The Chief Information Officer (CIO) Imperative:
What is the role of a CIO in the digital economy?

Applied Research Project

Submitted by

Sekgabo Adelaide Moloi

Student number: 1682538

Tel: +267 71526269

Email: sekgabo.badubi@gmail.com

Proposed Supervisor:

Warrick Tordiffe

Wits Business School

[July 2018]

Protocol Number: WBS/BA1682538/734
**SUPPLEMENTARY INFORMATION**

<table>
<thead>
<tr>
<th>Project format:</th>
<th>Research article</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominated journal:</td>
<td>African Journal of Science, Technology, Innovation and Development</td>
</tr>
<tr>
<td>Supplementary files:</td>
<td>Data collection instrument</td>
</tr>
<tr>
<td></td>
<td>Schedule of interview questions</td>
</tr>
</tbody>
</table>
## Table of Contents

Abstract................................................................................................................................. 4

1. Introduction ......................................................................................................................... 5
   1.1 Purpose ............................................................................................................................ 5
   1.2 Problem Statement ......................................................................................................... 5
   1.3 Delimitations of the study ............................................................................................ 6
   1.4 Research Question ........................................................................................................ 7

2. Literature Review .................................................................................................................. 7
   2.1 The CIO Role ................................................................................................................ 8
   2.2 Requisite CIO competencies, skills and education ....................................................... 9
   2.3 The CIO imperative in the digital economy ................................................................. 10
   2.4 CIO and organizational performance ......................................................................... 12

3. Research Methodology ....................................................................................................... 13
   3.1 Research Philosophy .................................................................................................... 14
   3.2 Research Design ........................................................................................................... 15
   3.3 Research Strategy ........................................................................................................ 15
   3.4 Measure of Quality ...................................................................................................... 16
   3.5 Population and sampling ............................................................................................ 17
   3.6 Data Analysis and Management ................................................................................ 18
   3.7 Ethical Consideration .................................................................................................. 20

4. Research Findings and Discussions .................................................................................... 21
   4.1 Understanding the role of a CIO ................................................................................ 23
   4.2 The importance of a CIO in the digital economy ....................................................... 25
   4.3 Impact of the CIO on the organizational performance ................................................ 27

5. Limitations of the Study ..................................................................................................... 28

6. Recommendations for further Study ................................................................................ 29

7. Conclusion ........................................................................................................................... 29

8. References .......................................................................................................................... 31

9. Appendix – Data Collection Instrument ............................................................................ 35
Abstract

There have been studies done over the past decade on the role of CIOs, and due to the ever changing technological environment the role has been evolving for some time. The digital economy has shifted the focus of the Chief Information Officers (CIOs) from managing Information Technology (IT) applications and infrastructure to becoming strategically inclined, leading the technology stream. This transition has caused organizations to re-assess their business model and take advantage of this opportunity by having a CIO in the middle of events leading the digital transformation as new technologies that are crucial to the competitiveness of the organizations emerge. Contrary to studies on the diminishing importance of CIO roles in organizations due to new roles like Chief Digital Officers (CDOs), this paper presents findings on the importance of the CIO role and its impact on organizational performance in the digital economy.

Research/Approach/Method: A qualitative research methodology using semi-structured interview questions was used as a form of data collection for this study.

Findings: Empirical findings suggest that the CIO is perceived to be an important role in organizations with more emphasis on medium to large organizations, to have a role that can drive the technology stream. Interestingly, while the name of the position given to the person that is assuming the role of the CIO has low significance, the position of the reporting line supervisor does matter if it’s a CEO or any other C-Suite position as it can have adverse implications on the performance of the Information Technology functional stream. The research results also indicate that the person playing the CIO role in an organization to be the driver of change, because digitization is described as not just one technology but several technologies that change the way business performs, the type of relationship that the organization has with its customers and its business model.

Key Message: This study has been envisaged as an enrichment towards the existing literature on the importance of the CIO role. The findings in this study can provide guidance to top management as they develop their digital strategy and select the right person who has both business and technology capabilities to drive it in order to have an impact on the organizational performance.

Keywords: CIO, Digital economy
1. Introduction

1.1 Purpose

The purpose of this research paper is to carry out a study that seeks to understand the role of a CIO in a rapidly changing technological environment, as the role continuously evolves from a traditionalist CIO to a modernized CIO who embraces the changes brought in by the digital economy.

1.2 Problem Statement

No industry is immune to digital transformation and CIOs are at the helm of this digitization push (Gerth & Peppard, 2016). Little attention has been paid to the dilemma that organizations are faced with when it comes to exploiting new digital technologies to modernize their business and operational processes (Horlacher & Hess, 2016) and deciding on the exact role that could lead the organization to embrace the opportunities presented by such a phenomenon (Singh & Hess, 2017). Thus, the goal of this research paper is to contribute to a better understanding of the importance of the role played by the CIOs in the digital economy.

