributing to success in the financial dimension. The stakeholders perspective reports on how the board achieves ethical and legal compliance. The internal process perspective identifies processes to be implemented to ensure optimal board functioning. The learning and growth perspective captures measures regarding activities needed to develop and learn for the future.

Figure 3—Examples of Metrics for a Board Balanced Scorecard

Perspective	Objective	Example Metrics
Financial	• Long-term financial success • Short-term financial success • Long-term success of changes	• Return on investment • Stock price • Success of change
Stakeholders	• Ethical behaviour and legal compliance • Corporate governance and accountability • Management of stakeholders' needs	• Number of ethical/legal violations • Number of voluntary disclosures • Number of meetings with stakeholders
Internal processes	• Risk and crisis management • Performance evaluation systems • Review of strategic plans • Functioning of the board	• Number of risk audits performed • Number of board members owning stock • Number of hours spent on strategic issues • Overall attendance at meetings
Learning and growth	• Succession for CEO • Composition of the board • Skills and knowledge	• Interim CEO identified • Percent of directors financially literate • Existence of training programs

(Adapted from Epstein, M.J.; M.J. Roy; "How Does Your Board Rate?," *Strategic Finance*, February, p. 25-31, 2004)

Developing an IT Governance Balanced Scorecard

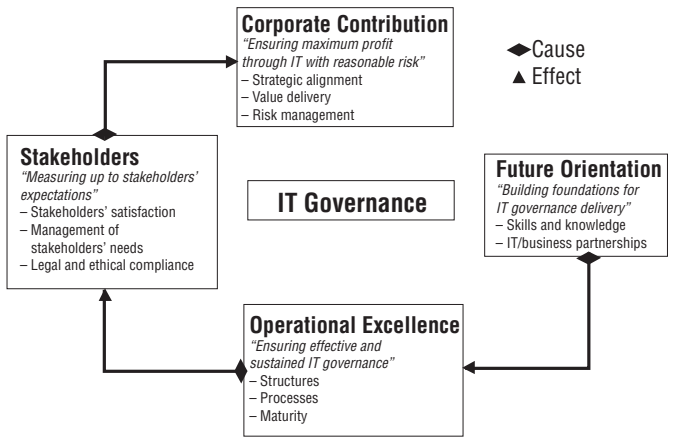
In previous paragraphs, it was demonstrated that the balanced scorecard concept can be applied to the IT function and the board. By using the balanced scorecard to its full extent, it enables IT management and the board to achieve their objectives. The BSC is not only a performance management system but also, at the same time, a management system when causal relationships between metrics are properly implemented. This can be illustrated with the board BSC of **figure 3**. A better composition of the board with improved financial literacy of its members (learning and growth perspective) may lead to a better review of strategic plans (internal processes perspective), better management of stakeholders' needs (stakeholders perspective) and ultimately to higher long-term financial results (financial perspective).

Building on these BSC applications, a scorecard has been developed for the IT governance process. It makes sense for CIOs, executive managers and board members that, through

such a scorecard, they can oversee the IT governance process—how well it is doing and how it can be improved. **Figure 4** displays the mission statements, objectives and corresponding measures for the four dimensions: corporate contribution perspective, stakeholders perspective, operational excellence perspective and future perspective.

The ultimate goal of the development and implementation of an IT governance process is attaining the fusion of business and IT and, consequently, achieving better financial results. Therefore, it is logical that the IT governance BSC starts with a corporate contribution perspective. As shown in **figure 4**, the other three perspectives have a causal relationship with corporate contribution and, amongst each other, cause-and-effect relationships. Overall, completed IT governance education (future orientation) may enhance the level of IT/business planning (operational excellence), which in turn may improve stakeholders' satisfaction (stakeholders orientation) and have a positive effect on the strategic match of major IT projects (corporate contribution). The metrics of the main elements of IT governance (**figure 1**)—structures, processes and relational mechanisms—can be found in the operational excellence and future orientation perspectives.

