Leveraging the Balanced Scorecard to Measure and Manage Information Technology Governance

Wim Van Grembergen & Steven De Haes
University of Antwerp, University of Antwerp Management School, Belgium, {wim.vangrembergen, steven.dehaes}@ua.ac.be

ABSTRACT

The Sarbanes-Oxley Act has brought about an enhanced attention on enterprise (corporate) governance. Consequently, information technology (IT) governance is also on the agenda as corporate governance and IT governance focus on related issues and the IT governance performance greatly impacts the ability of the organisation in achieving its objectives. Currently, many enterprises are implementing IT governance leveraging specific structures, processes and relational mechanisms. 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 (2002 and 2004) and previous work on the IT balanced scorecard (Van Grembergen and Van Bruggen, 1997; Graeser, et al., 1998; Van Der Zee and De Jong, 1999) an IT governance balanced scorecard will be developed in this paper. To set the context, we first briefly discuss the IT governance issues and the balanced scorecard concepts. After that, a balanced scorecard will be introduced as a performance measurement system for IT governance enabling strategies for improvement.

INFORMATION TECHNOLOGY GOVERNANCE

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 in this way ensure the fusion of business and IT (Van Grembergen, 2002). Primary focus is the responsibility of the board and executive management, as argued by the IT Governance Institute: "IT governance responsibilities form part of a broad framework of enterprise governance and should be addressed like any other strategic agenda item of the board. In simple terms, for critically dependent IT systems, governance should be effective, transparent and accountable." (ITGI, 2003)

To implement IT governance in practice, a framework can be deployed composed of a mixture of 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

Figure 1. Main Elements of IT Governance Framework

scorecard. The relational mechanisms include business/IT participation and partnerships, strategic dialogue and shared learning. The optimal mix of practices is contingent upon a variety of contingencies and what works for one company does not necessary work for another (Van Grembergen et al., 2004).

BALANCED SCORECARD APPROACH

The BSC approach has been introduced by Kaplan and Norton (1996, 2000, 2001a and b). Their fundamental premise 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. For this balanced measurement framework, Kaplan and Norton proposed a three-layer structure for each of the four perspectives: mission, objectives and measures. To leverage the scorecard as a management instrument, it should be enhanced with cause-and-effect relationships between 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. And performance drivers without outcome measures may lead to significant investment without a measurement indicating whether the chosen strategy is effective.

The 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 some examples of metrics of an IT balanced scorecard developed and implemented by an international financial group (Van Grembergen et al., 2003). 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.

In recent publications, Epstein and Roy (2002 and 2004) 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"*. Figure 3 shows examples of metrics for a board balanced scorecard. 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 ensuring optimal board functioning. The learning and growth perspective captures measures regarding activities needed to develop and learn for the future.

Figure 2. Example Metrics for IT Balanced Scorecard
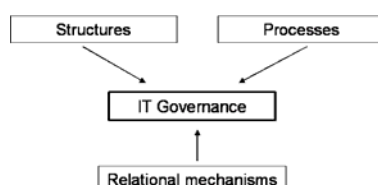
Perspective	Objective	Example of metrics
Corporate	Business/IT alignment	Operational budget approval
	Value delivery	Business unit performance
	Cost management	Attainment of expense and recovery targets
	Risk management	Results of internal audits
	Inter-company synergy	Single system solutions
Customer	Customer satisfaction	Business unit survey ratings
	Competitive costs	Attainment of unit cost targets
	Development performance	Major project scores
	Operational performance	Attainment of targeted levels
Operational excellence	Development process	Function point measures
	Operational process	Change management effectiveness
	Process maturity	Level of IT processes
	Enterprise architecture	State of the infrastructure assessment
Future	Human resource management	Staff turnover
	Employee satisfaction	Satisfaction survey scores
	Knowledge management	Implementation of learned lessons

(Adapted from Van Grembergen et al., 2003)

Figure 3. Example Metrics for Board Balanced Scorecard

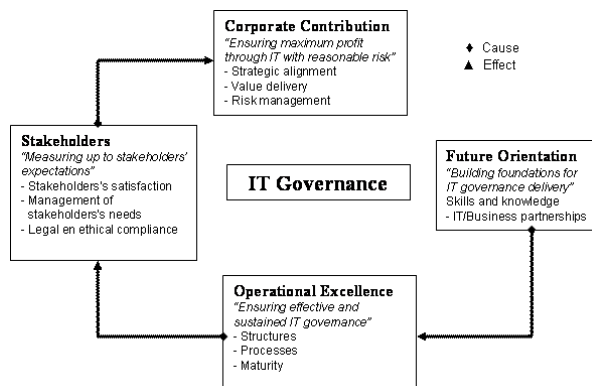| Perspective	Objective	Examples of metrics
Financial	Long-term financial success	Return on investment
	Short term financial success	Stock price
	Long-term success of changes	Success of change
Stakeholders	Ethical behaviour and legal compliance	# of ethical/legal violations
	Corporate governance and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

