Enhancing Corporate Governance Systems through Adoption of Blockchain Technology in Small, Medium and Micro Enterprises (SMMEs) in South Africa

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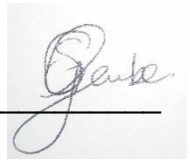
Declaration

I declare that this thesis is my own original work under the supervision of Dr J. Totowa (Wits Business School). It is being submitted for the degree of Maters in Business Administration to the University of the Witwatersrand, Johannesburg, South Africa. It has not been submitted before for any degree or examination in any other university.

Sanele G. Nyembe

Signature: 

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Abstract

Instances of corporate fraud, exemplified by cases such as Enron in the USA, Steinhoff in Germany/South Africa, and Tongaat Hullett in South Africa, have become prevalent worldwide, inflicting severe repercussions on diverse stakeholders. Despite the widespread occurrence of such frauds, they often evade early detection, resulting in substantial financial losses and erosion of shareholder value. Effective corporate governance systems are intended to serve as the ultimate surveillance mechanism to filter out various forms of corporate fraud.

Technological advancements, particularly blockchain, hold promise for enhancing corporate governance effectiveness. Blockchain, a digital ledger technology that records transactions in immutable blocks, offers potential benefits in detecting and preventing fraud. Importantly, blockchain technology is envisioned not as a replacement but as a complementary addition to existing corporate governance systems to enhance their efficacy.

The objective of this research was to analyse the potential impact of blockchain on SMMEs in South Africa through an online survey targeting professionals with varying expertise. The results of the survey, encompassing 214 respondents from diverse professional backgrounds including accountants, ethics committee members, board members, and blockchain technology experts, revealed a consensus on the positive impact of blockchain integration with corporate governance pillars in curbing corporate fraud within SMMEs. The Likert scale results indicated an average score of 4.09 out of 5, suggesting a predominantly positive perception of blockchain's efficacy in addressing corporate fraud in SMMEs. The results revealed that technological intervention, acting as a mediating factor between current corporate governance practices and the capacity for early fraud detection, would yield positive outcomes. As illustrated through the conceptual framework.

Keywords:

Corporate Governance

Financial Reports

Ethics Committee

Financial Auditors

Blockchain Technology

Adoption and Implementation

Transparency

Enron

Steinhoff

Fraud

Conceptual framework

GAAP/IFRS

SMMEs

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During this endeavour, I frequently found solace in a timeless quote attributed to Abraham Lincoln: "If I had nine hours to chop down a tree, I'd spend the first six sharpening my axe." This sentiment resonated deeply with me as I navigated numerous challenges throughout the completion of this study.

I express my heartfelt gratitude for the invaluable support and guidance extended by numerous individuals, whose contributions were instrumental in the success of this endeavour.

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I dedicate this thesis to my parents: **Petros Nyembe** and **Thandie Nyembe**

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1. Introduction

Corporations are established through capital investment by shareholders, but they are often managed by non-owners, which creates an agent/principal challenge (Khan, 2022). Corporate governance systems are procedures that are in place to mitigate the agent/principal issues and to protect the value of the shareholders and other stakeholders (Khan, 2022). In the case of South Africa these corporate governance procedures are outlined in the Kings IV Report. Corporate governance is the surveillance umbrella for rooting out any form of misconduct and corruption that could devalue shareholder's investment (Beygi, 2022). Furthermore, corporate governance sets out the rules to enhance transparency and accountability (Chang, 2021). However, these systems and procedures can be compromised by internal stakeholders such as executives and managers which often leads to undetectable fraud. An academic definition of Fraud is to deliberately bypass systems and procedures put in place and concealing wrong doings for own benefit (Antoniou, 2014). Due to more fraudulent being reported existing corporate governance systems are not full proof in sieving out fraud and corruption. Styan et al, 2019 reported that in the case of Steinhoff, South Africa fraud, it was a classic case of failed corporate governance (Styan, 2019).

Fraud management specialists estimated that about 75% of all corporate frauds will go undetected (Antoniou, 2014). This view was also shared by Christo Wiese who lost close to R6 billion in the Steinhoff scandal, He stated that "*Steinhoff-like scandals would still happen again in the future and there is no way of stopping it*". This research, seek to expose loopholes in the corporate governance and point out some of the benefits of including technology in the corporate governance framework.

1.2 Corporate Governance Control Systems

Corporate governance systems are designed to provide guide or procedure to how decisions are made. A corporation with weak corporate governance systems are at increased risk of fraudulent activities (Dimes, 2021). This section is going to investigate some of the corporate governance systems as sources of corporate fraud. Corporate governance systems that are the focus for this research are the role of auditors, the ethical standards of the executives that are enforced by the ethics

committees and the composition of board members in line with Kings report IV. Additionally, standards set out by Sarbanes-Oxley Act for reporting of financial statements (James, 2022).

The first place to start when trying to curb the corporate fraud is to educate the employees across all business functions about what fraud looks like and what to look out for. According to Antoniou, 2014, employees can be the best corporate watch dogs (Antoniou, 2014). Platforms such as whistleblowing are also other preventative tools that organisations use to reduce the risks of malpractice (Farooq, 2022). Furthermore, the board of directors or the executives should instil high moral and ethical standards to all the internal stakeholders. The ethics committee is often responsible for driving a message of ethics throughout the organisations. All these practices are a way of preventing fraud based on whether it is detectable and that there are no factions colluding to defraud the system (Lendez, 1999). In this case, whistleblowing and high ethical standards of internal stakeholders usually fall short.

Auditors are a more enforcing element of corporate governance framework because they provide credibility to the firm. Relying on auditors might also present it issues because in most cases fraud can happen for many years and the auditors would sign off financial reports legitimizing them. Additionally, there conflict of interest that may exist between the auditing firm and the company being audited i.e., auditing fees. Furthermore, the partial auditing of the company financial transactions and assets might be an issue as not all transactions are scrutinized. Auditing of companies is an important corporate governance system to detect fraud, however, there are plenty of examples in literature where fraud with massive financial loses happened while the company was audited by reputable auditing firms (Hake, 2005). The examples are Author Andersen & company at Enron (United States) and Delloite in the case of Steinhoff (Germany/South Africa) (Styan, 2019). Some academics predicts that auditing firms would be obsolete in the future because fraud still manages to escape through their fraud detection systems (Abbott, 2007).

Accounting fraud is a deliberate and wrongful presentation of financial statements (Rashid, 2022). There are assorted reasons why people commit fraud in corporations, these are perceived pressure, perceived opportunity and rationalizing that the fraud aligns with one’s ethical codes (Antoniou, 2014). Fraudulent financial statements are

the most common type of corporate fraud and creates unclear picture of the company financial status and deceives investors. The regulating bodies that set out the rules on how financial statements should be presented and regulated is Financial Accounting Standards Board (FASB) used in conjunction with accepted accounting principles (GAAP). These are deemed sufficient to detect any fraud presented in financial statement (Mohamad Mahsun, 2021). However, these financial statements are still qualified by auditors which could present a problem.

It is apparent that corporate governance requires a more robust system to detect fraudulent activities. There are numerous technological advancements suggested in the literature, however, for the purpose of this research, blockchain had more advantages than the other innovations. Some financial institutions have already started investing and using blockchain technology by means of international funds transfer, because it quicker than traditional methods. Blockchain is an information system that saves data sequentially secured by cryptographic proof. Kahan, 2008 suggested that blockchain is the answer to longstanding problems of corporate governance that has to do with inaccurate transaction recording and real-time auditing of every single transaction (Kahan, 2008). The technology has already been validated via the use of bitcoin since 2015. As more institutions trust the potential of blockchain, this disruptive technology can potentially be the crucial point of control within the corporate governance control systems.

1.3 Problem Statement

The most common problem faced by corporations is the total disregard of corporate governance by people in charge and potentially making it easy to commit fraud. This is due to lack of integration of the different elements of corporate governance. Incorporation of technology such as blockchain technology would create a harmonious and integrated corporate governance that is highly transparent, because it would make it possible to track every transaction. This would have a high potential of significantly reducing chances of corporate fraud.

Corporate governance systems are under continuous upgrades with the objective of closing the gaps identified through detected corporate frauds. Corporate fraud is often committed via accounting irregularities during the preparation of financial reports,

therefore, systems such as GAAP and IFRS require more strict measures to limit what is accepted when conducting accounting of corporations.

Literature review is unambiguous that there are gaps in the corporate governance systems to detect fraud before or shortly after it happens (ref: King's report on corporate governance). For instance, Jayasuriya *et al* emphasised that it is not economical for auditors to audit every single transaction of the company and often they do not fully understand the operations of the business, making it difficult for them to detect fraudulent activities (Jayasuriya, 2020). That is a problem because there is always a risk that fraud and corruption may have gone undetected.

This study posits to mitigate the complexity of a company's operation, auditors could make use of advances in information technology, such as blockchain, that could assist them test every transaction of corporations instead of partial testing currently taking place. This would provide auditors with a realistic global view of any company's financial health and to assist what already exists for early detection of fraudulent activities.

The aim of this research is to assess how can adoption of blockchain technology assist corporate governance systems to detect malfeasance in real time. Blockchain technology is a powerful tool that has the potential to increase company transparency, accurate recording of the activities. Wide use of blockchain technology amongst variety of industries would make this technology a capital investment worthy tool to assist corporate governance to eliminate corporate fraud.

1.4 Research Questions

Below are the research questions that would make adoption of blockchain technology into corporate governance a viable feat.

- Is adoption of blockchain technology simple for corporations to integrate it into their corporate governance without negatively interfering with other crucial business functions?
- How much control should the board members and the executives have over blockchain technology?

- What would be some of the risks associated with adopting blockchain into corporate governance and what are the future benefits for the early adopters?

1.5 Justification of the Study

Small, Medium, and Micro Enterprises (SMMEs) are instrumental in propelling economic growth in developing economies, yet they often contend with the pervasive challenge of corruption. This research endeavours to contribute towards identifying sustainable solutions to address the governance shortcomings encountered by SMMEs in South Africa. Such efforts stand to not only safeguard shareholder value but also promote the cultivation of a resilient and sustainable economic landscape.

Furthermore, these initiatives hold the potential to benefit auditing firms by streamlining their processes, thereby saving time, and furnishing them with a comprehensive understanding of organizational operations rather than limited audits. This paradigm shift has the capacity to revolutionize auditing practices for the better.

