

# Exploration of Corporate Governance Challenges in Public Sector Information Systems: An Auditor General Perspective

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**Abstract:** The aim of this article is to explore the obstacles that are within the South African public sector, preventing information systems from operating as efficiently as they could. The significance of the research lies in the fact that the accomplishment of the objectives outlined in the South African national development plan 2030 and the medium-term strategy framework is dependent on the performance of the public sector. In the course of the research, annual and general reports from the website maintained by the Auditor General of South Africa from 2017 through 2021 were used. This study made use of the qualitative analysis software, Atlas.ti 7 which was employed to analyse textual data in annual reports. The investigation of the difficulties posed by corporate governance in the South African public sector were unveiled from themes emerging from the use of thematic analysis. The research uncovered issues with both the macro and the micro levels of corporate governance in the South African public sector. The macro concerns that were brought to light were difficulties in the structure of information systems, an economic downturn, changes in the leadership of the government, and a lack of credible information offered to people. Poor leadership accountability, inadequate information technology capabilities, poor project management, poor information management, inadequate and ineffective disaster recovery, regression in information technology governance, and delay in filling information technology vacancies were some of the micro-obstacles of corporate governance that affected information systems. According to the findings of the research, a transformational approach should be used to solve the issues by first gaining an awareness of how users view the role that information technologies play in the running of public bodies. In addition, instruments of corporate governance that relate to information systems in the public sector should be assessed to gauge their effectiveness in the South African environment.

**Keywords:** Governance, South Africa, Challenges, Public sector, Information Systems, Auditor General

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## 1. Introduction

The relationship set up in corporate governance is composed of the principal that is shareholders of an organisation who are not involved in day to day running of the business and have certain objectives. The principal assigns responsibilities to the agent who are managers directly involved with the business activities to achieve the objectives of the principal. The problem of corporate governance emanates from the principal-agent relationship. Divergence of principal and agent interests provide a basis for instituting corporate governance mechanisms (Lazarides and Drimpetas, 2008; Lazarides, Argyropoulou and Koufopoulos, 2012; Papazafeiropoulou and Spanaki, 2016). Information asymmetry makes it difficult for the principal to monitor the activities of the agent who possess information advantage as compared to their principal (Lazarides and Drimpetas, 2008). Information systems (IS) play a crucial role in facilitating collection, processing and flow of information within and outside an organisation for example government entities. Corporate governance tools should ensure that IS delivers information to the controlling shareholders who are the citizens for public entities. The transmission of information should be timeously in line with their objectives to avoid abuse and misuse of information (Lazarides and Drimpetas, 2008; Chen, Dai and Na, 2019). Corporate governance offers a system of protection in the form of codes, best practices, legislation and regulation so that the goals of the principals and the constituent they represent are achieved (Lazarides and Drimpetas, 2008; Lazarides, Argyropoulou and Koufopoulos, 2012). Corporate governance mechanisms have a cost implication of the functionality and performance of organisations (Lazarides and Drimpetas, 2008). An effective corporate governance mechanism ensures the performance of IS, which provides stability and , as a result, reduces potential conflicts between principals and agents, thereby achieving the organization's goals (Lazarides and Drimpetas, 2008; Ali and Green, 2012; Papazafeiropoulou and Spanaki, 2016). The functionality of IS can be viewed in terms of how it provides control, communication and dissemination efficiency, flexibility, information storage and quality, trailing and security (Lazarides and Drimpetas, 2008; Chen, Dai and Na, 2019). The demise of information and technology (IT) departments, suboptimal operational IT costs, and incorrect information all contribute to an organisation's poor functionality, resulting in an inefficient corporate governance scenario (Ali and Green, 2012). Effective corporate governance plays a crucial role in ensuring that an organisation is sustainable (Achim and Borlea, 2014; Jarbou, Forget and Boujelbene, 2014). Corporate governance tools seek to align organisational management to shareholders interests (Achim and Borlea, 2014; Locke and Duppati, 2014).

