TOWARDS AN ELECTRONIC MONITORING, OBSERVATION AND COMPLIANCE FRAMEWORK FOR CORPORATE GOVERNANCE USING BUSINESS PROCESS MANAGEMENT SYSTEMS

Henk Pretorius,

Lecturer, Department of Informatics, University of Pretoria, South Africa henk.pretorius@up.ac.za

Awie Leonard,

Associate Professor, Department of Informatics, University of Pretoria, South Africa awie.leonard@up.ac.za

Ian Strydom,

Associate Professor, Department of Informatics, University of Pretoria, South Africa ian.strydom@up.ac.za

ABSTRACT: Corporate governance has been heavily criticised, because of governance failures in companies across the globe. In response to these failures, legislative and regulatory changes have been introduced. However, skeptics argue that compliance with these legislative and regulatory acts is costly and time consuming, causing overregulation. Furthermore, many regulatory measures lack business value and there is no guarantee that adherence to these measures can be enforced. This article presents an argument for better utilisation of electronic means and specifically, business process management systems (BPMS), in support of good corporate governance. Through the application of Orlikowski's theory of "technologies-in-practice" as the theoretical underpinning of the study and collection of data from a BPMS vendor company and seven BPMS user companies in South Africa, an electronic monitoring, observation and compliance framework for corporate governance is proposed.

KEYWORDS

Electronic monitoring and compliance framework, business process management systems, corporate governance, fraud, corruption

INTRODUCTION

Corporate governance is simply described as the system by which companies are directed and controlled (IODSA, 2002). In the United States (US), corporate governance has been heavily criticised, because of failures of companies like Enron, WorldCom, Tyco, Adelphia and Global Crossing (Boyd, 2003; Hough et al, 2009; Kaplan & Holmstrom, 2003; Kreitner & Kinicki, 2004; Pearlson & Saunders, 2009). It is further revealed that US industries lose about USD400 billion a year from unethical and criminal behaviour (Kreitner & Kinicki, 2004). The resignation and arrest of top US managers suggests that there is an increasing level of managerial negligence and corporate irresponsibility that erode domestic and global trust in those firms (Elliott & Schroth, 2002; Michell, 2002). Europe's biggest corporate failure was Parmalat (BBC News, 2003; BBC News, 2008; Gumber, 2004). The company collapsed in 2003 with a EU14 billion hole in its accounts. Calisto Tanzani, Chief Executive Officer (CEO) of Parmalat, was detained hours after the firm was declared insolvent, charged with financial fraud and money laundering and sentenced to 10 years in prison. Hundreds of thousands of investors lost their money and the Parmalat group collapsed.

In South Africa the corporate governance situation is no different from that in Europe and the US. Amongst many cases of lapses in corporate governance, information technology (IT) vendors are often accused of offering bribes to government employees (Jarvis, 2009), notably in the State Information Technology Agency (SITA). In 10 years of existence of SITA (2002-2012), it spent approximately ZAR10 billion on ICT (Mtimunye, 2009). This sum of money is very attractive to parties who want to share in the stake. This situation led to various forms of corruption and fraud within SITA, at the cost of service delivery to South African citizens. The dimensions of corruption and fraud at SITA include bribery, embezzlement, extortion, nepotism, favoritism, collusion, split purchases, abuse of power, conflict of interest and over- or under- invoicing (Mtimunye, 2009).

In response to the many corporate failures around the globe, legislative changes (eg the Sarbanes-Oxley Act of 2002) and regulatory changes (eg governance guidelines for the NYSE and NASDAQ) were introduced in various countries (Hough et al, 2009; Kaplan & Holmstrom, 2003; IODSA, 2009; Pearlson & Saunders, 2009). In the US, the purpose of the Sarbanes-Oxley Act of 2002 (SOX) was to build and restore confidence in US and international capital markets (Hough et al, 2009). However, many skeptics argue that compliance with legislative and regulatory acts are time consuming, costly and cause overregulation (Cangemi, 2007; Kaplan & Holmstrom, 2003; IODSA, 2009; King, 2006; Sewchurran, 2007; Velichety et al, 2007). Furthermore, these efforts do not always provide business value to organisations. There is also no guarantee that adherence to these measures can be enforced, indeed, in the first three years of SOX, this was at best regarded as an overreaction to Enron and at worst ineffective and unnecessary (IODSA, 2009; Richardson, 2006; *The Financial Express*, 2006).

This article argues for the use of an electronic monitoring, observation and compliance framework that makes use of electronic means in support of good corporate governance, noting that IT is not a remedy for all corporate governance problems. A support framework with effective electronic monitoring systems for good corporate governance is proposed, utilising a BPMS approach. However, the components of such a framework are unknown, therefore the following research question is posed:

What are the components and requirements for an electronic monitoring, observation and compliance framework that will explain how a BPMS approach can be utilised in support of good corporate governance?

GOOD CORPORATE GOVERNANCE: A SOUTH AFRICAN PERSPECTIVE

The corporate governance problems identified in the introduction are in accordance with the findings of King (2006), who has done extensive work in the field of corporate governance in South Africa. King's work includes three groundbreaking reports: "The King Reports" (King I Report, 1994; King II Report, 2002; King III Report, 2009). These guidelines strive to improve the quality of governance in South African and international firms operating in South Africa (Hough et al, 2009; King, 2006). The King Reports do consider how good corporate governance could be promoted by IT, but do not present detailed guidelines for electronic monitoring and observation of company practice.

