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INFORMATION TECHNOLOGY RISKS AND GOVERNANCE DISCLOSURE: EVIDENCE FROM TOP 40 JSE LISTED COMPANIES

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Abstract:
The study analyzed the extent to which information technology in the 40 JSE-listed companies discloses (IT) risks and governance. It also identified the similarities and differences between the South African King IV governance and other international IT governance and risk disclosure codes. We employed a qualitative content analysis technique and found that 32 of the top 40 JSE-listed entities (80%) completely complied with King IV and other international standards. In contrast, eight of the top forty JSE-listed businesses (20%) partly complied. Moreover, 79% (19/24) of provisions in King IV are similar to that of the international standards, while 21% (5/24) differ. The findings imply that most of the top 40 JSE-listed firms are protected from the consequences of non-compliance with IT risks and governance disclosure, such as going concern risk, fraud, and data manipulations. We also confirmed that King IV provisions regarding IT risks and governance aligned substantially with global standards, enhancing multinational firms' implementation of efficient IT risks and governance.

Keywords: Information Technology, Risk Governance Disclosure, King IV
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INTRODUCTION

Modern organizations use technology (IT) in their operations as IT application systems have improved company communication, data storage, processing, protection, and real-time business process integration. Further, IT equipment is prevalent in contemporary entities' offices, industries, schools, and business processes, and this has caused significant changes in the company and individual behavior and communication (Jusufi, 2013). For instance, business usage of computer application systems has enhanced productivity and efficiency, but it also poses concerns that might threaten a company's viability (Marx & Hohls-du Preez, 2017). It is argued that organizations that aggressively adopted IT application systems have reaped the benefits leading to success. For this reason, companies must stay abreast of evolving changes in IT application systems (Marx et al., 2016).

Additionally, IT, risk management, and governance help firms connect objectives to the strategic vision and accomplish business goals (Pirta & Strazdina, 2012). In the same line of thought, IT applications help managers streamline corporate operations and decision-making. Interesting to note that artificial intelligence has expanded the usage of IT application systems and is crucial to an organization's operations and yearly financial reporting. In this regard, IT application solutions conduct transactions uniformly, avoiding manual system mistakes and improving financial report reliability (Ngwenya, 2015). Nevertheless, IT application systems usage exposes firms to complex dangers that might threaten their going concern ability (Marx & Hohls-du Preez, 2017).

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IT risks pose a substantial threat to the continuous existence and operations of an organization. In addition, an organization's compliance with IT and risk governance is seen as a crucial instrument for enhancing its operations and continued existence. IT governance and its associated risks directly affect an organization's capacity to continue operations since these risks impair the efficient operations of IT systems and data inside the system. The going concern risk posed by IT risk in business is troublesome. The absence of IT governance and risk disclosure compliance with King IV by those responsible for governance will increase the likelihood of non-compliance by an organization. Inadequate IT governance exposes a corporation to significant risks, such as financial loss and the loss of crucial data, which may result in considerable reputational harm, legal exposures, and a loss of stakeholder and investor trust. IT governance failure hurts the company's performance and is likely to influence the choices of investors and other stakeholders (Marx et al., 2016). It is essential to establish the degree to which organizations comply with King IV disclosure obligations for IT and risk governance.

Existing research on King II and King III shows that disclosing IT governance and risks assures stakeholders and investors to make economic choices. It is because disclosure will enable investors and stakeholders to understand the company's IT and information systems governance and risks. There is, however, very little literature on the recently published King IV; therefore, this research analyzed King IV's IT governance and risk disclosure compliance by the top 40 JSE-listed firms. Examining and analyzing entities' King IV governance compliance is crucial since JSE may suspend their listing if they do not. This study focused on the top 40 JSE-listed companies mainly because it accounts for 80% of market capitalization (Baker et al., 2016; Barr et al., 2007; Kotze, 2017; Marx & Mohammadali-Haji, 2014; Marx & Voogt, 2010; Pholohane et al., 2020). The paper contributes to the discussion on King IV disclosure standards for IT governance and risk management in corporate reporting by public companies and the discussion on stakeholder theory.

The following sections of this paper provide a synopsis of the literature review, including the theoretical and empirical analysis. Furthermore, a summary of the methodology and analysis method used in the study will be discussed. Lastly, the results and implications of the findings will be presented, as well as the conclusion.

