

Information Technology Controls Within Organizational Control Environment

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ABSTRACT: The implementation of IT control processes (ITCP) is affected by organizational control environment (CE). This paper presents the results of an experimental study exploring the influence of organizational CE components (Corporate Ethical Environment, Commitment to Component, Board of Director and Audit Committee, Management Philosophy and Operating Style, Organization Structure, Assign Authority and Responsibility and Human Resource Policies and Practices) based on COSO framework on four domains (Plan and Organize, Acquire and Implement, Deliver and Support and Monitor and Evaluate) of ITCPs based on COBIT framework. One hundred and ninety eight relatively experienced external and internal auditors and accounting managers responded to the mail survey. Results reveal the association between CE components and ITCPs. The results of study could help auditors and managers and other practitioners in designing and implementing IT control systems.

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INTRODUCTION

Knowledge management and its related area emphasize that, achievement of the permanent competition advantage, in concept of global modern economy, is depended on the organization's capacities and abilities, and proper usage of organization's knowledge based sources. It must be mentioned that, all of the organization's sources are not in a same importance level. The structures of organization's properties are in change. In the last the objective properties of organizations were more significant than the subjective properties of organizations but nowadays the subjective properties are more important.

Business IT alignment debates have been intensified during recent years among practitioners and academics (Larsen et al, 2006) and several ITG models have been created (Haes and Grembergen, 2005). The Control Objectives for Information and related Technology (COBIT) has been developed as an acceptable and applicable standard (Larsen et al, 2006) for alignment between use of IT and organizations business objectives (Ridley et al, 2004). COBIT has been created and introduced by the Information Systems Audit and Control Association (ISACA). It is one of the well-built and multilateral ITG frameworks that allow bridging the gap between business risk, control needs, value creation and technical issues (Bodnar, 2006).

The preliminary step in the implementing IT control processes is the review of the organization control environment to obtain the information required for management to make decisions on the necessary controls. The necessity of various controls differs according to CE characteristics and organizational contingencies (Lee and Han, 2000). CE is one of five internal control components that Internal Control Integrated Framework issued by Committee of Sponsoring Organizations of Treadway Commission (COSO) identified it as the foundation for all other components of internal control (D'Aquila, 1998).

Despite the apparent importance of the CE, little empirical research has been conducted to investigate the relationship between the CE and ITCPs implementation. Therefore, this research was carried out to reveal whether there is a relationship between CE and ITCPs implementation. Consequently, this study addresses the major CE components affecting ITCPs implementation. The literature on CE theory as well as COBIT's ITCPs is reviewed and a research model is proposed. The main results of empirical survey for proposed model is analyzed and discussed. Finally, a summary of the findings and recommendations for ITCPs practitioners and researchers are presented.

Theoretical Framework

Organizations employ control frameworks to establish and assess of internal controls. The Treadway Committee suggested COSO framework as a proper base for internal control assessments. COSO is a highly conceptual framework that most organizations employ it for the evaluation of control at a relatively general level. It is not adequate for practical level and



such electronic business environment with specific and specialized IT processes (Tuttle et al, 2007). For this reason, ITG has emerged to control the formulation and implementation of IT strategy and ensure the fusion of business and IT (Heas and Grembergen, 2004). Within concentrated IT environment, COBIT as a tool for ITG is applied COSO supplemental framework (Tuttle et al, 2007).

The COBIT is a set of best practices for IT management. It is one of the strongest practices available to help an organization to determine whether IT supports the strategies of an organization (Marnewick, 2010). The COBIT assists meet the several needs of management in technical issues, control needs and business risks. It provisions good practices across domains and processes framework and presents activities in a practicable and logical structure. The four high level domains, Planning and Organization (PO), Acquisition and Implementation (AI), Delivery and Support (DS), and Monitoring and Evaluating (DE) comprise of 34 ITCPs with detailed control objectives (Funilkul et al, 2006).