In the three King Reports, the King Committee identifies nine principles of good corporate governance (Hough et al, 2009; IODSA, 1994; IODSA, 2002; King, 2006; Kreitner & Kinicki, 2004). A description of each of the nine principles of good governance follows below. These may be summarised as adhering to the good corporate governance principles of fairness, accountability, responsibility, transparency, discipline, independence, social responsibility, leadership and sustainability. Most importantly, the foundation of these concepts is intellectual honesty, acting in good faith and acting in the best interests of the company.

1. *Discipline:* Discipline is the commitment by a company's senior management to adhere to universally acceptable, correct and proper behaviour.

2. *Transparency*: Transparency can be defined or considered as the ease with which an outsider is able to obtain a true picture of what is happening inside the company. This includes financial and non-financial aspects of the organisation.

3. *Independence:* Independence is the extent to which mechanisms have been put in place to avoid potential conflicts of interest between parties. Internal processes and decisions should be objective without undue external influences. King (2006) furthermore suggests the segregation of duties within a company, especially between board and management.

4. *Responsibility:* Responsibility concerns acceptance of all the consequences of organisational behaviour that allows for corrective action and penalties for mismanagement.

5. *Accountability:* Individuals or groups (such as the board of directors) in a company, who make important decisions, should be accountable for their decisions and actions.

6. *Fairness:* A system must exist in the company that takes a balanced view by taking into account all those that have an interest in the company and its future. This means that the rights and interests of all stakeholders in the organisation should be acknowledged and respected.

7. *Social responsibility:* A company should be aware of and respond to social issues, placing a high priority on ethical standards. A good corporate citizen should be seen as non-discriminatory, non-exploitative and responsible with regard to environmental and human rights issues.

8. *Leadership:* Leaders need to define strategy, provide direction and establish ethics and values that will influence and guide practices and behaviour with regard to sustainability and performance. Leaders should further ensure compliance with policies, procedures and plans referred to as the conformance role of the leadership. Leaders should further reflect the balance of skills, experience and demographic diversity to provide effective leadership and control.

9. *Sustainability:* Business, nature and society are interconnected in complex ways that must be understood by decisionmakers. Companies are increasingly expected to grow their business, but at the same time meet human needs of societies around the world, while also reducing the negative environmental and social footprint of their operations and products. This is referred to as the "triple bottom line".

APPLICATION OF IT IN CORPORATE GOVERNANCE

King (2006, p. 74) argues that the use of IT must be increased to foster effective corporate governance, viewing this as the ultimate way to achieve good governance in today's 24-hour borderless world: "Willingly or unwillingly, we are members of the information age. The ultimate light in regard to transparency and governance has become IT. The use of IT in the business world is not only an enabler but has also become of strategic importance. Through this strategic role it has become pervasive".
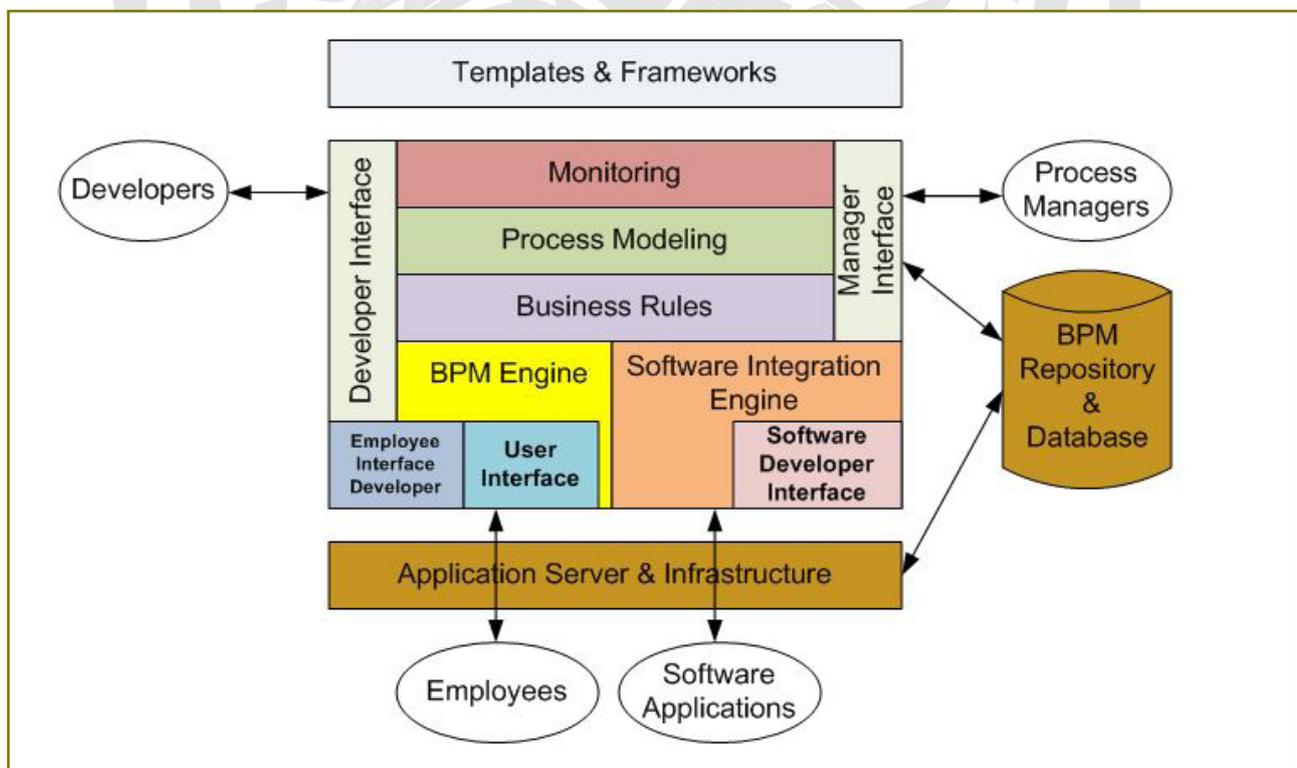
IT is a business enabler that has become of strategic importance (IODSA, 2009; King, 2006; Vecchiatto, 2009), and when aligned with the business goals, IT can deliver optimum value (Cangemi, 2007; Robinson, 2007; Tallon et al, 2001). The use of IT in governance is furthermore becoming a popular way to ensure regulatory compliance (Robinson, 2007; *The Financial Express*, 2006). The components of business process management systems (BPMS) for electronic monitoring, observation and analysis of corporate governance practice are discussed below.