Theoretical Framework. A stakeholder theory was considered in the context of this study. Stakeholder theory was defined by Abraham and Shrives (2014) as how an organization makes voluntary disclosures aimed at managing and influencing stakeholders' and investors' decision-making. Organizations use the disclosure of both financial and non-financial information to influence stakeholder discernment. Important organizational stakeholders have a more significant influence, which may result in increased disclosures. An entity's disclosure of its IT governance and risks is critical to the stakeholders, shareholders, and investors to assess its ability to maximize the use of IT applications to increase operating efficiency and minimize the risks exposed. To make informed economic decisions, stakeholders rely on information disclosed by entities in the annual reports and integrated reports. Therefore, an entity's compliance with King IV disclosure requirements on IT governance and risks is crucial to stakeholders.

Empirical Review, Information Technology. Information technology is now a vital resource for all businesses; it is crucial to gathering and processing data and supporting operational decisions and the long-term goals of an organization (Mangalaraj et al., 2014). The ongoing industrial revolution has led to an increase in the use of IT in business operations, financial reporting, and auditing (Byrnes et al., 2012). The internet, which has eliminated international barriers and created an immediate world, has been the most carefully researched advancement in information technology (Marx & Hohls-du Preez, 2017). The internet has allowed for the interchange of information between many parties, such as buyers and sellers, service providers, and customers,

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thus bringing the world closer together and allowing for real-time information sharing and distribution (Marx & Hohls-du Preez, 2017).

IT is recognized as the most crucial pillar for an organization's performance and, as a result, affects how an organization creates value, giving it a competitive advantage (Elazhary et al., 2022). IT use improved the speed, accuracy, and quality of organizational processes, which improved the efficacy and efficiency of providing goods and services to clients (Tohidi, 2011). Information and technology pervade all organizational mechanisms and processes, making it an operational enabler and a valuable asset. IT, as a strategic asset of an organization, should be governed and controlled to ensure that it helps the organization achieve its strategic goals (Hohls-du Preez, 2016). Organizations that have embraced the use of IT aim to reduce IT costs, keep IT risks to a minimum, and adhere to IT regulations and legislation (Mangalaraj et al., 2014).

Information Technology Risks. Risks in information technology can also be described as any incident or activity that can result in the loss or destruction of computer hardware, software, data, or information (Hohls-du Preez, 2016). The execution and processing of the information may be subject to risks such as unauthorized disclosure, modifications to or destruction of data, inadvertent mistakes and exclusions, interruptions connected to IT, blunders, and a lack of professional due care (Parent & Reich, 2009). The rapid rise of e-commerce and commercial operations has increased dependency on IT resources, exposing firms to numerous critical risks, problems, and dangers such as cyber security, hacking, and going concerns (Marx, 2009; Schutte & Marx, 2018). Additionally, the board of directors and executive management are responsible for informing stakeholders about the IT-related risks to which an organization may be exposed and how these can damage the company. IT risks are reduced when IT governance is appropriately applied. It is crucial to disclose these risks in integrated reports so stakeholders can understand how IT resources are used efficiently and how risks are tracked and managed to meet organizational strategic goals.

Some of the IT risks that organizations are exposed to because of adopting IT application systems in their operations were recognized by Marx and Hohls-du Preez (2017), Parent and Reich (2009), and (Schutte & Marx, 2018), and some them include the following:

1. IT competence risks
2. IT governance risks
3. IT infrastructure risks
4. IT business continuity risks
5. Data security risks
6. IT access risks
7. IT integrity risks
8. IT failures and disruption of IT systems
9. Social networking risks
10. Malware and cyber attacks

Organizations should inform their stakeholders and investors about the risks they incur when utilizing IT applications, how these risks can affect their operations, and how they can be effectively controlled. The study aimed to determine if the integrated governance reports intended to give stakeholders and investors the information they need to make investment decisions and disclose the risks that entities are exposed to when utilizing IT applications. The failure of the board and executive management to disclose the risks that are exposed to entities constitutes a governance failure and may result in a violation of the King IV code of corporate governance as well as the requirements for JSE listing.

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Information Technology Governance. IT governance is the process of examining, assessing, and guiding an organization's plans to use IT systems and resources to help it accomplish its goals while minimizing risks related to the use of IT resources (Pa et al., 2015; Selig, 2018). Establishing procedures, structures, and interaction mechanisms that allow the entity and IT professionals to carry out their tasks to generate value and accomplish the entity's goals is a crucial component of corporate governance handled by the board of directors. Moreover, IT governance should be seen in collaboration because IT is linked to other assets, emphasizing the management and use of IT resources to fulfill an organization's goals (Pa et al., 2015). Along with meeting the standards for IT governance risk disclosure, IT governance also seeks to ensure that IT operating systems align with the organization's strategic goals (IoD, 2016). An essential component of business operations is IT governance, which allows an organization to manage its IT application systems to generate and deliver value to the company while reducing the risks to which these systems expose the company (Rubino et al., 2017).