To understand the basis of this research, it was necessary to examine the evolution of the CIO role and its inception. The role of the CIO has continuously evolved over the years from Information Systems (IS) Manager in the early 60’s to becoming Chief Technology Officers (CTO) and CIO from the 90’s to date (Niederman, Ferratt, & Trauth, 2016). The role is mainly influenced by the relevance of the Information Technology (IT) unit in an organization as either influential or functional and the expectations hitherto of the IT leadership (Haffke, Kalgovas, & Benlian, 2016). In the early years, 60’s to 80’s, an IT unit was largely recognized by the support activities that they offered such as back-office, network cabling, data capture and programming to name a few. However over the years, an IT unit transformed from the position of a technology enabler, where it played the role of equipping business functions with the necessary tools to do their daily tasks to becoming a strategic business partner through the role of a CIO (Chun, Griffy-Brown, & Koeppel, 2014). In this role, IT is seen as a unit that can give advice on new technology advancements and introduce innovative ways of working, giving an organization a competitive advantage and superior performance (Nwankpa & Roumani, 2016) .

Most academic studies do agree on the basis that the role of CIOs has caused a lot of misunderstanding in what is expected of them by their peers as the role is often regarded as new in the industry (Karahanna & Preston, 2013). Depending on the maturity and usage of IT in an organization, senior executives prefer CIOs to spend more time in ensuring that the IT services are functioning optimally, devote their time with external customers to strengthen the customer
relationship and participate in strategy conversations, however CIOs tend to gravitate towards spending more time concentrating on digital technology (Weill & Woerner, 2013).

Digital transformation is driven by disruptive technology which means business transformation (Tiersky, 2017) and by definition, disruptive technology is radical, alters the way things are done, offers opportunities to techno-entrepreneurs and shapes the technological environment of many organizations by changing the basis in which the organizations compete (Fan & Suh, 2014). Seemingly, digital transformation has been defined as an organizational move towards, big data, analytics, cloud computing, social and mobile tools (Nwankpa & Roumani, 2016). Infusing the two, a new term is introduced, ‘Digital Disruptions’, which basically underscores innovation and redefines the norm (Molla, Cooper, & Karpathiou, 2016). It’s only befitting that the CIO understands digital disruption vis-a-vis digital economy even though a CIO role has been proven to be the most difficult position to fill because of the ideal combination of skills, experience and education required (Mazzola, Louis, & Tanniru, 2017) to harness the opportunities of the digital wave. Building on to the digital disruption, even though ill-defined, digital economy is mainly centered on anything that is digitally interconnected; economic activities, social interaction, physical and cloud infrastructure, devices, applications and all this is carried out through the network (Dahlman, Mealy, & Wermelinger, 2016).

Many organizations are going through a digital transformation where everything will become connected – customers and equipment alike, through technology and if they don’t then they will be destroyed by their competitors (Fitzgerald, Kruschwitz, Bonnet, & Welch, 2014). The digital maturity of an organization is important in gauging its competitiveness in the industry which compels a structural review of the roles and responsibilities to identify the competency requirements for taking advantage of the digital wave (Valentine, 2014). Also, the studies done by Elizabeth Valentine (2014), show that the organizational structure can depict the strategic focus of an organization, for instance where the CIO reports to the CFO, there is a strategic IT orientation however if the CIO reports to managers two or more levels below the CEO then the organization has an operational orientation.

1.3 Delimitations of the study

Although a plethora of research was done on the evolution of IT and IS over the years, there is still a gap that needs to be addressed in defining how the CIOs’ role fit in organizations by being cognizant of the digital economy (Weill & Woerner, 2013). This is influenced by the disruptive technology that keeps on changing the business models of many organizations contributing to the low literacy and expertise amongst the employees and leadership on handling the transformation (Solis, Li, & Szymanski, 2014).
Given the technology change and the ambiguous role of the CIO (Gerth & Peppard, 2016), this study focused on clarifying the role played by CIOs in organizations in the digital economy, offering top management insight and knowledge about the role. Even though there was not a lot of literature written on CIOs in developing countries in the Southern Africa context and limited answers to the question (B. Hussain, Imran, & Turner, 2016), research on available reputed academic journals that carry the same key theme and concepts was done to bring value to this study. Given the scarcity of the literature on the Southern African context, this study is keen to expand on the previous research of the CIOs role.

1.4 Research Question

The key questions that were addressed in this study are:

1. What is the role and responsibility of a CIO in a digital economy? (expectations, duties, obligations, position)
   a. Why is it important to have a CIO in an organization?
   b. What impact does a CIO have on the performance of an organization?