Government control public sectors and as such performance of public sector organisations is hinged upon their active involvement in ensuring that they operate under the ambit of their strategic and national objectives (Locke and Duppati, 2014). When corporate governance systems are effective, they will be efficient allocation of resources in an organisation in such a way that they will be increased firm performance (Locke and Duppati, 2014; Yapa, 2014). It is also argued that corporate governance system can curb fraud, misuse of power and increase citizen's trust on management of economic resources (Matei and Drumaşu, 2014). The need for accountability in the public sector has given rise to corporate governance mechanisms in an effort to organise and control organisations in such a way that they perform in line with government objectives (Papazafeiropoulou and Spanaki, 2016).

The emergence of corporate governance concept emanated from continued embezzlement of corporate funds and abuse of finance in developed economies that include the United States of America (USA) and United Kingdom (UK) (Ali and Green, 2012; Matei and Drumasu, 2015). In USA there was the Watergate in the 1970s, where private firms directed funds to illegally sponsor political parties and in UK between 1980 and 1990, there was sudden bankruptcy of firms listed on the stock exchange (Matei and Drumasu, 2015). Corporate failures necessitated a need to separate the powers of shareholders and managers (Matei and Drumasu, 2015). The key codes which were established in the UK includes Cadbury, Greenbury, Hampel and Combined (Matei and Drumasu, 2015). Corporate governance is founded on the crucial elements of relationship of principal and agent, performance and accountability, laws and regulations, and external audit among others (Matei and Drumasu, 2015).

IS connect accounting and finance, human resources, supply chain management, and manufacturing (Chen, Dai and Na, 2019). Units generate information that's stored in a database to support decisions (Chen, Dai and Na, 2019). IS and corporate governance improve firm performance and information processing (Chen, Dai and Na, 2019). Despite the value of IS and corporate governance, it's unclear how public sector organisations perform (Chen, Dai and Na, 2019). Information processing theory says good IS should ensure business function convergence (Chen, Dai and Na, 2019). IS outcome depends on system and implementation characteristics, environment, and organisation (Chen, Dai and Na, 2019). Agency and decision information costs and principal-agent conflicts help fuse corporate governance and IS (Chen, Dai and Na, 2019). IS should provide detailed, real-time, transparent information to reduce agency costs (Chen, Dai and Na, 2019). Ease and availability of information impact decision making in an organisation and help reconcile and assess individual decisions from different business units, ensuring quickness in making decisions that affect an organization's operations (Chen, Dai and Na, 2019). Public sector organisation functionality is based on principal decisions, which depend on IS information quality (Chen, Dai and Na, 2019). When information is hard to get or inaccurate, it delays decisions and leads to bad ones (Chen, Dai and Na, 2019). In public sector, political decisions and influence are prevalent, and principal-agent conflicts may exist in the form of government and the managers appointed on political grounds, who may not maximise the value of citizens, who are the financiers of public sector organisations (Chen, Dai and Na, 2019).

Corporate governance implementation should be guided to ensure proper operation (Masegare and Ngoepe, 2018). South Africa's inefficient corporate governance system fails to satisfy public interest (Masegare and Ngoepe, 2018). Failure in public sector performance attracts investigations, strikes, and leadership changes (Masegare and Ngoepe, 2018). Effective corporate governance requires legal, political, and social dialogue (Masegare and Ngoepe, 2018). Public sector organisations will perform better with continued review, monitoring, and evaluation of corporate governance procedures and rules (Masegare and Ngoepe, 2018). Lack of public sector corporate governance evaluation poses management challenges, preventing the government from achieving its strategic goals (Masegare and Ngoepe, 2018). King III code of South Africa mentions stakeholder engagement as a catalyst for good public sector governance, and Batho Pele guidelines require feedback on service delivery (Masegare and Ngoepe, 2018). IS should provide timely and accurate reports to stakeholders (Masegare and Ngoepe, 2018). Risk-based auditing systems help public sector organisations address sustainability and strategic issues (Masegare and Ngoepe, 2018).