Numerous frameworks have been developed to assist the board of directors in managing IT governance, such as COBIT 5, COSO, and various ISO/IEC standards (numbered 1 through 4). These frameworks have been discussed in publications by De Haes et al. (2013) and Jordaan (2019). Other laws and guidelines have also been created in various nations, such as the Sarbanes-Oxley Act (SOX), which was created in the United States to provide organizations with guidance on matters of corporate governance, and the King IV code of corporate governance which was designed to provide guidelines to both listed and unlisted entities (Ngwenya, 2015)

Information Technology Risk Management. Risk management is described as detecting exposures and risks inside an entity's structure and developing policies and procedures to reduce the impact on the utilization of IT resources (Gheorghe, 2010). Risk management is an essential component of IT governance, and COBIT 5 incorporates the basic principles of IT risks into the IT governance framework (Debreceny, 2013). In addition to being a crucial part of corporate governance, King IV, and the Companies Act, risk management is critical to a corporation since the company strategy should align with business risks, particularly IT risks (Raemaekers & Maroun, 2014). Risk management enables IT managers and senior management to balance protecting IT application systems and an organization's capacity to meet goals with business operations, expenses, and strategic objectives (Tohidi, 2011). IT risk management consists of risk analysis, which deals with obtaining information on risk exposures, and risk management, which deals with monitoring and controlling the risks found during the risk analysis to ensure that they remain acceptable (Hardy, 2005). Risk management and disclosure of IT risks are crucial because it guarantees that all stakeholders transparently receive information (Hohls-du Preez, 2016). King IV's principle 11 makes it clear that the board of directors must oversee and manage technology and information in a way that aids in defining important objectives and accomplishing strategic goals (IoD, 2016).

Information Technology Governance & Risk Disclosure Literature. Numerous research on the compliance of South African JSE-listed firms with IT governance and risk disclosure regulations, as well as risk management and disclosures, can be found in the academic literature. Van Vuuren (2006) evaluated the disclosure of risk management policies in financial statements and found that 33% of the enterprises surveyed conformed with King II governance and risk disclosure standards, which included IT (Marx et al., 2016). Researched the information technology governance disclosure compliance of JSE-listed businesses and discovered that IT plays a crucial role in facilitating business operations. While IT application systems are critical to an organization's success, their fast evolution has exposed them to new dangers that should be mitigated using good IT governance (Marx et al., 2016). Marx et al. (2016), in their study, reported that 47% or 19 of 40 organizations were utterly compliant; 15%, or five companies, were moderately compliant; and 38%, or 15 companies, did not

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comply with King III's IT governance and risk management disclosure requirement. The results of Marx et al. (2016) on IT governance and risk disclosure substantially improved over the earlier research conducted by Van Vuuren (2006), which revealed that just 33% of listed businesses complied with King II risk governance disclosure criteria.

Ngwenya (2015) examined the Information Technology Governance disclosure of the top 40 JSE-listed companies' compliance with King III IT governance requirements in 2015 and concluded that only 40% of the companies complied fully, 25% partially, and 35% did not comply with any of the IT governance disclosure requirements. The author suggested that a company's board of directors and top management may need to comprehend or interpret the King III code's disclosure obligations on IT governance and risks, resulting in non-compliance or incomplete compliance. According to Van Vuuren (2020), all the top 40 JSE-listed businesses that were examined declared all 17 King IV principles in their annual reports, complying with the King IV principles of good corporate governance. However, these organizations announced and published conformity with King IV's principles primarily to meet JSE listing requirements rather than value creation and good governance as envisioned by King IV (Van Vuuren, 2020).

Much emphasis has been placed on the King II and King III Codes of Corporate Governance, IT governance, and risk disclosure in the literature; moreover, there needs to be more literature about companies' compliance with the updated King IV IT governance and risk disclosures. This research attempted to fill the gap by analyzing the compliance of the top 40 JSE-listed companies with the recently adopted King IV guidelines on IT governance and risk disclosure.

King IV IT Governance and Risk Disclosures. King IV describes corporate governance as the board of directors' ethical and effective leadership in developing a good culture based on principles, exceptional performance, legitimacy, and effective management of an organization (IoD, 2016). King IV increased the importance of IT governance, IT security governance, and IT risk management and incorporated information technology governance as a need for corporate governance for a business (Jordaan, 2019). The Johannesburg Stock Exchange (JSE) has mandated that all firms listed adhere to the principles and suggestions of good corporate governance outlined by King IV (JSE, 2017).