Figure 4—IT Governance Scorecard Perspectives and Their Cause-and-effect Relationships



Metrics for an IT Governance BSC

The corporate contribution dimension evaluates the performance of the IT governance process. A well-balanced IT governance process must enhance business profit through IT while mitigating the risk related to IT (mission). The key issues, as depicted in **figure 5**, are strategic alignment, value delivery and risk management. These three issues are seen by the IT Governance Institute as main concerns of IT governance.[10] The main measurement challenge is within the area of strategic alignment. As an overall metric, a weighted governance performance measure as developed by Weill and Ross is proposed.[11] This governance performance measure is based on the scores of a quick self-assessment of at least 10 senior managers. They have to score on a scale from one (not successful) to five (very successful) how important a particular governance outcome is and how well IT governance contributed to meeting that outcome. The outcomes that are to be scored include cost-effective use of IT, effective use of IT for growth, effective use of IT for asset utilisation and effective use of IT for business flexibility. Based on the scores, a weighted governance performance can be calculated. Strategic match of major IT projects, percentage of development capacity engaged in strategic projects and percentage of business goals supported by IT goals are specific strategic alignment concerns.

Measuring the strategic match of IT projects can be done through a scoring technique as introduced by information economics.[12] Typical scores are attributed from zero to five, whereby zero means no match at all and five a perfect match of the IT project with the business strategy. In the value delivery area, "business unit performance measurement" refers to the business results of the individual lines of business. Indeed, the ultimate responsibility for achieving and measuring the business value rests with the business units.[13] Alternative metrics for value delivery assessment are the traditional financial evaluations, such as the return on investment (ROI), net present value (NPV), internal rate of return (IRR) and payback period (PB). A major concern of senior management is the level of the IT costs and their recovery, respectively measured through ratio IT costs/total turnover and percentage of IT costs charged back to the business. Regarding the risk management objective, a high level of security and disaster recovery should be attained respectively measured by thenumber of implemented IT security initiatives and security breaches and the attainment of disaster recovery plans. The audit performance is measured through the number of IT audits performed and reported shortcomings.

Figure 5—Corporate Contribution

Perspective	Corporate Contribution
Mission	Ensuring maximum profit while mitigating IT-related risks
Objectives	***Strategic Alignment***
	Measures • Weighted governance performance • Strategic match of major IT projects • Percentage of development capacity engaged in strategic projects • Percentage of business goals supported by IT goals
	Value Delivery
	Measures • Business unit performance management • Business value of major IT projects based on ROI, NPV, IRR, PB • Ratio IT costs/total turnover • IT costs charged back to the business
	Risk Management
	Measures • Number of new implemented IT security initiatives and security breaches • Attainment of disaster recovery plans • Number of IT audits performed and reported shortcomings

Figure 6 portrays the objectives of the stakeholders perspective: stakeholder satisfaction, management of stakeholder needs and legal/ethical compliance. This perspective evaluates the IT governance process from the

Figure 6—Stakeholders

Perspective	Stakeholders Orientation
Mission	Measuring up to stakeholders' expectations
Objectives	***Stakeholder Satisfaction***
	Measures • Stakeholders' satisfaction surveys on fixed times • Number of complaints of stakeholders • Index of availability of systems and applications
	Management of Stakeholder Needs
	Measures • Number of meetings with stakeholders • Clear communication in place with CEO and board members • Index of CEO/board involvement in new and major IT initiatives • Number of major IT projects within SLA
	Legal and Ethical Compliance
	Measures • IT adherence to Sarbanes-Oxley Act • IT adherence to privacy regulations • Adherence to IT code of ethics/IT code of conduct

stakeholders' viewpoint including the board of directors, CEO and executive management, CIO and IT management, business and IT users, customers, shareholders and community.

It is important to point out that the scope of this stakeholders perspective is much broader than the customer perspective as described in the IT balanced scorecard (**figure 2**). The broader scope is derived from the board scorecard (**figure 3**). In relation to stakeholders' satisfaction, the scores on satisfaction surveys (stakeholders' satisfaction survey on fixed times) for the aforementioned categories of stakeholders can be used.

This can also be applied to the number of complaints of stakeholders. An overall specific metric for business users is the index of availability of systems and applications.

The management of stakeholders' needs is assessed through a set of performance metrics, including measurements for the various stakeholder groups (number of meetings with stakeholders), more specific measurements for the board and CEO (clear communication in place with CEO/board members and index of CEO/board involvement in new and major IT initiatives), and specific measurements for the business users (number of major IT projects within SLA). Service level agreements (SLAs) are an important governance instrument for enforcing levels of IT service that are acceptable by users and attainable by their IT department and/or external providers.[14]

The third objective within the stakeholders perspective is legal and ethical compliance. Epstein and Roy state, "The company's reporting strategy is a powerful driver of stakeholder satisfaction, so accountable companies should provide transparent reporting to their internal and external stakeholders…."[15] Accountability and transparency can be enhanced through adherence to government and IT community regulations.

