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The Role of the Board of Directors in IT Governance: A Review and Agenda for Research

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ABSTRACT

The role of the board of directors in IT governance draws increasing attention from practitioners faced with evolving competitive pressures and Sarbanes-Oxley compliance requirements. However, research on the topic is in its very early stages. To further the continued development of this emerging research area, this review paper surveys the extant literature, formulates propositions for board involvement in IT governance, and outlines priorities for future research.

Keywords

Board of directors, IT governance, corporate governance, review.

INTRODUCTION

While the topic of executive involvement in information technology (IT) has been studied extensively (Jarvenpaa and Ives, 1991; Sharma and Yetton, 2003), research specifically on the role of the corporate board of directors in the management and control of information technology has been almost nonexistent (Kambil and Lucas, 2002). However, recent developments suggest that it is time to put the spotlight on the role of the corporate board in IT governance. Legislative initiatives such as the Sarbanes-Oxley act affix responsibilities for IT with the board (Damianides, 2005) and there is currently a surge in corporate IT governance initiatives and in IT governance research (Brown and Grant, 2005).

Furthermore, the US corporate governance practice of combining the CEO and chair (board chair, chairman) roles is under scrutiny (Lorsch and Zelleke, 2005) and whenever the chair and CEO roles are separated, the need to understand chair and board involvement in IT becomes even more pronounced. Many countries already separate the roles of chair and CEO, through codes or through law (Cadbury, 2002).

However, Present research on IT governance does not encompass the board level (e.g. Sambamurthy and Zmud, 1999; Weill, 2004) and there is thus little if any guidance available for research on board involvement in IT governance. This is a particularly interesting shortcoming since IT governance concerns organizational decision rights and accountabilities for key IT activities (Sambamurthy and Zmud, 1999; Weill, 2004) and since the board is the ultimate decision-making body of the organization, with primary responsibility for corporate governance (Conger, Lawler and Finegold, 2001).

The aim of this review paper (cf. Webster and Watson, 2002) is therefore to provide a basis for future research on board involvement in IT governance by reviewing relevant literature, developing propositions grounded in the literature, and outlining priorities for future research.

METHODOLOGY

The literature review was partly modeled after Brown and Grant (2005). Journal databases (Business Source Premier, ABI Inform, JSTOR, AIS e-library), library databases and online booksellers were searched. Webster and Watson's (2002) recommendation to search by topics rather than by journals was followed. Identified articles were used to search for additional articles through reference lists. Web of Science was used to search for forward-linkages for key articles.

The searches resulted in a pool of 124 articles and fifteen books. Only eight scholarly papers directly addressed board involvement in IT governance. None were published in top IS journals and several were in conference proceedings, further supporting that this is an emerging research area.

The eight papers on the core topic were reviewed separately and themes and issues in these papers were summarized. For the remaining papers, themes were identified through iterative readings and groupings of the literature. Guiding questions for this analysis were: "What activities, functions and meanings does board work encompass?", "What impacts the work of the

board?” and “How does this inform us about board involvement in IT governance?”. On the basis of the literature analysis, a conceptual model of influences on board work was developed and themes in the literature were summarized. For each identified theme, one or more propositions (or boundary conditions) about board involvement in IT governance were formulated, guided by the literature and the conceptual model. Boundary conditions were used because they are important for stating assumptions under which theoretical statements hold (Bacharach, 1989). The results of the analysis are presented in the following sections.

THE BOARD OF DIRECTORS AND IT GOVERNANCE: A SHORT REVIEW OF THE LITERATURE

A New Research Area

While strategic IT management has long been considered partly the responsibility of senior executives, including the CEO (Boynton, Jacobs and Zmud, 1992; Jarvenpaa and Ives, 1991), the role of the board in the management and governance of IT has received scant attention in the literature (Kambil and Lucas, 2002). However, board level involvement in IT governance is an emerging practical concern driven by several developments, including the operational dependency and strategic importance of IT (Nolan and McFarlan, 2005), corporate IT-related risk exposure (Jordan and Musson, 2003), and Sarbanes-Oxley compliance requirements (Damianides, 2005).

