

The mediating role of IT Governance effectiveness between ITG and financial / non-financial performance: empirical research on Egyptian banking sector

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Keywords

IT, Governance effectiveness, Organization Performance, Financial Performance, Non-financial Performance, SEM.

Abstract

Purpose – The current research aims at testing the mediating role for IT governance between Information technology, whether IT Structure and/or IT Capabilities and organizational performance, whether financial or non-financial performance of Egyptian banks.

Design/methodology/approach – An empirical study was conducted on a sample size of 371 responses collected by a structured questionnaire was circulated from (38) banks located in Alexandria city in Egypt. Using random sampling method. ITG has been measured using: Structure, capabilities. and performance. Likert scales were used to measure (SRM) dimensions, and Confirmatory factor analysis (CFA), and Structural Equation Modeling (SEM).

Findings – This research suggests that ITG effectiveness is a mediating variable between ITG Structure, Capabilities and financial/non-financial performance.

Research limitations/Implications – The main limitation of the current study in the small sample size. This was due to the addition to that, the surveys had to be paired for them to be considered complete, and This research applied on commercial banks branches located in Alexandria and did not consider Islamic and Industrial bank.

Originality/value – This research is an attempt to empirically test the effect of ITG structure, Capabilities on Financial/non-financial performance under ITG effectiveness in banks branches located in Alexandria, Egypt.

Introduction

The information technology (IT) enhances enterprises' ability to survive in the highly competitive global marketplace of the 21st century has become more and more evident. The effective use of information technology, however, relies heavily on good IT governance. When IT and corporate governance go away, the results can be devastating.

IT governance is critically important because of its substantial impact on the value generated by the investment in IT. (Weill & Ross, 2004) shows that top performing firms generate returns on their IT investments of up to 40 percent higher than their competitors. According to the Global Status Report on the Governance of Enterprise IT (2011), value creation of IT investment is one of the most important dimensions of IT's contribution to the business, and the critical driver is ensuring that current IT functionality is aligned with current business needs (i.e., strategic alignment).

Despite the growing importance of IT governance in corporations, the focuses of most extant IT governance research have been on: IT governance; the link between IT governance and its determinants; and the link between IT governance and its impact. Each focus appears separate from one another, but gaps exist for research that links IT governance effectiveness to both its determinants and impacts. Therefore, this research investigates IT governance literature to conceptualize a framework for IT governance effectiveness that integrates its determinants and impacts on organizational performance in Egyptian banking sector.

Problem Statement

Some studies have shown that companies with good IT governance models present superior returns on their IT investments than their competitors, especially because they make better IT decisions especially IT Structure and IT Capabilities (Weill, 2004; Weill & Ross, 2004). Committees, budgeting and

approval processes, and participation of IT area in strategy development are a few of the IT governance mechanisms that encourage behavior consistent with the organization's mission, strategy, values, norms, and culture. So many researchers found that there are a mediating role between IT "Whether IT Structure and/or IT Capabilities" and organizational performance whether financial or non-financial performance (Weill & Ross, 2004).

However, it is still not clear how IT governance affect firm performance (Liang et al., 2011). Moreover, there are some studies measuring the effect of IT governance on performance (Weill & Ross, 2005; Lazic et al., 2011; Liang et al., 2011) although it cannot be concluded that superior IT governance leads to superior financial or non-financial performance. Although the available studies are not conclusive, they provide important evidences about the relevance of IT governance to organizational performance whether financial or non-financial performance.

So, we can conclude the research problem as the following: Is there a mediating role for IT governance between Information technology, whether IT Structure and/or IT Capabilities and organizational performance, whether financial or non-financial performance of Egyptian banks.

The study problem can be summarized in the following questions:

Is there a mediating role for IT governance "ITG" between Information technology "Whether IT Structure or / and IT Capabilities" and organizational performance, whether financial or non-financial performance of Egyptian banks?

What are the determinants of Structure for ITG?

What are the determinants of Capabilities for ITG?

Is information technology governance effect on organizational performance?

Is information technology governance effect on the financial performance?

Is information technology governance effect on the financial performance of others?

Research Aim and Objectives

According to the research problem, the research aims at identifying the mediating role for IT governance "ITG" between Information technology "Whether IT Structure or / and IT Capabilities" and organizational performance, whether financial or non-financial performance of Egyptian banks.

Thus, the research objectives could be stated as follows:

Identify the relative importance of determinants of Structure for ITG.

Identify the relative importance of the determinants of Capabilities for ITG.

Identify the obstacles of IT governance in Egyptian banking sector.