The Sarbanes-Oxley Act, for example, focuses on the control and security of a company's financial systems and, consequently, its supporting IT processes (see *IT Control Objectives for Sarbanes-Oxley*, *www.isaca.org*).

A crucial IT process in this context is *manage changes* as defined by *Control Objectives for Information and related Technology* (COBIT), the internationally accepted IT control framework.[16] The objective of the *manage changes* process is "to minimise the likelihood of disruption, unauthorised alterations and errors," and in this sense—if this process is properly implemented with authorised system changes and a tracking system of changes—it is a crucial supportive mechanism for Sarbanes-Oxley compliance. A specific metric for IT adherence to Sarbanes-Oxley can be the maturity level of the *manage changes* process, evaluated on the basis of the maturity model as defined in the management guidelines of COBIT.[17] **Figure 7** illustrates maturity levels 0 and 5 of the "manage changes" process.

Figure 7—Maturity Levels for *Manage Changes* Process

Level 0: Nonexistent There is no defined change management process, and changes can be made with virtually no control. There is no awareness that change can be disruptive for both IT and business operations and no awareness of the benefits of good change management.
Level 5: Optimised The change management process is regularly reviewed and updated to keep in line with the best practices. Configuration information is computer-based and provides version control. Software distribution is automated, and remote monitoring capabilities are available. Configuration and release management and tracking of changes is sophisticated and includes tools to detect unauthorised and unlicensed software. IT change management is integrated with business change management to ensure that IT is an enabler to increasing productivity and creating new business opportunities for the organisation.
(Source: ITGI, COBIT, 2000)

The operational excellence perspective identifies the key IT governance practices—structures and processes—to be implemented and their corresponding metrics. As previously defined, structures refer to the existence of responsible functions and committees, and processes refer to decision-making and monitoring. Major IT governance structures and processes, as identified by Peterson[18] and Van Grembergen,[19] are shown in **figure 8**. The operational excellence card of **figure 9** gives a variety of metrics for IT governance structures and processes, including an overall IT governance maturity measurement. For the structures area, three specific metrics regarding IT committees are retained: the number of meetings of IT strategy committee and IT steering committees, the composition of IT committees, and the overall attendance of IT committees.

Taking the criticality of IT into account, boards should manage IT with high commitment and accuracy as they do with other critical areas, such as audit, compensation and acquisitions. An instrument for achieving this is an IT strategy committee that supports the board in carrying out its IT governance duties.[20]

On the other hand, the detailed implementation of the IT/business strategies is the responsibility of executive management assisted by a variety of steering committees overseeing major projects and managing priorities. Considering the importance of the IT strategy committee and the IT steering

committee, these committees need a careful and close monitoring through the aforementioned measures. Besides meeting frequency and attendance, profile and IT literacy should be monitored to ensure that the right people are members.

The ideal composition of an IT strategy committee includes a board member as chairman, other board members, nonboard independent members and *ex-officio* representation of key executives.[21] Whether the CIO or a member of executive management is on board is an indication of how important IT is considered within the organisation. The metric examples of the processes objective are focused on the level of and involvement in IT/business planning, the use of scorecards, the coverage by COBIT and the IT Infrastructure Library (ITIL), and the maturity levels of the IT processes. The level of IT strategy planning and business planning can be monitored by the effective use of strategic models, such as the competitive forces model and the value chain of M. Porter[22] and the strategic alignment model of J.C. Henderson and N. Venkatraman.[23] As already illustrated in this article, the balanced scorecard can be an effective management instrument. The existence of an IT balanced scorecard and a business balanced scorecard is very supportive for achieving a link between IT and business objectives. Establishing such a cascade of scorecards with rolling up and aggregating metrics of the IT scorecard in the business balanced scorecard may help to realise the ultimate link between IT and business.[24]