Additionally, the integration of blockchain technology into corporate governance would furnish board directors with a comprehensive overview of all transactions at the operational level, empowering them to make informed decisions and augmenting corporate transparency.

1.6 Delimitations of the Study

This research will primarily concentrate on exploring the benefits and advantages associated with integrating blockchain technology into corporate governance systems. Unlike focusing on the structural changes that blockchain adoption may impose on companies, the objective of this study will be to investigate the specific advantages of incorporating blockchain technology within the corporate governance framework.

Moreover, it's important to note that this research will not delve into the effects of ethics, corporate board dynamics, the role of auditors, and accounting irregularities on enhancing corporate governance. These aspects have been extensively researched and documented professionally, and thus will not be within the scope of this study.

1.7 Operational Definitions

Operational definitions are specific meanings of the terms within the context of this study. These operational definitions are crucial for ensuring consistency and understanding among researchers and readers. Below are some of the examples of operational definitions that are used in this research study:

1.7.1 Corporate governance

The definition of corporate governance in this research was adopted from Cadbury, 1992, that corporate governance are systems that are in place to control and direct companies with the objective of protecting the shareholder's worth from managerial discretion (Cadbury, 1992). Corporate governance systems protect the shareholders worth by being a surveillance and a diagnostic package to detect any fraudulent activities that could potentially be a result of fraud or corruption. This definition of corporate governance is widely accepted by academics (10 publications agrees with this definition).

1.7.2 Accounting Fraud

In context of this research, accounting fraud means the misrepresentation of corporation financial statements consequently misleading investors and stakeholders of the financial position of the company. The accounting fraud is divided into two subcategories which are malpresentation of assets or misrepresentation of financial statements (Rashid, 2022).

1.7.3 Corporate Ethics and Whistleblowing

Corporate ethics is used in this research as the way of doing things that has integrity and of high ethical standards. These traits should be developed as a corporate culture as an initiative by the board and executives. Having internal stakeholders with high ethical standards is an effective way of detecting fraud. Whistleblowing is a corporate governance system that supports and encourage internal stakeholders to report suspicious activities. Whistleblowing often that works well within a corporate culture of high ethical standards and integrity (Farooq, 2022).

1.7.4 Blockchain Technology

in the context of this research blockchain technology is defined as the systematic data storage, retrieval and tracking for easy access of information and offer ultimate transparency of the corporations' financial books. This definition is slightly different to how blockchain technology is used in cryptography even though the principles are similar, which are to systematically record activities. The benefits of using blockchain technology is that the next transaction or activity is linked with the previous one and it impossible to alter the previous record to do a new transaction. This makes blockchain an ideal corporate governance system (Jayasuriya, 2020).

1.7.5 Brief Description of the Research Paper

This paper is structured as follows; the next section is the literature review section that critically investigates the current corporate governance systems used for detection of corporate fraud and corruption and this is where gaps were identifies. The gaps that were identified in the literature review formed the bases of the next sections which are the *research problem statement* and the *motivation of the research*. The adoption of blockchain into corporate governance systems would be investigated and the findings and interpretations of the results would be in the results and discussion section. The conclusion section would follow, and this section would be to draw reflections based on the obtained results and how this information could be useful to SMEs. The last section would be recommendations and future work which would identify areas not covered in this research, that could potentially add value.

2. Literature Review

2.1 Background

The literature review will concentrate on uncovering the current challenges encountered by corporations, with a specific focus on their governance structures. It will delve into the establishment of corporate governance practices in different countries, such as the United States, United Kingdom, Germany, and Nigeria. Furthermore, it will investigate the disparities between externally enforced corporate governance regulations and internally cultivated governance mechanisms.

Subsequently, the literature review will narrow its focus to examine various aspects of corporate governance within the context of small to medium enterprises (SMEs) in developing economies. This section will aim to understand how corporate governance is tailored to suit the specific needs and challenges faced by SMEs operating in emerging markets.

Lastly, the literature review will explore different technologies that have the potential to enhance corporate governance practices. This will include an analysis of how technologies such as blockchain, artificial intelligence, and data analytics can be leveraged to strengthen governance frameworks and improve fraud detection mechanisms.

Consequently, this section will be divided into three main segments: firstly, exploring different definitions of corporate governance and identifying their key components; secondly, examining the role of corporate governance in effectively detecting fraudulent activities; and lastly, assessing the use of technology as a tool to enhance corporate governance practices.

The definition of corporate governance varies significantly between scholars (Claessens, 2003). The differences in definition are based on what most people thought was the objective of corporate governance. Andres-Alonso, 2010 argued that corporate governance is there to solve the agency conflict between owners and managers (de Andrés-Alonso, 2010). This definition was acceptable for some time as it seemed logical and provided a simple objective to the corporate governance. However, other researchers argued Andres-Alonso's view that this definition was not encompassing enough, hence Miller et al, 2003 proposed that corporate governance is to increase company value and all the stakeholders that directly and indirectly

involve should participate in the value creation (Miller, 2003). The most resent and widely accepted definition of corporate governance is a set of systems that enforce how a corporation is directed and controlled (Garzón Castrillón, 2021).

There are two types of corporate governance namely institutional corporate governance, which is enforced externally mostly by legal institutions of the country. The second one the contractual corporate governance which develops organically from within the company (Miller, 2003).

2.2 Corporate Governance Structure

Corporate governance structure framework is an overall surveillance that seeks to protects shareholders interest against the opportunistic profit making by operations managers (Beygi, 2022). According to EOCD, 2004 corporate governance structure includes corporate management and the Board of directors, Business ethics, Legal and Regulations and Auditors (OECD, 2004). Zattoni et al, 2008, emphasised that good corporate governance codes vary from country to country as an attempt to attract investors to protect investors (Zattoni, 2008). J Styan, 2019 highlighted that a collapse of corporate governance in a company may lead to catastrophic financial loses and leading to bad reputation not only to the company but the whole country (Styan, 2019). They alluded that the financial turmoil that occurred 2017 at Steinhoff, South Africa was due to a failed corporate governance (Styan, 2019). They pointed out a few issues with the corporate governance at Steinhoff such as two-tier corporate board members that lacked diversity, powerful and manipulative chief executive officer, questionable relationship between executive team and auditing firm etc. This is just one examples of what could happen if corporate governance codes are not adhered to and there are many other examples internationally.

The following sections will explore each aspect of the corporate governance and explore various policies enforced by US (United States) and UK (United Kingdom) in corporate governance.

2.3 Business Ethics

No matter how well set up the corporate governance is, there is nothing that could stop greedy and dishonest people from serving their own interests over the sustainability of the corporation. Which is why corporate governance must exist within the business ethics framework. Business ethics is based on the human integrity and quality, excellence of people within their tasks and within their actions and good business practice (Adekoya, 2011). The agent/principal problem within corporations mostly exists because the managers who are trusted with the shareholders or owner's capital sometimes act out of their own capital gains and not that of the shareholders or owners. The managers of corporations should lead through good governance codes, which is to add value to the corporation and protecting the owner's equity. Cadbury suggested that the way the corporation in controlled and directed should be embodied in codes of good governance (Cadbury, 1992). Furthermore, business ethics framework is about holding high moral standards in doing business. Business ethics is governed by these principles (Josephson, 2015).

- Conducting business honestly and good principles.
- Compliance with relevant regulators.
- Always abiding by the law
- Fulfilling all necessary commitments
- Avoiding conflicts and taking responsibility

Corporate governance should always be anchored within business ethics with good governance codes for it to be effective. It is in the best interest of the corporation to have an effective corporate governance as this leads to higher valuation, high degree of shareholder consideration and protection and making it easier to secure capital investment from the public (Rafael La Porta, 1988).

2.4 Board of Directors

There are often diverging interests between the corporate owners and the management team (OECD, 2004). The corporate governance is often in place to address these issues. However, Davies, 1997 reported a different view of the agent/principal problem. In their study, they reported that the agent/ principal challenge has three facets which are (i) Management and shareholders (well studies and known), (ii) Major shareholders versus minority shareholders and lastly (ii) Management versus non-shareholder stakeholders (Davies, 1997).

In most large corporations, management's power to make crucial business decisions is shifted to the shareholders to potentially eliminate the agent/principal challenge. However, the strategy of completely shifting power to shareholders is far too costly for shareholders. They would rather leave the decisions making to a group of experts, which is how the corporate boards are formed (Mallin, 2001). The board of director are appointed by shareholders to address all the agent/principal challenges, even though the emphasis is on the management and shareholder challenge. The board of directors are responsible for making complicated decisions such as mergers and acquisitions, capital investments etc (OECD, 2004). The corporate board structure may take two forms such as single tier, or dual tier (Heidi Hylton Meier, 2013). The single tier board structure is where the board is a single unit where management report to and a dual board structure is a situation where management (CEO, COO and CFO) are mostly responsible for the operations of the company and there is a second-tier supervisory board that supervises the management (Heidi Hylton Meier, 2013). Steinhoff used a dual tier board structure, and it was reported as one of the causes for the board to be dazzled of fraud for many years. The board members are accountable to the shareholders, and the shareholders hold the rights to remove all or some of the board members that they disapprove of (Styan, 2019).

Kesner and Lamont, 1988 argued that a board that is ineffective can have direct impact on the performance of the corporation. Furthermore, they argued that the composition of the board can have a direct influence of their role to monitor a corporation (Kesner, 1988). For instance, a male dominated board with "old boys" can have detrimental effects to the effectiveness of the board. This argument was made in 1988 and it still

holds even in current times, because the composition of the board was one of the factors that was identified that caused Steinhoff's collapse in 2017.

2.5 External Auditors

The first line of defence to assist corporate governance is the role of auditors of the firm (Ferreira, 2018) (Ho, 2008). Auditors are professionals often accountants that examine and investigate corporation's assets and finances for their accuracy (Alrabba, 2016). The auditors may be internal or external with the same objective; however, external auditors are often enforced by government regulations for publicly listed companies (Abbott, 2007). Furthermore, the external auditors sign off corporation's financial statement to be released publicly. This gives shareholders or any users of the financial statements confidence that they are a true reflection of the company's financial activities. The process of auditing corporations has many benefits such as increasing company value, removing ghost assets, complying with regulations, protection of shareholders etc (Drogalas, 2017). The problems begins when the auditing firms collude with agents or management of the corporations to misrepresent the financial position of the corporations. In this case the shareholders find themselves in an enigmatic situation where they are deceived, and it becomes difficult to identify this type of deception. Auditors form part of the independent audit committee with needs to make sure that audit firms are independent, thorough, and vigilant in their investigations of corporations financial, assets representation (Antoniou, 2014) (Cadbury, 1992).

