Internal Auditing and Enterprise Resource Planning (ERP) Systems

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Abstract

In this study, I examine how the internal audit (IA) maintains its legitimacy when enterprise resource planning (ERP) systems are introduced. This study aims to identify the control assumptions implicit in ERP systems and examine their effect on the IA These assumptions motivate changes in the practice and structure of the IA to become an integrated and comprehensive function to maintain its legitimacy.

Introduction

The Institution of Internal Auditors (IIA, 2004) recognizes the role of internal auditing in corporate governance. It asserts that internal auditing brings "a systematic, disciplined approach to evaluate and improve the effectiveness of risk management, control and governance processes". The increased interest in better corporate governance practices expanded the opportunities for the IAF (Elbardan, Ali & Ghoneim, 2015; Ebaid, 2011). This claim is supported by real-life cases, which clearly elucidate the implications of underestimating the role that the IAF can and should play (Boyle, Wilkins & Hermanson, 2012).

During the last years, ERP systems were considered to be the most important and substantial IT infrastructure that interacts with the accounting field (Kanellou & Spathis, 2013). Such systems are cross-functional integrated management systems, which consist of software modules that

support operational activities (Shehab, Sharp, Supramaniam & Spedding, 2004). Pollock and Williams (2008) argue that numerous tensions arise due to the gap between the system capabilities and the adopting organization's practices. Because of the socio-technical nature of the organizational change process that arises from the implementation of ERP systems, prominent researchers have identified the need to uncover the dynamics and mechanisms of the organizational change process (Lyytinen, Newman & Al-Muharfi, 2009). According to Grabski, Leech and Schmidt (2011), ERP systems implementation implies new methods of designing functions and leads to new work procedures, changes in job role definitions and restrictions in the flexibility of job tasks. Maheshwari, Kumar and Kumar (2010) assert that the implementation of ERP is a continuous adaptation process that includes the development of norms as well as the acquired knowledge of the organizational members, such as internal auditors. One of the functions affected by ERP systems implementation is internal auditing. More specifically, ERP systems embody new institutional logics for controlling the business and information (Gosain, 2004), which is the main interest of the IAF. This study focuses on tracing the institutional change in an organization and studying the auditing efforts to establish new governance structures.

Although the literature indicates many indicators of the impact of ERP systems on the control system and the required adaptations in the IAF, the manner in which ERP systems affect the IAF and the appropriate consequent adaptation are unclear. For example, Chen, Huang, Chiu, and Pai (2012) suggest that ERP implementation significantly changes the auditing procedure and internal control, but they did not provide evidence of these changes. More specifically, ERP

systems contain implicit assumptions about organizational control (Ignatiadis & Nandhakumar, 2009; Yoo, Lyytinen, & Berente, 2007) that may compromise IAF legitimacy if not suitably adapted.

A number of authors have used institutional analysis in the context of ERP systems implementation and as a framework to identify factors that drive the existence of an internal audit (Elbardan et al., 2015; Al-Twaijry, Brierley, & Gwilliam, 2003; Arena, Arnaboldi, & Azzone, 2006). However, most studies that examined the relationship of action and institutions have focused on the organizational field (Maheshwari et al., 2010). Therefore, this assignment aims to identify the control assumptions implicit in ERP systems and examine their effect on the IA, using institutional theory as an analytical tool. Understanding the new control assumptions and their impact in the IA will help internal auditors to adopt the proper strategic response in adaptation. This understanding would help to maintain the legitimacy of IAF as an effective corporate governance mechanism. This study starts by providing a background to the implementation of ERP systems and the concerns about maintaining the legitimacy of the IA.

Importance of this study

Effective internal controls play an important role in assisting enterprises to avoid risk and to ensure that financial reports are reliable. Internal auditors often understand internal control to an extent is reflected in their assessment and assurance of the internal controls. This understanding guides the assessment of internal controls and results in more comprehensive, reliable and

complete assurance. Tsai, Chou, Lee, Lin, and Hwang (2013) assert that research is needed to guide internal auditors in the conceptualization of internal controls within an IT context in a logically consistent manner in order to achieve these goals in an IT environment. Huang, Hung, Yen Chang and Jiang (2011) suggests that auditors need to understand the assumptions behind IT controls to reduce risk in the complex IT environment.