IT Control Processes

COBIT defines IT activities in a generic process model within four domains (PO, AI, DS, and ME) covering the IT traditional responsibility areas of plan, build, run and monitor (COBIT 4.1, 2007, Miroslavet al., 2008). Within each domain there are definite processes that organizations should address to achieve specific IT related control objectives (Tuttle et al, 2007). PO domain refers to strategy and tactics, and involves in establishing the best way that IT can contribute to the accomplishment of the business objectives. AI domain addresses the identification and providing solutions and applications that will meet business functional requirements. In addition AI is in responding to business and IT environmental changes. DS domain is concerned with the delivery and support of required services. It is involved in service levels and continuity, ensuring systems security and configuration, management of performance and operation, third-party services, problems and help desk services, and user training. ME domain includes IT performance management, internal control evaluation, regulatory compliance and governance to regularly assess over time for control requirements. These four domains and 34 IT processes mainly provide comprehensive dimensions of an organization's IT processes performance and capability that need to be managed (Tugas, 2009).

Control Environment

The topics of CE are often difficult to grasp (Sanchez et al, 2007) due to its abstract and diffused concept. Nevertheless, the auditing standards emphasize the importance of control environment and its comprehensive consideration has been required (e.g. SAS No. 109). The way business activities are organized, objectives founded and risks assessed has been influenced by the CE. Many factors determine the CE and some are discussed below. The CE questionnaires and checklists organize CE components into seven dimensions: corporate ethical environment (CEE); commitment to competence (CC); board of directors or audit committee (BOARD); management's philosophy and operating style (MPOS); organizational structure (OS); assignment of authority and responsibility (AAR); and human resource policies and practices (HRP). In this study we use this categorization. It (independent variables in the research model) will be discussed and hypotheses are developed as follows.

Corporate Ethical Environment: The company's objectives and the way they are obtained are based on ethical values which are translated into behaviour standards (COSO, 1992). The CEE includes polices about acceptable business practices, procedures for complying with regulations and policies regarding illegal acts. Furthermore it indicates management's reactions to noncompliance with ethics and regulation and governing relationships with customers, creditors, suppliers, regulators and etc. Valentine et al (2002) explored the CEE was significantly associated with the employees' organizational commitment. Rae and Subramaniam (2008) demonstrated that internal controls quality is significantly and positively related to CEE. In this study we expect that the ITCPs for control over information and management of IT related risks are influenced by integrity and ethical values. Thus the first hypothesis of the study is as follows:

H1. Companies with high level in CEE components are more likely to have high level implementation of ITCPs.

Commitment to Competence: An organization needs to identify the required competence level for its different job tasks and to transform those requirements into necessary levels of skill and knowledge (Moeller, 2007). In other word, the organization should identify competencies, retain individuals with those competencies and periodically evaluate competencies (Rittenberg et al, 2009). CC is made by placing the proper people in appropriate jobs and providing adequate training (Moeller, 2007). Deron (2008) investigated the effects of intensification employee competence and its impacts on improving quality performance in small-company environment. The results demonstrated that developing competence result in enhanced quality and ultimate cost reductions. Bassellier et al (2003) explored the concept of IT competence of business managers as a contributor to their intention to champion IT within their organizations. This component of CE is critical for ITCPs, as people are important assets, and governance and the ITCPs are heavily dependent on the motivation and competence of personnel. Thus, we argue that with increasing levels of CC, the implementation of ITCPs can be enhanced based on the preceding discussion, the second hypothesis is as follows:

H2. Companies with high level in CC components are more likely to have high level implementation of ITCPs.