The problem that has been found about the auditor is that they need to reveal corporation's "skeletons" and they need audit fees for it. This situation creates an opportunity for the auditors to collude with the management. Our contention is that if the auditors are paid well enough by the board, they would be less likely to be corrupted by the management team. However, there are various conflicting reports between the audit fees and the independence of the board. Cercello, 2002, revealed that the audit fees are depends on the independency of the board (Carcello, 2002) (Knechel, 2006), however, Steward et al, 2006 found that there was no direct relationship between the two (Jenny Stewart & Mazlina Mat Zain, 2006). On the other hand, Larcker et al, 2004 reported that the reputation of the auditing firms tends to mitigate all the opportunistic temptations, and these become issues only if the

company has weak corporate governance systems (Larcker, 2004). Even though these debates are still ongoing, but it is known that auditing firms were reported and sometimes questions whenever there is a large scandal involving financial fraud in big corporations. For example, the involvement of Delloite as the auditing firms was questioned in the case of Steinhoff collapse in 2017 and Tongaat Hullett. Furthermore, internationally, Arthur Andersen served as auditors for Enron and as their consultants (Glater, 2002), Fliehling and Horowitz audited Madoff's pyramid scheme that went undetected for more than two decades (Abkowitz, 2008). The international standards on auditing have keep on evolving to enforce auditing firms to report accurate and unbiased findings. For instance, international standard on auditing 700 was revised in 2016 which enforces several issues such as, auditors must form an opinion on the corporate's financial statements, ISA 701 that enforces auditors to effectively communicate audit matters in the auditor's report. All these recent changes are made to make auditors report more robust and useable by shareholders or investors (Griffin, 2010).

In this research the role of auditors would be in question in the context of our research of the Small to medium enterprises in the developing economies where the corporate governance is not well established and often none-existence. This section of the market has been reported to experience massive corruption and the role of auditors in curbing or perpetuating corruption would be investigated and analysed.

2.6 Corporate Governance based on various Countries.

In this section we will explore the differences of corporate governance based on various countries in developed and developing economies such united states of America, United Kingdom, Nigeria, and South Africa. The analysis of the difference approaches to corporate governance by different countries would be analysed based on the four approaches. These corporate governance approaches are agency theory, resource dependency approach, shareholder approach (Friedman) and the stakeholder approach based on Freeman theory (Castrillón, 2021). The ***agency theory*** is the main one and is the underlying reason for corporate governance, since often managers of other people's money are not expected to take of it as the owners of it (Ho, 2008). The ***resource dependency*** approach operates under the premise that organisations do not operate in silos and there is an interdependency with the

environment they operate in. hence to ensure their survival in the market, corporates depend on and compete with other organisations for information and resources (Pfeffer, 1978). The ***Friedman approach*** is based on serving the shareholders on the organisations and the automate goal is to maximise shareholders worth sometime in the expense of other stakeholders. The ***Freeman approach*** encompasses all the other stakeholders involved in making the corporation a success such as suppliers, employees, communities where the corporation operates etc (Castrillón, 2021).

2.6.1 Corporate Governance Principles in South Africa based on Kings IV Report

The King's code is a set of practices and voluntary principles that were proved to apply to every organisation no matter their incorporation. The King's code puts emphasis on transparency in governing a corporation. The King's report is evolving with times and the current version is the Kings IV. The Kings IV version combined massage is transparency that is put forward as an essential element of good corporate citizenship. Some of the highlights of the Kings IV reports are that the board of any corporation should have a balanced power and the majority should be non-executive directors of which majority should be independent. Additionally, it also says that the board should have a charter which stipulates its responsibilities, it also stipulates that at least two executive members should be part of the board including the CEO for the financial function. Furthermore, it says that the CEO of the company should not serve as the chairperson of the board and not within three years of retiring their position. The aim of the Kings report is to stipulate the rules pertaining the corporate governance by encouraging transparency within the organisation.

Some of the highlights from Kings IV report are listed below.

- Transparent, responsible, and fair organization wide reward.
- The delegation to management and committees
- Audit committee disclosures
- Risk governance
- Social and ethics committee
- Performance evaluations
- Responsible tax strategy

2.6.2 Examination of Corporate Governance in Developed Countries

As technology and innovation keeps improving more corporations are using market development as their go to growth strategy This means they want to gain market share and do business internationally. Currently, the biggest companies in the world based on world revenue are all international companies such as Amazon, Walmart, Apple, Microsoft. To maximise revenue or profits companies need to compete on the international level. However, as more companies compete with other companies internationally, a unified way of analysing them becomes more clear. For instance, the US unified the accounting standards by migrating from GAAP to IFRS, which makes it easier for shareholders to make informed decisions from their financial statements (Oxera, 2006). This migration of reporting financial statements by the US raised question of whether corporate governance practices should also be unified to better transparency. H. Meier and N Meier, 2013 reported that the convergence of corporate governance is not an easy feat because difference countries and diverge in their legal systems and culturally (Meier, 2013). Oxera, 2006 suggested that often corporations chose corporate governance systems that are less expensive and that are more beneficial to them (Oxera, 2006). The laws of the country where the organisation is incorporated also often plays a role in how their corporate governance is structured. History of financial scandals of a country also plays a role in how their corporate governance is structured.

The following sections show the differences in corporate governance from difference countries.

2.6.2.1 United States of America (USA)

United States has seen a fair share of catastrophic financial scandals in the early 2000s such as Madoff pyramid scheme, Enron, WorldCom, and Tyco. These financial spectacular failures shifted the focus to corporate governance. The shareholders were concerned about the legal system of the country not able to aid companies in detecting these financial frauds early on. The scrutiny of the legal system of the country by investors fuelled the introduction of Sarbanes-Oxley Act in 2002 which is the revisions to framework of corporate governance. United State now follows a corporate governance which is more garnered to the interest of shareholders (Friedman approach) (Barnett A. a., 2008). Furthermore, the US uses a single tier board

members that are often non-executive directors. The countries corporate governance focuses on the golden rules which is to align corporate governance with concept of ethics, business goals, strategic management, and reporting (auditing). This approach has not changed the corporate governance but has put more emphasis on the accountability. For instance, the after the introduction of Sarbanes-Oxley Act there is an enforced obligation for the CEO and CFO of corporations to accurately show company disclosures. Furthermore, the board is given more power to in the corporate management (Miller, 2003).

2.6.2.2 United Kingdom (UK)

The European approach to corporate governance seems to be like that of the US, however, there are legal and cultural differences (Solani, 2005). These differences are European approach is more garnered towards Freeman's approach of including all the stakeholders in decision making rather than only emphasizing the shareholders. The prevalent of two-tier board seems to be normal in the European context, where the board is divided into two tiers structures as the supervisory board (non-executive) and management board (composed of executives). This approach is to cuts the CEO/Chair duality (Abbott, 2007). In hindsight, this was one of the factors reported as the contributor to Steinhoff collapse, because the CEO was so powerful, and he colluded with the CFO and other members of the executive do report false information to the second tier with the chairperson of the board. In this case the duality of the CEO/chair was perpetuated. UK introduced a corporate governance code which set up good governance practices such as sound internal controls, an input in the composition of the board and its committees. However, these corporate governance code does not enforce companies but forms as a guard and companies are free to change as they see fit (Meier, 2013). Any deviations from the code requires the corporations to explain their approach to the shareholders. The UK approach to the corporate governance gives the shareholders power to via extensive voting rights such as rights dismiss directors. The UK system advantages is the low cost and strong and effective corporate governance (Council, 2012).

2.6.2.3 Germany

The Germany approach to corporate governance stakeholders Freeman approach and adopts two tier board as the rest of Europe. However, Germany involvement of stakeholders is even more enforced, for instance the employees of the corporations have a seat in the board and are part of the decision making (codetermination) (Meier, 2013). This could be because ownership is much more concentrated in Germany since most of the corporations are family orientated businesses (Barnett A. a., 2008). The creditors of the corporations are also recognised for their ownership position in the company which is known as bank-based system. This approach to corporate governance put more emphasis on all the stakeholders of the business not just the shareholders (Kaen, 1999) as shown in *Table 1*.

Table 1*:* Corporate Governance Models in United State, United Kingdom, and Germany *(Meier, 2013)*

	CG goals	**Board Structure**	**Appointment of Auditors**	**CEO/Chair duality**	**Mandatory**
US	Shareholder Approach (**Friedman**)	One-Tier	Independent audit committee	Permitted	Required by SOX, 2002
UK	Shareholder Approach (**Friedman**)	One-Tier	Independent audit committee	Not permitted	Comply or explain
Germany	Stakeholder Approach (**Freeman**)	Two-Tier	Supervisory board	Prohibited	Required by law

2.6.3 Examination of Corporate Governance in Developing Countries

In developing economies such as South Africa and Nigeria corporate governance has been reported to be weak due to absence of corporate governance systems, bad unethical practices, and poor risk management (Adekoya, 2011). The poor corporate governance reported in developing economies has seen some spectacular financial

system collapse (Osemeke, 2014). For instance, the collapse of banks in the 1990s in Nigeria was due to more than poor corporate governance, poor auditing was also another factor (Osemeke, 2014). The auditors were found to collude with management to falsify financial reports and non-discloser of some financial items. The reported financial scandals in the developing countries are believed to be a small fraction of the unreported ones which makes the situation even more dire (Ahunwan, 2002). The issues of corporate governance in this area are viewed as a wicked problem which is due to other factors such as socioeconomic issues (Asare, 2008). The challenges to circumvent corruption in developing economies is a high mountain to climb. The government officials are identifying as corrupt in substantial numbers and there are not real repercussions. For instance, between 2020 and 2022, in South Africa there was an Zondo commission of enquiries, which unearthed corruption of top officials. Stringent systems and enforcing laws are still needed in developing economies to curb financial corruption. Another challenge facing developing countries is that they often adopt international standards of operations that often does not match with their internal cultures and countries laws (Vesala, 2012). This mismatch often causes confusion and perpetuate the problems. However, the level of compliance is not the same for all developing economies, South Africa subscribes to the King Code which looks to improve ethical organisations, ensuring effective controls are in place and build trust between all stakeholders.