Determine the effect of information technology governance on the financial / non-financial performance for Egyptian banks.

Literature Review

Information Technology (IT) governance is a term that first appeared in the title of academic papers in the late 1990s. (Brown, 1997) and (Sambamurthy & Zmud, 1999) began to refer to a notion of "IS governance frameworks" see also early works by (De Haes & Van Grembergen, 2005; ITGI, 2003; Weill & Ross, 2004). However, it is not a new concept.

4/1 IT governance

IT governance, recognized as an integral part of enterprise governance, is commonly referred to as a subset discipline of corporate governance (Korac-Kakabadse & Kakabadse, 2001; Weill & Ross, 2004). It is different from IT management in that IT governance is about decision rights (who makes the decision; who has input to a decision and his/her accountability), whereas IT management is about making and implementing specific IT decisions (Weill, 2004).

The IT governance literature offers varying definitions of IT governance depending on the researchers' objectives and approaches to the research topic. The most widely accepted definition of IT governance is from (Weill & Ross, 2004) who define IT governance as "specifying the decision rights and accountability framework to encourage desirable behavior in the use of IT".

More recently, some researchers define IT governance based on a combination of previous major research articles. For example, (Bradley et al., 2012) define IT governance as "the capacity of top management to control the formulation and implementation of the IT strategy via organizational

structures and processes that produce desirable behaviors, which will ensure that IT initiatives sustain and extend the organization's strategy and objectives" (De Haes & Van Grembergen, 2004; Weill, 2004; Weill & Ross, 2004).

4/2 Information technology governance in banking sector

Nowadays banks are struggling with risky environment and constant technological changes in order to achieve best possible results. Information technology is crucial for banks to be able to create, implement and deliver new services and products but at the same time it is source of significant risks.

In order to achieve results that are sustainable in long term banks need to assure adequate IT governance. Regulators give guidelines and frameworks for IT governance but very often bank managers and supervisors find themselves confused by actual assessment of their IT governance.

IT governance as subcategory of corporate governance has its specificities and is of crucial importance for banks in order to keep performing their business activities by minimizing risks and accomplishing their full potential, but bank managing and supervising boards often remain unsecure how to assess their IT governance, effects it has on bank and areas that need improvement.

IT governance implies that IT processes are fully integrated into life cycle of business process and it influences on quality of service and business agility (Spremić, 2009; Van Grembergen & De Haes, 2005) defined IT Governance 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. The primary focus of IT governance is on the responsibility of the board and executive management to control formulation and the implementation of IT strategy, to ensure the alignment of IT and business, to identify metrics for measuring business value of IT and to manage IT risks in an effective way.

According to (Peppard & Ward, 2004), IT is nowadays used as business transformer and factor that can increase organizational value. Different authors have tried to identify and quantify elements of adequate IT governance. (Weill & Ross, 2004) allege that structure of decision making process; process compliance and access to communication are key elements. (Sohal & Fitzpatrick, 2002) notice that IT steering committee, centralization of IT decision making process and inclusion of higher level management in decisions regarding IT brings success to IT governance, but this research was not empirically confirmed.

Based on a review of literature, we identify two main factors that serve as determinants of IT governance: Structures for ITG, and Capability of ITG processes.

4/2/1 ITG Structures

Structures for ITG contains of many factors, it represented in: IT Steering Committee, IT Strategy Committee, Involvement of Senior Management, Corporate Performance Measurement Systems, Corporate Communication Systems, Organizational culture/ethics, the information intensity.

IT Steering Committee

The IT steering committee, as a mechanism for supporting information systems planning and management, has been widely supported in the systems literature. In this study an IT steering committee means a high-level executive management team of representatives from multiple divisions or functions that are assigned the task of linking IT strategy with business strategy by setting strategic directions, matching corporate concerns with technology potential, and building commitment (ITGI, 2003). The committee serves as a high-level executive team, comprised of representatives from various divisions or functions within the organization (such as business executives and the CIO), with the main function of linking its IT strategy and business strategy (Nolan, 1982; ITGI, 2003).

Several earlier IS studies provide further empirical evidence of the importance of an IT steering committee. For example, a study by (Karimi et al., 2000) found that an IT steering committee had a positive impact on the sophistication of IT management, and it was shown to have made improvements to IS project portfolios (McKeen & Guimaraes, 1985). A more recent study by (Vaswani, 2003), using 80 auditors in Australia, revealed that an IT steering committee has a positive correlation with the level of effectiveness of overall IT governance.