Board of Directors or Audit Committee: Members of the board of directors are elected by shareholders as representatives and have responsibility for management surveillance and evaluating organization's strategic plans (Rittenberg et al, 2009). Factors of a capable board and audit committee include independence from management, experience of its members, extent of its involvement of activities, and the appropriateness of its actions (COSO, 1994). Beasley (1996) found that firms with significantly higher percentage of outside board members have fewer frauds; however the existence of audit committee does not affect the probability of fraud. Zhang et al (2007) investigated a relationship between audit committee quality and internal control weakness. It was stated firms are more likely to be identified with an internal control weakness, if their audit committees have less experiences and independence. In this manner, Li et al (2007) explained companies with more IT experienced board members and higher level of independent board directors is less likely to have IT control material weakness. We expect that board and audit committee characteristics are associated with IT control processes implementation quality. Therefore, our third hypothesis is:

H3. Companies with high level in BDAC components are more likely to have high level implementation of ITCPs.

Management's Philosophy and Operating Style: The way the business is run and its risk acceptance is significantly affected by MPOS (Harrer, 2008). The components of MPOS includes attitudes toward timely financial reporting and accurate disclosures, emphasis on meeting financial and operation objectives, ability to adapt new roles response to changes, concerns to reliability and accuracy of information and accounting estimates, and concerns about internal controls and business environment. Chiesa (1999) studied management control styles over R&D units. It is found that the control relies on managers' mind set and attitude and the certain types of managerial styles to be appropriate to certain types of R&D organization structures. In this manner clearly the research activities require higher degrees of autonomy. ITCPs should be aligned with enterprise's management aims and directions including expectations regarding delivery of value from IT investments and appetite for risk. The fourth hypothesis attempts to investigate the influences of MPOS on ITCPs implementation.

H4. Companies with high level in MPOS components are more likely to have high level implementation of ITCPs.

Organizational Structure: The OS provides an overall framework for planning, executing, controlling, and monitoring operations for achieving entity-wide objectives. Significant aspects relevant to OS include appropriateness of organization size and complexity, defining important areas of authority and responsibility, segregating duties, smoothing flows of information and creating proper lines of communicating and reporting (COSO, 1994). Ouchi (1977) attempted to uncover the relationship between control and structure. He argued that approximately 33 percent of the variance in the control mechanisms can be defined by company structural characteristics. Lee et al (2000) revealed that large and complex organizations with integrated IT applications are positively correlated with external formal controls and automated controls. For these reasons and following these studies, the relationship between companies appropriate OS and ITCPs implementation is probed. The supposed hypothesis is as follow:

H5. Companies with high level in OS components are more likely to have high level implementation of IT control processes.

Assignment of Authority and Responsibility: Authority and responsibility are intertwined with the organization's structure (Rittenberg et al, 2009). The company should assign limitations of authority, assign responsibility to employees and establish reporting relationships (Harrer, 2008). Authority and responsibility for operating activities are generally assigned by business practice policies on the delegation of authority and responsibilities, authorization hierarchies and reporting relationships (Dauber et al, 2009). We posit that the adequacy of company's policies regarding the assignment of responsibility and the delegation of authority help companies improve IT related control processes. Based on the above arguments, we produce our sixth hypothesis:

H6. Companies with high level in AAR components are more likely to have high level implementation of IT control processes.

Human Resource Policies and Practices: Human resource policies and practices relate to hiring, direction, training, evaluating, advising, promoting, rewarding and remedial actions (COSO, 1994). The organization's HRPP should support integrity, ethical behavior, and competence and management should encourage its employees with the appropriate tools and training to succeed (Rittenberg et al, 2009).

Choi et al (2009) examined the effect of human resource investment in internal control over financial reporting on the existence of internal control weaknesses. They measured firm's human resource investment by the ratio of the number of employees involved with the internal controls implementations to the total number of employees. It was found out that the proportion of internal control personnel is negatively associated with the existence of internal control weaknesses. This paper

aims to explore the HRPP effects on IT control processes implementation. This concern made the basis for development of the following research hypotheses:

H7. Companies with high level in HRPP components are more likely to have high level implementation of IT control processes.