The poor corporate governance in developing economies is often because of one or more from the following list (Adekoya, 2011).

- Corrupt Auditors
- Bad ethical practices
- Ineffective board members
- Poor internal controls
- Directors lack good operational knowledge.
- Nepotism in high executive positions

The context of our research is based in the sub-Sahara Africa and our suggestion will be affected by the issues listed above. However, our focus would be on effects of technology adoption into corporate governance.

2.7 Gaps that were Identified in the Literature Review

Despite the extensive efforts to enforce robust corporate governance codes, complemented by international regulations and various improvements in corporate governance practices, the trend of financial scandals persisting still is unchanged. Reports of significant financial losses due to scandals continue to surface on an international scale, and there is no discernible improvement in the overall count of scandals. It appears that the traditional corporate governance structure is falling short of its aim, which is to safeguard shareholders by easing sustainable, value-adding business decisions.

Given this persistent challenge, the introduction of technology is considered necessary to address the shortcomings of traditional corporate governance practices. The later section will delve into an exploration of various technological innovations that have been or could be used to strengthen corporate governance, particularly through early detection of fraudulent activities.

2.8 Technology Adoption in Corporate Governance

Advancements in technology and innovation over the past decades is leading to diverse ways of conducting business and the traditional ways might soon be the thing of the past. To circumvent financial corruption corporate governance systems has been the only solution and the development has been making corporate governance more effective and stronger (Tan, 2022). Technology that has the highest potential to strengthen corporate governance according to various research is blockchain (Sebastian Schuetz, 2020). Blockchain is the technology that stores sequential data in a securely by methods of cryptographic proof (Yermack, 2017). This means the transactions that occurs in a blockchain technology are recorded and transparent to various stakeholders (Sims, 2020). This is a practical alternative to classical financial ledgers that are traditionally used to track transactions, furthermore, it could resolve the old problems of corporation’s inability to accurately keep track of transactions in prompt manner (Ronaghi, 2022). D. Yermack, 2017 reported that blockchain technology cannot be cheated because transaction made on the blockchain technology are linked and each transaction is linked to the other transaction (Yermack, 2017)

However, the downturn of blockchain is the sunk costs associated with it, for examples the development of dedicated computer chips and the massive power consumption requirements for the blockchain network. However, our contention is that should this infrastructure be developed on a national level and private and public enterprises have access to it would help the sub-Saharan region and curb corruption (Onyeonoru, Omolawal, & Okunola, 2019). Various research articles (15 publications between 2019 and 2021) agree that the use of blockchain on a macrolevel would increase accountability of the governance, it would yield strict controls of governance and it would promote collective decision making.

It has been reported that corruption is 35% more in SMEs compared to big corporations. SMEs are the engine that drives economies most countries and intervention is needed in this sector more that the big corporations (Lavalle, 2014). However, the SMEs often do not have the resources to adopt expensive technologies, and this leaves them prone to corruption (Shanmugam, 2012). The corruption in SMEs is perpetuated by some of these attributes (Alabladejo, 2006).

- Heavy use of cash instead of electronic platforms
- Overarching systematic public sector corruption
- Weak or non-existence of law enforcement to corruption and lack of political will

In the context of this research, this technology is much needed in the sub-Saharan region because of poor corporate governance and high rate of financial fraud scandals. There is an awareness that adoption of such technology might face resistant in these regions because of high sunk costs, public sector unwillingness and it could potentially make the auditing profession retardant.

2.9 Blockchain Adoption and Implementation in the Banking Industry

The banking sector is at the forefront of adopting and implementing the blockchain technology in wide scale because of the benefits it offers such as speed, transparent transactions and secure (Poonam Garg, 2021) (Deloitte, 2017). The state bank of India was the first big bank by transactions that had a pilot trial with other 10 bank consortium of the blockchain technology (Andoni, 2019). There are many benefits of using blockchain technology that have been cited by different banks such as investment and creating a banking industry ecosystem (Andoni, 2019). However, the

biggest use of blockchain technology is for fund transfers, registrations and supporting back-end utilities (Taylor, 2019), (Zheng, 2018). The blockchain technology is beneficial to the banking sector because it works like an open ledger that can be accessed by anyone on the network which enhances corporate transparency (Pereira, 2019). Additionally, it offers fast transactions and secure record keeping some other institutions are beginning to explore blockchain technology use to improve their operations (Reyna, 2018).

3. Research Methodology

The nature of this research is hypothesis testing as it seeks to confirm a general theory in a different context than initially tested. The study of the adoption of blockchain technology has been explored before and there is extensive information on this topic by researchers in different contexts to this study. M.H Ronaghi explored the effects or role of blockchain adoption to corporate governance and corporate performance in the United States (Ronaghi, 2022). the theoretical underpinnings of this study are (i) the effects of general corporate governance structure to the betterment and transparency of the organisation to it stakeholders, (ii) The effects of blockchain adoption to the organisational corporate government framework.

This section will also prove the theoretical underpinnings of this study in the context of SMMEs in South Africa. This study seeks to confirm if adoption of blockchain technology to corporate governance would create a better corporate governance with high transparency and correct information for stakeholders to make informed decisions, clearly defined roles for accountability, that appoints able board members, that is detects fraud before it happens etc.

3.1 Theoretical Underpinnings: Corporate governance framework capabilities, Blockchain Adoption, and Enhanced corporate governance.

3.2.1 Corporate Governance Structure

According to EOCD, 2004, corporate governance structure includes corporate management and the Board of directors, Business ethics, Legal and Regulations and Auditors (OECD, 2004). Zattoni et al, 2008, emphasised that good corporate governance codes vary from country to country as an attempt to attract investors to

protect investors (Zattoni, 2008). J. Styan, 2019 highlighted that a collapse of corporate governance in a company may lead to catastrophic financial loses and leading to bad reputation not only to the company but the whole country (Styan, 2019). They alluded that the financial turmoil that occurred 2017 at Steinhoff, South Africa was due to a failed corporate governance (Styan, 2019). They pointed out a few issues with the corporate governance at Steinhoff such as two-tier corporate board members that lacked diversity, powerful and manipulative chief executive officer, questionable relationship between executive team and auditing firm etc. This is just one examples of what could happen if corporate governance codes are not adhered to and there are many other examples internationally.

The variables in this study are traditional corporate governance, blockchain technology adoption and the effects it has on corporate governance and auditing industry.

3.2.2 Linking Blockchain Adoption to the Enhancement of Corporate Governance

In the context of this research blockchain technology is defined as the systematic data storage, retrieval and tracking for easy access of information and offer ultimate transparency of the corporations' financial books. This definition is slightly different to how blockchain technology is used in cryptography even though the principles are similar, which are to systematically record activities. The benefits of using blockchain technology is that the next transaction or activity is linked with the earlier one and it impossible to alter the earlier record to do a new transaction. This makes blockchain an ideal corporate governance system (Jayasuriya, 2020).

This is a practical alternative to classical financial ledgers that are traditionally used to track transactions, furthermore, it could resolve the old problems of corporation's inability to accurately keep track of transactions in prompt manner. D. Yermack, 2017 reported that blockchain technology cannot be cheated because transaction made on the blockchain technology are linked and each transaction is linked to the other transaction.

3.2.3 Linking Traditional Corporate Governance Capabilities and its Corporate Effectiveness

The definition of corporate governance in this research was adopted from Cadbury, 1992, that corporate governance are systems that are in place to control and direct companies with the aim of protecting the shareholder's worth from managerial discretion (Cadbury, 1992). Corporate governance systems protect the shareholders worth by being a surveillance and a diagnostic package to detect any fraudulent activities that could potentially be a result of fraud or corruption. This definition of corporate governance is widely accepted.

In the context of our research of the Small to medium enterprises in the developing economies where the corporate governance is not well set up and often none-existence the role of external auditors and other corporate governance factors would be questioned. This section of the market has been reported to experience massive corruption and the role of auditors in curbing or perpetuating corruption would be investigated and analysed.

This research will conduct a quantitative study to test the conceptual framework in the context of SMMEs in South Africa. Our approach would be to conduct a questionnaire to SMME entrepreneurs, employees working for SMMEs and most importantly the auditors that often audit these SMMEs.

3.2 Intended System of Data Collection

The development of this instrument was informed by literature which will be confirmed by quantitative data collection, Zomorodi and Lynn, 2010. The quantitative research is about testing a certain well-known framework in a different context and analysing if there should be changes to an existing framework. Blockchain technology has been applied in the banking sector and the aim of this study is to use blockchain technology to aid corporate governance for SMMEs in South Africa.

The first part of our data collection was potentially relevant respondents of our case study. To develop a comprehensive research instrument that would help future researchers a careful consideration was given to the respondents that were familiar with blockchain technology and sometimes in the forefront of its implementation in

their respective organisations. Consistent with the conceptual framework, a decision was made to potentially send the quantitative questionnaire to three categories of respondents i.e., preparers of the financial reports, ethics committee members, auditors, and members of the board.

The firms and individual to partake in this study were identified and approached post ethics clearance. The potential respondents were contacted both telephonically and via email. Below is a comprehensive questionnaire that was crafted based on (Poonam Garg, 2021) who investigated the blockchain adoption benefits in the banking sector. Our questionnaire is comprehensive and is in line with our research aims.

3.3 Research Hypothesis

The incorporation of blockchain technology into corporate governance has the potential to bolster the integration of diverse corporate governance elements and enhance its effectiveness in detecting fraudulent activities.

The following hypotheses were generated based on the relationship between blockchain adoption and corporate governance.

- **H1**: Blockchain adoption leads to effective corporate governance performance.
- **H2**: Blockchain has a positive impact on corporate governance.
- **H3**: Blockchain technology leads to early detection of corporate fraudulent activities.

3.4 Conceptual Framework

This research conceptual framework shown in Figure 1 is based on incorporation of blockchain technology as a link amongst already existing elements of corporate governance. The purpose of blockchain is to allow real time effective and accurate flow of information from one element of the framework to the next with better transparency and accuracy. The corporate governance elements that are interlinked via blockchain would increase the system’s capacity of detecting fraud and lead to enhanced corporate governance. the objective of this study is to validate this research instruments with quantitative data to generalize it to a wider population or contexts so that can be used by future researchers.