This cascade mechanism can also be used between the IT scorecard and scorecards on a lower level for the different IT processes (metric: number of IT processes through a scorecard). Outcome measures (key goal indicators) and performance drivers (key performance indicators) can be found in the management guidelines of COBIT for the 34 identified IT processes as well as the corresponding maturity models (metric: maturity levels of IT processes). The control objectives of COBIT indicate for the different IT processes what has to be accomplished, whereas other standards, such as ITIL, describe in detail how specific IT processes can be organised and managed. Regarding COBIT and ITIL, two metrics are included: the number of IT processes covered by COBIT and ITIL. The percentage of IT goals supported by IT processes is related to the corporate contribution measure of percentage of business goals supported by IT processes. A clear causal relationship between both metrics exists: if IT goals are not properly supported by IT processes, insufficient IT support for the business may result. The operational excellence card concludes with an IT governance maturity evaluation. Overall level of the IT governance process maturity can be assessed through the IT governance maturity model of ITGI as reproduced in **figure 10**. Such a maturity model provides a method for scoring that enables an organisation to grade itself from nonexistent (level 0) to optimised (level 5). Maturity models, such as the ITGI model of **figure 10** and others such as the one developed by J. Luftman,[25] have to comply with the basic principles of maturity measurement: one can only go to a higher maturity when all conditions described in a certain level are fulfilled. The question of which level an organisation should target is, of course, dependent on the nature of the business; a business within the banking sector should probably strive to a higher IT governance level than a concrete factory, for example. To give an indication, a worldwide survey found that the average maturity for the 34 COBIT IT processes was around 2.0.[26]

The future orientation scorecard reports on the building of foundations for governance delivery focusing on relational mechanisms, the third leg of the IT governance tripod (**figure 1**). Relational mechanisms such as business/IT co-location, partnership rewards and incentives, shared understanding of business/IT objectives, cross-functional business/IT training, and cross-functional business/IT job rotation are of primordial importance. IT governance structures and processes may be in place, but when IT and business professionals do not understand each other and do not share the business/IT-related problems, a successful fusion between areas will not be achieved. Implementing the right relational

Figure 8—IT Governance Structures and Processes

	Structures	Processes
Tactics	• IT executives and accounts • Committees and councils	• IT decision-making • IT monitoring
Mechanisms	• Roles and responsibilities • IT strategy committee • IT steering committee • IT organisation structure • CIO on board • Project steering committees	• Balanced scorecards • Strategic IT planning • COBIT and ITIL • Service level agreements • Information economics • Maturity models

(Adapted from Peterson, R.R.; "Integration Strategies and Tactics for Information Technology Governance," and Van Grembergen, W.; S. De Haes; E. Guldentops; "Structures, Processes and Relational Mechanisms for IT Governance," *Strategies for Information Technology Governance*, Idea Group Publishing, 2004)

Figure 9—Operational Excellence

Perspective	**Operational Excellence**
Mission	Ensuring effective and sustained IT governance
Objectives	***Structures***
	Measures • Number of meetings of IT strategy committee and IT steering committees • Composition of IT committees • Overall attendance of IT committees • CIO on board or member of executive management
	Processes
	Measures • Level of IT strategy planning and business planning • Number of hours spent on IT/business strategic issues • Existence of an IT balanced scorecard and a business balanced scorecard • Number of IT processes measured through a scorecard • Number of IT processes covered by COBIT • Number of IT processes covered by ITIL • Maturity levels of IT processes • Percentage of IT goals supported by IT processes
	Maturity
	Measures • Overall level of the IT governance process maturity

Figure 10—IT Governance Maturity Model

0 Nonexistent There is no senior management oversight of IT-related activities.
1 Initial/*ad hoc* The concept of IT governance does not exist formally, and oversight is based mostly on a case-by-case basis. The governance of IT depends on the initiative and experience of the IT management team. The measurement of IT performance is only within the IT function.
2 Repeatable but intuitive There is a realisation that more formalised oversight of IT is required. Regular governance practices take place but rely mostly on the initiative of the IT management team. Problems identified are tackled on a project basis with teams formed as necessary to undertake improvements.
3 Defined process An organisational and process framework has been defined for oversight and management of IT activities and is being introduced in the organisation as a basis for IT governance. The board has issued guidance, which has been developed into specific procedures for management.
4 Managed and measurable Target-setting has developed to a fairly sophisticated stage with relationships between outcome goals in business terms, and IT process improvement measures are now well understood. Real results have been communicated to management in the form of a balanced scorecard.
5 Optimised IT governance practices have developed into a sophisticated approach using effective and efficient techniques. There is true transparency of IT activities, and the board feels in control of the IS strategy. IT activities have been optimally directed toward real business priorities.
(Adapted from ITGI, *Board Briefing on IT Governance*, *2nd Edition*, 2003, *www.itgi.org*)