MATERIAL AND METHODS

Data collection

The data for this study were collected using questionnaire designed to measure the perceived IT controls, control environment and demographic information. Data about IT control processes implementation were obtained using questions developed based on COBIT's framework and organization's control environment data were collected using questions developed based on guidelines established by COSO (1994). Pre-testing and piloting are important steps in the development of the questionnaire. Several useful suggestions and comments came. These were used to refine the questionnaire in order to prepare the questionnaire for the pilot study. A sample of 650 CPAs (including 270 external auditors, 210 internal auditors and 170 accounting and financial managers) was randomly selected. A packet containing the questionnaire and a stamped self-addressed envelope was mailed to each of the 650 CPAs. Only 198 questionnaires were received out of the 650 questionnaires, that 174 questioners were usable. The usable response rate for detailed analysis was 26.7%.

Measures, measurement reliability, and validity

The measures were adapted from COBIT and COSO framework as explained above and a multiple 5 point Likert scale is used to quantify measures in the questionnaire. Reliability and validity tests were conducted for the collected data. A reliability analysis was conducted by using Cronbach's alpha model on the collected data. All scales exceed 0.738. The result shows that the questionnaire design is moderate to high reliable, and the collected data are reliable and consistent (Bagozzi, 1994). In this study, the measures are pretested by both practitioners and two academics to enhance the content validity of the instrument.

RESULTS

Multiple regression analysis was carried out to analyze collected data and examine the significance of the relationship between individual variables of organizational CE and ITCPs implementation. Table 1 presents a set of regression analysis with the four domains of ITCPs as dependent variables and the CE components as independent variables. All the regression models deduce to have significant F ratios (p -value $< .001$), with good explanatory power (Adjusted $R^2 = 0.245, 0.283, 0.223, 0.217$).

The results of table 1 indicate that companies with high level in CEE components are more likely to have high implementation of PO and ME control processes. Despite the overall effects of ethical values on employees and managers performance (Valentine et al, 2002), and its positively relations with internal control quality (Rae and Subramaniam, 2008), our evidence reveals that some of ITCPs (PO and ME) are affected by the components of CEE. For examples, the definition of strategic IT plan (PO1) is developed based on acceptable business practices.

In this study, the obtained results for CC are similar to CEE so that, companies with high level in CC components are related to high implementation of PO and ME. The previous studies have substantiated the effects of employee and managers IT competence on improving quality of performance (Deron, 2008), championing IT (Bassellier et al, 2003) and establishing controls on specific IT system (EDI) (Lee and Han, 2000). The process of IT human resources management (PO7) entails management awareness of employee's required skills and knowledge and competency level. In the monitoring and evaluation processes, the compliance with external requirements (ME3), among other necessities, implies to personnel competence and certifications requirements.

The relations of BDAC domain to internal controls has been considered and investigated more than other CE domains in the previous studies. As Zhang et al, Li et al (2007), and Hoitash et al (2009) have authenticated the positive relationship between strong BDAC and quality of internal controls. We found that three domains of ITCPs including PO, AI and ME are significantly supported by BDAC. Board of directors steer the enterprise's strategic IT plan (PO1) to extend the organization's strategies and objectives and satisfies the business requirement (COBIT 4.1, 2007). Moreover audit committee should monitor IT performance (ME1) and IT's contribution on business and evaluate to what extent planned IT objectives have been achieved, budgeted IT resources (AI5) used, set performance IT targets met and identified IT risks (PO9) mitigated (COBIT 4.1, 2007).

According our findings, the implementation of ITCPs domains are mostly influenced by MPOS along with BDAC, so that, the implementation of PO, AI and DS are significantly supported by MPOS. MPOS affects ITCPs in strategic and operational levels. Management with identification of business environment determines business requirements for IT and expands a strategic IT plan (PO1). Responding to business IT requirements entails change management process (AI6) and management ability to adopt new roles (COBIT 4.1, 2007).