These questions were addressed via an exploratory interviews with middle and senior management in technology driven companies. The management was chosen mainly because of the interaction that they have with the position and role of a CIO, thus the assumption made was that they had understanding on what the role entails. Another reason for choosing management team from technology driven companies was because digitization has become the main driver in modernizing the operational processes therefore the assumption made was that the participants should be in a position to give answers on how the CIO role thrives in a digital environment.

The structure of this paper has been organized in the following manner, a literature review that gives a theoretical analysis of the role of a CIO, the requisite responsibilities and skills of CIO and the impact that a CIO has on the performance of an organization. The literature review is then followed by the research methodology, research findings and conclusion.

2. Literature Review

As a start, prior research on understanding the role of the CIO has been done on various academic researches to define what CIOs are supposed to do in organizations because there is generally a lot of ambiguity in fully understanding their role (Haffke et al., 2016). Coupled with the expectations of the CIOs’ role from their C-Suite colleagues, and the disruptive technological change aspect of it,
understanding their role has become even more complex (Gerth & Peppard, 2016). To explore more on the problem statement, a theoretical analysis of the current role of the CIO in the form of a literature review tries to give a better perspective at defining the responsibilities of a CIO in organizations.

2.1 The CIO Role

Depending on the business model of an organization and whether or not it is highly dependent on information management by seeing it as a strategic asset, the organization mandates the value of a CIO (La Paz, 2017).

CIOs differ from country to country, institution to institution and organization to organization, they are treated differently across organizations depending on the type of business model of the organization (Hooper & Bunker, 2013). For instance, in higher education institutions, CIOs are supposed to serve the needs of the campus community by having an input on the campus technological investments (Dlamini, 2015) whereas in the public sector CIOs provide leadership in ensuring that there is proper management of information systems resources for the sustainability of an e-government (B. Hussain, Turner, & Imran, 2016).

CIOs handle most of the information activities and are seen as leaders amongst their information technology peers however in small organizations, CIOs are not treated in the same manner especially if information is not treated as the main factor that drives the organization (Paul, Bhuimali, & Aithal, 2018). The role of the CIO evolved from being the head of information technology to that of a decision maker responsible for managing IT projects and making strategic decisions. In some instances CIOs have also been perceived as Chief Integration Officers because of the shift in their role to understand how the enterprise architecture works and benefit the overall organizations (Ragowsky, Licker, Miller, Gefen, & Stern, 2014).

Many of the CIOs today sit in boards and give direction on innovative IT solutions, setting business priorities which are aligned to the changing technology landscape (Valentine, 2014). As a board member, CIOs share concerns and have a common understanding with the other board members on effectively using information, IT project deployment, processes, systems and infrastructure (Coertze & Von Solms, 2014). In principle, they become the leader of IT in the organization and they drive change. Comparing this type of CIOs who sit in boards with the transactional CIOs who support the operational IT strategy, they hold executive leadership roles, they partner with business executives and the organizational leadership to encourage growth in the organization business model (Coertze & Von Solms, 2014).
Over and above the strategic role that CIOs play in the organizations, they have mammoth responsibilities that they need to fulfill in the organizations and a challenge of becoming both transformational and transactional leaders, maintaining a balance between the roles of innovator, technologist, enabler and strategist (McLean & Smits, 2014). Some of the responsibilities entail establishing a connection between the Information Systems (IS) strategy and the business orientation strategy, educating the business community on IT investments, promoting the IT strategic vision and making resounding strategic decisions in resource allocation (D. Q. Chen, Preston, & Tarafdar, 2015). A CIO also plays a role of translator between the business and IT by understanding the business strategy and being able to advice on what can be achieved through the usage of IT tools (Coertze & Von Solms, 2014).

A closer examination of the role of a CIO has been effectively narrowed down to five key qualities: The CIO is mostly in a managerial position, reports to Chief Executive Officer, should have a unique combination of skills and background in IT and business, delivers on ICT projects and services to meet the demands and requirements of internal and external customers and the fifth most important element is to contribute in the development of an IT strategy and governance by ensuring that it is aligned to the organizational strategy, and that it adds value and gives an organization a competitive edge (M. Al-Taie, Lane, & Cater-Steel, 2015).

2.2 Requisite CIO competencies, skills and education

Ever since the CIO position was first introduced in the 1980’s after organizations identified the importance of leveraging Information Technology as a strategic asset (Cano, Fernández-Sanz, & Misra, 2013), most CIOs have been leading organizations as business strategists, solution architects and infrastructure developers and to top it, the competitiveness of an organization depends on the appointment of a qualified CIO to lead the IT fraternity of the organization. Most organizations tend to overlook the importance of having a competent workforce which is a key element of a successful digital transformation (Solis et al., 2014).