IT Strategy Committee

As IT becomes a critical element of business strategies or core operating processes, there is a need for greater involvement of the board of directors in establishing effective governance of IT. A board can pursue these responsibilities by establishing a committee called the IT strategy committee (ITGI, 2003). In this study an IT strategy committee means a subcommittee of board members with responsibility to provide insight and advice to the board on topics such as the alignment of IT with the business direction and the achievement of strategic IT objectives; and also to provide direction to management relating to the IT strategy (ITGI, 2003).

Involvement of Senior Management in IT

Many researchers have examined the critical role of senior management practices in IS success. In this study senior management means the CEO and the level of management directly below that of the CEO. The involvement of senior management appears to lead to effective IS planning (Sohal & Fitzpatrick, 2002). A lack of senior management involvement has been shown to lead to unfavorable outcomes in IS planning, and even failure to plan for IS (Salmela et al., 2000). In the IT governance literature, a recent study by (Vaswani, 2003) has shown that senior management involvement was positively correlated with effective IT governance.

Ethics/Culture of Compliance

Over the last decade, business has been paying greater attention to corporate ethical and legal compliance programs. In a survey of Fortune 1000 firms, (Weaver et al., 2013) found that 98% of responding firms address ethical or conduct issues in formal documents. Meanwhile, 78% have a separate code of ethics. Recent corporate collapses, like Enron, WorldCom, HIH, and One. Tel, have shown that the lack of a culture/ethics of compliance has adversely impacted the company's existence. This situation has forced government authorities to enact laws like the Sarbanes-Oxley Act (2002) in US, and CLERP 9 in Australia, to address such cases in the future.

To achieve an effective ethics/culture of compliance, a firm needs to adopt and implement a comprehensive compliance program such as COSO (Committee of Sponsoring Organizations of the Treadway Commission), COBIT (Control Objectives for Information and related Technology), provide sufficient ethical training for employees, and provide a reporting hotline. It is also important for top management to give leadership in promoting awareness of ethical compliance within their organization. (Beyer & Nino, 1999).

Information intensity

Information intensive industries use IT to support core activities and identify strategic opportunities (Kearns & Lederer, 2004; Teubner, 2007). Organizations in this type of industry are more dependent on IT for business operations. (Spremic et al., 2009). (Kearns & Lederer, 2004) use attributes like accuracy, updates timeliness, pervasiveness, and frequency of information use in production and service operations to define information intensity. Conducted in the USA, the study reports a positive relationship between information intensity and effective SISP. This finding is in line with (Teubner, 2007) who acknowledges that extensive SISP calls for high information intensity. On the contrary, (Stoel et al., 2006) reports a negative association between information intensity and shared understanding between business and information systems.

Corporate Performance Measurement Systems

One of the IT strategy committee's duties is to supervise the implementation of its strategic agenda. To achieve this outcome, effective performance measurement mechanisms, such as an IT balanced scorecard, project tracking systems, and IT charge back systems, are necessary. Such a system enables the management and the board to detect and correct any deviations and alter the strategy when necessary (ITGI, 2003). In line with this argument, (Hardy, 2003) contends that the use of a performance management system is an integral part in applying effective IT governance. The measurement, which incorporates a set of metrics, provides management with a regular and precise analysis of how IT is performing the current operations and the latest projects.

Corporate Communication Systems

The role of communication systems in the effective governance and management of IT has been examined extensively. Effective IT governance requires close relationships between the business and IT so

that there will be better understanding between both areas, thus creating good participation and collaboration in the organization (Luftman, 2004; Reich & Benbasat, 2000; Callahan et al., 2004).

(Weill & Ross (2004) also reveal that the more that management communicate formally about the existence of IT governance mechanisms, how they work, and what outcomes are expected, the more effective are their governance processes. By contrast, this study differs from the previous studies in that it provides empirical evidence of communication mechanisms based on an extensive questionnaire survey.

4/2/2 ITG Capabilities

Capabilities s for ITG contains of many factors, it represented in: applying project management methodologies, frameworks for organizational, developing and implementing IT strategic plans, implementing processes for procurement and contracting of IT solutions; conducting training for employees and leaders in IT governance.

4/2/3 ITG effectiveness

4/2/4 Organizational Performance

The traditional dimensions and measures used in executive decision making to measure the performance of an organization are financial. Most opinions prefer the nonfinancial measures because of some disadvantages of financial measures.

Organizational Non-Financial Performance

The Organization Non-Financial Performance construct measures the organization performance in terms of the benefits earned by its stakeholders. For this construct, IT governance is assessed at the organization level and the stakeholders are the managers working within the organization and other members of the top management team who are dealing with the business unit and are affected by its performance.