Lyytinen et al., (2009) suggest that investigators need to probe ERP implementation as a multilevel change process that involves changes in the organizational routines that carry out the organization's functions and conform to the dominant institutional logic. These functions are expected to operate in their current form until the ERP implementation system overcomes the inertia and effects a change (Al-Mudimigh, Zairi & Al-Mashari, 2001). Despite the large volume of research on ERP systems, the impact of ERP systems implementation on the internal control system and subsequently on the IAF remains poorly understood. ERP systems are built from interdependent modules, and their business risks and audit risks significantly differ from those of traditional computer systems (Tsai et al., 2013). ERP systems implementation affects the internal control systems within organizations because the mechanisms of control are changed, while the internal control objectives remain the same. Therefore, Saharia, Koch & Tucker (2008) argue that ERP systems create new opportunities as well as new challenges for the overall focus of the internal auditing profession.

The effectiveness of the IAF assures an effective internal control system and the quality of information. Try fonas and Kearney (2008) argue that internal auditing is particularly laborious and the need to automate auditing tasks is maximized after the implementation of ERP systems.

ERP systems integration forces auditors to reassess their audit models and move towards a business process and Information Systems (IS) control orientation. Traditional auditing skills are not sufficient in the ERP environment because a high degree of technical knowledge is also required (Hunton, Wright, & Wright, 2004).

The traditional boundaries of internal auditing are clearly challenged because ERP systems complicate the IA (Saharia et al., 2008), leading to new roles being assumed by internal auditors within their professional community. An overarching problem pertains to the fact that IA adheres to an institutional model that has undergone important changes resulting from ERP systems implementation.

To date, research has identified the increased importance of the IA after ERP systems implementation. For example, Spathis and Constantinides (2004) examine the changes resulting from the implementation of ERP systems in the accounting process. Their results have revealed that the most notable change in accounting practice is related to the increased use of the IA. However, only a few studies have attempted to examine the internal auditing after ERP systems implementation, and this field requires further developments on several fronts (Penini and Caemeli, 2010). .

The effect of ERP systems on the auditing legitimacy has yet to be fully explored because the current insights into ERP implementation feature a number of limitations. First, no previous studies have addressed the internal auditing changes in response to ERP systems implementation (Kanellou and Spathis, 2011). Second, previous research has also ignored the fact that ERP built-

in best practices are derived from companies that operate in developed countries and do not necessarily suit the contexts of developing countries (Soh, Kien & Tay-Yap, 2000). However, most studies of the impact on IAF of ERP systems have taken place in the developed countries, such as the US and the UK (Ebaid, 2011; Kholeif, Abdel-Kader & Sherer, 2007), while ignoring developing countries where ERP systems are currently diffusing. Third, banks are widely acknowledged to heavily depend on IT (Chowdhury, 2003), and the longest history of IAF is found in the banking sector (Sarens, Allegrini, D'Onza & Melville, 2011). According to Fuß et al. (2007), no previous academic research has addressed ERP usage in banks, even though banks may represent an important customer for ERP systems. Fourth, auditing researchers have tended avoid trying to understand the social context, particularly in terms of contemporary audit practice (Robson, Humphrey, Khalifa & Jones, 2007). Finally, according to Abdolmohammadi and Boss (2010), research has focused on addressing the changes in external auditing while very few studies are driven by the internal audit view.

IA adaptation after ERP systems implementation is an under-researched area that requires more attention (Nwankpa & Datta, 2012; Grabski et al., 2011; Kanellou & Spathis, 2011). Moreover, Grabski et al. (2011) suggest that a strong theoretical base for ERP studies is lacking. However, the levels of analysis in the study of ERP systems differ, offering interesting new insights. Hence, Mignerat and Rivard (2009) argue that there is room for contribution at the sub-organizational level, such as groups, departments and functions.

To address these issues, this study draws on and elaborates the conceptualization of ERP institutional logics and assumptions proposed by Yoo et al. (2007). A conceptual framework is

proposed claiming that a key enabler of adopting a specific strategic response to maintain the IA legitimacy is the extent to which auditors perceive the internal control assumptions embedded in the institutional control logic of the ERP system. Therefore, the paper responds to the calls of institutional theorists to understand how IS, which is a collection of material objects, contributes to the change and/or stability of IA. The present study aims to elucidate how ERP systems motivate adaptation in the IA to maintain its role as an acceptable and legitimate corporate governance mechanism.

IA legitimacy Maintenance Strategies

A limited but growing body of literature has examined the IA perspective both empirically (Al-Twaijry et al., 2003; Arena & Azzone, 2007) and conceptually (Mihret, Mula & James, 2012). These studies mainly focused on explaining internal audit adoption and characteristics.