The board of directors is required by King IV principle 12 to manage and administer the firm's information technology in a way that assists the company in achieving its strategic objectives (IoD, 2016). King IV made a clear recommendation that the board of directors should assume full responsibility for the governance of information technology by establishing the framework for how information technology and its risks should be managed in a firm to meet its strategic and operational goals. Moreover, the board is responsible for overseeing the integration of information technology risks into the company's risk management as well as identifying and responding to threats such as cyber-attacks and sufficient disclosure thereof to enable stakeholders to assess and evaluate the quality of an organization's governance structure (IoD, 2016). Additionally, King IV principle 11 demands that the board of directors manage and oversee the firm's risks in a way that helps the organization accomplish its goals (IoD, 2016).

METHODS

Data Sources and Sample. The researcher extracted data from 2021 integrated, sustainability, and corporate governance reports from the top 40 JSE-listed company websites. A quota sample of JSE's top 40 listed companies was selected and used in the analysis. The list of the top 40 JSE-listed entities used was obtained from the JSE index, supported by the money web markets website and Sharenet JSE indices. The top 40 companies listed on the JSE are regarded as the top performers and the prominent market drivers in South Africa (Mamaro & Tjano, 2019). The FTSE/JSE top 40 index

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consists of the 40 largest entities in the South African FTSE/JSE all-share index based on total market capitalization (Pholohane et al., 2020; Russell, 2010).

Furthermore, the top 40 JSE index comprises over 80% of the market capitalization of all listed firm shares, making them of enormous public interest and often debated on public financial venues (Kotze, 2017; Van Zijl & Hewlett, 2022). FTSE/JSE-listed companies must issue integrated corporate governance, and sustainability reports, including risk and governance reports. Therefore, in this study, the researcher analyzed how companies comply with King IV criteria for IT governance and risk disclosure using these reports.

Empirical Analysis. This study used qualitative content analysis to analyze the annual reports and assess the extent of IT and risk governance disclosures using a deductive reasoning approach, as the basic disclosure requirements and recommended practices already exist and are categorized using the developed checklist. In order to comply with King IV's disclosure requirements, the study utilized an interpretive methodology to analyze the IT governance and risk disclosures made by the top 40 companies listed on the JSE. In addition, a qualitative text analysis enabled the researcher to appreciate whether the suggested IT risk governance and management disclosures were made. Moreover, a qualitative approach based on content analysis was used to identify similarities and differences in IT governance and risk disclosure requirements between King IV, COBIT 5, International Organisations for Standards (ISO 27002, 38500), Sarbanes-Oxley Act, and International Standards of Auditing 315, as well as likely recommendations on IT governance and risk disclosure that have the potential to improve King IV provisions.

The researcher used secondary data because the information used in the analysis was already published in integrated/annual reports, sustainability reports, and corporate governance reports accessible via the company websites. The 2021 annual/integrated reports of the top 40 listed companies on the JSE were subjected to qualitative content analysis since they disclose the IT governance and risk management practices. IT governance and risk management disclosure checklist were designed to address the research objective based on the empirical study on King IV around IT risk governance and management disclosure practices. A disclosure checklist was developed to extract the content from the integrated reports. The disclosure checklist was developed per King IV principles 11 and 12 and the recommended practices for effective IT and risk governance and management to assess if each organization used full disclosure, non-disclosure, or obscure disclosure. The checklist was divided into two stages for testing:

Stage 1 of the checklist consisting of "Yes," "No," and "Obscurely" was applied to analyze the extent of disclosure by companies relating to IT risk governance and management disclosures as per King IV.

Stage 2 was simultaneously used to assess whether IT risk governance and management practices have been applied. As per King IV, the test included Yes", "No," and not fully applied/ partially applied. The disclosure checklist which was designed and used in this study is presented below;

Table 1: IT & Risk Governance Disclosure Checklist Was Designed as the Measuring Instrument.

	STAGE 1 Test	STAGE 2 Test
	DISCLOSURES	King IV APPLICATION

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No	Category	King IV Recommended Practices (IODSA, 2016)	Yes	No	Obscurely	Yes	No	Partial
1	IT Governance	The board of directors should be responsible for IT governance by setting the direction on how IT should be addressed in a company.						
2	IT Governance	The board of directors should approve a policy that articulates and gives effect to the set direction on the employment of IT.						
3	IT Governance	The board of directors should delegate to management to implement and executive an IT governance framework.						
4	IT Governance	The board of directors should ensure that IT is aligned with the performance and sustainability objectives of the company.						
5	IT Governance	The board of directors should exercise an ongoing oversight of IT management to ensure alignment and integration of IT risks into organization-wide risk						
6	IT Governance	The board of directors should exercise an ongoing oversight of IT management to ensure proactive monitoring of intelligence to identify and respond to incidents, including cyberattacks and adverse social						
7	IT Governance	The board of directors should exercise an ongoing oversight of IT management to ensure management of the performance of and the risks of third-party outsourced services.						
8	IT Governance	The board of directors should monitor and evaluate significant IT investments and expenditures.						
9	IT Governance	The board of directors should exercise an ongoing oversight of IT management to ensure ethical and responsible use of IT and compliance with relevant laws and standards.						