BUSINESS PROCESS MANAGEMENT SYSTEMS (BPMS) AND ARCHITECTURAL COMPONENTS

A BPMS is defined as a generic software information system that is designed to manage operational business processes (Weske et al, 2004). A process is further defined as a collection of activities that takes one or more kinds of input and creates an output that is of value to a customer (Hammer & Champy, 1993). A BPMS gives an organisation the ability to rapidly make changes to business processes in the real-time business environment, reducing the risk of firms losing competitive advantage, minimises business process complexity for the user, and contributes to the strategic alignment of business processes with the business objectives (McGoveran, 2001). A BPMS makes business processes visible to process owners, users and auditors who are directly affected by the regularity pressures of acts like the Sarbanes-Oxley Act (Palmer, 2003) and in South Africa, the South African Companies Act 71 of 2008 as amended. The South African Companies Act is enforced by the Companies and Intellectual Property Commission in South Africa (Deloitte, 2013) and contains key elements of the King Reports.

A BPMS consists of a number of architectural components (Megard, 2002; Miers & Harmon, 2005; Miers et al, 2007; Palmer, 2003), as illustrated in Figure 1:

FIGURE 1:   THE ARCHITECTURAL COMPONENTS OF A BPMS

Source: Miers & Harmon, 2005; Miers et al, 2007

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- *Business Process Management (BPM) Engine*: The BPM engine consists of a multi-tier architecture, namely server, client and web services. The server component is responsible for the execution, monitoring and controlling of all automated business processes. The server also handles user interaction and routing and ensures that work is accomplished. The client component typically consists of a web portal through which a user can access relevant work items. Web services are used in the multi-tier architecture to expose specific functionality of the BPMS to external users.

- *BPM Repository and Database*: This is the database of the BPMS that stores business process definitions, integrity rules, process instance history, data flows, business metrics definitions, analytical and reporting definitions, transactions definitions, security information, simulation and error logs.

- *Process Modelling*: This is the part of the BPMS in which the user develops and designs business processes. Part of process modelling is organisational modelling. Organisational modelling allows the BPMS to define groups, roles and users with access permissions.

- *Business Rules:* The rule engine is mainly an extension of the process modelling engine in the BPMS to configure business process rules.

- *Software Integration Engine:* Consists of different application adapters, which make integration to third party enterprise software possible.

- *Monitoring:* The BPMS stores all process data (real-time information) for analytical purposes. This data is used for measurement of resources, organisational processes (ie to be able to identify bottlenecks in processes) and audits.

- *Templates and Frameworks:* Typically BPMS are accompanied by process templates for specific market segments. This reduces development time by providing a starting point for more complex client specific development.

In a later section, the authors explain how these components of the BPMS can be utilised for electronic monitoring, observation and compliance in support of corporate governance.
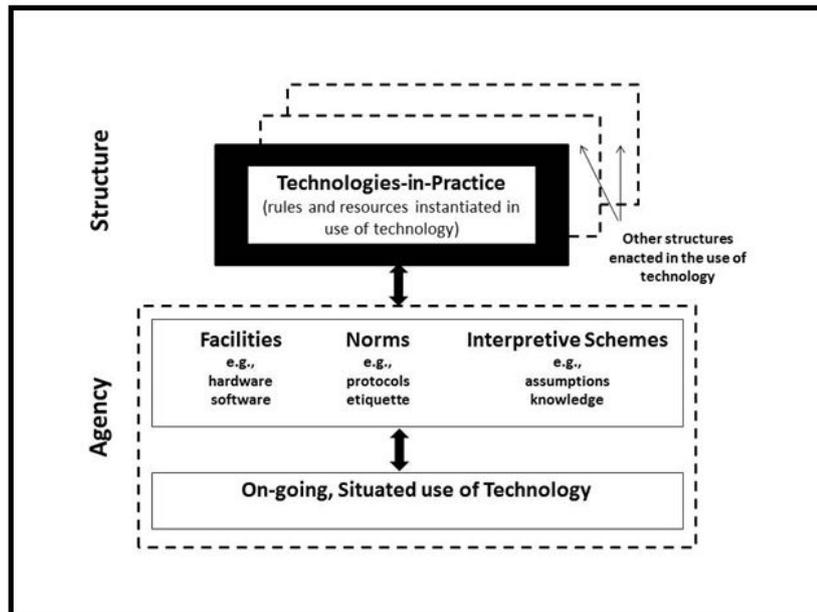
THEORETICAL UNDERPINNING: TECHNOLOGIES IN PRACTICE

A summary of Orlikowski's theory of "technologies-in-practice" serves as theoretical underpinning for the research. This theory is pertinent to electronic monitoring, observation and compliance in support of corporate governance, as discussed here. In her early work, Orlikowski (1992) depicts the relationships between technology, humans (agents) and the organisation. People (agents) design information systems and information systems change the way in which people work. The way in which agents work further changes the characteristics (including social behaviour and social action) of the organisation, referred to as structuration in a continuous process.