According to a study done by Marysaka & Doucek (2015), developing countries grapple with the required skillset for CIOs due to the following reasons; insufficient ICT experience which is surmountable to a scarce skill in the ICT domain, inadequacy in infrastructure maturity and a short fall in long term strategic thinking and planning,

It is imperative that the CIO should not only have excellent communication skills, business acumen and strategic thinking capabilities but must also possess leadership and people management skills (Kappelman, Jones, Johnson, McLean, & Boonme, 2016). Depending on the type of organization, the CIO needs to be knowledgeable on the current technology and how it can be applied in the organization
to augment the business strategy, however most research emphasise on the need for a CIO who can be both technology and business savvy to be able to engage with business leaders as well as lead the research and development team whilst marketing and driving the digital business (Collin et al., 2015).

The digital drivers of technology that is; cloud, mobile, social and analytics coupled with the technological changes like Internet of things, 3D printing and big data analytics, (Veling, Murnane, Carcary, & Zlydareva, 2014) necessitates the need for a shift in subject matter experts and demands a different mindset and skills for the transformation which is not the same as the one from the previous technology era (Singh & Hess, 2017). In addition to the IT functional responsibility there is a high expectation by CEOs to have CIOs who can digitally lead therefore it’s important for recruiters to determine the competency level of the required executives, for instance technology –savvy CIOs with business acumen and non-IT CIOs with an extensive appreciation for digital technology are in demand for executive and board positions (Valentine, 2014).

**Key competencies** of CIOs as highlighted by Chun, Griffy-Brown, & Koeppel (Chun et al., 2014) are; effective leadership, innovation and growth, business strategy and process, relationship management and communication, business management and risk management.

The education level of CIOs was found to be positively associated with the reception of innovative IT strategies, which basically means that CIOs with a higher formal education level tend to adopt IT strategies that are innovative and malleable to the business strategy, compared to CIOs with lower formal education level who are more inclined to go for risk-averse strategies (Li & Tan, 2013).

### 2.3 The CIO imperative in the digital economy

According to Tomi, Dahlberg; Päivi, Hokkanen; Mike, Newman and Harri, Hyvönen (2017) changes to the CIO position are related to the technology advancement, the evolution of the organizations’ business model and strategy as well as managerial practices. A research done by Al-Taie, Lane, & Cater-Steel (2014) came close to unravelling the legitimacy of a CIO as an executive manager to drive the IT vision of an organization, however it lacked the empirical content to substantiate the existence of CIOs in organizations. There is insufficient emphasis on the real reason why organizations find the role of the CIOs to be necessary to employ.

IS studies done over the years have shown that there is a relationship between managers of IT and executives of organization, also the reliance on technology has created a gap for strategic roles such as that of a CIO which has become pivotal over the years (Hu, Yayla, & Lei, 2014a).
Most developing countries still regard ICT as a support function rather than a function that gives strategic focus (B. Hussain, Turner, et al., 2016). In most cases such organizations do not have a CIO but an ICT Director or Senior Systems Analyst who is more technically capable versus having a good business acumen (B. Hussain, Turner, et al., 2016). Developed countries have embraced CIOs in their organizations because of their ICT maturity level which is higher than in developing countries (Soja & Cunha, 2015). The existing literature doesn’t give much detail on the level of maturity of IT in developing countries, as well as discussions on the impact of digital technology on the CIOs roles in those countries, but there seems to be a consensus about the importance of not overlooking the digital revolution which affects all countries regardless of their development status (Dahlman et al., 2016).

Digital transformation of an organization introduces new ways of working and high level of complexities for the CEO and executive managers to manage technology in addition to their original scope of work (Singh & Hess, 2017) and most organizations entrust that responsibility with the person who understands technology and business well to sufficiently exploit the existing IT infrastructure thus minimizing costs and drive the business transformation (Li & Tan, 2013). Lin and Tan’s study comes close to defining the importance of having a CIO in an organization however most literature foresee the CIO role changing even further to accommodate new roles such as Chief Digital Officers (CDOs) and Chief Marketing Officers (CMOs) in top management, bringing even more complexities to the role clarity (Singh & Hess, 2017).

**Competing roles – CIO versus Chief Digital Officers (CDOs) or Chief Marketing Officers (CMOs)**

As more organizations recognize the value of CIOs they see other opportunities in broadening the delivery of business value, adding more to the responsibilities of the CIO and subsequently putting pressure on CIOs to move from being pure technologists to business strategists (Singh & Hess, 2017). To counter act on this demand organizations are positioning CDOs as the next people to share the responsibilities with CIOs (Horlacher & Hess, 2016). A lot of caution needs to be exercised in differentiating between the mandate of the two roles as they do not serve the same purpose, for instance CIOs are normally at the forefront in bridging the gap between IT and business, heading the IT unit and responsible for the smooth execution of the IT strategy (Haffke et al., 2016). On the other hand CDOs do not have the same functional responsibilities like CIOs, they care less about the organizations’ bottom –line because their sole responsibility is to ensure that there is digital transformation in the organization (Singh & Hess, 2017). It will be of great interest to know the role the CEOs and executive managers find to be best suited to run the digital transformation of an organization given the disparity between the two roles or if organizations are ready to assume both roles at a go.
Interestingly the CDOs position is trending fast, with the number of CDOs doubling each year globally (Horlacher & Hess, 2016) however other studies use the two roles interchangeably to clarify the position that is taking precedence in digital leadership of organizations (Valentine, 2014), but their throughput still remains different.

