Information Technology Governance & Bank Performance: A Conceptual Analysis

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Technology is one of the most prominent strategic assets for a bank. With the paradigm shift towards the digitalized economy, the role of technology as an enabler for a bank has become increasingly important, likewise for the banks' productivity and performance. Hence, it is crucial to effectively administer and govern Information Technology (IT) in banks to bring about business value from IT governance. This paper forms a conceptual framework for IT governance and performance in banks that can be used by researchers and academics worldwide to undertake further empirical research work in this domain.

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Introduction

The banking sector is highly technology-intensive. Information Technology (IT) has been largely seen as a critical driver of success and value creation in banks. IT also enhances efficiency and productivity in banks. Technological improvements have enabled banks to reduce costs and increase revenues, pushing up their bottom line. Technological efficiency often reduces transaction costs and yields higher bank revenues (Rishi et al., 2004). It is well recognized that IT is a critical asset that provides firms with a competitive advantage. Given the importance of IT in banks, it has become an enabler and one of the most prominent drivers of business processes (Khan, 2015). The early studies on IT business value deal with the consequences of IT on value creation and organizational performance from the theoretical consideration of the 'IT Productivity Paradox'. Though the early literature has studied the effect of IT on productivity and profitability (Beccalli, 2007; Oua et al.,

2009), the productivity paradox's ambiguity remains unsettled and remains so until now. Since IT is an important strategic asset, managing IT effectively to acquire business value through IT investment is an imperative. Thus, IT governance remains significantly essential. While the concept of corporate governance has been appreciated for a long, IT governance has recently gained the attention of banks (Khan, 2015). To a large extent, the success of deriving value from IT depends on how it is managed by the board of directors (BOD) and executive management. Thus, it becomes crucial for banks to govern IT in a way that maximizes business value from IT use and minimizes any IT-related risks. IT governance may be defined as the obligation of the executive management and the organizational board. It is a significant element of the firm governance and is composed of the leadership and organization's structures and procedures, which assure the sustainability of IT, further widening its strategies and objectives (ITGI, 2001). Previous literature concludes that IT governance acts as a subdivision of broad corporate governance (Heart et al., 2010; Heroux et al., 2014; Joshi et al., 2013; Weill et al., 2004; Wilkin et al., 2010). IT Governance's primary purpose concerns acquiring and managing IT resources to generate IT business value and alleviate associated risks (De et al., 2005). It assists in integrating the IT resources of an organization with the resources of other organizations, leading to a competitive advantage for firms. IT further performs an essential part in underpinning the business objectives of banks in addition to innovation and business processes.

As an enabler for business processes, IT has immense potential to drive a firm's innovation and financial performance. Given the move towards digitalization and the use of disruptive technologies, IT performs a prominent role in the banking sector, thus making it hard to imagine the banks performing well without properly exploiting IT-based capabilities. IT governance further performs a significant role in the management of IT and exploitation of IT for better value creation in banks. Despite a significant proportion of the existing literature on IT governance (Heart et al., 2010; Heroux et al., 2014; Iden et al., 2014; Joshi et al., 2013; Rau, 2004; Simonsson et al., 2010), significant studies with respect to the efficacy of IT governance in generating IT business value through appropriate IT exploitation is limited (Zhang et al., 2016). The existing literature talks about various facets of research in the IT-performance domain, like the result of IT capabilities on firm performance, the impact of IT capital/IT investment on firm profitability or productivity, the influence of IT governance on IT dominance and its fragility, etc. To our surprise, the early literature is scant on the result of IT governance on bank performance (BP) and value creation.

With the demonetization policy measure by the Government of India in the recent past, we are slowly moving towards a cashless economy where the role of IT in banks becomes increasingly essential. Hence, banks' IT governance becomes critical to effectively deploy IT, derive business value from IT and minimize IT-related risks. Also, there exists

a dearth of understanding of IT governance effectiveness in banking firms in the governance literature, as banks are perceived to vary from non-financial firms due to high leverage, risk and informational asymmetries. Hence, we seek to study IT governance in banks and form a conceptual framework for IT governance performance relationships. We choose the banking sector as it is highly IT-intensive, where IT acts as a critical driver of its productivity and performance. It offers us a very rich and ideal context for our study. The present paper is the first conceptual study on IT governance and performance for the banking sector. Academics and researchers can use this framework to study the role of IT governance on bank performance.