(Adapted from Epstein and Roy, 2004)

DEVELOPING AN IT GOVERNANCE BALANCED SCORECARD

Based on the aforementioned insights, we will develop a BSC for IT governance. It makes sense for CIO's, 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 and objectives for the four dimensions: corporate contribution perspective, stakeholders perspective, operational excellence perspective and future perspective. Corresponding metrics are shown in Figure 5. It is important to mention that the proposed scorecard is derived from literature in related IT and corporate governance knowledge domains and the researchers' personal experience in IT governance case research (De Haes and Van Grembergen, 2005, De Haes and Van Grembergen 2006). Further case research should focus on how these insights are or can be leveraged in practice.

Ultimate goal of the implementation of IT governance is the attainment of the fusion of business and IT and consequently achieving better

Figure 4. IT Governance Scorecard Perspectives and its cause-and-effect Relationships

financial results. It is therefore logical that the IT governance balanced scorecard starts with a corporate contribution perspective. As shown in Figure 4, the other three perspectives have a cause relationship with corporate contribution: 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 the strategic match of major IT projects (corporate contribution).

METRICS FOR IT GOVERNANCE BALANCED SCORECARD

The proposed metrics for the IT governance scorecard are shown in Figure 5 and discussed in more detail in following paragraphs.

The corporate contribution dimension evaluates the performance of the IT governance process as articulated in three objectives: strategic alignment, value delivery and risk management. These three issues are seen by the IT Governance Institute (2003) as main concerns of IT governance. The main measurement challenge is within the area of *strategic alignment.* As an overall metric, we propose a *weighted governance performance* measure as developed by Weill and Ross (2004). This measure provides one aggregated IT governance performance score based on a self-assessment by business and IT managers regarding their perception on 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. *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 (Parker, 1996): typical scores are attributed from 0 tot 5 whereby 0 means no match at all and 5 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 (Van Grembergen et al., 2003). Alternative metrics for value delivery assessment are the traditional financial evaluations such as the return on investment, net present value, internal rate of return and pay back period (*business value of major IT projects based on ROI, NPV, IRR, 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 *number of implemented IT security initiatives and security breaches* and *attain-*

Figure 5. Metrics for the IT governance balanced scorecard

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

Perspective	Stakeholders Orientation	
Mission	Measuring up to stakeholders' expectations	
Objectives	*Stakeholders' satisfaction*	
	Measures	Stakeholders' satisfaction surveys on fixed times
		Number of complaints of stakeholders
		Index of availability of systems and applications
	Management of stakeholders' 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

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	
	Measure	Overall level of the IT governance process maturity

Perspective	Future Orientation	
Mission	Building foundations for IT governance delivery	
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

ment of disaster recovery plans. The audit performance is measured through *number of IT audits performed and reported shortcomings.*

In the **stakeholders perspective**, the proposed objectives are**:** stakeholders' satisfaction, management of stakeholders' needs and the legal/ethical compliance. This perspective evaluates the IT governance process from the 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 *index of availability of systems and applications.* The **management of stakeholders' needs** are 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 are attainable by their IT department and/or external providers (Van Grembergen et al., 2003). Third objective within the stakeholders perspective is the **legal and ethical compliance.** Epstein and Roy (2004) state that *"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,…".* Accountability and transparency can be enhanced through the adherence to government and IT community regulations. The Sarbanes-Oxley (SOX) Act for example, focuses on the control and security of company's financial systems and consequently on its supporting IT processes (see e.g. www.isaca.org for "IT Control Objectives for Sarbanes-Oxley"). A crucial IT process in this context is "manage changes" as defined by COBIT (Control Objectives for Information and Related Technology), the international accepted IT control framework (ISACA, 2000). Objective of the manage changes process is *"to minimise the likelihood of disruption, unauthorised alterations, and errors"* (ISACA, 2000) and in this sense - if this process is properly implemented with authorised system changes and a tracking system of changes – is a crucial supportive mechanisms for the Sarbanes-Oxley compliance. A specific metric for the IT adherence to SOX 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 (ISACA, 2000).