Combining these three dimensions, it can be customized to reflect the satisfaction and needs of the business unit. Considering the satisfaction of a organization as the fulfillment of its business objectives, a review of the organization performance literature leads to some non-financial benefits that are considered as organization performance indicators, such as, improved decision-making processes; better performance and resource management; better data quality, productivity improvement, building business innovations (Shang & Seddon, 2002), time to bring a new product or a new service to the market (Weill & Broadbent 1998).

The non-financial performance can also draw from the existing literature on the success measures. The D&M updated model (Delone & McLean 2003) provides a Net Benefits success dimension containing different criteria for measuring an information system success. (Bernroider, 2008) verified the new version of DeLone and McLean model (Delone & McLean 2003) and tailored it to measure the success of an ERP and came up with a model where the Net Benefits dimension is divided into Net Benefits and Financial Benefits. The Net Benefits 'sub-dimensions are: enhanced decision-making; reduced cycle times; cost savings; business process improvement; an enabler for desired business processes; increased organizational flexibility; and improved innovation capabilities.

Organization Financial Performance

The Organization Financial Performance is the construct representing the financial performance measured at the organization level. The more mature IT governance configurations are expected to be positively correlated with this construct.

This proposition is built on the existing IT governance balanced scorecard (Van Grembergen & De Haes 2005). Many studies in the IS field has tried to link different variables such as IT capabilities (Bharadwaj, 2000; Melville et al. 2004) or business strategy and technology deployment (Croteau & Bergeron 2001) to organizational performance and many of these studies have measured the financial performance at the organizational level. Some of these financial measures are productivity ratio (Neirotti & Paolucci, 2007), or growth and profitability and cost ratio (Venkatraman, 1989; Bharadwaj 2000; Weill & Ross 2004; Weill & Aral 2005).

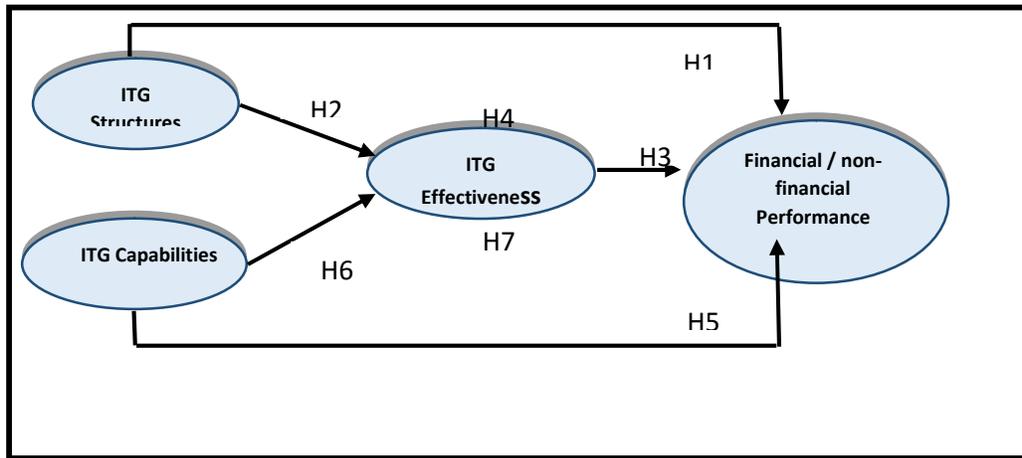


Figure 1 : Research Model

Variables and Measures

The following variables were adopted from prior studies or newly developed for the purpose of this study. Except for the IT intensity variables, all the variables were measured using seven-point Likert scales.

Table.1: Study Variables and Measurement Methods

Independent Variables		Intermediate variable	Dependent Variable
ITG Structures: IT Steering Committee IT Strategy Committee Involvement of Senior Management in IT Ethics/Culture of Compliance Information intensity Corporate Performance Measurement Systems Corporate Communication Systems	ITG Capabilities applying project management methodologies frameworks for organizational developing and implementing IT strategic plans implementing processes for procurement and contracting of IT solutions; conducting training for employees and leaders in IT governance	applying project management methodologies	<i>Financial Performance</i> <i>Non-Financial Performance</i>

Research Hypotheses

According research literatures the research hypotheses are:

- H1: There is a positive effect of ITG Structure on Financial / non-Financial Performance.
- H2: There is a positive effect of ITG Structure on ITG effectiveness.
- H3: There is a positive effect of ITG effectiveness on Financial / non-Financial Performance
- H4: ITG effectiveness is a mediating variable between ITG Structure and Financial / non-Financial Performance
- H5: There is a positive effect of ITG Capabilities on Financial / non-Financial Performance.
- H6: There is a positive effect of ITG Capabilities on ITG effectiveness.
- H7: ITG effectiveness is a mediating variable between ITG Capabilities and Financial / non-Financial Performance.