Another role that also needs to be put on the radar is the CMO, which has created a divide between the CIO and the CMOs strategic investment decisions that are detriment to the organizational performance (Whitler, Boyd, & Morgan, 2017). Although the two roles have been vastly separated before due to their different role expectations, they are now learning to co-exist as CMOs have started to share the same resources with the CIO creating conflicts over power to control technology spending (Whitler, Boyd, & Morgan, 2017) however the role of a CMO differs significantly with that of the CIO given the pragmatic position that the CMO plays in increasing the organizations’ sales projections by employing marketing strategies that can bring financial gains (Germann, Ebbes, & Grewal, 2015). The CMO role has been largely academically critiqued on the premise of their added value to sit in the top table and justify their existence in organizations but it all depends on the executive management’s willingness to hear the customers voice (Wang, Saboo, & Grewal, 2015).

2.4 CIO and organizational performance

Organizational performance relates to the social, financial and systematic dimensions performance of an organization, whereby the financial performance encapsulates wealth maintenance and creation by making IT investment on the capabilities of the IT management that loosely translate into financial payoffs (Turel & Bart, 2014).

IT is considered to be detrimental to the survival and growth of organizations (Y. Chen et al., 2014). According to Li & Tan (2013) there is a positive impact on the organizational performance if there is a match between a business strategy and the inclusion of a CIO with certain competency, skill and experience in top management. The organizational performance in this regard is tied to profitability and growth. In addition to financial performance, inclusion of a CIO in top management increases the functional knowledge and diversity of teams as well as transforming legacy and emerging technologies into a viable competitive advantage for the organization (Hu et al., 2014a).

There is also empirical evidence that shows that aligning an organizational information systems strategy and business strategy significantly increases the organizational financial performance (Karahanna & Preston, 2013). This is largely contributed by the relationship that the CIO has with top management team to ensure that the two strategies are infused, to collectively set a direction on
strategic IT investments that can potentially have an impact on the organizational bottom line (Karahanna & Preston, 2013).

Given the emergence of CIO roles in organizations, and the challenge of achieving triple bottom line performance measures by most strategic leaders (Carter & Greer, 2013), CIOs are under immense pressure to meet the set target by demonstrating their full capability in acclimatizing to the demands of digital technology.

Other studies link organizational performance to the organizational structure, emphasizing on a transparent structure with a clear division of tasks that are well understood by everyone subsequently increasing and boosting productivity (Maduenyi, Oke, Fadeyi, & Ajagbe, 2015). Previously, the senior IT Manager reported to the CFO however with organizations becoming digitally transformed it is important for the CEO to establish an appropriate reporting structure for a CIO, effectively creating a seat for him at the executive table to have an input on the business strategy (Krotov, 2015).

3. Research Methodology

Choosing the right research methodology to use was fundamental to efficiently evaluate the research topic and findings, systematically collecting data and analyzing it to resolve the research problem. There are two very common methods that can be employed to do a research, which are Qualitative and Quantitative methods of research. There is also mixed methods which is an integration of the Qualitative and Quantitative methods and it is not as extensively used as the former two methods.

The differences between the three research methods are that, the Quantitative method is more applicable in a situation where there is vast amounts of data to analyze and measure whereas the Qualitative method aims at answering the ‘what’, ‘how’ or ‘why’ of a research question (McCusker & Gunaydin, 2015). The other differentiating factor is that emphasis is put on the quality of the process in the Qualitative method to allow the researcher to interpret the data after it has been acquired, in contrast to the emphasis put on the quality of the raw data for the Quantitative method.

In order to understand the CIO imperative in organizations and dispel any misconstrued perceptions that the top management may be harboring with regards to the mandate of the role of a CIO in the digital economy, a qualitative research methodology was used as the ideal instrument for collecting data because of the type of phenomena that needed to be understood. Qualitative method has been defined by Satyendra C. Pandey and Srilata Patnaika (2014) as the interpretation of problems in order to make sense out of them through a thorough examination of interconnected terms and concepts.
Also qualitative method is characterized by aims which try to understand the social setting by generating words instead of numbers. The reasons for choosing the qualitative methodology was because it’s conducted under a real world setting to uncover the truth and to basically build a meaningful picture without necessarily compromising the data quality (Leung, 2015). The Qualitative approach assumes that one person can represent the feelings and emotions of a group of people which is something that is ignored in the quantitative approach (Rahi, 2017).