The **operational excellence** perspective identifies the key IT governance practices – structures and processes - to be implemented and their corresponding metrics. As defined before, structures refer to the existence of responsible functions and committees, and processes to decision-making and monitoring. For the **structures** area three specific metrics regarding IT committees are retained: *number of meetings of IT strategy committee and IT steering committees, composition of IT committees* and *overall attendance of IT committees.* Taking the criticality of IT into account, boards should manage IT with high commitment and accuracy as it does 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 (ITGI, 2003). On the other hand, the detailed implementation of the IT/business strategies will be the responsibility of executive management assisted by a variety of steering committees overseeing major projects and managing priorities. These important committees need a careful and close monitoring. Besides the meeting frequency and the attendance, it should be monitored whether the right people are members as to their profile and IT literacy. *CIO on board or member of executive management* 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 ITIL, and the maturity levels of the IT processes. *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 Porter (Porter, 1998 and 2001) and the Strategic Alignment Model of Henderson and Venkatraman (1993). As already illustrated in this paper, 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 linkage between IT and business objectives and can even be extended by more detailed scorecards for the different IT processes (metric: *number of IT processes through a scorecard).* Regarding COBIT and ITIL two metrics are included: *number of IT processes covered by COBIT and ITIL.* The control objectives of COBIT (ISACA, 2000) indicate for the different IT processes what has to be accomplished whereas other standards such as Information Technology Infrastructure Library (ITIL), describe in detail how specific IT processes can be organised. COBIT also provides maturity models per IT

process (metris: *maturity levels of IT processes). Percentage of IT goals supported by IT processes* is related to the corporate contribution measure "percentage of business goals supported by IT goals". A clear causal relationship between both metrics exists: if IT goals are not properly supported by IT processes, this may result in an insufficient IT support for the business. The operational excellence card concludes with the *Overall level of the IT governance process maturity which* can be assessed through the IT governance maturity model of ITGI (2003) providing a maturity scale from 0 (non-existent) to 5 (optimised).

The **future orientation** perspective reports on the building foundations for governance delivery focusing on relational mechanisms, the third leg of the IT governance tripod (Figure 1). Implementing the right relational mechanisms will be the crucial enabler for better governance structures and processes (operational excellence perspective), higher stakeholders' satisfaction (stakeholder perspective), and ultimately a higher governance performance (corporate contribution perspective). 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, percentage 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 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 manager IT literate*) and the IT team (*percentage of IT managers business literate*). The importance of these two metrics is confirmed by Teo and Ang's study (1999) where the knowledge ability of IT management and top executives about respectively business and IT was found to be two crucial critical success factors in business/IT planning alignment. *Level of business perception of IT value* can be measured through scores indicating the level going from 1 (perceived as a cost) to 5 (IT seen as a driver/enabler) (Luftman, 2000).

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. A particular challenge was to construct a scorecard capturing adequately 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. Main difference is that the other perspectives focus completely on the IT governance process itself.

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 upon and to achieve in this way 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.

REFERENCES

De Haes S. and Van Grembergen W., 2005, *IT Governance Structures, Processes and Relational Mechanisms: Achieving IT/Business Alignment in a Major Belgian Financial Group*, proceedings of Hawaii International Conference on System Sciences (HICSS)

De Haes S. and Van Grembergen W., 2006, *Information Technology Governance Best Practices in Belgian Organisations*, forthcoming in proceedings of the Hawaii International Conference on System Sciences (HICSS)

Epstein, M.J. and Roy, M.-J., 2002, *Measuring and Improving the Performance of Corporate Boards*, The Society of Management Accountants of Canada, www.cma-canada.org

Epstein, M.J. and Roy, M.-J., 2004, *How Does Your Board Rate?*, Strategic Finance, February

Graeser, V., Willcocks, L. and Pisanias, N., 1998, *Developing The IT Scorecard*, Business Intelligence, Wimbledon

ISACA, 2000, *CobiT*, www.itgi.org

ITGI, 2003, *Board Briefing on IT Governance*, www.itgi.org

ITIL, www.itil.org

Henderson J.C. and Venkatraman N., 1993, *Strategic alignment: leveraging Information Technology for transforming organizations*, IBM Systems Journal, vol. 32, nr. 1

Kaplan, R.S. and Norton, D.P., 1996, *The balanced scorecard; translating strategy into action*, Harvard Business School Press