South Africa's public and government entities follow a unique set of mandatory corporate governance systems and frameworks to ensure they fulfil their mandate in a fair and equitable manner. Public sector governance faces many challenges and despite obstacles, the public sector accounts for 10% of world output and is a major economic priority (Daiser, Ysa and Schmitt, 2017). South Africa government enacted corporate governance mechanisms to improve transparency in public sector organisations (Daiser, Ysa and Schmitt, 2017). South

African public sector has witnessed the implementation of various governance tools that include the public service corporate governance of information and communication technology policy framework herein referred as PSCGICTPF (DPSA, 2012). The corporate governance instruments that affect the operations of IS in South African public sector include Public Finance Management Act (PFMA), King Code, Control Objectives for Information Technology (COBIT) and ISO 38500. The benefits of having corporate governance in place for a public sector manifest in the form of reduced costs, improvement in quality and service delivery, agility in information and technology systems, protection of information and management of risks.

The Auditor General of South Africa (AGSA) is an independent body that promotes constitutional democracy and governance. AGSA is a mandatory public sector entity which act as a watchdog to audit public sector organisations and is defined by Section 239(b)(i) of the Constitution (AGSA, 2021). The AGSA is South Africa's audit oversight institution, whose obligation is derived from Chapter 9 of the Republic of South Africa's Constitution of 1996 (AGSA, 2021). Section 188 of the South African Constitution describes the responsibilities of AGSA and Chapter 2 and 3 of the Public Audit Act governs how they should be carried out (AGSA, 2021). Government entities are audited by the AGSA to monitor how public finance has been spend so as to build citizens' confidence (AGSA, 2021). Material irregularity is the main emphasis of audit outcomes carried by AGSA (AGSA, 2021). AGSA submits material irregularity to public agencies for inquiry, suggestions and remedial actions and in event of non-compliance, enforceable corrective action is taken such as issuance of debt certificate to ensure recovery of lost money (AGSA, 2021).

A misalignment of effectiveness of corporate governance that influence delivery of IS may result in inefficient, uncompetitive and unresponsive economic infrastructure network and hence failure to meet government's strategic outcomes. Failure of corporate governance systems and IS in South African public sector entities may hinder the achievement of national development plan 2030 (NDP) and medium-term strategic framework (MTSF) goals.

## **2. Literature review**

IS performance is an integral part of key public sector reforms initiated by the government (Trotta *et al.*, 2011). IS supports transparency in public sector entities as it facilitate monitoring of resources and allowing optimal decisions to be made (Trotta *et al.*, 2011). IS operations are affected by tensions that arises from standardisation of processes that speak to governance of public entities (Trotta *et al.*, 2011). In implementation of public sector reforms, it is essential that IS influence organisational functions toward achieving strategic goals (Trotta *et al.*, 2011). IS increases citizen participation and accountability in public entities operations and hence reducing bureaucratic processes in key decision making (Trotta *et al.*, 2011). Riihim and Pekkola (2021) highlighted problems of IS procurement as a hinderance to achieve expected outcomes that are inline with established practices. The challenge emanate from IS being procured in a way that makes it difficult for realisation of its intended short and long-term benefits (Riihim and Pekkola, 2021). Understanding vendors and procurement agencies can assist in performance improvement of IS procurement (Riihim and Pekkola, 2021).

IS are hubs for value-creation and innovation amongst stakeholders in public sector organisations (Senyo, Effah and Osabutey, 2021). The transformative effect of IS is articulated in private sector and there is limited research for public sector in developing nations (Senyo, Effah and Osabutey, 2021). Public sector governance reforms that exclude IS create misalignment with effect being failure to me set objectives (Senyo, Effah and Osabutey, 2021).