Orlikowski (2000) advances the structuration perspective by explaining that social structures are not and cannot be embedded in material artifacts, such as technology. Structuration, the enforcement or change in social behaviour and action, can only be achieved through recursive, ongoing technology use when users of a technological artifact interact with certain properties of the technology. Typically, the properties of the technological artifact are designed and developed by technology designers and developers for a specific organisational purpose, while properties are also added by users. The inscription process of technology (Orlikowski, 2000) explains that when people use technology, they draw on the inscribed properties of the technological artifact – those that were inscribed by the designers and those added by the users. In the process of use, the users also draw on their own interpretive schemes (skills, power, knowledge, emotional abilities, intellectual abilities, other), norms and other facilities (hardware and software) in a specific organisational setting as indicated in in Figure 2 below.

In an organisational setting, a community of users with similar work practices is required to use the technological artifact with its inscribed properties in a similar way; repeated use leads to institutionalisation in the organisation. Orlikowski (2000) refers to this institutionalised process of similar technology use as "technology-in-practice", as indicated in Figure 2 below. At this stage she argues, institutionalised and similar technology use for a community of users become firm prescriptions for social action that may impede change or reinforcement. Recurrent use of technology may simultaneously enact multiple structures, as indicated in Figure 2. Over time and as contexts change, different structures will emerge. However, in change lies the possibility and potential for innovation and learning (Orlikowski, 2000).

Source: Orlikowski, 2000

The structuration theory (Orlikowski, 2000) is pertinent to guide and inform this research project, because it introduces a perspective that links organisations and technology. The authors were not only interested in investigating how the King principles of good governance could be inscribed into a technological artifact such as a BPMS and its components, but also in the possible impact and change that such an intervention would have on the social behaviour and action (the structuration that occurs) in the organisation to support good corporate governance. The suitability of other structuration theories was investigated, but found not applicable. The structuration theory of Giddens (1984), for example, was eliminated, because this theory was ignorant of the role of technology and social structures (Jones, 1997). On the other hand, the adaptive structuration theory of DeSanctis and Poole (1994) was eliminated, because this theory had very little resemblance to original structuration theory principles (Jones, 1997).

RESEARCH METHODOLOGY

In order to present a broad perspective of how BPMS are utilised in support of good corporate governance, the authors adopted an interpretive research paradigm, using qualitative methods. This interpretive research paradigm approach holds that social life is based on socially constructed meaning (Chen & Hirschheim, 2004; Jones & Nandhakumar, 1997; Klein & Myers, 1999; Pozzebon, 2004; Webber, 2004). The research involves case studies of a BPMS vendor company in South Africa and seven BPMS user companies of varying sizes and from different industry sectors (banking, financial, technology, manufacturing, energy and petro-chemical) in the Gauteng province of South Africa. Case study research suits the interpretive stance well, as a number of researchers (Kwon & Zmud, 1987; Markus, 1983; Schultze & Orlikowski, 2004) have demonstrated how case study research enables an in-depth review leading to a broader understanding of the research phenomenon that offers the potential to improve practice-based problems.

The case studies were documented through interviews and surveys between June 2010 and January 2011. At the BPMS vendor company, data was collected from 12 managers (24%), 14 business analysts (29%), 12 developers (24%), eight trainers (16%) and three other positions (7%). At the BPMS user companies, data was collected from six IT managers (24%), two general managers (8%) and 17 business analysts (68%). In all eight case studies, the participants represent different language groups, social backgrounds and genders. Data was systematically coded into themes and categories (thematic analysis), as it emerged from the BPMS vendor company and the seven BPMS user companies, using the constant comparative method (Strauss & Corbin, 1998). The themes and categories that emerged were used in the process to develop an electronic monitoring, observation and compliance framework for corporate governance.

Triangulation was used to increase the credibility and validity of the research results (Kennedy, 2009; Olsen, 2004). In this study, the triangulation approach brings together data from eight perspectives, the BPMS vendor company and the seven BPMS user companies, to gain a richer and more plausible account of a research phenomenon than would be possible with only one or two case studies. Orlikowski's (2000) "technologies-in-practice" theory was used to synthesise the research results and provide the basis for data analysis towards developing an electronic monitoring, observation and compliance framework for corporate governance following a BPMS approach.

TOWARDS AN ELECTRONIC MONITORING, OBSERVATION AND COMPLIANCE FRAMEWORK FOR CORPORATE GOVERNANCE

This section describes an electronic monitoring, observation and compliance framework for corporate governance. The framework was derived from the triangulated research findings. Throughout the sub-sections that follow, extracts of the raw data are presented. The themes and interpretation that emerged from the thematic analysis are tabled alongside them. Finally, Orlikowski's (2000) theory of technologies-in-practice was used as underlying theory to inform the synthesis of the various elements of the proposed electronic monitoring, observation and compliance framework for corporate governance depicted in Figure 3 below. Data is presented and analysed with the aim of testing the suitability of the framework.