Theoretical Underpinnings

The resource-based view affirms that firms' resources (both tangible and intangible), organizational capabilities (competencies) lead to sustainable competitive advantage, which impacts their performance. Further, to have a sustainable competitive advantage, firm resources should be valuable, scarce, unique and non-substitutable. The existing literature has employed this view of the firm to answer the questions related to IT business value as well as IT-constructed competitive edge (Bharadwaj, 2000; Mata et al., 1995; Powell et al., 1997; Ray et al., 2005; Wade et al., 2004). IT governance is the firm-level IT capability that enables better acquisition and deployment of resources so as to derive IT-related business value and create a competitive advantage for the firm. On the other hand, strategic choice theory argues that board attributes (IT capabilities or competencies) affect the board's choice to participate in IT governance. It asserts that the board's participation affects organization's strategy and influences organizational performance (Jewer et al., 2012; Judge et al., 1992). Agency theory mentions that the divergence of interests between owners and agents results in managerial opportunism. In standard corporate governance literature, a prominent role of the BOD has been the monitoring of management in order to prevent any business failure. IT governance is also a crucial function of the BOD, and agency conflicts additionally occur around the IT context (Benaroch et al., 2017; Ho et al., 2011). IT governance on boards performs two critical functions of monitoring managerial IT decisions and services by providing firms with access to critical IT resources. This is analogous to boards' function in corporate governance literature.

IT & Performance

In their study on Mexican banks, (Navarette et al., 2002) found that IT investments positively impacted industry profits and return on assets. Shao et al (2002) conducted a study on Fortune 500 companies and found that IT investments (IT hardware and IT labor expenses) show a positive and remarkable influence on the technical efficiency of firms. Shu et al. (2005) did a study on U.S. banks and concluded that IT contributed positively to the productivity of U.S. banks. In their study on U.K. banks, (Holden et al., 2004) identified self-service technology devices like ATMs as significant drives of bank profit-

ability. In his analysis of European banks Beccalli (2007) found the existence of the IT profitability paradox and highlighted a weak connection between IT investment and bank profitability and efficiency. Oua et al. (2009) research on Taiwanese banks shows that ATM investments significantly influence cost efficiency. Ho et al (2010) studied IT investments in the U.S. banks. The findings highlight that IT spending negatively impacted banks' profitability due to the existence of network effects. (Martin et al., 2011) extensively studied IT in Spanish banks. They concluded that the creation of human capital from IT investments in banks explains the significant economic performance of banks. The findings by Hung et al. (2012) showed that investments in ATMs positively influenced the financial performance of banks. Wiengarten et al. (2013), in their survey paper on IT and business value from IT, highlighted that aligning IT with complementary organizational factors (culture, strategy, structure, process) may result in IT capabilities and drive the firm's long-run performance. In his review paper on IT and its business value Schryen (2013), pointed out that the causal connection between IT and business value remains unexplored. Early literature failed to consider industry and country-wide factors in IT business value research.

Existing literature on IT capabilities argues that IT influences a firm's performance via numerous business capabilities like talent, knowledge management, entrepreneurship, etc. (Benitez-Amado et al., 2015; Benitez-Amado et al., 2012; Chen et al., 2015a; 2015b; Chen et al., 2014; Iyengar et al., 2015). It is visible that the majority of the early studies on IT investments and the business value from IT have concentrated on the role of IT capital or IT investments in explaining banks' profitability or productivity.

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IT Capability & Performance

IT capability refers to the potentiality of firms, enabling them to skillfully position IT assets with other organizational resources. Chen et al. (2015b) define IT capabilities to be a second-order measure and include IT as a determinant of infrastructure, integration, business alignment and management. Early work in this area by (Bharadwaj, 2000) suggested that IT capability enables a firm to achieve a competitive advantage, which further results in increased firm's performance. The existing literature shows a large number of studies on IT capability and organizational performance (Aral et al., 2007; Ashrafi et al., 2015; Barua et al., 1995; Bharadwaj, 2000; Bharadwaj et al., 1999; Masli et al., 2011a; 2044 b; Muhanna et al., 2010), leading to the interpretation that firms having high IT capability mostly have higher performance.

Corporate Governance & Bank Performance

While corporate and organizational

performance is exhaustively studied on non-financial firms, the study on board-specific governance and banks' financial performance has gained the attention of the research community recently, with considerable papers being published in the context of emerging markets. While the existing literature has thoroughly studied the governance-performance relationship in banks (De Andres et al., 2008; Grove et al., 2011; Aebi et al., 2012; Liang et al., 2013; Pathan et al., 2013; Garcia-Meca et al., 2015; Battaglia et al., 2015; Sarkar et al., 2016; Ghosh, 2017; Mayur et al., 2017; Thaker et al., 2021) there are limited studies which examine the effect of board-specific governance mechanism on banking sector technical efficiency and total factor productivity (Wang et al., 2012; Salim et al. 2016; Nanwal et al., 2016). Although some recent work on corporate governance in Indian banks has been published, none of the studies talks explicitly about IT governance and its impact on bank performance (BP).