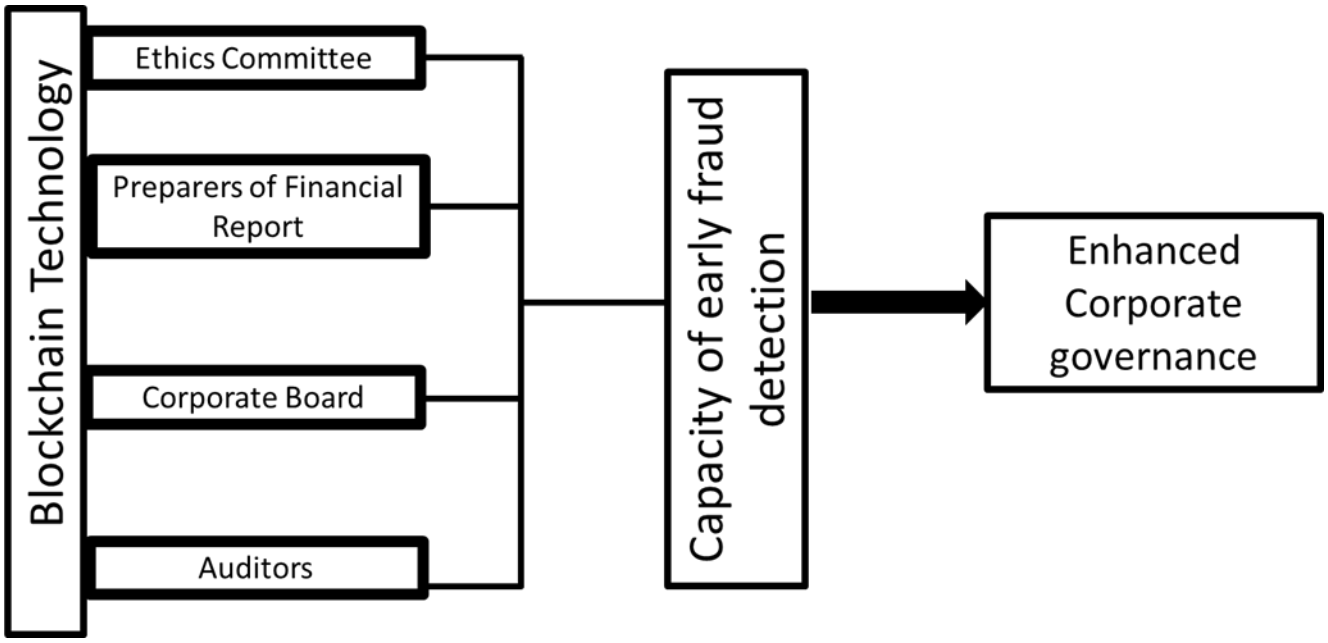


Figure 1: Research conceptual framework schematic.

4. Results and Discussion

The data collection instrument utilized for this study took the form of a Microsoft online form, which was disseminated to potential respondents across various media platforms including LinkedIn, Microsoft Teams, among others. The questionnaire comprised 28 Likert scale questions, designed to be completed within an average timeframe of 3-5 minutes.

The survey was distributed over a span of 50 days, from October 10, 2023, to November 28, 2023, yielding a total of 214 responses within this period. The target respondents for this study were specifically chosen from among board members, ethics committee members, blockchain experts/technicians, financial report preparers, and auditors.

It is noteworthy that all responses obtained were deemed valid, as there were no instances of invalid submissions noted during the analysis of the collected data.

4.2 Demographics of the respondents

The demographics of the respondents are shown in Figure 2, and it shows that most of the respondents were financial statement preparers (42%), followed by Financial Auditors (30%), jointly amounting to 72%. The other 28% of the respondents were spread out between board members, blockchain experts and ethic board members. This is an ideal distribution for this study because literature has shown that most of the corporate fraud occurred due to misrepresentation of financial statements and further supported by auditors in the case of Steinhoff, South Africa in 2018 (J. Rossouw, 2018).

Occupation

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Blockchain Expert/Technician	13	6.1	6.1	6.1
	Board Member	24	11.2	11.2	17.3
	Ethics Committee Member	23	10.7	10.7	28.0
	Financial Auditor	64	29.9	29.9	57.9
	Financial Statement Preparer (CFO, Accountants, Bookkeepers, etc.)	90	42.1	42.1	100.0
	Total	214	100.0	100.0	

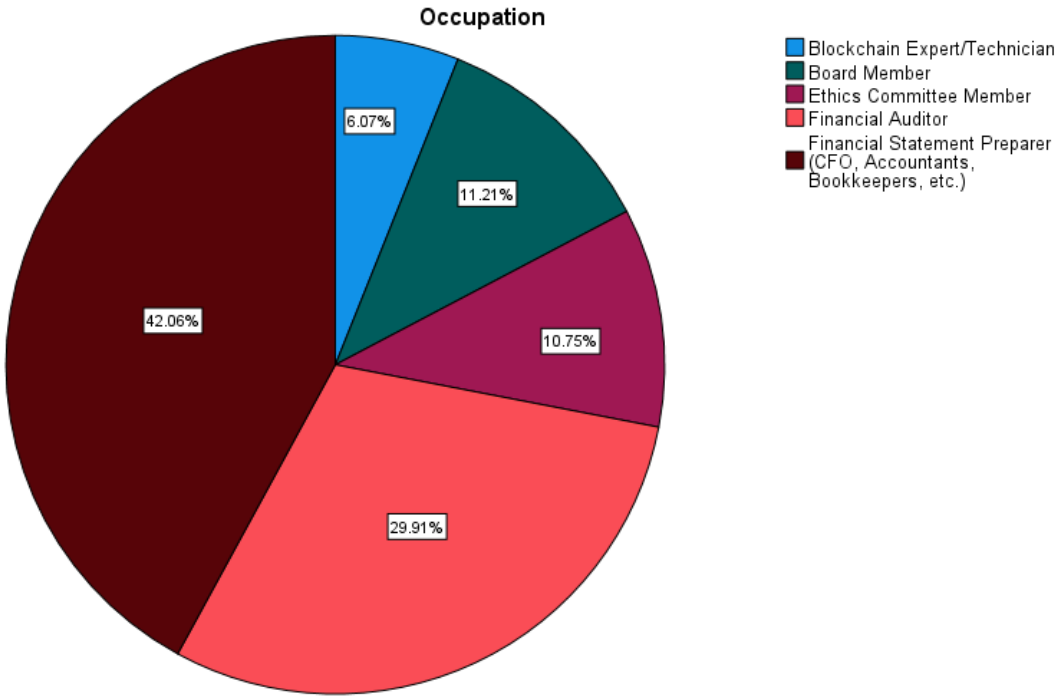


Figure 1: A pie graph showing the breakdown of occupations of the Respondents.

Further demographical analysis of the occupation of the respondents shows that 87% of the respondents had work experience less than 10 years. The other 13% was divided between over 20 years and less than a year as shown in Fig. 3. This distribution means the responses that were received came from experienced individuals that should have a basic understanding of the broad corporate governance systems and fair knowledge or experience of corporate fraud. This feat increased our

confidence in the validity of the results hence further analysis continued to gain further insights from the data.

Experience

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1 to 5 years	63	29.4	29.4	29.4
	10 to 20 years	47	22.0	22.0	51.4
	5 to 10 years	70	32.7	32.7	84.1
	Less than 1 years	18	8.4	8.4	92.5
	Over 20 years	16	7.5	7.5	100.0
	Total	214	100.0	100.0	

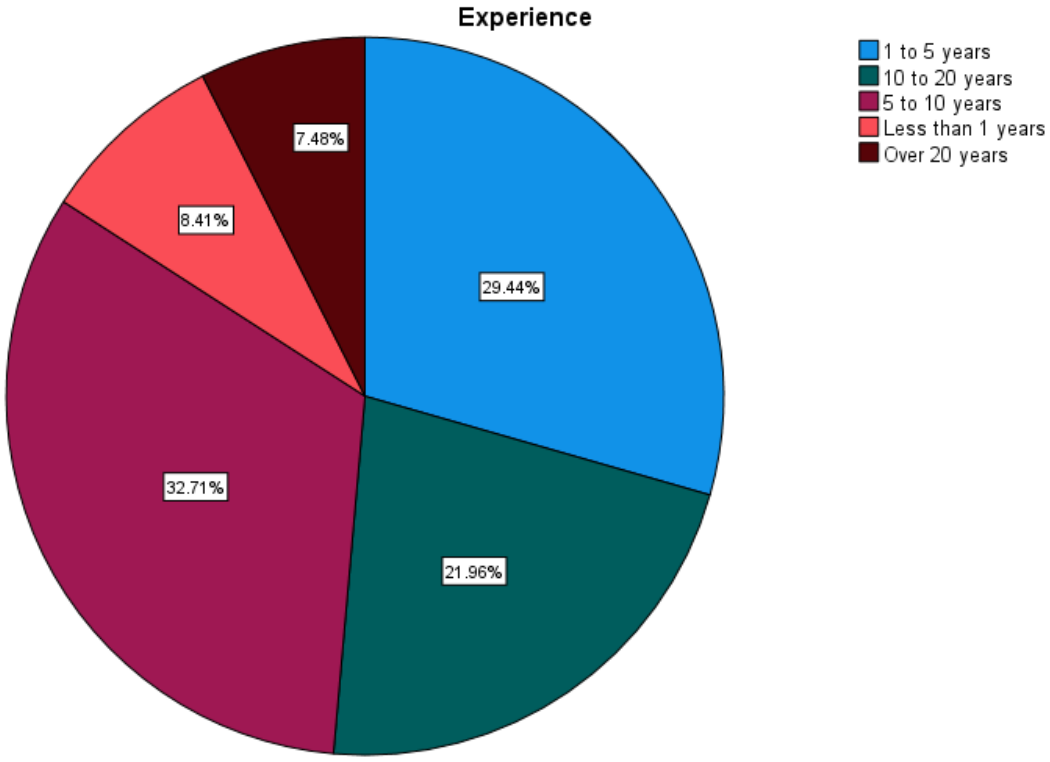


Figure 2: Pie Graph showing the breakdown of the professional experience of the respondents.