Advantages of having used the qualitative methodology are:

- It offered an interactive session with the sample population offering more content to be analyzed thereafter.
- It offered the opportunity to understand the different perspective of the sample population.
- It answered the ‘how’, ‘why’ and ‘what’ of a phenomenon which covered the experiences, perspective and knowledge of the population

The disadvantages of a qualitative methodology are;

- It was more intense and time consuming than the quantitative methodology due to the data analysis that needed to be done
- It was susceptible to generalization due to the fewer sample population that was studied
- If working under tight budgetary and time constraints the researcher may limit the time spent interviewing to save time or even reduce the sample size

### 3.1 Research Philosophy

A selection of the research methodology to use for a study is entirely dependent on the type of paradigm that will be used to guide the researcher (Antwi & Hamza, 2015). There are a couple of beliefs shared by scientists that deposits research work and give a description of certain perspectives to the study of any work (M. A. Hussain, Elyas, & Nasseef, 2013). Paradigms guide researchers on choices of research methods and they are known as; positivist, interpretive, advocacy/participatory, pragmatism paradigms (Rahi, 2017).

From the four paradigms, the interpretive paradigm is concerned with finding deep meanings and understanding of a concept. It’s aim is to find and explore the sample’s perception about a phenomena and share meanings and findings through interpretation and elaborate descriptions (M. A. Hussain et al., 2013). Unlike the interpretive paradigm, the positivist paradigm is more inclined towards the
assumption that the world is stable and can be scientifically measured because it is systematic and controllable.

The other philosophical assumptions that make up the four paradigms are the ontology, epistemology, axiology, rhetoric, methodology and methods. Where epistemology deals more with theories about knowing and varies according to the theories of what is known and the process of knowing (Else-Quest & Hyde, 2016). This research study has used the interpretive paradigm underpinned by the epistemology because it was much more aligned to the qualitative research methodology.

### 3.2 Research Design

A research design is a plan with an architectural view of how the research question will be answered. The research design used in this study is the descriptive research design which focused on understanding and gaining a new perspective on a phenomenal by providing an accurate representation of perceptions and attitudes towards the role of a CIO in a digital economy. The goal of the descriptive research was to describe the problem and its characteristics. This design was selected mainly because it was more focused than the exploratory design which basically gave a generic background rather that answering the ‘What’ part of the problem (Wohlin & Aurum, 2015). Also the sample was thoroughly analyzed to ensure that the participants were a true representative of the research and offered fertile examples of the research topic.

### 3.3 Research Strategy

There are a couple of research strategies that can be used to collect primary data; surveys, experiments, interviews, case studies to name a few.

The research strategy that was used in this study was interviews using a semi-structured questionnaire. A semi-structured questionnaire with open and closed questions was devised from previous studies and the literature review context to capture the questions that lead to the main research question. The questionnaire was divided into several sections (see Appendix) and was used in both types of interviews, online interview (Skype and telephone) and the face to face interviews. The online interviews was used to reach out to the sample that could not make it to the interviews in order to gather as much data as possible.

The research strategy comprised the following; a combination of a questionnaire and interview questions whereby middle management and C-Suite were asked questions to get their views on the position of the CIO in organizations and how the role relates back to the digital economy bearing in
mind the following; impact that the CIO might have on the organizational performance and business strategy, requisite skills or qualifications of the CIO role and competing roles.

The interviews were conducted in a conducive environment with less distractions, this allowed the participants to speak more freely and openly about the research topic. Each interview took 45 – 60 minutes and the participant was presented with the same structure of questions, follow up questions were asked where there were pockets of unclarified data. Prior to interviewing the participants a pilot interview was done to hone interviewing skills and resolve any difficulties in explaining the research topic. Questions that were too technical or made the participant uncomfortable were disregarded from the data analysis. The pilot interviews also gave the researcher an opportunity to structure the questions sequentially.