Table 1: Multiple Regression Results

Independent	Dependents															
	Plan & Organize				Acquire & Implement				Delivery & Support				Monitor & Evaluate			
	Beta	S.E.	t Value	p Value	Beta	S.E.	t Value	p Value	Beta	S.E.	t Value	p Value	Beta	S.E.	t Value	p Value
Constant	.470	.407	1.156	.250	-.027	.400	-.068	.946	.723	.355	2.034	.044	.286	.406	.703	.483
CEE	.172	.078	2.357	.020	.073	.078	1.011	.313	.075	.070	1.015	.312	.176	.079	2.369	.019
CC	.167	.068	2.226	.027	.132	.067	1.815	.071	.113	.060	1.501	.135	.154	.068	2.067	.040
BDAC	.255	.076	3.556	.000	.204	.076	2.897	.004	.131	.068	1.802	.073	.176	.077	2.428	.016
MPOS	.164	.083	2.239	.027	.187	.081	2.604	.010	.177	.073	2.404	.017	.116	.082	1.575	.117
OS	.081	.075	1.068	.287	.037	.073	.494	.622	.193	.066	2.532	.012	-.007	.074	-.088	.930
AAR	-.066	.071	-.944	.346	.161	.069	2.349	.020	.046	.062	.655	.514	.019	.070	.271	.787
HRPP	.035	.075	.495	.621	.192	.074	2.756	.007	.116	.067	1.607	.110	.197	.076	2.739	.007
R ²	.277				.313				.256				.250			
Adjusted R ²	.245				.283				.223				.217			
F	8.739				10.357				7.943				7.746			
Significant F	.000				.000				.000				.000			

OS fails to affect the implementation of PO, AI and ME domains. Only the DS processes implementation is significantly supported by OS. Appropriate OS helps to manage the configuration (DS9) of IT infrastructure, resources and capabilities. It makes smooth information flows across the organization and optimizes data management (DS12). Organization with proper OS supports IT security systems (DS5) and minimizes vulnerabilities. It manages physical environment (DS12) and protects computer assets business data (COBIT 4.1, 2007).

While AI is significantly affected by AAR, the AAR fails to influence other ITCPs domains (PO, DS and ME). AAR and OS are two least impressing CE components on ITCPs domains. Detailed description of duties, properly delegation of control responsibilities and establishment of reporting relationships streamline maintaining application software and automated solutions (AI2) and enable operation and use (AI4). Adequacy assignment of responsibility and authority limit determination affect change management (AI6) and procuring IT resources (AI5) for responding to business IT requirements in alignment with the business strategy (COBIT 4.1, 2007).

HRPP significantly supports AI and ME domains of ITCPs but the effect of HRPP on PO and DS is not confirmed. Organization's human resource policies particularly training programs are critical factor of changes management (AI6) for responding to business IT requirements in employment and maintenance of automated solutions (AI1) and application software (AI2). Implementing and installing new or changing solution systems (AI7) require employing new personnel or providing training and promoting programs for current personnel. The results shows that the ME processes depend more than other CE components to HRPP. Basically, the successful implementation of ME processes without effective HRPP is not possible. The implementation of ensuring compliance with external requirement (e.g. IT related regulation and laws) (ME3), monitoring and evaluating internal controls (ME2) and IT performance are associated with HRPP in employing, retaining, rewarding, promoting and training policies and procedures (COBIT 4.1, 2007).

CONCLUSION

The purpose of this study is to examine the impact of control environment components on the implementation of IT control process domains. This investigation extends previous works on IT governance. The study considered the effects of control environment components on IT control process domains implementation separately. It shows plan and organize is significantly affected by corporate ethical environment, commitment to component, board of director and audit committee and management philosophy and operating style. Acquire and implement processes are significantly supported by board of director and audit committee, management philosophy and operating style, assignment authority and responsibility and human resource policies and practices. Delivery and support is significantly influenced by management philosophy and operating style and organization structure. And finally monitor and evaluate processes are significantly supported by corporate ethical environment, commitment to component, board of director and audit committee and human resource policies and practices. The results indicate board of director and audit committee with management philosophy and operating style have the most impact on IT control processes among others. Whereas organization structure and assignment authority and responsibility have the minimum supports. Furthermore, there is evidence that IT control process domains except delivery and support processes are affected by control environment components uniformly and delivery and support domain processes are influenced less than others.