The findings of the study reveal that 92% of the respondents had prior knowledge or experience with blockchain technology, as illustrated in Fig. 4. The later analysis focused exclusively on this subset of respondents, excluding the remaining 8% who lacked any familiarity, usage, or training in blockchain technology.

To effectively test the conceptual framework of this study, it is imperative that respondents possess a solid understanding of the core principles of corporate governance, as well as prior familiarity with blockchain technology. This prerequisite ensures that the insights garnered from the study authentically capture the convergence of corporate governance principles with the proficiency in blockchain technology among the respondents.

Blockchain Use/Knowledge

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	No	18	8.4	8.4	8.4
	Yes	196	91.6	91.6	100.0
	Total	214	100.0	100.0	

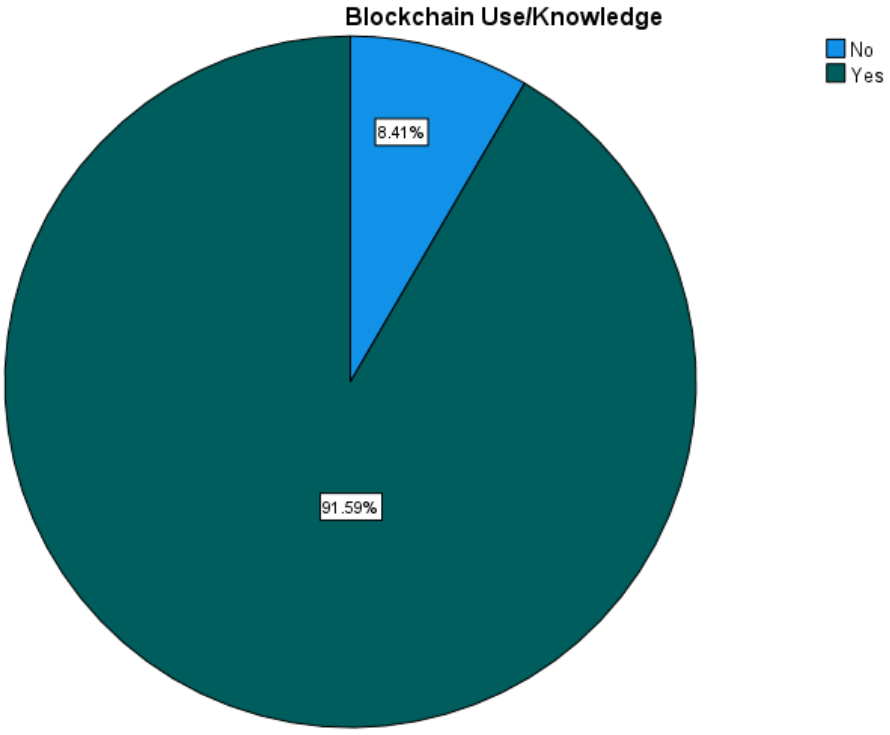


Figure 3: Pie Graph showing the breakdown of the professional experience of the respondents.

4.3 Data Reliability and Validity

To address the research questions, the questionnaire was designed to evaluate several key aspects about corporate governance, these includes regulatory compliance, secure remittances, effectiveness and security, audit performance, and the perceived impact of blockchain technology in reducing or cutting corporate fraud, as depicted in Scheme 1 in the Appendix.

The results about these different aspects are summarized in Table 2, showing that the average ratings for regulatory compliance, secure remittances, effectiveness and security, audit performance, and the impact of blockchain on fraud early detection target were 3.89, 3.56, 4.04, 4.05, and 4.09, respectively. These findings suggest that, on average, the respondents agree that blockchain technology will enhance early fraud detection in SMMEs. The study involved 214 respondents with diverse backgrounds.

Furthermore, the examination of the distribution normality based on skewness and kurtosis values revealed that the data points of the histogram were slightly concentrated towards the right, as showed by the observed negative skewness. This implies that the median, mean, and mode of the results differed, contributing to the negative skewness of the data. Additionally, the kurtosis values of the data were close to zero on average, showing that the histogram of the data points had lighter tails compared to a normal distribution. However, both the skewness and kurtosis values fell within the range of -2 to 2, suggesting that the data distribution was approximately normal.

Table 2: Descriptive Statistics of different aspects of the questionnaire with their averages and standard deviation

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
Regulatory Compliance_1	214	4	1	5	3.91	.099	1.447	-1.008	.166	-.503	.331
Regulatory Compliance_2	214	4	1	5	3.78	.099	1.445	-.807	.166	-.882	.331
Regulatory Compliance_3	213	4	1	5	3.74	.095	1.392	-.810	.167	-.730	.332
Regulatory Compliance_4	214	4	1	5	3.88	.093	1.364	-.975	.166	-.458	.331
Regulatory Compliance_5	213	4	1	5	3.90	.095	1.385	-.971	.167	-.526	.332
Regulatory Compliance_6	213	4	1	5	4.15	.085	1.236	-1.478	.167	.994	.332
Secure Remittances_1	214	4	1	5	4.23	.054	.787	-1.656	.166	4.587	.331
Secure Remittances_2	214	4	1	5	4.20	.077	1.130	-1.479	.166	1.246	.331
Secure Remittances_3	214	4	1	5	4.01	.089	1.304	-1.134	.166	-.017	.331
Secure Remittances_4	214	4	1	5	3.86	.097	1.419	-.952	.166	-.584	.331
Secure Remittances_5	214	4	1	5	3.89	.089	1.297	-1.048	.166	-.124	.331
Secure Remittances_6	213	4	1	5	3.97	.085	1.236	-1.127	.167	.168	.332
Effectiveness and Security_1	214	4	1	5	4.19	.069	1.014	-1.837	.166	3.401	.331
Effectiveness and Security_2	214	4	1	5	3.90	.102	1.490	-1.085	.166	-.404	.331
Effectiveness and Security_3	213	4	1	5	4.19	.087	1.268	-1.417	.167	.662	.332
Effectiveness and Security_4	213	4	1	5	4.11	.085	1.246	-1.190	.167	.040	.332
Effectiveness and Security_5	213	4	1	5	4.07	.086	1.261	-1.222	.167	.267	.332
Effectiveness and Security_6	210	4	1	5	3.79	.093	1.347	-.717	.168	-.788	.334
Effectiveness and Security_7	212	4	1	5	3.92	.077	1.128	-.832	.167	-.207	.333
Audit Perfomance_1	214	4	1	5	4.24	.058	.843	-1.910	.166	5.298	.331
Audit Perfomance_2	214	4	1	5	4.04	.088	1.294	-1.352	.166	.618	.331
Audit Perfomance_3	213	4	1	5	4.20	.087	1.277	-1.541	.167	1.031	.332
Audit Perfomance_4	213	4	1	5	3.90	.093	1.361	-.930	.167	-.554	.332
Audit Perfomance_5	212	4	1	5	3.97	.083	1.212	-1.042	.167	-.002	.333
Target	213	4	1	5	4.09	.094	1.372	-1.312	.167	.223	.332
Valid N (listwise)	197										

The data set was analysed for corelation of the different questions in the questionnaire instrument and the data shows that some questions showed more correlation than others as shown in Table 3. However, the Pearson Chi-Squared value of the of 5.8 is smaller than the critical value at 95% confidence. This means the observed correlation is not significant to reject the null hypothesis (***Ho***: the original grouping of the data and the suggested grouping has equal frequencies)

Table 3: Descriptive Statistics of different aspects of the questionnaire with their averages and standard deviation

Descriptive Statistics

	N	Range	Minimum	Maximum	Mean		Std. Deviation	Skewness		Kurtosis	
	Statistic	Statistic	Statistic	Statistic	Statistic	Std. Error	Statistic	Statistic	Std. Error	Statistic	Std. Error
Secure Remittances_1	214	4	1	5	4.23	.054	.787	-1.656	.166	4.587	.331
Audit Perfomance_1	214	4	1	5	4.24	.058	.843	-1.910	.166	5.298	.331
Effectiveness and Security_1	214	4	1	5	4.19	.069	1.014	-1.837	.166	3.401	.331
Effectiveness and Security_7	212	4	1	5	3.92	.077	1.128	-.832	.167	-.207	.333
Secure Remittances_2	214	4	1	5	4.20	.077	1.130	-1.479	.166	1.246	.331
Audit Perfomance_5	212	4	1	5	3.97	.083	1.212	-1.042	.167	-.002	.333
Secure Remittances_6	213	4	1	5	3.97	.085	1.236	-1.127	.167	.168	.332
Regulatory Compliance_6	213	4	1	5	4.15	.085	1.236	-1.478	.167	.994	.332
Effectiveness and Security_4	213	4	1	5	4.11	.085	1.246	-1.190	.167	.040	.332
Effectiveness and Security_5	213	4	1	5	4.07	.086	1.261	-1.222	.167	.267	.332
Effectiveness and Security_3	213	4	1	5	4.19	.087	1.268	-1.417	.167	.662	.332
Audit Perfomance_3	213	4	1	5	4.20	.087	1.277	-1.541	.167	1.031	.332
Audit Perfomance_2	214	4	1	5	4.04	.088	1.294	-1.352	.166	.618	.331
Secure Remittances_5	214	4	1	5	3.89	.089	1.297	-1.048	.166	-.124	.331
Secure Remittances_3	214	4	1	5	4.01	.089	1.304	-1.134	.166	-.017	.331
Effectiveness and Security_6	210	4	1	5	3.79	.093	1.347	-.717	.168	-.788	.334
Audit Perfomance_4	213	4	1	5	3.90	.093	1.361	-.930	.167	-.554	.332
Regulatory Compliance_4	214	4	1	5	3.88	.093	1.364	-.975	.166	-.458	.331
Target	213	4	1	5	4.09	.094	1.372	-1.312	.167	.223	.332
Regulatory Compliance_5	213	4	1	5	3.90	.095	1.385	-.971	.167	-.526	.332
Regulatory Compliance_3	213	4	1	5	3.74	.095	1.392	-.810	.167	-.730	.332
Secure Remittances_4	214	4	1	5	3.86	.097	1.419	-.952	.166	-.584	.331
Regulatory Compliance_2	214	4	1	5	3.78	.099	1.445	-.807	.166	-.882	.331
Regulatory Compliance_1	214	4	1	5	3.91	.099	1.447	-1.008	.166	-.503	.331
Effectiveness and Security_2	214	4	1	5	3.90	.102	1.490	-1.085	.166	-.404	.331
Valid N (listwise)	197										

4.3.1 Chi Squared Analysis

In this section, a Chi-squared analysis was conducted to examine the relationship between two categorical variables (María A. Fernández-Cásseres, Daniela Russi-Pulgar, 2023).