Research Methodology

7/1 Sampling and Data Collection

Using Random Sampling methods, A survey design is an excellent form of data collection for a quantitative study. A survey was designed specifically for this study to address content related to the variables within the study. Data was collected for this study through questionnaire. We use likert seven categories scale to measure employees about research variables. And interview with males and females who are working in banks. With a sample size of (371) people. From (38) Banks in Alexandria, Egypt. The sampling unit is the commercial bank .but the unit of analysis is bank staff.

7/2 Validity and Reliability

Reliability refers to the dependability of an instrument in measurement to yield the same results on repeated trials (Babbie & Mouton, 2001). Whereas reliability is concerned with the consistency of results of a particular instrument, validity is concerned with the systematic or consistent error factor.

Cronbach's Alpha is one of the most popular reliability statistical tests used in research to determine the internal consistency or average correlation of items in a survey instrument in an attempt to gauge the reliability of that survey instrument. (Cronbach, 1951)

First, the reliability of each measurement was tested, Cronbach's alpha values (from 0.756 to 0.913) are higher than the generally agreed lower limit of 0.70. (Flynn et al., 1990; Nunnally, 1978), So, all variables are reliable.

We can measure convergent validity by using factor analysis and find both the total variance explained (VE) and factor loading for each variable, if (VE) more than 0.50 and factor loading for each variable more than 0.60.,the VE for variables ranged from 0.56 to 0.78, and the factor loading for each variable ranged from 0.67 to 0.89. so there are a convergent validity for each variable. Also, there are a discriminant validity between variables whereas the co-officiant of correlation between each two variables less than the root square of variance extracted.

Table.2. The Correlation Coefficients for the variables of the study.

	ITSC	ITSTC	RSM	ECC	II	CPMS	CCS	ITGC	ITGE	FP	NFPC	NFPO	NFL
ITSC	.822												
ITSTC	.689**	.806											
RSM	.625**	.662**	.823										
ECC	.671**	.604**	.601**	.815									
II	.672**	.618**	.651**	.705**	.847								
CPMS	.559**	.535**	.561**	.615**	.625**	.828							
CCS	.678**	.656**	.667**	.628**	.683**	.668**	.873						
ITGC	.759**	.727**	.622**	.636**	.721**	.612**	.720**	.835					
ITGE	.652**	.638**	.561**	.401**	.548**	.455**	.607**	.739**	.881				
FP	.661**	.620**	.613**	.741**	.677**	.625**	.708**	.705**	.545**	.792			
NFPC	.472**	.511**	.577**	.584**	.608**	.562**	.585**	.556**	.387**	.611**	.838		
NFPO	.584**	.580**	.560**	.587**	.600**	.530**	.609**	.605**	.527**	.694**	.604**	.773	
NFL	.678**	.635**	.552**	.609**	.584**	.523**	.600**	.639**	.560**	.712**	.529**	.709**	.791

Data Analysis

In order to assess the model of the study, (Hair et al., 2006; Kline, 2005) stages in Structural Equation Modeling (SEM) modeling were adapted. From the result of that literature review, the study incorporated those stages, and the following steps were adapted and implemented in this study. Statistical analysis for the study included descriptive statistics, Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM).

8/1 Hypothesis test

As a satisfactory measurement model was obtained, the structural model could then be tested. The purpose of evaluating the structural model was to determine whether the theoretical relationships specified are supported by the data. The structural relationships among the constructs were evaluated based on the defined constructs and confirmatory factor analysis (CFA) evaluation. Modeling (SEM) is to be able to examine a series of dependent relationships simultaneously, which is necessary for assessing the proposed model of the study. After (CFA) and modification, (SEM) was followed to assess the overall fit of the hypothesized models and paths were tested simultaneously. Again, various fit indexes were used to check statistical significances of each path and overall fit.