FIGURE 3: AN ELECTRONIC MONITORING, OBSERVATION AND COMPLIANCE FRAMEWORK FOR CORPORATE GOVERNANCE: A BPM APPROACH

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Data collected from the BPMS vendor and user firms reveals the following:

FORCES THAT IMPACT DESIGN AND USAGE OF TECHNOLOGIES SUPPORTIVE OF GOOD CORPORATE GOVERNANCE

Table 1 below presents extracts from the data on the forces seen to influence the design and usage of a BPMS in support of good corporate governance and themes that emerged from thematic analysis.

TABLE 1:   DATA ANALYSIS OF FORCES THAT IMPACT THE DESIGN AND USAGE OF CORPORATE GOVERNANCE SUPPORTIVE TECHNOLOGIES

Raw data extracts from participants	Themes that emerged from the thematic analysis	Interpretation
Governance always depends also on the social, legal and cultural conditions … (BPMSVC Participant 12, 2010, online survey). Legislation and acts are different in different countries. The company rules are also different in different countries … (BPMSVC Participant 8, 2010). It depends on top management commitment to corporate governance. It also depends on legislation as corporate governance is impacted by legislation. Example: Telkom is listed on the JSE and NY stock exchange (BPMSVC Participant 1, 2010).	Social (culture and maturity), legal, political and economic forces	The forces that influence the design and usage of corporate governance supportive technologies can be analysed using a PEST[1] framework

Forces identified by respondents as affecting corporate governance include social, political and economic forces, hence these factors must influence the design and usage of the IT artifact for supporting corporate governance, as also identified by Orlikowski and Iacono (2001). By applying the PEST methodology to understanding the effects of these forces, organisations may be better able to use IT to support corporate governance, increasing the capacity to identify corporate governance opportunities and to create contingency plans to address corporate governance threats (Byars, 1991; Cooper, 2000; Pearce & Robinson, 2005).

INSCRIBING[2] THE KING PRINCIPLES OF GOOD GOVERNANCE INTO A BPMS

Table 1 below presents extracts from the daAs previously stated, a BPMS is a generic software system for design, execution and management of operational business processes (Weske et al, 2004). Orlikowski and Iacono (2001) argue that the analysis and usage of an IT artifact must acknowledge the multiplicity of fragile and fragmentary components that are present. This is also true for a BPMS, which consists of several architectural components, including the BPM engine, process modelling, the business rules component, the software integration engine, the monitoring component, the BPM repository and database, and templates and frameworks as indicated in 4a in Figure 3.

In Table 2 below, raw data extracts from interviews indicate how the King principles of good governance (fairness, accountability, responsibility, transparency, discipline, independence, social responsibility, leadership and sustainability) can be inscribed and supported by the architectural components of a BPMS.

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1   A PEST analysis considers political, economic, social and technological factors.
2   Built in by designers during technology development (Orlikowski, 2000).

King principles of good governance	Raw data extracts from participants
Fairness	When all users of the BMPS are handled in much the same way, there exists no room for any form of discrimination – all (issues) are treated equally (BPMSVC Participant 15, 2010) (authors insert: using the Business Rules component). Metrics and measures that are built into the BPMS can be used to determine the need to re-allocate work to ensure that all end-users share an equal and fair workload (BPMSVC Participant 10, 2010) (authors' insert: using the BPM Repository and Database component). The principle of fairness can be incorporated in such a way that all stakeholders are involved in the design of the BPMS solution. Role clarification must be done in a fair and equitable manner (BPMSVC Participant 6, 2010). (authors' insert: using the Process Modeling component)
Discipline	Creating clearly defined roles in the BPMS forces people to be disciplined in doing their work. Processes are broken down into sequential tasks thus forcing people to finish certain activities before engaging in others thus making sure that people are disciplined (BPMSVC Participant 24, 2010) (authors' insert: using the Process Modeling component). Setting up the system so that the person responsible for the task has a certain amount of time to complete the task before it gets routed to a superior (BPMSVC Participant 21, 2010) (authors' insert: using the Process Modeling component). Processes can be executed in a specific standard fashion. The rule builder also assists in helping to execute decisions in a similar way by taking out human unfairness, bias. Process notification and escalation may help to keep to process and business deadlines (BPMSVC Participant 8, 2010).
Sustainability	Streamlining processes so that overhead costs in manpower are kept to a minimum (BPMSVC Participant 21, 2010) (authors' insert: using the Process Modeling component). Continuously improving processes and by quickly adapting processes to new strategic market opportunities, IT will help to make the financial condition of the company visible to those responsible to take the correct actions (BPMSVC Participant 8, 2010) (authors' insert: using the BPM Repository and Database component). BPM/BPMS can be used as a knowledge management tool where the company's intellectual property can be housed. An organisation can be sustainable and improve its operation through the use of such technologies (BPMSVC Participant 6, 2010).
Accountability and responsibility	Accountability can be incorporated into the BPMS through responsibilities and the audit trail (authors insert: using the BPM Repository and Database component). When a process is configured, responsibilities for actions are assigned to users (authors insert: using the Process Modelling component). Through the BPMS, it is possible to see who performed which action (authors' insert: using the Monitoring component). This will increase accountability (BPMSVC Participant 27, 2010). Both the BPMS and rules engines can be used to enforce responsibility by the required parties as per the organisation's rules and regulations. In order to complete an automated process successfully, the responsible parties must complete the activities and tasks assigned to them (BPMSVC Participant 10, 2010) (authors' insert: using the Monitoring component). As in accountability the tracking and reporting will monitor and the rules will enforce responsibility (BPMSVC Participant 5, 2010) (authors' insert: using the BPM Repository and Database component).
Transparency	Any decision made is recorded as part of the audit trail of a process. So if an internal or external auditor needs to go back and check who decided what, it can easily be done (BPMSVC Participant 19, 2010) (authors' insert: using the BPM Repository and Database component). Internal and external people may see all the processes of the organisation (authors' insert: using the Process Modelling component). Processes may be standardised throughout organisations to help produce information in a standard way (authors' insert: using Templates and Frameworks). The audit trail of any process provides visibility into that process (authors' insert: using the BPM Repository and Database component). It is also possible to see how the organisation is put together (authors' insert: using the Process Modelling components). The rule builder will provide a way for transparent decisionmaking – to see how a decision was made (BPMSVC Participant 8, 2010).