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10	IT Governance	The board of directors should exercise an ongoing oversight of the management of IT to ensure that IT systems support confidentiality, integrity, and availability of information.
11	IT Governance	The board of directors should exercise an ongoing oversight of the management of IT to ensure the protection of privacy of personal information, security of information, and protection of IT assets.
12	IT Governance	The board of directors should ensure the disclosure of an overview of its governance and management of IT.
13	IT Governance	The board of directors should ensure the disclosure of key areas, including objectives, significant changes in policy, and risks, including major incidents and significant risks exposed due to IT application
14	IT Governance	The board of directors should ensure the disclosure of actions taken to monitor the effectiveness of IT management and governance and how the outcomes were addressed.
15	Risk Governance & Management	The board of directors should assume the responsibility to govern risk or through a dedicated committee by setting direction for how risks should be approached and addressed in the organization, including the risks' potential positive and negative effects in achieving
16	Risk Governance & Management	The board of directors should treat risks as integral to the way it makes decisions and execute its duties, as well as approve policies that articulate and gives effect to its set direction on risks.
17	Risk Governance & Management	The board of directors should delegate management the responsibility to implement and execute effective risk management and governance.

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18	Risk Governance & Management	The board of directors should evaluate and agree on the nature and extent of the risks an organization is willing to take in pursuit of its strategic objectives, which includes limiting potential loss to the organization due to FT risks and approving the organization's risk
19	Risk Governance & Management	The board of directors should consider allocating the oversight role of risk governance to a dedicated committee which is the audit committee.
20	Risk Governance & Management	The board of directors should exercise ongoing oversight of risk management to ensure the following: i. Assessment of risks ii. Assessment of opportunities presented by risks iii. The integration and embedding of risk management in the business activities and culture of the organization.
21	Risk Governance & Management	The board of directors should ensure the disclosure of the nature and extent of the risks and an overview of the arrangements for governance and managing risk.
22	Risk Governance & Management	The board of directors should ensure the disclosure of the key risks that the organization faces, as well as undue, unexpected, or unusual risks, as well as the actions taken to monitor the effectiveness of risk management and how the outcomes were addressed.

RESULT AND DISCUSSION

This section provides findings, a discussion of the results and implications of how the top 40 JSE-Listed firms complied with IT risks and governance disclosure as contained in the King IV governance code as well as the alignments of King IV provisions with other international codes such as (ISO 38500), Sarbanes-Oxley Act (SOX), and International Standards of Auditing 315 (ISA 315). A summary of key findings and implications of the research focus is presented below:

Figure 1 and Table 2 below showed that most of the top 40 listed entities have disclosed and applied the King IV principles and recommended practices, demonstrated by an above 80% disclosure compliance on each practice. In contrast, the results also revealed that only some companies under 20% obscurely disclosed, which resulted in the partial application of the code of corporate governance practices on effective IT governance and risk management.

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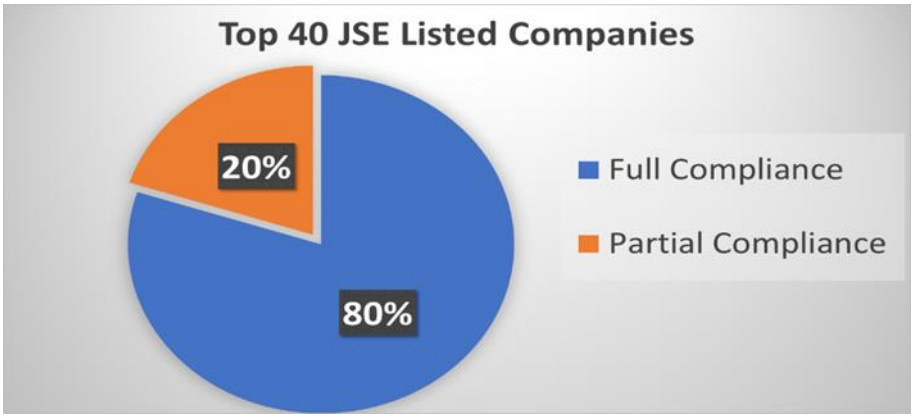

Source: Designed by the researcher

Figure 1: Overall disclosure on IT governance and risk management

The current study has recognized significant improvement compared to previous research studies, indicating that companies have understood the simplified King IV corporate governance code. Compared to the previous research conducted by Ngwenya (2015), which found that 40% of organizations completely complied with King III, 25% partly complied, and 35% did not comply with King III's IT governance and risk management disclosure, this study demonstrates a substantial improvement. The significant improvement in disclosures mandated by King IV may also be attributed to the streamlined concepts and suggested "Apply and Explain" methods compared to "Apply or Explain" in King III. King III's "Apply or Explain" concept required a company to apply the code practices and, if not, explain why the recommended rules did not apply to the company. King IV's "Apply and Explain" concept stipulated that all principles and recommended practices should be supported by a detailed disclosure of how they were applied (IoD, 2016).