Since the study model consists of (4) variables, each of which is measured by a set of indexes, it is first necessary to make sure the compatibility fit of each standard model with a field model, this means making sure that data matches with the perceived structure, and the standard model has high compatibility fit, if three elements are proven :

Unidimensionality: is achieved by finding both of: (a) The goodness of fit indexes by using (CFA), the goodness of fit indexes are: Normed fit index (NFI), Comparative fit index (CFI), Non-Normed fit index (NNFI), Goodness of index, There indexes should be more than or equal 0.90, and Chi-Square not more than 3. (b) Error Indexes are: Root mean square error approximation (RMSEA) should be 0.08 and less, Root mean square residuals (RMR), there index should be 0.04 and less. (2) Construct Reliability (CR): Should be more than or equal 0.60. (3) Construct Validity (VE): Should be more than 0.50. Therefore, the standard model has compatibility quality, if the three conditions are checked.

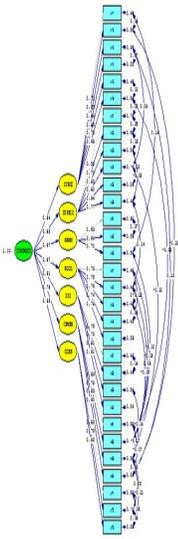
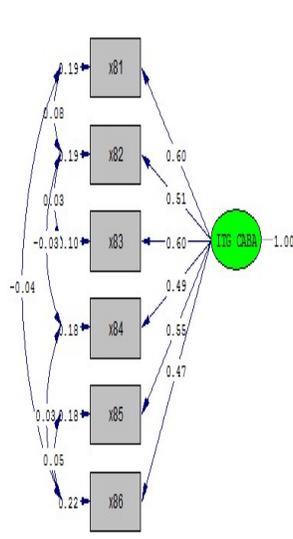
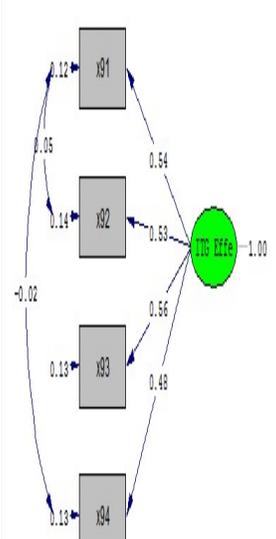
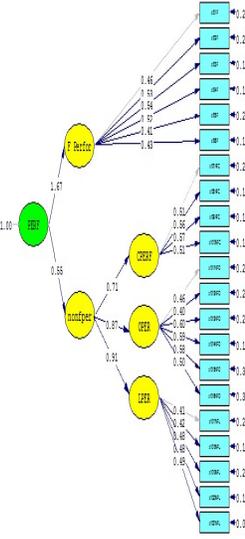
ITG Structure	ITG Capabilities	ITG Effectiveness	Performance								
											
Model	Indexs			(CR)				(VE)			
	χ^2	df	χ^2/df	CFI	NFI	NNF	GFI	RMR	RMSEA		
ITG Structure	931.3	395	2.357	0.97	0.96	0.97	0.91	0.026	0.079	0.86	0.62
ITG Capabilities	2.96	3	--	1	1	1	1	0.0039	0.00	0.75	0.56
ITG Effectiveness	0.00	0	--	1	1	1	1	0.000	0.00	0.74	0.58
Performance	1463.17	920	1.590	0.98	0.97	0.96	0.95	0.023	0.079	0.88	0.62

Table.3. The Measurement models of the study variables.

Table (3). Shows that goodness of fit indexes after the correction the model is matching with a field model, where all goodness of fit indexes more than 0.90, Error indexes for (RMR) not more than (0.04), (RMSEA) not more than (0.08). As that construct reliability (CR) more than 0.60 and construct validity (VE) more than 0.50. Thus, each variable has unidimensionality, reliability, and validity. After the overall structural model was evaluated, the individual parameter estimates were examined. The hypotheses were tested by evaluating the relationship between the endogenous and exogenous variable. First, the sign of the parameters that represented the paths between the latent variables were evaluated, and then the magnitudes of the estimated parameters, which provide important information on the strength of the hypothesized relationship, were reviewed.

The sign of the coefficient indicated whether the two variables were moving in the same or opposite direction, and the (T-Test) indicated whether the corresponding path coefficient was significantly different from zero coefficient with (t) values between +1.96 and -1.96 are considered to be statistically insignificant.

To confirming the validity of the hypotheses, Table (4) shows the results of the Structure model bath coefficients between study variables, which reflect the study hypotheses, this table can be explained as follows:

Table.4. Path coefficients for study variables.