IT Governance &Performance

Kumar (2013) studied the influence of IT investments by Indian banks on their total factor productivity. The findings of the paper revealed that an increase in electronic transactions in banks increases productivity, whereas an increase in intermediation cost lowers productivity in banks. Behera et al (2015) studied the result of IT adoption and usage on banks in India and service firms. The results highlight that the firms that adopted IT early had greater turnover and more significant market share from innovation. (Sathye et al., 2016) tested the result of ATMs on the technical efficiency of Indian banks and analyzed that ATM investment intensities were negative on technical efficiency in Indian banks.

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Weill et al (2004) executed a study of IT governance within 256 firms globally and discovered that firms having effective IT governance mechanisms had at least 20 % more profits than their counterparts. They developed 15 IT governance mechanisms, including the following committees: IT steering, IT executive and IT architecture. As per IT Governance Institute (2007), effective IT governance provides various business aids like better trust, superior product leadership, reduced costs, etc. and helps to increase stakeholders' value. Li et al. (2007) performed a study on U.S firms and IT experience in administration and found that the existence of Chief Information Officer (CIO), long-term CIO and the existence of higher independent board members are associated with less IT material weakness or better IT control governance. Boritz and Lim (2008), in their study on IT governance, IT material weakness and firm's performance, found superior firm performance in association with IT governance mechanisms (Presence of IT strategy committee and CIO). IT governance was found

to improve financial performance in firms by reducing their IT control weaknesses. Buchwald et al. (2014) in their study found that IT governance has a profound business influence. (Lazic et al., 2011) and (Lazic et al., 2011) demonstrated that IT governance impacts performances via IT and business process connectedness.

Lunardi et al. (2014) studied the connection between IT governance on financial performance in Brazilian firms and constructed that companies adopting IT governance had significantly performed better than the controlled companies that refrained from adopting the IT governance framework. Wu et al. (2015) investigated the impact of IT governance in Taiwanese firms. The results present that IT governance affects strategic alignment and firm performance. IT governance has an impact on firm performance through strategic alignment. Zhang et al. (2016) studied the U.S. firms and developed a measurement based on publicly available secondary information on IT governance. The empirical analysis highlights the importance of IT governance as a determinant of IT capability, which is positive and significantly related to firm performance. IT capability was found to mediate between IT governance and the performance of firms. Turel et al. (2017), in their study on firms in North America, found that Board-level IT governance impacted strategic alignment, which subsequently influenced firms' performance. Benaroch et al (2017) studied the impact of operational IT failures on board IT governance for public financial firms in the U.S. They argued that the board's IT competency comprises Directors' IT capital, the presence of the CIO, and the board IT committees. Their findings demonstrated that after operational IT non-success, firms modify their board IT governance, and those changes have been in proportion to negative stock market response. These changes are at the executive level, such as the IT competency of executive directors and the high revenue of the CIO of the board. The authors used board IT capital, the presence of CIO and board IT committees as factors of IT governance in their study. Chong et al., (2017) examined the connection between IT governance and firms' performance in 70 public firms in Asia. They examined the impact of every component of IT governance (structures, processes and relational mechanisms) on the performance of firms by employing Tobin's Q. Their analysis highlighted that IT governance positively influenced IT governance structure with regard to market performance of firms; however, it showed a significant negative influence of IT governance processes and relational mechanisms on firm's market performance.This study didn't include Indian firms and confined mostly Chinese firms

Research Gaps

While a significant proportion of the early studies on IT business value in banks concentrated on the impact of IT in enhancing banks profitability and productivity, however, none of them has looked at the crucial function of IT governance, including its effectiveness in generating value for banks. Hence, our study develops a conceptual framework

for the association between IT governance and BP. Thereafter, hypotheses have been formulated for empirical analysis of IT governance and performance relationships.