mechanisms is the crucial enabler for better governance structures and processes (operational excellence perspective), higher stakeholder satisfaction (stakeholders perspective), and ultimately a higher governance performance (corporate contribution perspective). **Figure 11** displays the two distinct objectives of the future orientation perspective: skills and knowledge and IT/business partnership. Within the skills and knowledge area, the cross-functional education and training metrics are predominant: number and level of cross-functional business/IT training sessions, number of overall IT governance training sessions, and percentage of completed IT governance education per skill type. A specific and important measure is the number of IT governance presentations for CEO and board members, capturing the communication efforts between the IT management team and its business hierarchy. Level and use of the IT governance knowledge management system refers to an intranet that all employees can access for seeking and sharing knowledge on the IT governance practices within the organisation. IT/business partnership objectives report on the IT and business literacy of respectively senior business managers (percentage of senior managers IT-literate) and the IT team (percentage of IT managers business-literate). The importance of these two metrics is confirmed by T. Teo and J. Ang's study,[27] where the knowledgeability of IT management and top executives about business and IT was found to be two crucial critical success factors in business/IT planning

Figure 11—Future Orientation

Perspective	Future Orientation
Mission	Ensuring effective and sustained IT governance
Objectives	***Skills and Knowledge***
	Measures • Number and level of cross-functional business/IT training sessions • Number of overall IT governance training sessions • Percentage completed IT governance education per skill type • Number of IT governance presentations for CEO and board members • Level and use of IT governance knowledge management system
	IT/Business Partnership
	Measures • Percentage of senior managers IT-literate • Percentage of IT managers business-literate • Level of business perception of IT value

alignment. Level of business perception of IT value can be measured through scores from one (IT perceived as a cost) to five (IT seen as a driver/enabler).

Discussion and Conclusion

Drawing on previous work on balanced scorecards measuring the IT function and the board performance, a generic IT governance balanced scorecard was developed in this paper. A particular challenge was to construct a scorecard adequately capturing the performance of the IT governance process along with the differences with the IT BSC and the board BSC. The corporate contribution perspective of the proposed IT governance BSC matches with that of the IT function. Indeed, the ultimate goal of both scorecards is obtaining better corporate financial results. The main differences are that the other perspectives focus completely on the IT governance process and some of the metrics of the IT governance BSC will be rolled up and/or aggregated in the IT BSC. This is also true for the board BSC, which will certainly import some relevant IT governance measures.

Improving IT governance performance is the main reason for building and implementing an IT governance scorecard. It must be clear that measuring is not enough; the scorecard must be implemented as a management system. When the measurements indicate that there are major problems with risk management (corporate contribution), a strategy may be to adequately improve the disaster recovery planning (DRP) through a COBIT and ITIL implementation of this process (operational excellence), which in turn may need cross-sectional business/IT training in COBIT, ITIL and DRP (future orientation).

With an IT governance balanced scorecard, organisations can empower their board, CEO, CIO, executive management, and the business and IT participants by providing them the information that is needed to act and achieve a better fusion between business and IT and, consequently, reach better results. In this sense, the IT governance scorecard can play an important role in an overall program that should be in place to enhance corporate governance.

Currently, many organisations are introducing and implementing IT governance processes. Using the proposed generic IT governance BSC may help them to realise a successful implementation. Further research may focus on how IT governance cards are built and implemented in practice and what the cost and benefits are of such an implementation.

Endnotes

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Research Availability

As part of a broader research project that will address the five domains of IT governance, the IT Governance Institute (ITGI) recently completed a major global benchmarking survey of 200 IT professionals. The areas addressed are return on investment (ROI), performance measurement, information risk management, IT alignment and IT resources. Lighthouse Global, a London-based management consultancy, carried out the survey portion of the project. The survey covered 14 countries in North and South America, Asia-Pacific and Europe. Toward the end of the second quarter and in the third quarter of 2005, ITGI will publish a series of reports based on the survey results. One volume in the series, by this article's authors, will further expand on the balanced scorecard to address the performance measurement domain of IT governance. Please check *www.itgi.org* for the latest information on the reports' availability.

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