Independence	A BPMS rule builder can be configured to ensure that departments or individuals that may have a vested interest in the outcome of a particular process do not participate in the process (BPMSVC Participant 10, 2010). External auditors can audit processes (authors insert: using the Process Modelling and the BPM Repository and Database components). Processes can also be developed so that certain activities are independent from others to eliminate fraud and create segregation of duties. The audit trail will provide visibility into how actions were performed in the organisation and whether someone has behaved dishonestly or unethically (BPMSVC Participant 8, 2010) (authors' insert: using the BPM Repository and Database component). Independence can be incorporated into the BPMS to improve independence in the organisation through reporting (authors' insert: using the BPM Repository and Database component). In the process engine, business rules can be used to ensure independence in the automated version of the process by ensuring that the correct steps are taken. Reporting can be used to monitor the levels of independence and flag any exceptions (BPMSVC Participant 27, 2010).
Leadership	Good leadership is achieved through fairness, consistency and transparency. So BPM offers a rule-based approach, everyone knowing their roles and offering capabilities that open up the organisation to the outside world (BPMSVC Participant 24, 2010) (authors' insert: using the Process Modeling component). The report builder may provide information to leaders to make better and accurate decisions about the company. The rule builder will help managers to make fair decisions, taking unfair human emotions and actions out of the equation (BPMSVC Participant 8, 2010) (authors' insert: using the BPM Repository and Database component). Enforcing the responsibilities of all role players, including those of the leaders (BPMSVC Participant 2, 2010) (authors' insert: using the BPM Repository and Database and Rule Builder components). Good leadership leads by example, by embracing processes, emphasising the value to be gained from having transparency and improving capacity (BPMSVC Participant 1, 2010) (authors' insert: using the Process Modelling component).
Social responsibility	The processes of the organisation can be designed to include the necessary social responsibility measures and controls, which can be enforced using the business rules. Reports can be used to highlight exceptions and to ensure that all processes adhere to the social responsibility policies and KPIs set by the organisation (BPMSVC Participant 27, 2010) (authors' insert: using the BPM Repository and Database component). To provide visibility in the processes and honest audit reports (no creative accounting), information is available to all those outside the company, thereby ensuring socially responsible action towards all stakeholders investing in the company (BPMSVC Participant 8, 2010) (authors' insert: using the Process Modeling and the BPM Repository and Database component). Using the Green IT approach, each organisation should have asset disposal policies and strategies in place so that they adhere to the good governance principle of social responsibility. The same concept can be used in the asset disposal policies for BPMS (BPMSVC Participant 6, 2010) (authors' insert: using the Business Rules component). Processes can be designed / developed around social issues such as racism, discrimination and civil rights … so a certain process must be followed to ensure that all the checks have been done (BPMSVC Participant 19, 2010) (authors' insert: using the Process Modelling component).

During the inscription process, designers play a proactive role in bringing forth their own realities through interpretive schemes (Figure 3, 6a), organisational facilities (Figure 3, 6c) and norms in the organisational context (Figure 3, 6b). Therefore, designers are both enabled by, and constrained in, their own sense-making and existing structures in the organisational setting (Orlikowski, 2000), when specific principles of good corporate governance are inscribed into a BPMS. Hence, the inscribing process of the King principles into a BPMS will have localised complexities. Technology designers may have difficulty in inscribing concepts or business rules that are unstructured, tacit, vague, ad-hoc, unpredictable and/or abnormally complex. This is due to the fact that explicit inscription of any technological artifact involves programming that requires explicit, externalised (not tacit), logical, structured and codifiable solutions. This also applies to a BPMS that has its own programmable and modelling languages, conventions and standards (Pearce & Robinson, 2005). In other words, a BPMS will not be the solution to all types of corporate governance problems.