Conceptual Framework & Hypotheses Formulation

We argue that banks, with top leadership and management of IT competency, are more likely to deploy IT resources and innovations. With the functional reliance on IT, the CIO and IT strategy committees having expertise in IT competency will be better able to manage information assets or resources (Nolan et al., 2005). Thus, banks with greater IT competency in the executive or expertise (IT capital) make better decisions and efficiently handle critical information assets. With better decisions and management, banks may exploit IT use efficiently, leading to superior BP. In line with Zhang et al. (2016), we state that banks having better IT governance might possess distinctive assets in human IT resources, namely, IT capital of top management and leadership teams and IT knowledge assets, which may give them a competitive advantage and superior performance. IT governance may enable banks to make effective IT decisions, better manage critical IT resources, effectively deploy IT resources, increase transparency among stakeholders, alignment of IT with other resources and organizational strategies. All this will lead to a competitive advantage for banks against their peers and enhance IT value and performance. Lunardi et al. (2014) found the connection between effective IT governance and the high financial performance of firms. We also argue that effective IT governance in banks may enhance overall corporate governance by maximizing IT-based business value and minimizing IT-related risk. Enhanced corporate governance minimizes agency conflicts, leading to superior bank performance. In this paper, we are explicitly apprehensive about the direct effect of IT governance on BP. We wish to study the business value creation of IT governance in banks. IT governance contributes to organizational performance by better and superior sequence of investments in IT with business strategies. Directors' IT capital is analogous to boards' capital in standard corporate governance literature (Hillman et al., 2003; Forbes et al., 1999) and includes boards' experience, competence, skills, and knowledge.

Effective IT governance in banks may enhance overall corporate governance by maximizing IT-based business value and minimizing IT-related risk.

Zhang et al., (2016) argue that leadership's IT background is the reason for better and more productive IT governance that helps blend business and IT. Directors' IT capital is further considered to enhance IT governance effectiveness (Weill, 2004; Benaroch et al., 2017). Hence, based on our review of the early studies, we formulate the following hypothesis:

H1: The proportion of BOD 'with IT capital" is positively connected with BP.

A greater proportion of independent/ outside directors on the BOD reduces agency problems and leads to superior supervision and monitoring. Their presence also leads to better earnings quality and results in a reduction in the cost of debt. That has been evident from the agency theory, which argues for a more significant proportion of independent directors for superior performance. Thus, we argue that the greater the participation of independent directors with IT expertise or capital, the superior will be the IT governance and its effect on BP.

H2: A substantial number of independent directors with IT capital on boards will positively impact BP.

The existence of a board-level IT committee signals the banks to concentrate on IT as a whole and IT capital in particular. The presence of an IT committee will lead to better and enhanced decision-making of IT, governance and value by the BOD. Therefore, we form the mentioned hypothesis:

H3- Banks with a dedicated board-level IT committee are associated with better performance.

Resource dependency theory (RDT) highlights that considerable board size results in greater resources and diverse human capital for supervision and monitoring. Hence, the larger size of the IT committee would mean a more remarkable set of diverse human capital with IT expertise for better decision-making related to IT. Therefore, we hypothesise as follows:

H4- IT committee size influence has a positive association with BP.

Greater proportion of independent directors in the IT committee would reduce agency conflicts and lead to enhanced monitoring, advising and supervision of the IT committee of the board. Therefore, we hypothesize as follows:

H5- IT committee independence has a positive association with BP.

A greater number of IT committee meetings would imply that the committee is more proactive, which would lead to enhanced supervision and monitoring related to IT, its governance and business value.

H6- Greater IT committee meetings have a positive association with BP.

The presence of the big four auditors for auditing results in high-quality audits and supervision of the information system and its resources (Cater-Steel, 2008; Zhang et al., 2016). Thus, we hypothesize:

H7- The presence of Big 4 auditors is positively associated with BP.

If the CEO or CMD has IT expertise, it would lead to better decision-making about IT governance and business value. Thus, we further hypothesize:

H8- CEO or CMD IT capital/expertise has a positive relation with BP.

Researchers have argued that the capabilities of the CEO often lead to improved performance as they put on their

enhanced skills and high level of performance in work. Thus, better expertise of the CEO/CMD will lead to better and enhanced BP.

Conclusion

This paper attempts to form a conceptual model with the hypothesis to analyze the consequences of IT governance on BP. Using existing studies and theories on governance, the conceptual analysis is done for the association of IT governance on BP. This study is the first conceptual work on the impact of IT-based governance on BP. Our paper will be mainly helpful for academics and researchers in conducting empirical investigations on the role of board IT governance on BP. Further, such empirical investigation will present captivating understanding and insights for policymakers and bank managers looking for measures to strengthen BP and value addition.

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