A summary of key findings and results from each King IV recommended practice on principles 11 and 12 has been presented below, indicating the percentage of company disclosures and application of King IV per each recommended practice on IT governance, risk governance, and management.

Table 2: Results on IT & risk governance disclosure and application by top 40 listed entities

			King IV DISCLOSURES			**King IV APPLICATION**		
No	**Category**	**King IV Recommended Practices (IODSA, 2016)**	**Yes**	**No**	**Obscurely**	**Yes**	**No**	**Partial**
1	IT Governance	The board of directors should be responsible for IT governance by setting the direction on how IT should be addressed in a company.	97%	0%	3%	97%	0%	3%
2	IT Governance	The board of directors should approve a policy that articulates and gives	95%	0%	5%	95%	0%	5%

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		effect to the set direction on the employment of IT.							
3	IT Governance	The board of directors should delegate the responsibility to implement and execute an IT governance framework to management.	97%	0%	3%	97%	0%	3%
4	IT Governance	The board of directors should ensure that IT is aligned with the performance and sustainability objectives of the company.	92%	0%	8%	92%	0%	8%
5	IT Governance	The board of directors should exercise an ongoing oversight of IT management to ensure alignment and integration of IT risks into organization-wide risk management.	95%	0%	5%	95%	0%	5%
6	IT Governance	The board of directors should exercise an ongoing oversight of IT management to ensure proactive monitoring of intelligence to identify and respond to incidents, including cyber-attack and adverse social media risks.	95%	0%	5%	95%	0%	5%
7	IT Governance	The board of directors should exercise an ongoing oversight of IT management to ensure management of the performance and risks of third-party outsourced services.	82%	0%	18%	82%	0%	18%
8	IT Governance	The board of directors should monitor and evaluate significant IT investments and expenditures.	90%	0%	10%	90%	0%	10%
9	IT Governance	The board of directors should exercise an ongoing oversight of IT management to ensure ethical and responsible	95%	0%	5%	95%	0%	5%

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		use of IT and compliance with relevant laws and standards.						
10	IT Governance	The board of directors should exercise an ongoing oversight of the management of IT to ensure that IT systems support confidentiality, integrity, and availability of information.	95%	0%	5%	95%	0%	5%
11	IT Governance	The board of directors should exercise an ongoing oversight of the management of IT to ensure the protection of privacy of personal information, security of information, and safety of IT assets.	97%	0%	3%	97%	0%	3%
12	IT Governance	The board of directors should ensure disclosure of an overview of its governance and management of IT.	90%	0%	10%	90%	0%	10%
13	IT Governance	The board of directors should ensure disclosure of key areas, including objectives, significant changes in policy, and risks, including major incidents and significant risks exposed due to IT application systems.	92%	0%	8%	92%	0%	8%
14	IT Governance	The board of directors should ensure disclosure of actions taken to monitor the effectiveness of IT management and governance and how the outcomes were addressed.	90%	0%	10%	90%	0%	10%
15	Risk Governance & Management	The board of directors should assume the responsibility to govern risk or through a dedicated committee by setting direction for how risks should be approached and	97%	0%	3%	97%	0%	3%

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		addressed in the organization, including the risks' potential positive and negative effects in achieving objectives.							
16	Risk Governance & Management	The board of directors should treat risks as integral to the way it makes decisions, executes its duties, and approve policies that articulate and give effect to its set direction on risks.	95%	0%	5%	95%	0%	5%	
17	Risk Governance & Management	The board of directors should delegate management the responsibility to implement and execute effective risk management and governance.	97%	0%	3%	97%	0%	3%	
18	Risk Governance & Management	The board of directors should evaluate and agree on the nature and extent of the risks an organization is willing to take in pursuit of its strategic objectives, which includes limiting potential loss to the organization due to IT risks and approving the organization's risk appetite.	95%	0%	5%	95%	0%	5%	
19	Risk Governance & Management	The board of directors should consider allocating the oversight role of risk governance to a dedicated committee, the Audit and risk committee.	97%	0%	3%	97%	0%	3%	