The results of this study provide some insights on control environment components that necessitate the effective implementation of IT control process domains. The tasks of designing control systems are complex and unstructured especially in e-commerce and IT concentrated environment. And there is not a homogenous situation and way to implementation of control systems as accomplish by managers and auditors. Many alternatives models of IT controls exist, and many control environment components affect the design of controls. The results of this study may help managers and auditors analyze organizational control environment and concentrate their limited IT resources to effectively design and implement IT control processes. It attracts management to consider the various dimensions of control environment to appropriate invest on IT resources for implementation IT control processes.

REFERENCES

- Abu-Musa, A.A. 2008, "Exploring the importance and implementation of COBIT processes in Saudi organizations: An empirical study", *Information Management & Computer Security*, vol. 17, no. 2, pp. 73-95.
- Bagozzi, R. 1994, "Measurement in Marketing Research: Basic Principles of Questionnaire Design", *Principle of Marketing Research*, , pp. 1-10.
- Bassellier, G., Reich, B.H. & Benbasat, I. 2001, "Information Technology Competence of Business Managers: Adefinition and Research Model", *Journal of Management Information Systems*, vol. 17, no. 4, pp. 159-182.
- Beasley, M.S. 1996, "An empirical analysis of the relation between the board of director composition and financial statement fraud", *THE ACCOUNTING REVIEW*, vol. 71, no. 4, pp. 443-465.
- Bernroider, E.W.N. & Ivanov, M. 2011, "IT project management control and the Control Objectives for IT and related Technology (CobiT) framework", *International Journal of Project Management*, vol. 29, no. 3, pp. 325-336.