Kaplan, R.S. and Norton, D.P., 2000, *Having Trouble with Your Strategy? Then Map It*, Harvard Business Review, September-October

Kaplan, R.S. and Norton, D.P., 2001a, *Transforming the Balanced Scorecard from Performance Measurement to Strategic Management: Part I,* Accounting Horizons, Vol. 15, No.1, March

Kaplan, R.S. and Norton, D.P., 2001b, *Transforming the Balanced Scorecard from Performance Measurement to Strategic Management: Part II,* Accounting Horizons, Vol. 15, No.2, July

Parker, M. , 1996, *Strategic transformation and information technology,* Upper Saddle River (NJ), Prentice Hall

Peterson, R.R., 2004, *Integration Strategies and Tactics for Information Technology Governance*, in Strategies for Information Technology Governance, book edited by Van Grembergen W., Idea Group Publishing

Porter, M., 1998, *Competitive advantage: creating and sustaining superior performance,* Free Press (NY).

Porter, M., 2001, *Strategy and the internet*, Harvard Business Review, March

Luftman, J, 2000*, Assessing business-IT alignment maturity*, Communications of AIS, # 4

Teo, T. and Ang. J. ,1999, *Critical success factors in the alignment of IS plans with business plans,* International Journal of Management Information, # 19

Van Der Zee, J. and De Jong, B., 1999, *Alignment is not enough: integrating business and information technology management with the balanced business scorecard*, Journal of Management Information Systems*,* 16(2)

Van Grembergen, W. and Van Bruggen, R., 1997, *Measuring and improving corporate Information Technology through the balanced scorecard technique*, Proceedings of European Conference on Information Technology

Van Grembergen, W., 2002, *Introduction to the Minitrack IT governance and its mechanisms,* Proceedings of 35th Hawaii International Conference on Systems Sciences (HICSS)

Van Grembergen, W., De Haes, S. and Amelinckx, I. 2003, *Using COBIT and the balanced scorecard as instruments for service level management,* Information Systems Control Journal, volume 4

Van Grembergen, W., Saull, R. and De Haes, S. 2003, *Linking the IT Balanced Scorecard to the Business Objectives at a Major Canadian Financial Group*, Journal of Information Technology cases and applications (JITCA)

Van Grembergen, W. (ed), 2004, *Strategies for information technology governance,* Idea Group Publishing

Van Grembergen, W., De Haes, S. and Guldentops, E., 2004, *Structures, Processes and Relational Mechanisms for IT Governance,* in Strategies for Information Technology Governance, book edited by Van Grembergen W., Idea Group Publishing

Weill, P. and Ross, J., 2004, *Don't just lead, govern: empowering effective enterprise use of information technology,* Harvard Business School Press

0 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/proceeding-paper/leveraging-balanced-scorecard-measure-manage/32780

Related Content

Capacity for Engineering Systems Thinking (CEST): Literature Review, Principles for Assessing and the Reliability and Validity of an Assessing Tool
Moti Frank (2009). *International Journal of Information Technologies and Systems Approach (pp. 1-14).*
www.irma-international.org/article/capacity-engineering-systems-thinking-cest/2543

Constructing New Venues for Service Improvements Using the Architecture of Preventive Service Systems
Elad Harisonand Ofer Barkai (2015). *Encyclopedia of Information Science and Technology, Third Edition (pp. 7063-7072).*
www.irma-international.org/chapter/constructing-new-venues-for-service-improvements-using-the-architecture-of-preventive-service-systems/112405

Getting the Best out of People in Small Software Companies: ISO/IEC 29110 and ISO 10018 Standards
Mary-Luz Sanchez-Gordon (2017). *International Journal of Information Technologies and Systems Approach (pp. 45-60).*
www.irma-international.org/article/getting-the-best-out-of-people-in-small-software-companies/169767

Current Status and Future Directions of Blended Learning Models
Michael C. Johnsonand Charles R. Graham (2015). *Encyclopedia of Information Science and Technology, Third Edition (pp. 2470-2480).*
www.irma-international.org/chapter/current-status-and-future-directions-of-blended-learning-models/112663

Security in Border Gateway Protocol (BGP)
Suvradip Chakrabortyand Bhaskar Sardar (2015). *Encyclopedia of Information Science and Technology, Third Edition (pp. 6924-6933).*
www.irma-international.org/chapter/security-in-border-gateway-protocol-bgp/113161