CHANGING ORGANISATIONAL BEHAVIOUR IN SUPPORT OF CORPORATE GOVERNANCE

The research findings obtained from the thematic analysis indicated in Table 3 below, shows that there can be positive changes in organisational behaviour when a BPMS is applied to corporate governance. However, these changes can also be negative.
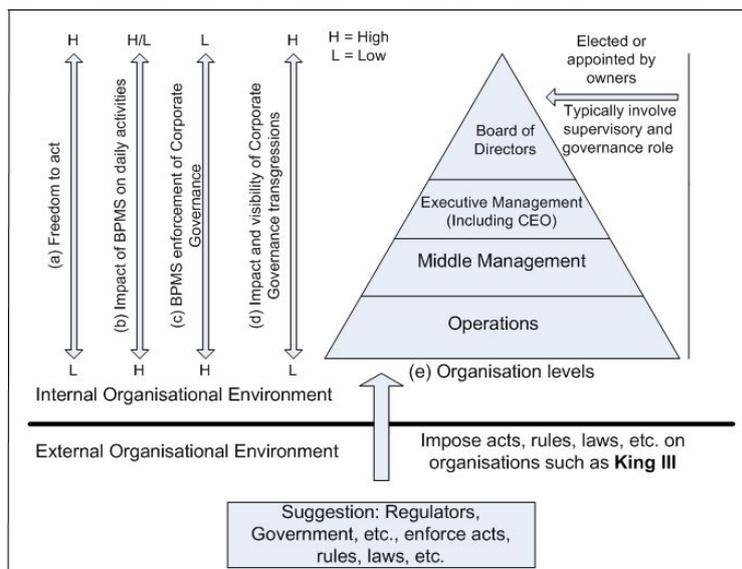
Raw data extracts from participants	Themes that emerged from the thematic analysis
Since a BPMS enables all the principles discussed in the previous questions, these principles should become more evident in the process used and in the company as a whole (BPMSVC Participant 15, 2010). They will do things with more diligence knowing that it is more possible to hold them accountable (BPMSVC Participant 9, 2010). … as the organisation matures employees prefer to follow well-structured processes (BPMSVC Participant 16, 2010). BPM can enforce standard process to be followed … thus making sure that human behaviour changes . It will be impossible to bribe an individual as he/she needs to adhere to the process (BPMSVC Participant 24, 2010). … a BPMS creates transparency which in turn creates responsibility and accountability (BPMSUC_A Respondent 23, 2011). … changes the way people work. People know they are measured on certain criteria. You get what you measure. Their behaviour will change in line with the measurement … (BPMSUC_B Respondent 22, 2011).	• The principles of good governance become more visible • A BPMS enforces the King principles of good governance • Employees make "mind-shifts" in favour of good corporate governance in transparent environments, enabling them to become more accountable and responsible • Employee accountability and roles become well-defined

When people use a technology (Figure 3, 4), they draw on the properties of the artifact inscribed by the designers and added by the users (Orlikowski, 2000). When the King principles of good governance are inscribed into a BPMS and its architectural components, the users will draw on the inscribed principles when they use the BPMS (Figure 3, 6b). Users also draw on their own interpretive schemes and the facilities available in the institutional context (Figure 3, 6a and 6c).

The ongoing enactment of a technology-in-practice reinforces that technology in the organisation, becoming routinised through habitual and repeated use (Orlikowski, 2000). In the case of this study, use of technology serves as a template to improve behaviour so that the King principles become more evident and enforced in the organisation. This is termed "good corporate governance supportive technologies-in-practice" in Figure 3, 3.

The behavioural impact of a BPMS in support of good corporate governance is illustrated in Figure 4 below:

FIGURE 4: THE BEHAVIOURAL IMPACT OF USING A BPMS IN SUPPORT OF CORPORATE GOVERNANCE

The traditional management classification of Anthony (1965) states that the organisation can be viewed as a three-level pyramid as indicated in Figure 4, (e). The strategic planning (SP) level of managers controls the long-term activities and decisions of the organisation. The management control (MC) level controls the medium-term activities of the organisation, while the operational control (OC) level controls the short-term activities of the organisation. The bottom-level managers deal with more detailed data and shorter time periods than high-level managers. The implication is

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that control at lower levels is more concrete and structured, while decisions at upper levels are more unstructured (Ahituv et al, 1994). Therefore, a BPMS may enforce and support corporate governance better at lower levels of the organisation, where information and processes are more structured as indicated in Figure 4, (b) and (c). As a consequence, the impact of a BPMS is much higher at operational level than strategic or top-management level as indicated in Figure 4, (b).

Typically, the board of directors of an organisation are involved in strategic decisionmaking processes (King, 2006) as indicated in Figure 4, (e). When directors fail to act in good faith, neglecting care, skill and diligence, the impact and visibility of such corporate governance transgressions are high. Directors can cause significant damage to the organisational reputation when they neglect their duties as indicated in Figure 4, (d).

CONTINUOUS FEEDBACK THAT DEFINES THE ROLE AND NATURE OF A BPMS TOWARDS CORPORATE GOVERNANCE

The proposed electronic monitoring, observation and compliance framework caters for continuous improvisation and change as designers reconfigure the technology (the BPMS), users alter their habits of use, and/or social, economic and political practices unfold. Users may use a technology in ways that were not anticipated by the developers, or may alter or work around the inscribed properties to suit their purpose (Orlikowski, 2000), in either a positive or negative way. When a set of norms, such as the King principles of good corporate governance, are inscribed into a BPMS, the result and associated organisational behaviour may be different from what was anticipated. Therefore, continuous improvisation and change must be part of the ongoing BPMS design (Sewchurran, 2007). Such continuous improvement, resulting from constant feedback, involves automation of corporate governance activities and the enforcement of rules, acts and legislation, resulting in better-governed organisations, compliance and intellectual honesty that improve all aspects of the business, as indicated by Figure 3, 2.

The results indicate that the nature and role of a corporate governance BPMS includes continuous improvisation, standardisation, consistency and compliance. This results in a performance-driven culture, not only in corporate governance, but in all aspects of the business.

IMPACTING OTHER OVERLAPPING SOCIAL SYSTEMS

A technology is seen to be situated in a number of overlapping social systems, thus user's interaction with technology will impact on other social structures through the application of technologies-in-practice (Orlikowski, 2000). This is also the case for a corporate governance BPMS, which would be located in a number of overlapping social systems. As a consequence, the use of the BPMS and the resultant changes in organisational behaviour may influence those overlapping social systems, causing ripple effects in corporate governance inside and outside the organisation. Investors, for example, will have better trust in organisations that have IT-enabled measures for good corporate governance in place.