3.4 Measure of Quality

Validation of the Qualitative methodology was important in clearing the confusion on the quality control of the study because it emphasized on the trustworthiness of the method used, the coherence of the findings and application of the findings. The following criterion was used as a measure of quality and trustworthiness for the qualitative methodology used:

a. Adequacy of the research topic

As the first measure of trustworthiness towards the methodology used for the research topic, adequacy of the research question addresses whether the chosen research methodology is appropriate for the research topic. Therefore a phenomenological method was used as a suitable method for data analysis to answer the research topic. The phenomenological method’s premise was to understand the scenario from the participant’s perspective and those that have lived the experience (T. Roberts, 2013). For instance the targeted sample consisted of CIOs or those who have assumed the position of a CIO even though under a different title, as well as C-Suite managers who are knowledgeable about the role of a CIO. Experiences were relieved through different accounts of one-on-one interviews.

b. Credibility

To ensure credibility of the data collected, a triangulation procedure was used where the data was sorted and analyzed to find common themes, eliminate redundant data and produce corroborating information from the evidence collected. The triangulation process is commonly used as a research process for qualitative methodology and it has been proven to be a valid process in most cases
because researchers go through a lot of material to substantiate the data collected (Pandey & Patnaik, 2014).

c. **Reliability**

Although reliability in the qualitative method has been found to be challenging (Leung, 2015), it was determined by the consistency in the data collected and this was verified by matching the data across sources to ensure its accuracy. A margin of variation was allowed although it had to be tolerable and similar in the quality of the context given.

d. **Transferability/ Generalizability**

This is where the findings of one study can be applicable to another study under a similar theory and model considering the location, people, and social context. In this research a pragmatic approach of assessing generalization is by adopting the same criteria used for validation; the processes and tools used to derive data and findings.

### 3.5 Population and sampling

Data acquisition is very important in any research and a plan on how the data will be acquired to better understand the theoretical framework is thoroughly evaluated to make sure that the appropriate participants are included in the study.

A population can be referred to as people or cases that are under study while a sample is a targeted segment that is to be studied (Rahi, 2017) because it is impossible to interview the whole population. Also, Robinson O C (2014) defines the target population as the number of people from which a case may be legitimately sampled in an interview research strategy. A sample also consists of probability and non-probability sampling where probability sampling means every participant has equal chances of being included in the population. Compared to probability sampling, non-probability sampling is more selective and subjective methods are used to select the participants (Etikan, Musa, & Alkassim, 2016).

A non-probability sampling method was chosen based on the knowledge and experience of the participants which tied back to the research topic. This type of non-probability sampling is defined as purposive sampling because it involves careful identification and selection of the participants who are proficient and well informed about the research topic. The participants consisted mostly of IT Managers and top management who interacted with CIOs or people acting in the role of a CIO. It is
also widely used in Qualitative researches when compared to convenience sampling which can be used for both Quantitative and Qualitative researches.

Purposive sampling puts emphasis on the data saturation which basically means repeating the same data acquisition method until no further or new substantive information is acquired therefore the sample size is determined by the saturation rather than the statistical power of the convenience sampling, which was the case in this study.

The participants were willing to divulge information and communicate experiences and their perspectives eloquently, therefore the target sample for this study consisted of top management or C-suite in Gaborone and Johannesburg in technology dependent organizations and parastatals.

3.6 Data Analysis and Management

Qualitative research is about putting oneself in another person’s shoes to be able to see the world from that person’s perspective (Sutton & Austin, 2015) therefore the data analysis and management used for doing this research was audio recorded and interpreted for others to later read and learn from this study.

It was imperative that data analysis was thoroughly done to truly represent the participants’ views. The data analysis and management included interpretation of data, transcribing and checking for erroneous data. The interpretation relied more on the theoretical standpoint of the researcher which in this instance was the phenomenological approach because the intention of the research was to understand how the participants viewed the role of a CIO in the digital economy.

Before transcribing the data, a decision was made to transcribe only the questions which were asked and relevant to the research question. The research consisted of ten questions that were derived from the main research question. The audio recordings were transcribed verbatim. Thereafter, a transcription was checked to correct spellings or any other errors to make it more intelligible when read back. For ethical reasons, the participant anonymity was respected and any names or inferences towards the identity of the participant were removed. The data was then organized into a corpus and stored in a folder for another round of fine transcription. The process was iterative and involved repeatedly listening to the audio tapes, transcribe and document any new codes.

Instances where there were lengthy pauses, silences or fidgeting by the participants during interviews were included in the transcription to be further analyzed as the behavior could be deduced to either mean the participant was uncomfortable about the question being asked or deciding on what to say
and how they can put their answer into context. The purpose of including what the participants are not saying in words was to try as much as possible to justify the findings through the participant’s experience. Another important thing to note was emphasis on the words that were used during the interview by the participants. The words were deemed to be of importance for the participant to have gone to extra length of repeating and emphasizing them.

After transcribing, coding of the chunks of data following the initial summation of the interview was done. Notable points that were taken into consideration were; identification of similar phrases, emotions, beliefs, surprising statements and experiences. These were stated as themes and patterns.

- **Grounded Theory Analysis**

There are various ways of analysis data, however for this study a grounded theory approach was adopted. According to Khan (2014), grounded theory is an approach, method or strategy that generate data from theory. It is not by any measure qualitative method as clarified by Cho & Lee (2014) but a general method that uses an open – ended and iterative process of data collection and coding. By using this approach data was collected and analyzed to generate theory. The premise of ground theory is to deduce theory from collected data and this was done by basing the findings or theory on the data source (interviews) after reviewing it repeatedly, organizing it into transcripts, notes and categorizing the themes.