The Chi-squared test was chosen for its suitability in analysing categorical data and deciding if saw frequencies differ significantly from expected frequencies. A significance level of $\alpha = 0.05$ (95%) to decide statistical significance was used.

Table 4: Showing the Chi-Square test results.

Occupation * Blockchain Use/Knowledge Crosstabulation

Count

		Blockchain Use/Knowledge		
		No	Yes	Total
Occupation	Blockchain Expert/Technician	1	12	13
	Board Member	5	19	24
	Ethics Committee Member	2	21	23
	Financial Auditor	5	59	64
	Financial Statement Preparer (CFO, Accountants, Bookkeepers, etc.)	5	85	90
Total		18	196	214

Chi-Square Tests

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	5.801[a]	4	.215
Likelihood Ratio	4.645	4	.326
N of Valid Cases	214		

a. 3 cells (30.0%) have expected count less than 5. The minimum expected count is 1.09.

4.4 Insights from Data Analysis

The data collection instrument was constructed to test the impact blockchain technology on various aspects of corporate governance such as regulations, effectiveness in finding fraud and its effectiveness as a security tool. These aspects were tested with the aim of testing the perceived performance of blockchain on SMMEs in cutting fraud. Regarding the conceptual framework shown in Fig 1, this research was aimed at testing the impact the following research questions. The target output performance being the early detection of fraud.

H1: Blockchain adoption leads to effective corporate governance performance in SMMEs.

Corporate governance are systems in which an enterprise is controlled and to create transparency and trust amongst stakeholders and plays a critical role in times of conflicts due to separation of ownership (Mohammad Hossein Ronaghi, 2022). There are various theories in the literature that explains the positive impact blockchain

technology would have if implemented in corporate governance. These theories are Agency cost, transaction cost theory, Stewardship theory and resource dependency theory, these are all various forms of theories highlighting the advantages of using blockchain technology into corporate governance (Srivastava, M, 2009). This study differs from the other studies within the same subject because it focuses on the SMMEs.

The aim of corporate governance is to lay a foundation for business to achieve their financial and social goals. Work done by Iqbal et al, 2019 revealed that corporate governance largely contributed to the profitability and sustainability of the studied firms (Iqbal, S., Nawaz, A., & Ehsan, S., 2019). It is unambiguous that good corporate governance leads to enhanced enterprise financial performance. However, literature has proved that integration of blockchain technology enhances corporate governance of new firms (Mohammad Hossein Ronaghi, 2022), (Gupta, P., & Sharma, A. M, 2014).

The survey done for this work shows clearly that blockchain technology would have a positive impact if integrated into SMMEs corporate governance. Based on the relationship that was set up between blockchain technology and corporate governance in this research which are in line with what has been reported in literature in different circumstances a secondary hypothesis appeared.

H2: The ease of Integration of Blockchain technology in corporate governance framework.

The integration of blockchain technology into corporate governance frameworks presents various avenues for implementation, including the use of open-source distributed systems. This approach, as suggested by Lansiti et al, 2017, eases the simultaneous recording and continuous updating of transactions by diverse stakeholders in a transparent and verifiable manner, thereby enhancing the integrity of corporate governance processes (Lansiti M & Lakhani K.R, 2017).

Furthermore, empirical findings by Iqbal et al. in 2019 underscore the positive impact of blockchain adoption on the performance of nascent enterprises. The inherent features of blockchain, such as decentralization and immutability, offer potential benefits such as operational efficiency, enhanced security, and improved stakeholder trust, ultimately contributing to organizational success (Iqbal, S., Nawaz, A., & Ehsan, S., 2019).

However, despite these advantages, Hashimy *et al*. (2021) found external challenges met by small and medium-sized enterprises (SMMEs) in the implementation of blockchain technology (Hashimy, L., Treiblmaier, H., & Jain, G., 2021). These challenges encompass issues related to trust deficit, regulatory constraints in international markets, bureaucratic impediments, and financial limitations. Overcoming these obstacles is imperative for SMMEs looking to fully integrate blockchain into their corporate governance frameworks and use its transformative potential.

To surmount these challenges, SMMEs must prioritize efforts to foster trust among stakeholders through transparent communication and demonstrable benefits of blockchain adoption. Additionally, navigating regulatory landscapes in international markets, streamlining bureaucratic processes, and securing adequate financial resources are essential steps towards successful blockchain integration.

In conclusion, while blockchain technology holds significant promise for bolstering corporate governance practices, SMMEs must address external challenges diligently to maximize its utility. By mitigating issues related to trust, regulatory compliance, bureaucracy, and finance, SMMEs can harness the transformative power of blockchain to elevate their corporate governance standards and overall operational effectiveness (P. Garg & B. Gupta, 2021).

The literature shows that blockchain technology offers the potential to cut undesirable activities within organizations and alleviate issues of mistrust between enterprise management and owners. Its integration into corporate governance frameworks promises to cut third-party supervision and reduce transactional costs, thereby enhancing operational efficiency (P. Garg & B. Gupta, 2021), (Mohammad Hossein Ronaghi, 2022).

Furthermore, the allure of blockchain adoption spans both private and public sectors, encouraging corporations to invest in its further development. However, literature from various countries highlights significant challenges to its adoption.

Foremost among these challenges is the lack of senior management support and organizational readiness. Additionally, factors such as complexity, compatibility with existing systems, perceived benefits, readiness of business models, technological infrastructure, and market dynamics are identified as potential barriers to adoption.

Addressing these challenges needs concerted efforts from organizations to secure support from senior management, evaluate and enhance organizational preparedness, and navigate the complexities inherent in integrating blockchain technology. By doing so, corporations can harness the transformative potential of blockchain to bolster corporate governance practices and drive innovation across sectors.

The literature concurs on the undeniable advantages of incorporating blockchain technology into corporate governance (Hashimy, L., Treiblmaier, H., & Jain, G., 2021). Nevertheless, its mainstream adoption may meet impediments due to the existing power structures within organizations. This is attributed to blockchain's prowess in easing information transfer, communication, monitoring, and control, which can potentially disrupt established hierarchical dynamics. Therefore, while blockchain offers significant benefits, its integration into mainstream corporate governance may face resistance from entrenched organizational power structures (Sebastian Schuetz, Viswanath Venkatesh, 2020).

4.5 Consequences of the Theory

The conceptual framework of this study is derived from the established generic corporate governance framework, serving as the structural basis for examining governance mechanisms within organizations. The study posits a hypothesis suggesting that the integration of blockchain technology can enhance the early detection capabilities of fraud within corporate governance systems.

Blockchain's decentralized nature and its inherent capabilities have been recognized for their potential to improve transaction visibility and ease correct tracking among diverse stakeholders within a company. This integration of blockchain technology is expected to bolster transparency and mitigate fraudulent activities within organizations (Lansiti M & Lakhani K.R, 2017), (Rajesh Kumar Singh a & , Ruchi Mishra, 2023).

The findings of this research affirm a notable correlation between the adoption of blockchain and enterprise performance, particularly in terms of enhancing transparency and reducing the occurrence of fraudulent transactions. The consensus among the 214 respondents, reflected by an average Likert scale rating of 4.09, strongly supports the assertion that the integration of blockchain technology in SMMEs would not only enhance their performance but also serve as a deterrent to fraudulent activities.

The study's findings suggest a positive association between the integration of blockchain technology into corporate governance and the improvement of overall governance effectiveness, a trend supported by existing literature in diverse contexts. However, it is noteworthy that while the study saw enhancements in governance following blockchain integration, direct measurement of the ability for early fraud detection was not possible. Moreover, the study lacked explicit justification as to why early fraud detection should be regarded as the mediating factor for enhanced corporate governance. To address these gaps, future research could focus on setting up clearer connections between blockchain integration, specific governance outcomes, and the mechanisms through which these outcomes are achieved. This could involve targeted investigations into the impact of blockchain on various sides of corporate governance, including fraud detection, transparency, accountability, and stakeholder trust, thus contributing to a more comprehensive understanding of blockchain's role in enhancing corporate governance.

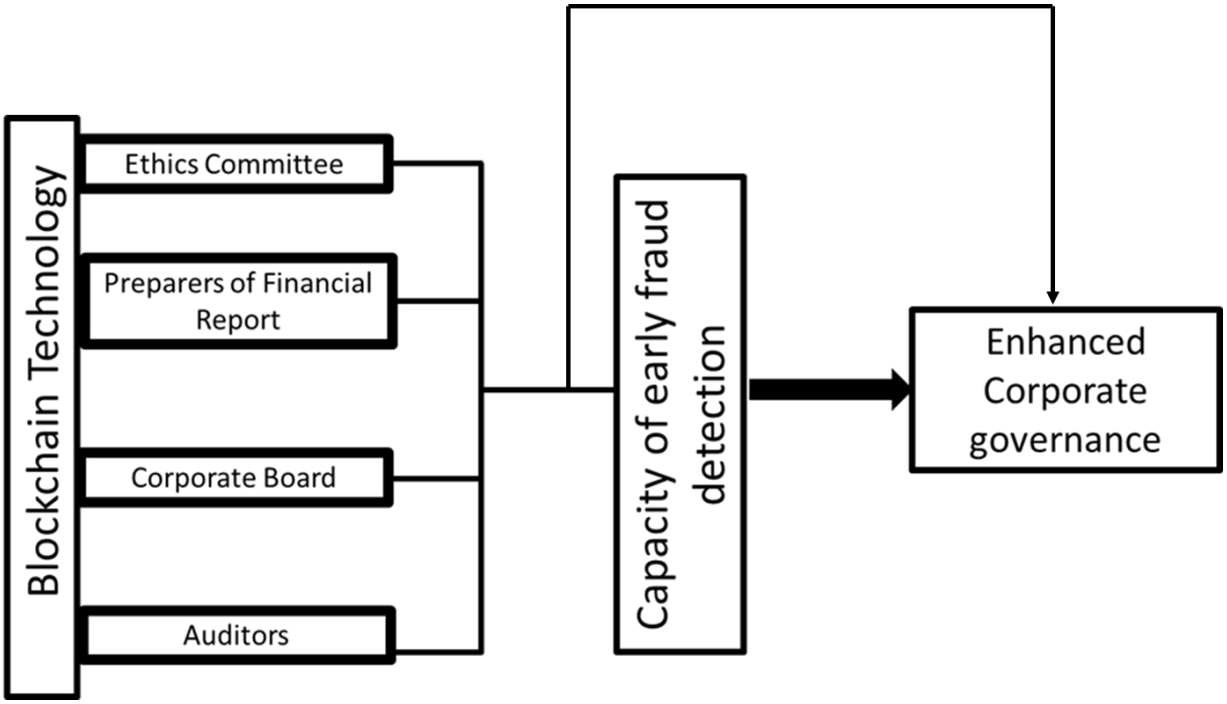


Figure 4: Modified framework based on the analysis of the data.