Paths	Path coefficients	(t)
ITG Structure Performance	0.76	13.66
ITG Structure ITG effectiveness	0.47	2.86
ITG effectiveness Performance	0.52	5.26
ITG Structure Performance (Total effect)	0.76	13.66
ITG Structure Performance (Direct effect)	0.45	1.47
ITG Structure Performance (indirect effect)	0.31	Sobel Score Z= 5.688
ITG Capabilities Performance	0.13	2.34
ITG Capabilities ITG effectiveness	0.60	10.03
ITG Capabilities Performance (Total effect)	0.13	2.321
ITG Capabilities Performance (Direct effect)	0.12	1.95
ITG Capabilities Performance (indirect effect)	0.01	Sobel Score Z= 6.867

Through the path coefficients, can be confirming the validity of the hypotheses as follows:

H1: There is a positive effect of ITG structure on Financial/non-financial performance.

It is shows from the path coefficients that the total effect of ITG Structure on financial/non-financial performance was (0.76) at (t-test) equal (13.66). This means the effect is significance, then (t) more than 1.96, which function in the significant level (Sig<0.05). Thus, that there is a positive effect of ITG Structure on financial/non-financial performance. Thus the first hypothesis is accepted.

H2: There is a positive effect of ITG structure on ITG effectiveness.

Table (4) shows that the total effect of ITG Structure on ITG effectiveness was (0.47) at value of (t= 2.86). This means the effect is significance, then (t) more than 1.96, which function in the significant level (Sig<0.05). Thus, there is a positive effect of ITG Structure on ITG effectiveness. This confirming the validity acceptance of the hypothesis.

H3: There is a positive effect of ITG effectiveness on Financial/non-financial performance.

Table (4) shows the total effect of ITG effectiveness on Financial/non-financial performance was (0.52) at (t= 5.26). This means the effect is significance, then (t) more than 1.96, which function in the

significant level (Sig<0.05). Thus, there is a positive effect of ITG Structure on ITG effectiveness. Thus the third hypothesis is accepted.

H4: ITG effectiveness is a mediating variable between ITG Structure and Financial/non-financial performance.

Table (4) shows the path coefficient of ITG Structure on Financial/non-financial performance is significant and positive, and ITG effectiveness on performance is significant and positive, also table shows that the total effect of ITG Structure on Financial/non-financial performance was (0.76) at (t= 13.66). This means the effect is significance, then (t) more than 1.96, (Sig<0.05). The direct effect of the same relationship was a regression coefficient (0.45) at (t= 1.47), which also (Sig<0.05). Also, regression coefficient for indirect effect was (0.31) and the sobel statistic of (Z= 5.688), which is more than (1.96), which (Sig<0.05).

According to (Baron, 1986) the variable is full mediator, if total effect is significant, and direct effect is non-significant. But if the direct effect is significant and the indirect effect is significant, the variable in this case is partial mediator if (z-value> 1.96), but if (z< 1.96), the variable is not mediator in this case. Thus, from direct and indirect path coefficients shows that the ITG effectiveness is partial mediator between ITG Structure and performance. This confirming the validity acceptance of the hypothesis.

H5: There is a positive effect of ITG Capabilities on Financial/non-financial performance.

Table (4) shows that the total effect of ITG capabilities on financial/non-financial performance was (0.13) at (t= 2.34). This means the effect is significance, then (t > 1.96), which function in the significant level (Sig<0.05). Thus, there is a positive effect of ITG capabilities on financial/non-financial performance. Thus the hypothesis is accepted.

H6: There is a positive effect of ITG Capabilities on ITG effectiveness.

Table (4) shows that the total effect of ITG Capabilities on ITG effectiveness was (0.60) at value of (t= 10.03). This means the effect is significance, then (t > 1.96), (Sig<0.05). Thus, there is a positive effect of ITG Capabilities on ITG effectiveness. Thus the hypothesis is accepted.