Kambil and Lucas' (2002) study of board involvement in IT management focused the correlation between board characteristics, IT management practices and measures of IT spending and value from IT. Although the results and implications from the study are limited by the low response rate (7%), the study still provides ideas and indications about board practice. Findings suggest a correlation between firm revenue, board size, value from IT, and presence of a Chief Information Officer (CIO).¹ It was also suggested that education level of board members and presence of board members with technical degrees might correlate with higher IT budgets and more frequent board reviews of IT. Similarly, presence of board members with IT background seemed to correlate with IT spending and value from IT. The study also suggested that younger boards will be savvier about IT. Finally, Kambil and Lucas suggest that the board's most important task concerning IT is to make corporate management aware of technological trends and to integrate IT with corporate strategy.

Huff, Maher and Munro (2004; 2005) performed interviews in 17 companies to find that boards spend “remarkably little time” on IT, even when their IT spending is high. Most boards were found to cede oversight of IT to top management and to disregard strategic aspects of IT. Risk was found to be the number one IT concern of boards and information-intensive firms were more likely to review IT risks in the board, while primary sector firms relied more on the audit committee. This difference was attributed to differences in IT spending level and operational dependency on IT. The authors found no board IT committees in their sample. However, “a majority” of the boards of financial service firms were found to have discussed the IT development portfolio, IT leadership and the IT organization. Some boards had instigated IT benchmarking by outside consultants. The authors suggest that the CIO should brief the board on IT regularly and that boards should have at least one director with an IT background.

Nolan and McFarlan (2005) argue that boards should be involved in IT because of the strategic importance of IT and operational dependency on IT for most firms. They argue that most boards fail to fully understand how IT impacts firm strategy and that boards should institute measures for monitoring IT, but that the means and approach for doing so depends on the role of IT for the firm. Their proposed vehicle for board oversight is a IT governance committee consisting of independent directors that – depending on the strategic role of IT – would monitor IT assets, IT projects, security and risk (project, operational, legal), and participate in IT-related business intelligence and strategy formation.

In contrast to the strategic outlook of these papers, the remaining identified papers that address board involvement in IT primarily focus risk assessment and mitigation. Jordan and Musson (2003) focused whether standards for risk management are adequate for Australian boards, particularly regarding electronic commerce initiatives and found that existing standards are insufficient, particularly for addressing IT projects. The extent to which boards had implemented risk assessment procedures for electronic commerce and IT projects varied substantially, although most respondents identified the relevance of various IT-related risks. Board members responding to the quantitative part of the study (response rate around 10%) found CEOs (50%) and boards or board audit committees (22%), and other management (17%) to be responsible for risk procedures. Where the board was seen as responsible, procedures were most likely to be in place.

Damianides (2005), commenting on procedures for risk-focused IT governance (IT Governance Institute, 2003), argued that the Sarbanes-Oxley act has boards putting IT governance on their agendas. He stresses that boards should oversee that

¹ This finding is difficult to theorize from, since the relationship between board size and other factors is confounded.

expectations of IT are met and risks are mitigated and suggests that boards should exercise IT governance through assessing IT in terms of risk mitigation, strategic issues, internal reporting and control, and board monitoring of IT.

Of these papers, Kambil and Lucas’ (2002) and Jordan and Musson (2003) are explorative and empirical. Huff et al. (2004; 2005), Nolan and McFarlan (2005) and Damianides (2005) are normative and pragmatic. The papers by Huff et al. (2004; 2005), although based on interviews, do not report empirical findings systematically. Nolan and McFarlan (2005) and Damianides (2005) report no empirical findings. None of the other papers use theory to shed light on the focused phenomenon.

The assumptions, ideas and tentative findings of this budding literature will be revisited later in this paper, as they are related to established results from other research areas. For now, it can be concluded that early studies on board involvement in IT governance have yielded useful tentative results and ideas, but they arguably do not provide a solid enough base for more systematic research in the area. Neither does the literature on IT governance.