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20	Risk Governance & Management	The board of directors should exercise ongoing risk management oversight to ensure the following: i. Assessment of risks ii. Evaluation of opportunities and threats. iii. The integration and embedding of risk management in the business activities and culture of the organization.	95%	0%	5%	95%	0%	5%
21	Risk Governance & Management	The board of directors should ensure the disclosure of the risks' nature and extent and an overview of the governance and management arrangements.	97%	0%	3%	97%	0%	3%
22	Risk Governance & Management	The board of directors should ensure the disclosure of the critical risks that the organization faces, as well as undue, unexpected, or unusual risks, as well as the actions taken to monitor the effectiveness of risk management and how the outcomes were addressed.	97%	0%	3%	97%	0%	3%

Table 3 displayed a detailed comparison indicating that most of King IV's recommended practices align with those of the international standards. Compared to the International Standards of Auditing (ISA 315), it became clear that some essential requirements related to IT systems and the internal control environment should be included in King IV and ISO 38500/COBIT 5, resulting in a difference. Furthermore, compared to the SOX Act, the study found that some key requirements related to IT application systems and the internal control environment are not included in King IV, resulting in differences. For better execution of King IV, the Code of Corporate Governance of King IV should include the rules for safeguarding IT systems and internal controls as mentioned in ISA 315, ISO 38500/COBIT 5, and SOX Act.

A summary of the detailed results comparing King IV with other international standards and regulations on IT governance and risk management disclosure practices and requirements are presented below with the implications.

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Table 3: Results on IT governance and risk management disclosure requirements comparison

IT governance & risk management disclosure requirements as per standards, regulations, and Acts	King IV (IoD, 2016)	SOX (SOX Act, 2002)	ISA 315 (IASB)	ISO 38500/ COBIT 5 (ISO/IEC 38500:2008)
The board of directors should govern IT to support the organization in achieving its strategic objectives (King IV).	√	√	√	√
The board of directors should approve a policy that articulates and gives effect to the set direction on the employment of IT (King IV).	√	×	√	√
The board of directors should delegate to management the responsibility to implement and execute an IT governance framework (King IV).	√	×	√	√
The board of directors should exercise an ongoing oversight of IT management to ensure alignment and integration of IT risks into organization-wide risk management (King IV).	√	√	√	√
The board of directors should exercise an ongoing oversight of IT management to ensure proactive monitoring of intelligence to identify and respond to incidents, including cyber-attack and adverse social media risks (King IV).	√	√	√	√
The board of directors should exercise an ongoing oversight of IT management to ensure the privacy of personal information security of information and IT assets (King IV).	√	×	√	√
The board of directors should exercise an ongoing oversight of the management of IT to ensure that IT systems support confidentiality, integrity, and availability of information (King IV).	√	√	√	√
The board of directors should exercise an ongoing oversight of IT management to ensure ethical and responsible use of IT and compliance with relevant laws and standards (King IV).	√	√	√	√
The board of directors should monitor and evaluate significant IT investments and expenditures (King IV).	√	×	√	√
The board of directors should ensure disclosure of key areas, including objectives, significant changes in policy, and risks, including major incidents and significant risks exposed due to IT application systems (King IV).	√	√	√	√
The board of directors should ensure disclosure of an overview of its governance and management of IT (King IV).	√	√	√	√
The board of directors should ensure disclosure of actions taken to monitor the effectiveness of IT management and governance and how the outcomes were addressed (King IV).	√	√	√	√
The board of directors should treat risks as integral to the way it makes decisions, executes its duties,	√	√	√	√

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and approve policies that articulate and give effect to its set direction on risks (King IV).				
The board of directors should consider allocating the oversight role of risk governance to a dedicated audit and risk committee (King IV).	√	√	√	√
The board of directors should evaluate and agree on the nature and extent of the risks an organization is willing to take in pursuit of its strategic objectives, which includes limiting potential loss to the organization due to IT risks and approving the organization's risk appetite (King IV).	√	×	√	√
The board of directors should ensure the disclosure of the nature and extent of the risks and an overview of the arrangements for governance and managing risk (King IV).	√	×	√	×
The board of directors should ensure the disclosure of the key risks that the organization faces, as well as undue, unexpected, or unusual risks, as well as the actions taken to monitor the effectiveness of risk management and how the outcomes were addressed. (King IV).	√	×	√	×
Access is authenticated through unique user IDs and passwords or other methods to validate that users are authorized to gain access to the system (ISA 315).	×	√	√	×
Financial data are backed up regularly according to an established schedule and frequency (ISA 315).	×	√	√	×
Management approves the nature and extent of user-access privileges for new and modified user access, including standard application profiles/roles, critical financial reporting transactions, and segregation of duties (ISA 315).	×	√	√	×
Management should establish safeguards aimed at preventing data tampering (SOX 302.2).	×	√	√	×
Management should establish verifiable controls to track data access (SOX 302.4B).	×	√	√	×
Management should establish safeguards to ensure IT controls' effectiveness (SOX 302.4.D).	√	√	√	√
Management should disclose data security safeguards and breaches to enable independent auditors to assess the effectiveness of the internal control structure and security framework (SOX 404 A).	√	√	√	×