THE COMPONENTS OF AN ELECTRONIC MONITORING, OBSERVATION AND COMPLIANCE FRAMEWORK FOR CORPORATE GOVERNANCE
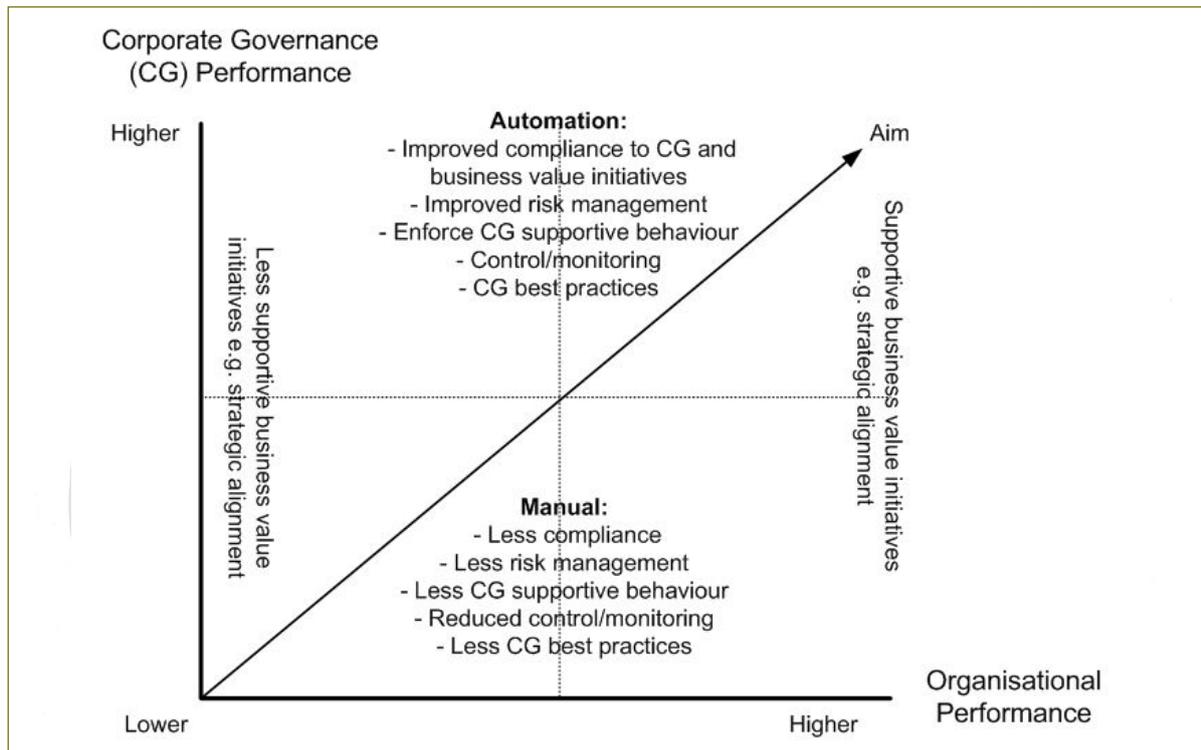
This study proposes adoption of an electronic monitoring, observation and compliance framework for good corporate governance, applying a BPMS perspective. The framework was developed by conducting a BPMS vendor case study and seven BPMS user case studies engaging participants from diverse backgrounds, including managers, IT managers, business analysts and developers. In understanding the components and requirements for an electronic monitoring, observation and compliance framework for good corporate governance and the contribution of a BPMS approach, it was found that attention should be given to:

- An inscription component: The King principles of good governance (IODSA, 1994; IODSA, 2002; IODSA, 2009; King, 2006) can be inscribed into a BPMS to address corporate governance problems for which the solutions are structured, logical and codifiable.

- An organisational behaviour component: The utilisation of a BPMS approach can increase visibility of the principles of good governance and promote changes in organisational behaviour in favour of good governance.

- A feedback component: Continuous changes are required as designers reconfigure the BPMS, users alter their habits of use and/or social, economic and political practices unfold. Ongoing improvisation, constant improvement, standardisation, consistency and compliance are needed to drive advances in corporate governance.

- An influence component: The utilisation of an electronic framework for monitoring and compliance in corporate governance may influence overlapping social systems as some firms may employ the BPMS approach, even when others may resist such approaches.

For the framework to be effective, the authors recommend a holistic approach, including enablers such as change management, top-management support, leadership, financial resources to support the process system, a process-thinking culture and policies. These enablers will differ from one context to another.

These formative findings and analysis suggest that automated business processes can result in improved corporate governance, as well as business value. BPMS applications can result in better risk management and lower organisational risk. On the contrary, where business processes are performed manually, there tends to be less compliance, decreased observation and visibility, reduced monitoring and control, poorer risk management, less corporate governance supportive behaviour, resulting in poor corporate governance practices, as indicated in Figure 5.

FIGURE 5:   THE IMPLICATIONS OF USING A BPMS IN SUPPORT OF CORPORATE GOVERNANCE

The contribution of this work lies in explaining the components of a conceptual electronic monitoring, observation and compliance framework to address corporate corruption, fraud, misconduct, and other corporate governance weaknesses, noting that any particular framework will not be a remedy for all corporate governance problems. Extensive further researcher is required to analyse innovative IT designs and applications to fight corruption, fraud and corporate misconduct in the interest of better corporate governance.

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