IT Governance below the Board

The literature on IT governance emphasizes effective control of IT through decision structures and procedures (Sambamurthy and Zmud, 1999; Weill and Ross, 2004). Decision authority and accountability are considered important, and key topics include the characteristics of the governance structure, including such aspects as decentralization/centralization and the balance of influence between different constituencies (Brown and Grant, 2005; Sambamurthy and Zmud, 1999; Weill and Ross, 2004).

However, this literature does not address the role and involvement of the board of directors in IT governance (cf. Brown and Grant, 2005; Sambamurthy and Zmud, 1999; Weill and Ross, 2004; Weill and Ross, 2005). Since the board is the ultimate decision-making body of the corporation, it can therefore be argued that the “top” of the IT governance control structure is missing in IT governance studies.

LOOKING ACROSS THE BOARD: LESSONS FROM CONTRIBUTING RESEARCH AREAS

Since the role of the board of directors is not well covered in the information systems literature, one avenue to theorizing on board involvement in IT governance is to use employ literature from other research areas. Themes in the identified literature were identified (Webster and Watson, 2002) and a preliminary conceptual model of influences on board work practices was constructed . Together with the literature, this model guided the formulation of propositions and boundary conditions.

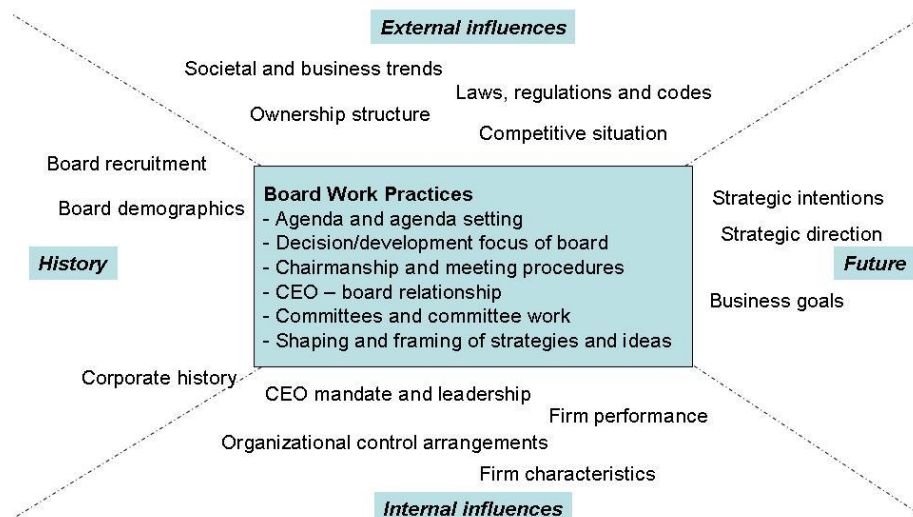


Figure 1: A Conceptual Model of Influences on Board Work Practices

Corporate Governance

The idea and concept of corporate governance is firmly rooted in the institution of corporate ownership, which includes the idea that owners (shareholders) have ultimate authority and ultimate control over the firm's resources and actions (Fama and Jensen, 1983). This view is in line with organizations as reflections of their "upper-echelons" (Hambrick and Mason, 1984), boards and executives, that have the freedom of strategic choice (Child, 1972). However, the view is not readily compatible with a stakeholder perspective (Freeman, 1984) or with institutional theory (DiMaggio and Powell, 1983). The view of governance as an extension of ownership is clearly dominant in the IT governance literature (Brown and Grant, 2005; Weill and Ross, 2004) and in the literature on board involvement in IT governance (Kambil and Lucas, 2002; Nolan and McFarlan, 2005) and therefore adopted in this paper. A boundary condition of emerging theory on boards and IT governance may thus be formulated:

Boundary condition 1: The propositions assume an "upper echelons", strategic choice view of the firm, of corporate governance and of IT governance. This view emphasizes the actions and influence of the board (and corporate executives) in the formulation and execution of corporate strategic action.