- Bondar, G. 2006, "What's New in COBIT 4.0", *Internal Auditing*, vol. 21, no. 4, pp. 37-44.
- Chiesa, V. 1999, "Technology development control styles in multinational corporations: a case study", *Journal of Engineering and Technology Management*, vol. 16, no. 2, pp. 191-206.
- Choi, J., Choi, S., Hogan, C. & Lee, J. 2009, "The Effect of Human Resource Investment in Internal Control on the Existence of Internal Control Weaknesses and on Earnings Quality", af.polyu.edu.hk.
- COSO (The Committee of Sponsoring Organizations of the Treadway Commission) 1994, *Internal Control - Integrated Framework*.
- D'Aquilq, J.M. 1998, "Is The Control Environment Related to Financial Reporting Decisions?", *Managerial Auditing Journal*, vol. 13, no. 8, pp. 472-478.
- Dauber, N.A., Levine, M.H., Qureshi, A.A. & Siegel, J.G. 2009, *The complete Guide to Auditing Standards and other professional standards for accountants*, John Wiley & Sons, New Jersey.
- Doyle, J., Ge, W. & McVay, S. 2007, "Determinants of weaknesses in internal control over financial reporting", *Journal of Accounting and Economics*, vol. 44, no. 1-2, pp. 193-223.
- Grant, G.H., Miller, K.C. & Alali, F. 2008, "The effect of IT controls on financial reporting", *Managerial Auditing Journal*, vol. 23, no. 8, pp. 803-823.
- Haes, S.D. & Grembergen, W.V. 2009, "An Exploratory Study into IT Governance Implementations and its Impact on Business/IT Alignment", *Information Systems Management*, vol. 26, pp. 123-137.
- Haes, S.D. & Grembergen, W.V. 2008, "Practices in IT Governance and Business/IT Alignment", *Information Systems Audit and Control Association*, vol. 2.
- Haes, S.D. & Grembergen, W.V. 2005, "IT Governance Structures, Processes and Relational Mechanisms: Achieving IT/Business Alignment in a Major Belgian Financial Group", *Proceedings of the 38th Hawaii International Conference on System Sciences*.
- Haes, S.D. & Grembergen, W.V. 2004, "IT Governance and Its Mechanisms", *Information Systems Audit and Control Association*, vol. 1.
- Harrer, J. 2008, *Internal Control Strategies: A Mid to Small Business Guide*, John Wiley & son.
- Hoitash, U., Hoitash, R. & Bedard, C.J. 2009, "Corporate Governance and Internal Control over Financial Reporting: A Comparison of Regulatory Regimes", *Accounting Review*, vol. 84, no. 3, pp. 839.
- ISACA. 2007, *CobiT—4th Edition (Version 4.1)*, Information Systems Audit and Control Foundation, IT Governance Institute, Rolling Meadows, USA.
- Kerr, D.S. & Murthy, U.S. 2007, "The Importance of the COBIT Framework IT Processes For Effective Internal Control over the Reliability of Financial Reporting: An International Survey", *Symposium on Information Systems Assurance University of Waterloo*.
- Larsen, M.H., Pederson, M.K. & Andersen, K.V. 2006, "IT Governance Tools and Analysing the Case of Novozymes A/S", *Proceedings of the 39th Hawaii International Conference on System Science*.
- Lee, S. & Han, I. 2000, "The Impact of Organizational Conexts on EDI Controls", *International Journal of Accounting Information Systems*, vol. 1, pp. 153-177.
- Li, C., Lim, J. & Wang, Q. 2007, "Internal and external influences on IT control governance", *International Journal of Accounting Information Systems*, vol. 8, no. 4, pp. 225-239.
- Miroslav, M. & Zdravko, K. 2008, "Innovation Through ICT-The Management View ", *Central European Conference on Information and Intelligent Systems 19th International Conference 2008 Proceedings*, pp. 235.
- Moeller, R.R. 2007, *COSO Enterprise Risk Management: Understanding The New Intergrated ERM*, John Wiley & Sons, Canada.
- ouchi, W.G. 1977, "The relationship between organizational structure and organizational control", *Administrative Science Quarterly*, vol. 22.
- Rae, K. & Subramaniam, N. 2008, "Quality of internal control procedures: Antecedents and moderating effect on organisational justice and employee fraud", *Managerial Auditing Journal*, vol. 23, no. 2, pp. 104-124.
- Ridley, G., Young, Judy. & Carroll, P. 2004, "COBIT and its Utilization: A framework from the literature", *Proceedings of the 37th Hawaii International Conference on System Sciences*.
- Rittenberg, L.E., Johnstone, K. & Gramling, A. 2009, *Auditing: A Business Risk Approach*, 7th edn, South-Western Cengage Learning, USA.
- Sanchez, M.H., Brown, K.F. & Agoglia, C.P. 2007, "Consideration of control environment and fraud risk: A set of instructional exercises", *Journal of Accounting Education*, vol. 25, no. 4, pp. 207-221.
- Tugas, F.C. 2009, "assessing the level of information technology (it) processes performance and capability maturity in the Philippine food, beverage, and tobacco (fbt) industry using the cobit framework", *Proceedings of the Academy of Information and Management Sciences AIMS, Las Vegas*, pp. 68.

- Tuttle, B. & Vandervelde, S.D. 2007, "An empirical examination of CobiT as an internal control framework for information technology", *International Journal of Accounting Information Systems*, vol. 8, no. 4, pp. 240-263.
- Valentine, S., Godkin, L. & Lucero, M. 2002, "Ethical Context, Organizational Commitment, and Person-Organization Fit", *Journal of Business Ethics*, vol. 41, pp. 349-360.
- Zhang, Y., Zhou, J. & Zhou, N. 2007, "Audit committee quality, auditor independence, and internal control weaknesses", *Journal of Accounting and Public Policy*, vol. 26, no. 3, pp. 300-327.