Increasing interest towards having IS that supports public sector reforms which in turn should result in better and efficient service delivery (Kassen, 2021). The role of IS in public sector goes beyond capturing, storing, processing and distributing of incorruptible information to citizens, government and their respective agencies (Kassen, 2021). Apart from transparency and efficiency, IS provides flexibility in dealing and handling public sector information (Kassen, 2021). Maximisation of IS value is dependent on correct application and right environment for performance (Kassen, 2021). Corporate governance in government owned organisations are viewed as catalyst for overall economic governance (Mahadeo and Soobaroyen, 2012). There is scarcity of literature that focus on corporate governance challenges that are confronted by IS and how they improve the functionality of public sector in the face of reforms (Kassen, 2021). The goal of this study was to explore the main issues linked to operational barriers affecting IS in South African public sector. This study's research inquiry is: What are the challenges that affect IS in South African public sector?

### **3. Data and methodology**

This study brings an auditor's perspective on the challenges faced by IS in South African public sector. A constructivism philosophical assumption was taken since we sought to understand the governance problems in the South African public sector context. In the context of constructivism, a comprehension of realities of the world is sought by forming subjective understanding based on experiences and emphasis is on the perspectives provided by participants (Cresswell and Poth, 2016). A qualitative research method is employed in this study. A qualitative research approach is motivated by the fact that phenomena under study is analysed by looking at existing and historical events that occurred in a real-world setting (Leedy and Ormrod, 2015). We explore the Auditor General of South Africa (AGSA) as a case study to have an in-depth insight into barriers faced by IS function within the public sector. The study concentrate because its peculiar characteristics that aid comprehension and inform challenges hindering functionality of IS in South African public sector (Leedy and Ormrod, 2015). Documentary data from AGSA annual integrated and general reports for the period 2016 to 2020 are used as unit of analysis. The annual integrated and general reports were obtained from AGSA website. Documents provide data or proof of how people represent and account for themselves in society. Documents serve as a technique and medium for comprehending and perceiving societal and organizational activities (Flick, 2014). The information that addresses the research question is of qualitative nature. Thematic analysis of the texts in the documents is performed to come up with corporate governance obstacles in IS. In thematic analysis, data is reduced by categorising it into key concepts that explains the underlying phenomena within a dataset (Flick, 2014). Analysis of textual data is done in the Atlas.ti 7 software.

### **4. Findings and discussion**

The findings on the challenges affecting IS emanate from 27 codes and 60 quotations from analysing annual and general reports for a 5-year period ending in 2021. Figure 1 highlights the holistic view of the challenges as perceived by the AGSA.

#### **4.1 Macro challenges affecting functioning of IS**

At a macro level, functioning of public sector entities' information systems are affected by the corporate governance framework, economic recession, changes in political leadership and lack of reliable information to citizens which it can make use of to demand accountability and transparency. Leadership changes at a government level makes it difficult to implement and address issues emanating for adverse audit outcomes. Apart from changes in leadership, economic recession makes it difficult for IS to function effectively as alluded by the AGSA:

- Weakening economy and downgraded credit ratings typified the year 2017-2018, exerting fiscal limits on the delivery of public services as well as income creation.

Public sector entities must account to the taxpayers, which are the citizens and the information they provide in the public domain form the basis for this checks and balances. According to the AGSA comments:

- It is alarming that government institutions do not provide accurate progress updates to citizens in order to put pressure on public authorities to meet strategic goals.