In this paper, as in agency theory, the board of directors is seen as appropriate owner representatives; there is no agency problem between owners and their representatives (Fama and Jensen, 1983). This leads to our second boundary condition:

Boundary condition 2: The propositions assume that the board properly represents owners.

The Functions of the Board

The board of directors is an empirical manifestation of the principle of corporate control by principals (owners) over agents (executives). According to the standard view, the board is a governing body that does not execute policy, but rather shapes and sets policy, supervises the actions of the CEO and corporate executives and decides on CEO succession (Cadbury, 2002; Conger *et al.*, 2001; Forbes and Milliken, 1999).

Assuming that the intentions and actions of the board are reflected in how the organization operates (Hambrick and Mason, 1984), it is likely that non-board IT governance arrangements reflect board activity concerning IT. On the other hand, it might be that effective non-board IT governance reduces the need for board oversight over IT. Thus, it is proposed:

*Proposition 1: **Existence** of non-board IT governance structures and procedures is correlated² with board involvement in IT governance.*

*Proposition 2: **Effectiveness** of non-board IT governance structures and procedures is **negatively** correlated with board involvement in IT governance.*

Neither of these propositions have been addressed in the literature.

Societal and Legal Influences

Different societies exhibit different institutionalized corporate governance arrangements, and for the foreseeable future, convergence of corporate governance across societies is highly unlikely (Fliegstein and Freeland, 1995). An obvious instance of institutional variety is the Sarbanes-Oxley act, which only pertains directly to companies registered with the U.S. Securities and Exchange Commission and places concrete demands on both internal reporting procedures and board responsibility (Damianides, 2005):

Proposition 3: The existence of rules, codes and legislation that stipulate board responsibility for monitoring of IT-related issues is correlated with board involvement in IT governance.

This proposition is important because in a global perspective, most companies are not legally bound by the Sarbanes-Oxley act. While suggested in the literature, it has not been studied empirically.

The Board's Role in Shaping Strategy

McNulty and Pettigrew (1999) outlined three levels of non-executive director involvement in strategizing: *taking strategic decisions* (strategy is shaped by others), *shaping strategic decisions* (influence is exercised early in decision process) and *shaping content, context and conduct of strategy* (influence is exercised continuously rather than only in decision episodes).

² Correlations are *positive* unless otherwise stated.

While all boards “take” strategic decisions, additional involvement in strategy-making varies amongst boards. Thus, the depth of involvement of the full board in shaping strategy may vary considerably. Consequently, so could involvement in IT governance:

Proposition 4: The scope of the role of the board in shaping strategy is correlated with board involvement in IT governance.

This proposition has not been addressed in the literature.

Shaping of Ideas and Views in the Boardroom

The shaping of ideas in and around the boardroom is key to interpersonal influence, decision making and strategy formation (Maitlis, 2004; McNulty and Pettigrew, 1999). This shaping of ideas arguably also pertain to IT. Huff et al. (2004; 2005) suggest that the understanding (or lack thereof) of the board concerning the role of IT for the business impacts if and how the board addresses IT issues. This can be conceived both as directly related to the “actual” impact of IT on the business (Nolan and McFarlan, 2005) and as a case of framing and sensemaking (Maitlis, 2004). While Nolan and McFarlan (2005) argue that actual circumstances should govern, Huff et al. (2005) report contradictory evidence, noting that boards of directors “even in information-intensive companies” spend remarkably little time on IT-related issues. The following propositions summarize this issue:

Proposition 5: The importance of IT for the firm impacts board involvement in IT governance.