Effective IT governance and risk management practices enable a company to reduce going concern risk, preventing fraud and data loss, thus benefiting employees with guaranteed employment, the company's revenue and income growth, which may also increase the share price and shareholders' returns, as well as the South African economy through company contributions in the form of taxation and job creation. Effective corporate governance results in strong performance, efficient risk management, and accurate financial reporting, all of which encourage potential

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investors to invest in the business and drive-up stock prices. Moreover, adherence to IT governance, risk management, and disclosure compliance shields a company from any violations of rules, regulations, and standards that might incur fines and penalties, primarily because full adherence to King IV is one of the JSE listing requirements.

It is important to note that most of the King IV guidelines and principles for IT governance and risk management were aligned with global norms and standards, including ISO 38500, COBIT 5, SOX, and ISA 315. The alignment is crucial because it helps multinational companies implement efficient IT and risk governance with their worldwide operations. Furthermore, aligning these principles may enable JSE-listed multinationals to comply with both King IV and other international standards on disclosure compliance relating to data loss prevention and data safeguards, which reduces non-compliance and liabilities associated with fines and penalties. In addition, the study revealed that a few principles identified in the different standards were not aligned. The implication of this non-alignment may result in multinational companies' non-compliance with other countries by these companies, which may result in financial consequences in the form of fines. Penalties cost as well as a data breach. Therefore, the study recommended that King IV include other principles identified in the international standards mainly relating to management responsibility for ensuring financial data backups, data safeguards, prevention of unauthorized access, and data tracking and security controls.

CONCLUSION

The study analyzed the extent the top 40 JSE-Listed firms complied with the Information Technology risks and Governance provisions in the King IV governance code. Also, King IV's provisions and other International codes provisions were compared. The qualitative content analysis technique was used, and the findings revealed that 32 of the top 40 JSE-listed entities (80%) completely complied with King IV and other international standards. In contrast, eight of the top forty JSE-listed businesses (20%) partly complied. Furthermore, 79% (19/24) of provisions in King IV are similar to that of the international standards, while 21% (5/24) differ. It implies that the majority of the companies within the bracket of top 40 JSE-Listed companies can be protected from the dangers of non-compliance with IT risks which include cyber-attacks, data breaches, IT system failure, social media risks, malware, IT data security risk, integrity risks, and the likes. Regarding the alignment of the King IV code with other international codes, the King IV code is substantially aligned. It creates a suitable environment for multinational firms to effectively and efficiently comply with IT risks and governance.

Information technology's importance to organizations' operations should be emphasized. It assists in collecting and processing data and facilitating the attainment of strategic goals. IT is thus the most crucial aspect of a company's operations. However, the increased usage of IT application systems has exposed businesses to new hazards, necessitating good IT governance and risk management to protect firm data. Literature indicates that entities are subject to several IT risks, such as cyber-attacks, data breaches, IT system failure, social media, malware, IT data security, and integrity risks. These risks expose an entity to significant financial loss and essential information, which may lead to considerable reputational harm, legal claims, and a loss of stakeholder trust, undermining the company's capacity to continue as a going concern. Cyber-attacks, including ransom wares and malware, resulting in the loss of financial records and customer data, affecting the company's future operations, cash flow generation, and ability to continue as a going concern. However, IT system failures may cease commercial activities, resulting in a loss of income, clients, and an increase in operational expenses, impacting a company's capacity to continue as a going concern. The hazards outlined above need good governance and management of IT risk, which

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attempts to decrease IT-related risks and the disclosure of these risks. In the integrated/annual reports, a company's approach to risk management is deemed crucial since it allows stakeholders to comprehend how IT resources have been used and how IT risks have been managed and controlled to reach the company's strategic goals. In their integrated reports, most of the organizations examined in this research acknowledged their IT risks and their risk management and governance methodology, while a minority provided just a portion of their IT risks and risk governance approach. The study examined the compliance of the top 40 JSE-Listed companies to the King IV code on IT risks and governance, extending the scope of previous research on IT risks compliance on King III. It provides evidence of assurance to potential investors on companies' compliance and enhances multinationals' operations in terms of IT risk compliance. This research adds to the corporate governance literature in South Africa. Like other studies, the study had limitations. The study considers only the top 40 JSE-Listed firms. Further study can be done on the compliance of all JSE-Listed companies.

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