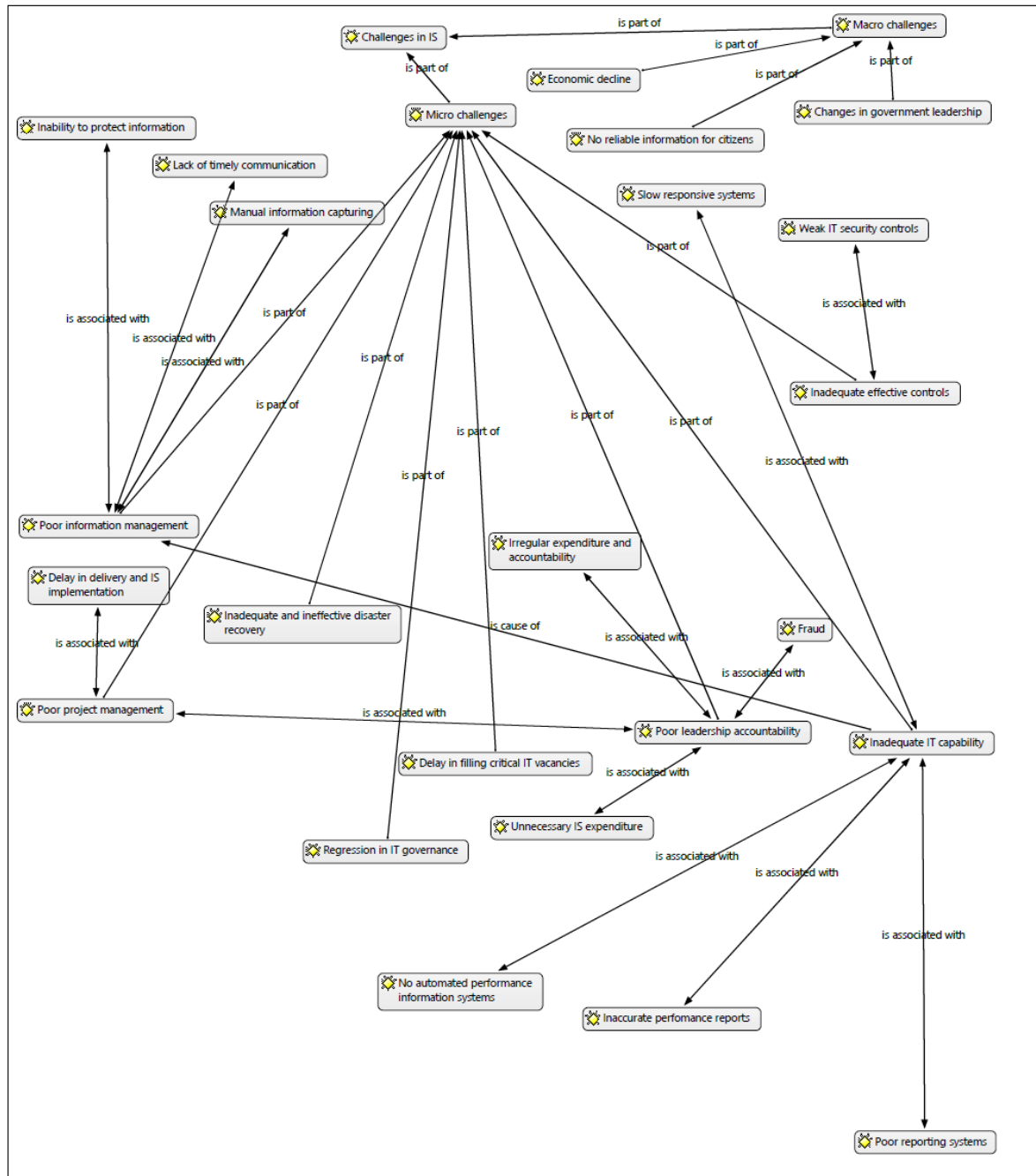


Figure 1: Challenges in functioning of IS

Source: Authors' analysis

#### 4.2 Micro challenges affecting functioning of IS

The micro issues hindering the operation of IS in public sector entities include weak information technology security controls, inadequate information technology capabilities, poor leadership accountability, poor project management, poor information management, inadequate and ineffective disaster recovery, regression in information technology governance and delay in filling information technology vacancies. Weak information technology controls are associated with inadequate effective controls thereby undermining the functionality of IS and this is expressed from AGSA views as follows:

- There has long been a shortage of IT security competence, as well as enough financing.
- Insufficient financing for defence measures and aged IT technology have plagued the public sector.
- Despite the government's large investment in modern systems to ease operations, data collected by these systems is untrustworthy, opening the door to fraud and abuse.