- a. *Operational dependency on IT is correlated with board involvement in IT governance.*
- b. *Strategic importance of current IT resources and capabilities is correlated with board involvement in IT governance.*
- c. *Strategic importance of future IT resources and capabilities is correlated with board involvement in IT governance.*

Proposition 6: The board’s collective understanding of the role and importance of IT for business impacts board involvement in IT:

- a. *Definition of IT as an operational issue is **negatively** correlated with board involvement in IT governance.*
- b. *Definition of IT as a strategic issue is correlated with board involvement in IT governance.*
- c. *Definition of IT as a strategic and/or operational risk is correlated with board involvement in IT governance.*

Board Demographics, Knowledge and Skills, Effectiveness

All boards are not equally effective (Conger *et al.*, 2001; Forbes and Milliken, 1999) and among the factors influencing performance are effort norms, knowledge and skills and appropriate cohesiveness (Forbes and Milliken, 1999). The extant papers on board involvement in IT all argue that boards fulfill their task better through being more involved in IT governance. This implies that more effective boards would be more involved in IT issues:

Proposition 7: Board effectiveness is correlated with board involvement in IT governance.

This is an important hypothesis since a refutation of this hypothesis would be at odds with the literature on the topic.

The importance of knowledge and skills in the board (Forbes and Milliken, 1999) leads us to the impact of board demographics on IT governance. Based on tentative findings of Kambil and Lucas (2002) and Huff et al. (2004; 2005), it can be proposed that:

Proposition 8: Board demographics influence board involvement in IT governance in the following ways:

- a. *Lower age of directors is correlated with board involvement in IT governance.*
- b. *Higher education of directors level is correlated with board involvement in IT governance.*
- c. *Technical education of directors is correlated with board involvement in IT governance.*
- d. *IT background of directors is correlated with board involvement in IT governance.*

Influence of Societal and Business Trends

Furthermore, ideas that shape or take hold in the boardroom come not only from the inside or from the directors and their immediate contexts. Business ideas also emerge in society, taking the form of management fashions that are disseminated and adopted throughout a business community, or even globally (Abrahamson, 1996). Nolan and McFarlan (2005) suggest that boards have traditionally treated IT if and when fashions and circumstances have prompted them to do so, such as with e-commerce and “Y2K”. This suggests:

Proposition 9: Trends that portray IT as having strategic importance influence boards to increase their involvement in IT governance.

Focus and Scope of Board Involvement in IT Governance

Given that boards engage in shaping and approving strategy, monitoring performance and monitoring risks, what should they do about IT? The literature on boards and IT offers quite a few pointers in this particular area (Damianides, 2005; Huff *et al.*, 2004; Huff *et al.*, 2005; Kambil and Lucas, 2002; Nolan and McFarlan, 2005):

Proposition 10: Board involvement in IT governance should focus on the following topics:

- a. *Monitoring technological trends and bringing them to management's attention*
- b. *Integrating IT with corporate strategy*
- c. *Monitoring IT-related strategic risks*
- d. *Monitoring IT-related legal risks*
- e. *Monitoring IT-related operational risks*
- f. *Monitoring IT assets*
- g. *Monitoring IT projects*

None of the papers, however, discuss how to make room for these new tasks on the board agenda. Given the limited amount of time and attention many board members allocate to board memberships (McNulty and Pettigrew, 1999), there is an opportunity cost of spending time on IT issues and the list of added duties should arguably be kept to an effective minimum. This proposition is important because for each item that can be crossed off the list, remaining items will get more attention. Still, some boards will need to pay more attention than others, according to Nolan and McFarlan (2005):

Proposition 11: A combination of operational dependency on IT and strategic importance of IT increases the scope and extent of the board's involvement in IT governance.

Huff *et al.* (2004; 2005) report a contradictory empirical observation, which makes this proposition important to study.

Enactment of Board Involvement in IT Governance

In general, the literature on boards does not highlight specific "levers of control" (Simons, 1995), but rather focuses on the meanings or functions of boardroom action. However, practically oriented literature on boards highlights effective conduct of board meetings (Cadbury, 2002; Conger *et al.*, 2001). Nolan and McFarlan (2005) and Huff *et al.* (2004; 2005) propose a number of means for enacting involvement in IT governance::

Proposition 12: Board involvement in IT governance can be effectively enacted through the following procedures and practices:

- a. *Discussions, monitoring activities and decisions by the full board on a regular basis*
- b. *The institution and ongoing work of a board level IT governance committee (similar to the audit committee)*
- c. *Regular presentations by the CIO to the full board*
- d. *Delegation of responsibility for IT governance to the CEO*
- e. *Regular monitoring of the CEO's activities in relation to IT governance*
- f. *Monitoring of IT governance as part of the work of the audit committee*
- g. *Integration of IT in the board's strategy discussions*
- h. *Initiation of benchmarking by outside experts*

The Quest for the Dependent Variables: Does Board Involvement in IT Matter?