4.6 Consequences for Practice

The implications for practice resulting from this study are significant and multifaceted. The findings of the study highlighted the potential positive impact of integrating blockchain technology into small, medium, and micro enterprises (SMMEs) in South Africa, particularly in enhancing their corporate governance practices. It is advisable for the boards of directors of these enterprises to consider implementing blockchain technology to better serve the interests of their stakeholders. Additionally, the adoption of blockchain is expected to contribute to the establishment of a more effective regulatory framework.

However, the successful adoption of blockchain technology in SMMEs in South Africa may face challenges stemming from external factors such as insufficient technological infrastructure, particularly given the country's status as a developing nation. Furthermore, the full implementation of blockchain technology is likely to require significant financial investment, which may pose constraints for SMMEs with limited resources. Government funding could play a pivotal role in overcoming these financial barriers and easing the successful integration of blockchain into corporate governance practices within SMMEs (Mohammad Hossein Ronaghi, 2022).

5. Future Work

In this study, respondents were selected based on their professional backgrounds and experiences, yet they lacked direct involvement with small, medium, and micro enterprises (SMMEs). Consequently, their perspectives may have been influenced by their experiences within larger corporations rather than SMMEs. Hence, it is recommended that future research involve auditors, financial statement preparers, and board members who are directly affiliated with SMMEs. This approach would provide insights from the perspective of SMMEs and enhance the accuracy of statistical calculations used to estimate variables in this study.

6. Conclusions

This study aimed to assess the hypothesis suggesting that the integration of blockchain technology into the corporate governance framework of small, medium, and micro enterprises (SMMEs) in South Africa would improve early fraud detection. Employing a quantitative research method, data was gathered through a Likert scale survey from respondents categorized as financial statement preparers, board members, ethics committee members, auditors, and blockchain users/experts. Notably, a significant proportion of respondents, over 80%, had professional experience exceeding 5 years, with 94% reporting prior knowledge or experience with blockchain technology.

The collected data underwent rigorous validity and reliability testing using statistical measures, ensuring its applicability to the broader population of SMMEs in South Africa. The study's results strongly showed that the incorporation of blockchain technology into SMMEs' corporate governance would yield positive outcomes, enhancing their ability for early fraud detection while promoting transparency and trust among stakeholders.

However, the adoption of blockchain technology would meet challenges arising from external factors, including regulatory constraints, perceived complexities, limited resources within SMMEs in South Africa, and technological readiness issues. These findings underscore the importance of addressing these challenges to ease the successful integration of blockchain into the corporate governance practices of SMMEs.

7. Appendix

Scheme 1: Data Collection Instrument

Data Collection Instrument

The data collection instrument would be used to provide insight towards our research questions. It would be sent to potential respondents electronically to financial statement preparers, board members, ethics committee members, blockchain experts/technicians and financial auditors. The questionnaire would be a Likert type where a respondent would need to choose a number between 1 and 5 to a series of statements (where 1 is strongly disagree and 5 being strongly agree). The demographic information section would not be answered using a Likert.

Demographical Information

Please answer the following questions without the use of Likert scale.

1. Does your current or earlier occupation have been as a financial statement preparer, board member, ethics committee member, blockchain expert or technician, an auditor?
2. In the list of occupations in *Q1*, which one have you been or currently serving in?
3. Have you ever heard of, been trained in, or used blockchain technology before?

In the following sections please choose the most proper response from 1 to 5.

1	Strongly Disagree
2	Disagree
3	Neutral
4	Disagree
5	Strongly Agree

Regulatory Compliance

4. Blockchain technology can ensure unchanging business rules.
5. Blockchain technology can prevent financial fraud and tempering.
6. Blockchain technology will simplify business processes.
7. Blockchain technology ensures data protection.
8. Blockchain technology will enhance compliance with regulatory requirements.
9. Blockchain technology can reduce errors in handling and reconciliation.

Secure Remittances

10. Blockchain technology will create an unchanging audit trail.
11. Blockchain technology can strengthen systems resilience.
12. Blockchain technology will improve the robustness of business processes.
13. Blockchain technology will lead to fast and secure payment processes.
14. Blockchain technology can enhance the traceability of transactions.
15. Blockchain technology will enhance data control for companies.

Effectiveness and Security

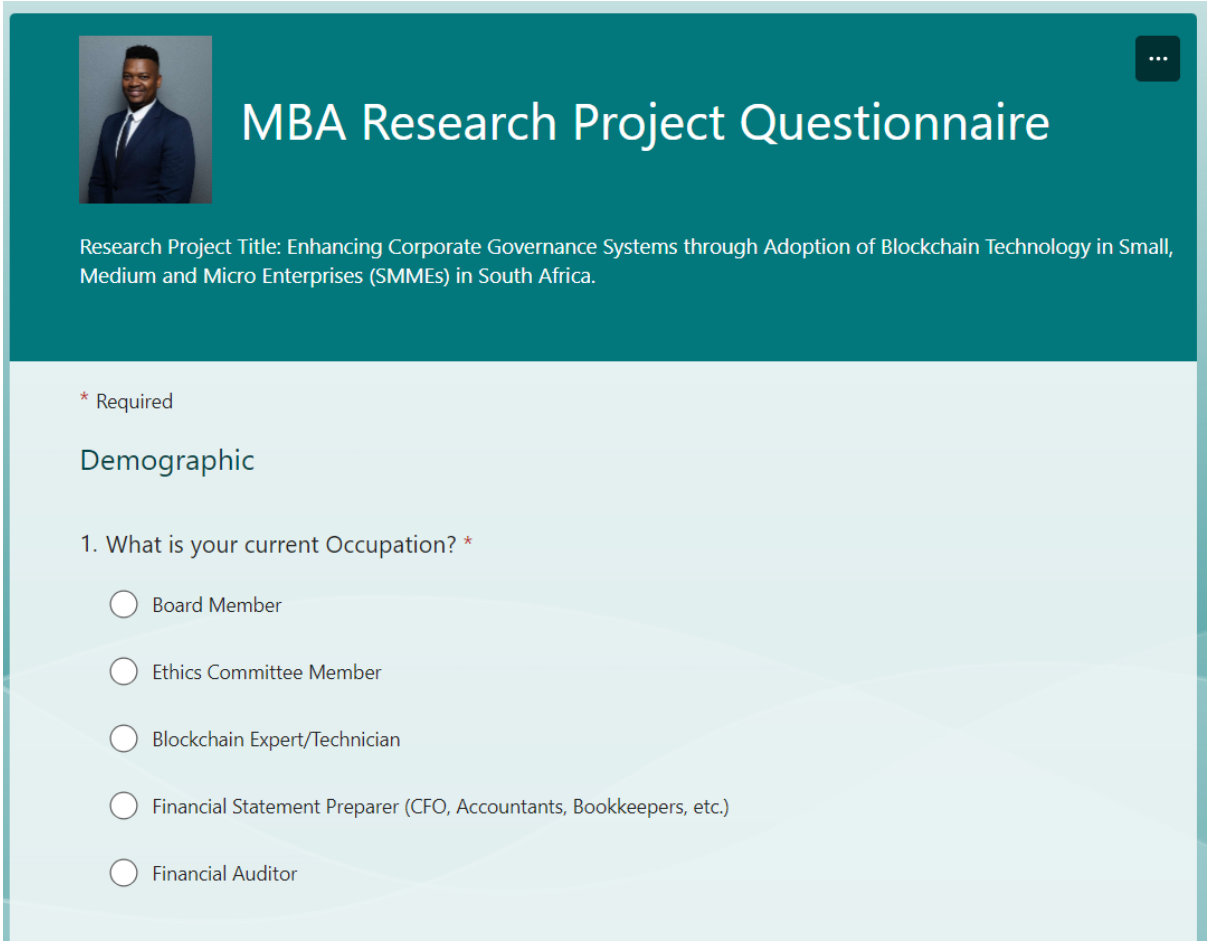
16. Blockchain technology will help in tracking real-time business transactions.
17. Blockchain technology will increase the speed of transactions.
18. Blockchain technology will increase efficiency in financial processes.
19. Blockchain technology will improve security.
20. Blockchain technology will improve the integrity of the information systems.
21. Will blockchain lead to job losses.
22. Will blockchain lead to organizational structure changes.

Audit Performance

23. Blockchain would enhance transparency.
24. Blockchain would increase trust within the organization.
25. Blockchain increases data accuracy.
26. Blockchain can reduce corporate fraud.

27. Blockchain technology reduces business risk in terms of irregular spending.
28. Blockchain will enhance auditing positively.

Microsoft Online Questionnaire Template



8. Project Gantt Chart

The Gantt chart shows the timeline to achieve each of the project's milestones.

Gantt Chart	Year 2023												Year: 2024	
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb
Milestone 1														
1. Decide on the MBA project														
2. General Introduction														
3. Literature Review														
4. Research Methodology														
Milestone 2														
1. Submit Proposal														
2. Ethics clearance														
Milestone 3														
1. Identify potential Respondents														
2. Contant respondents about the research														
3. Build an online questionaire														
4. Release the questionaire to the respondends														
5. Gather respondants data														
Milestone 4														
1. Statistical Analysis of the data														
2. Reporting the results														
3. Dissertation Write-up														
4. Report Submission														

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