- Weak system security in government entities was impacted by hacking, resulting in the inability to provide critical services, and in some instances, hackers demanded money to restore systems.
- Due to a lack of support from service providers for old systems, security fixes remained unpatched, resulting in breaches in IT security.

In addition to the weak IT controls, there is inadequate effective controls to address the IS functionality. The AGSA highlighted critical comments as follows:

- The IT environment in government organisations is a source of worry, with institutions failing to implement sufficient security and user management policies. Priority should be given to the adoption of automated control systems that ensure organisational continuity.
- IT security remained unaltered since management were unable to get important IT people with vital capabilities to maintain the present IT infrastructure.
- Lack of insufficient controls to oversee safe information processing resulted in IT control degradation.
- Control issues persisted particularly in security and user management owing to restrictive capability of systems.
- IT managers and those entrusted with ensuring compliance and implementation of governance structures and systems are reluctant to monitor and address weakness in IT controls.
- Contracts with IT service providers are not monitored to ensure alignment with agreed performance.
- Public sector managers were focussing on addressing the symptoms instead of strengthening IS for better operation.
- Inadequate financing to fund purchase of new IT equipment and improved internet connectivity.

The public sector entities were found to have poor recovery systems which affects revenue generation and service delivery. Inadequate information technology capabilities were observed by the AGSA and these manifest in form of slow responsive systems, poor reporting systems, inaccurate performance reports, no automated performance information system. The slow responsive system derails the functionality of IS as indicated by the comments from AGSA:

- Management of public sector organisations were found to be slack in dealing with IT control gaps that were identified in audit outcomes.
- The sluggish response intensity is increased by lack of priority by leaders to hold management in public sector to account and solve the root drivers of functionality of IS.

Public entities from South African provinces experienced some poor reporting systems and this was emphasised in the following view:

- There is lack of guidance at a national level to address challenges related to reporting systems. Robust reporting systems assist public organisations to allocate resources efficiently during planning and budgeting phases.

Absence of monitoring systems have an effect on the quality of information produced for decision purposes and blame has been put on accounting personnel and IT as indicated by the AGSA:

- Lack of accountability in monitoring and evaluation departments as well as unstable IS makes it difficult to have credible information that support quality and informed decision making in public sector organisations.

The use of manual systems was also a major concern in some public sector entities which affects the timely execution of decisions. The AGSA noted that:

- Public sector organisations were found to have no automated systems to track performance and they relied on Microsoft Excel which is prone to manipulation. Monitoring performance in public sector is critical for evaluating service delivery to citizens. Therefore, inaccurate reports undermine the efforts of governments to deliver on their promises to citizens.

IT is essential for the accuracy and accessibility of data recorded, which is required for accurate reporting. However, there were insufficient information systems to follow the strategic plan's ambitions and major objectives, which was a duty that the leadership was neglecting. Lack of an accountable leadership is a barrier to strategic performance of IS. Poor leadership accountability is exhibited in the form of irregular expenditure

and accountability, unnecessary IS expenditure and fraud. Irregular expenditure and accountability issues provide detrimental effects on IS performance. The following was noted:

- Failure in accountability of leadership hindered service delivery in strategic sectors namely infrastructure, education and health.
- Public officials and leaders were found to part of decisions process that resulted in irregular expenditure and were reluctant to deal with such matters and resorted to writing off expenditure.

Poor allocation of resources demonstrated by unnecessary IS expenditure disrupts the operation of IS. This was revealed by AGSA who gave the following expression:

- Misallocation of IT resources were displayed in purchase of software which was not needed by public sector organisations.