Finally, the most important question: Does board involvement in IT governance matter? The most common argument is that board involvement in IT governance will secure and improve alignment between business strategy and IT resources, increase business value from IT and improve the monitoring of IT-related risks (Damianides, 2005; Jordan and Musson, 2003). Strategy alignment is here seen as a means towards future business value, not an end in itself. Thus:

*Proposition 13: Board involvement in IT governance is correlated with **current** and **future** business value from IT.*

Proposition 14: Board involvement in IT governance is correlated with effective corporate control of IT-related risks.

While the existing papers on the topic all assume these statements to be true, the only empirical evidence that exists is a weak indication from Kambil and Lucas (2002) that current business value might be correlated with board involvement in IT.

DISCUSSION

The above conceptual model and propositions are offered as a basis for future research on board involvement in IT governance. While topics of several propositions have been discussed in existing papers, they have not been linked to existing theory, such as corporate governance and strategic management. Above, each proposition has been linked to literature from contributing research areas and existing literature on the core topic, where applicable.

There is currently little if any firm empirical evidence of current board practices regarding IT governance. Clearly, this research area is now ready to move beyond its emergent state into the realm of more rigorous empirical studies on board involvement in IT governance. This can be done both in the form of factor studies that strive to identify determinants of board involvement in IT and in the form of process studies that offer process descriptions and theorizing on how board involvement in IT governance is shaped and reshaped over time.

Perhaps most importantly, the consequences of board involvement in IT governance need further study. Currently, all existing papers assume that board involvement increases business value from IT. However, empirical evidence for this assumption is almost non-existent. It could well be that IT governance is better executed at the executive level and below and that boards should minimize involvement in IT, considering it subordinated to issues of financial and strategic performance. At present, we just do not know.

Given the availability of studies and theories from other research areas, there is also an untapped potential in employing specific theories to shed further light on how IT governance intertwines into board work processes and control structures and how social meanings associated with IT governance are shaped in the boardroom context.

However, the literature on boards of directors, whether connected to IT or not, identifies several problems related to data collection for this particular topic. Problems include achieving appropriate response rates in surveys; the confidential nature of board work and related business and legal risks of allowing outsider access; the high social status of the respondents; and their opportunity cost for participation in research. A possible route to countering these challenges might be to design studies on the "impact frontier" of relevance and rigor (Davenport and Markus, 1999), making sure that there is output of substantial value for practitioners. In addition, research could be conducted in collaboration with practitioner associations and/or in conjunction with high profile events for executives and board members.

CONCLUDING REMARKS

The role of boards of directors in the governance and management of information technology is just emerging as a research topic. Since the practical importance of the topic increases rapidly, there is a need for rigorous and relevant, conceptual and empirical research on this important topic. The framework and propositions presented in this review paper are intended to provide a basis for such further research.

At present, only a few studies exist and this review of the literature found this emerging research area in want of empirical descriptions of current practices, establishment of determinants and consequences of board involvement in IT governance and a firmer grounding of future in existing theories from other research areas within the organization sciences.

Furthermore, it is also important to consider the interface between board level IT governance and non-board IT governance. Arguably, a minimum requirement of future IT governance studies should be that the delimitations of a studied or conceptualized (IT) governance system are clarified. In this way, a study of non-board IT governance will at least clarify the interface between the studied system and board level corporate governance mechanisms. Through this, the "G" in IT Governance would be taken seriously, the fundamental connection to corporate governance would be acknowledged and the relevance of IT governance research for the whole corporate governance system and its various constituencies would be safeguarded.

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