The existing auditing literature has paid limited attention to the institutional adaptation perspective as an analytical lens (Dillar, John & Goodman, 2004). Although the IAF literature has established the importance of institutional theory (Mihret et al., 2012), it is chiefly employed to interpret motives for the adoption of IAF by organizations. For instance, Al-Twaijry et al. (2003) use it to explain motives for the adoption of IAF by Saudi companies, and the adoption was mainly found to be a result of coercive regulatory pressure. The IAF literature (Arena & Azzone, 2007; Arena et al., 2006) has also employed this theory to explain similarities and differences in IAF's practice, which originate from the institutional pressure. However, the

institutional perspective has not been employed to interpret the adaptation of the IAF practice after the implementation of ERP systems. Therefore, the change process by which traditional IAF's practice is delegitimized and new practice is adopted is yet to be entirely investigated and theorized. An institutional change perspective can facilitate study of how IAF's practice has adapted. Therefore, a useful extension to the growing application of institutional theory in IAF literature would be to examine how it adapts through institutional change. This institutional change framework is adopted to examine the development of the IAF after introducing ERP systems.

Figure 1.   *Conceptual framework for the IAF change as a response to institutional logics*
Oliver (1991) links the institutional theory to strategic choices (IAF Response) in order to better understand the responses associated with new institutional logics-led pressures. She suggests five generic strategic responses to such pressures, namely *acquiescence, compromise, avoidance, defiance and manipulation.* These strategies are exerted via different tactics (see Oliver, 1991).

IA adaptation was an integral part of remaining a legitimate governance tool after ERP systems implementation. Therefore, the changes in the IA needed to be explored and analyzed in order to interpret the adopted strategy. The changes in the IA in response to ERP systems implementation were very difficult to quantify because organizations do not report the added value of this function. Therefore, each aspect of the IA practice and structure was investigated.

This analysis identified the following changes that occurred after ERP systems implementation, which were a response to the new control assumptions:

- *Practice change:* ERP systems replaced and consolidated many auditing tasks. ERP standard and integrated systems reduced the time and effort needed to perform audit missions and minimize the investigated samples.

- *The structure of the IAF:* A balanced internal audit team was crucial to support an integrated business working environment. While IS was considered a domain for specialized IT auditors, it was of interest to all auditors after the implementation of ERP systems.

- *Skills:* Internal auditors are required by the standards of their profession to possess the knowledge, skills and technical proficiency essential to the performance of internal audits. Therefore, implementing ERP systems did not significantly affect the skill set of the audit team.

- *Tools:* The internal auditors best utilized the systems because they used software to extract the data from the database of the ERP systems. The IAF at MB already utilized the latest audit tools and IT-based solutions.

- *The IA Sourcing:* The ERP working environment required different competencies in the IA.

- *Relations with IT department:* However, the IT audit was identified as one of the most difficult specialized tasks; developing a job rotational relationship between internal auditors and the IT team provided great benefits.

- *The size of the IAF:* The size of the internal audit department increased because new individuals with new experiences were incorporated. Although ERP systems implementation reduced the effort of and time spent by the internal auditors, an integrated internal audit team that draws on a variety of experience needed to be built. Therefore, the internal audit team increased, especially via the addition of more IT auditors.

- *The budget assigned to the IAF:* Despite the increase in the IA's size and scope, its budget slightly decreased with the implementation of ERP systems. Best utilizing the system features to control and monitor the business process saved a substantial part of the budget.

- *Relation with external auditor:* External auditors judge the effectiveness and capability of the IAF to determine the extent of dependability.

Conclusions

This study intended to explore the assumptions of the controlling logic of ERP systems and explore and interpret the changes in the IA in response to the introduction of ERP systems in order to maintain IA legitimacy as a governance tool. Integrated internal auditing now audits the processes and systems across the bank. Instead of conducting separate audits, the institution should focus on the vertical analysis of different sets of controls over the end-to-end process.

Audits depend on horizontal analysis in a way that ensures that all interconnected controls for assessing the business risk are addressed in an integrated fashion. The audits simultaneously focus on the organization's financial, operational and IT controls and processes. Practical and

scientific rehabilitation for the internal auditors is necessary in order to assimilate the principles

and criteria of governance in the new ERP environment.

 Contribution of this study is to address a gap in the literature that concerns the impact of ERP

implementation on the IA. The importance of this assignment is beneficial for organizations

that plan to implement ERP systems and internal auditors.

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