Trends of fraud has been reported by the AGSA in the supply chain contracts which has effect on the IS functionality as follows:

- 259 audit outcomes in public sector organisations revealed investigations in areas of fraud risk engagements, fraud risk detection analysis, and high-risk supply chain contracts.

The major setback for IS as a result of poor project management is delay in delivery and IS implementation. The AGSA alluded the following project management challenges:

- IT projects were being poorly implemented resulting in spending resources on avoidable costs. Moreover, systems that support IT projects fall short of expectations.

Poor information management was associated with inability to protect information, lack of timely communication and manual information capturing. Inability to protect information was expressed as follows:

- Information is not readily available and as a result public sector organisations in some cases delay in providing useful data for compliance and governance.
- Leadership in public sector lacks accountability and it was observed that they would pressure the AGSA not to disclose their malpractices without providing solid proof.
- Weak information security was found. Decisions are driven by information and it is critical that information generated be reliable, trustworthy and of high quality. In addition, information must be secured so that it is not prone to manipulation.

Late communication was attributed to weaknesses such as completeness of working papers; lack of documentation particularly at meetings; lack of timely communication; and acceptance of additional documentation late in the audit process.

Manual information hindered the performance of IS as follows:

- Manual data carries risk that it may have errors and as such makes it difficult to be used for decision purposes. Apart from that, manual information pose serious challenges in planning and monitoring business activities.

Inadequate and ineffective disaster recovery put pressure on IS efficiency through the following:

- More than 60% of audited public sector organisations were disaster-prone and had no recovery mechanism that would support the continuation of business in the event of technological incidents.
- Management of risks in IT environment was not being given attention making the current practices ineffective.
- The typical disaster affecting operation of IS included failure of recovery link and systems which meant services were unavailable thereby adversely impacting on public sector operations.

Regression in information technology governance is of paramount concern in fuelling IS failure in public sector as expressed from AGSA views:

- IT governance required attention as it highlighted as major challenge in operation of government entities. In some cases, governance structures were not implemented at all.
- Investment in IT lacked monitoring so as to ascertain the dividends realised from IT related expenditure.
- IT committees lack the necessary tools to monitor performance in relationship to strategic objectives and mandates.

- Effective delivery of strategic objectives becomes difficult in the short and long run as the current IT is unable to provide a conducive environment for public sector growth.

Delay in filling information technology vacancies derailed progress in implementing IT controls. The position is expressed in following AGSA opinions:

- There was failure to recruit key IT personnel that could drive the monitoring of IT controls and addressing matters arising from auditing.
- The freezing on recruiting IT staff meant some key aspects of IS were not attended for extended time periods thereby compounding IT control problems.
- IT is a dynamic environment and it was observed that current management skills could not match the evolving challenges and hence IT problems remained unsolved.

## **5. Conclusion and recommendations**

A well-functioning information system has the potential to simplify crucial choices in the public sector, government, and individuals. The study's findings, such as a lack of trustworthy information for citizens, weak information technology security controls, poor leadership and disaster recovery systems, a shortage of critical staff, and failure in IT governance, highlight key areas for potential improvement in the public sector's use of IS. The findings of this study have a variety of implications for people, government, and the public sector. Although it may not be possible to eliminate the constraints that prevent IS from functioning in the public sector, stakeholders raise critical concerns to further investigate these barriers, such as:

- How can IS be harnessed to provide quality and timely information for key decisions?
- How can IT security controls be reinforced to avoid security breaches?
- How leadership performance can be assessed to ensure IS processes operate without hinderance?
- How can governance process relating to IS be improved?

The fact that only the AGSA perspective on challenges affecting functionality of IS in public sector was the study's principal drawback. There is scarcity of literature on corporate governance challenges, pertaining to operation and performance of IS in South African government entities. The study proposes further studies to be conducted for emerging economies having similar challenges.

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