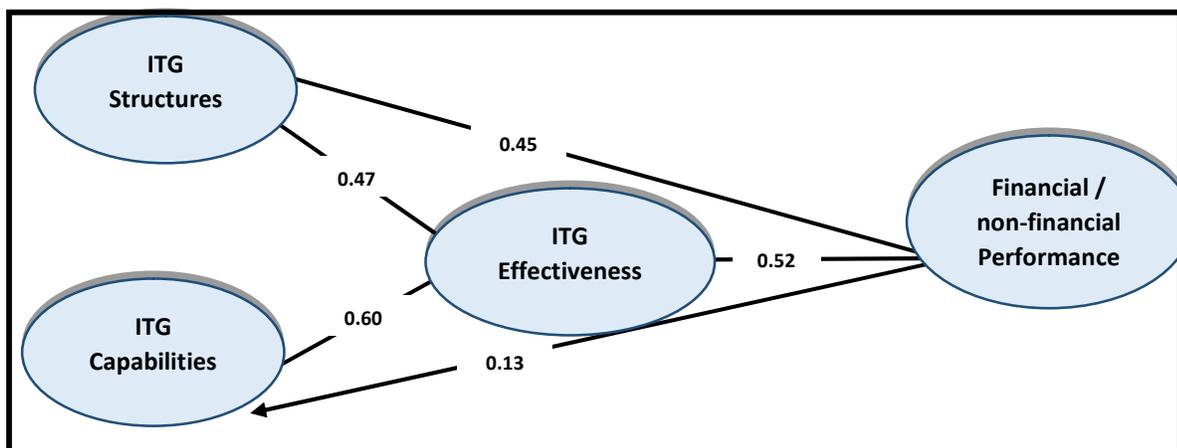
H7: ITG effectiveness is a mediating variable between ITG Capabilities and Financial/non-financial performance.

Table (4) shows the path coefficient of ITG Capabilities on Financial/non-financial performance is significant and positive, and also ITG effectiveness on performance is significant and positive, also table shows that the total effect of ITG Capabilities on Financial/non-financial performance was (0.13) at (t= 2.34), (Sig<0.05). The direct effect of the same relationship was (0.12) at (t= 1.95), which also (Sig<0.05). Also, the indirect was (0.01) and (Z= 6.867), which is more than (1.96), which (Sig<0.05).

Thus, the direct/indirect coefficients show that the ITG effectiveness is partial mediator between ITG Capabilities and performance. Thus the hypothesis is accepted.

Figure (2) shows the structure model, with path coefficients that show the pathways of effects between study variables.

Figure 2. Structural Model of the study



Conclusion

The current study attempted to determine the role of information technology governance ITG (structure, capabilities) in improving financial/non-financial performance under ITG effectiveness in Egyptian banking sector. Which includes the bank to provide guidance and orientation to achieve goals, providing useful information to them? To achieve this, we proposed a model that shows these relationships. This model was subjected to all the necessary tests to determine its validity, through using structural equation modeling (SEM), and confirmatory factor analysis (CFA). This model has been validated because the entire model fit indexes in the acceptable limits.

Thus, this study is distinct from other previous studies. It is a generalized the model that shows the role of ITG structure, capabilities on performance under the ITG effectiveness. This model shows these relationships at the same time. Also, the study shows the ITG can be a powerful tool for balancing IT priorities. However, this study suggests that at many banks, ITG initiatives are more focused on cost containment and risk reduction objectives. Focus on customer differential and enabling business needs has taken a lower priority than more foundational cost and risk reduction objectives.

Those Banks at higher levels of ITG effectiveness have higher level of performance, and we find that Banks have high levels of ITG have built on structure and capabilities focused governance efforts. These Banks achieve consistently higher levels of performance than others in the study. As a result, running the statistical analysis for predictive validity to significant links between ITG and financial/non-financial performance under the ITG effectiveness.

Contribution to theory and practice

We see this work contributing to theory within two domains. On one hand the body of knowledge on ITG and on the applied theoretical lens itself, which is the resource based perspective on IT creation. While, previous literature on ITG is primarily focused on best practices, a theoretical assessment of the value creation process itself was to date not a variable. Therefore the paper provides a fundamental theoretical contribution to the area of ITG with a framework that is the first to analyze and explain the relationship between ITG and performance in detail.

First, this study fully confirms these propositions. Second, being the major contribution in the domain. This paper shows and explains in detail how IT and ITG are interlinked with the enhancement of business processes and what the role and mechanisms of the complementary effects within the value. Further, by showing what ITG can generally achieve, and what is to be considered within every ITG implementation, the outcomes of this study can serve as a basic frame for planning and implementing ITG in practice.

Limitations and Future Research

Along the identified contributions to theory and to practice, the study has several limitations to be pinpointed. The main limitation of the current study in the small sample size. This was due to the addition to that, the surveys had to be paired for them to be considered complete, and This research applied on commercial banks branches located in Alexandria and did not consider Islamic and Industrial bank.

We do not propose that the mediating constructs (ITG effectiveness) within the relationship of ITG and financial/non-financial performance is yet complete. One central limitation is that we primarily talked to the IT side of the Banks. Consequently, the frame work is to be contrasted with case studies within business departments.

Future study aiming at a larger simple size and covering the other banks is very much in need. Finally, testing the link between non-financial performance at the business unit level and its financial performance can be conducted as a separate study whether under MIS or the management field.

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