A selective coding was adopted to basically find out the main ideas after having gone through the process of open coding and axial coding to come up with the findings and answers to the research questions. During open coding, there were various emerging ideas that came up which were used as properties for the sub-categories and categories. Those categories were then merged depending on how they related to each other. This formed a basis for axial coding which then translated to selective coding once explanation and translation of the categories was provided.

During the entire process of collecting data, the following questions were kept in mind to achieve the ultimate goal;

a. What the data collected meant? This required being open minded about the data and not making any assumptions because the data could be interpreted in different ways which is one of the advantages of qualitative analysis because it allowed for flexibility.

b. What needed to be understood by the data collected? The question related back to the research question and objective that had to be addressed in the study. Also taking cognizant of the way in
which the interview questions were asked. Interrogation of whether they were serving the intended purpose or if there was a need to refine the interview technique, that is if it didn’t work.

c. What was the relationship between the data presented and what had to be understood? The last question refined the question and matched or created a relationships between the collected data with what had to be understood. This evolved into the final analysis of the data to give answers to the main research question.

The rigorous process of doing ground theory analysis was effective in doing the analysis and management of the collected data. It was important that the process took place in order to contribute towards the research on the field of technology.

3.7 Ethical Consideration

An ethical research strikes a balance between the potential benefits of a research and the likelihood of the research participants to be harmed psychologically, legally, socially (L. D. Roberts, 2015) and as such ethical considerations were observed throughout the entire study. This was done by doing the following:

A request for consent to conduct one – on - one interviews was sent to the participants in the form of an email. The email outlined the objectives of the study, and cited approval by the research ethics board from the respective University to carry out the study. The approval was received prior to conducting the study and an ethics protocol number was assigned for this study.

Observation of confidentiality and anonymity was done for the participants and they remained anonymous in this study. Therefore the full names of the participants were not included in this study to protect their privacy, rather numbers were assigned to differentiate the participants.

Prior to conducting interviews, participants were sensitized about contributing voluntarily to this study and that they could stop at any point in time if they did not wish to continue further with the study. Therefore all participants willingly contributed to this study and they were not coerced or forced. Their views and opinions remained independent.
4. Research Findings and Discussions

Studies on the role of the CIO, responsibilities and activities have been done in the last decade to find out the relevance of the CIO role in organizations however it is even more important to provide understanding on the CIO role in the digital economy, as the role evolves and organizations recognizes the value of technology to put them ahead of their competition. It is through the data collected, analyzed and presented below that this study attempts to put into perspective interpretation of the findings of the research objectives.

A total of 10 participants contributed towards this study, they had a range of work experience between 5 to 30 years. For the purpose of answering the research questions, these participants were deemed to be appropriate for the sample because they constituted middle and executive management from different industries; that is, Technology, Mining, Insurance, Electrical and Power generation companies. Their roles in the organizations represented a diversity of IT deployment or familiarity of the CIO role which suggested a wealth of experience and knowledge of the research questions. It should be noted that the sample constituted of a representation from middle to senior management from different organizations located in two different countries; Botswana and South Africa. The research design was done in this manner to avoid possible organizational idiosyncrasies.

From the 10 participants that were interviewed, only one outlined that they had a CIO in their organization who reports to the CEO. The other participants had IT managers that assumed the role and responsibilities of a CIO but did not directly report to the CEO.

Table 1 gives an overview of the roles of participants.

<table>
<thead>
<tr>
<th>Participant</th>
<th>Gender</th>
<th>Job Title</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Male</td>
<td>Head of Information Management</td>
<td>Leads the IT department and is responsible for drafting IT strategies</td>
</tr>
<tr>
<td>2</td>
<td>Male</td>
<td>IT Manager - Service Delivery</td>
<td>Responsible for day-to-day management of operational processes</td>
</tr>
<tr>
<td>3</td>
<td>Female</td>
<td>IT Manager - Projects</td>
<td>Ensures that the technology component is covered in all capital intensive projects</td>
</tr>
<tr>
<td>4</td>
<td>Male</td>
<td>IT Manager - Information Services Manager</td>
<td>Leads the digital and innovation stream and manages IT support</td>
</tr>
</tbody>
</table>
Table 1: Roles of Participants

<table>
<thead>
<tr>
<th></th>
<th>Gender</th>
<th>Role</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>Female</td>
<td>Board Secretary</td>
<td>Ensures that the organisational board is in line with the</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>legal requirements of the bylaw</td>
</tr>
<tr>
<td>6</td>
<td>Male</td>
<td>Business Services: Senior</td>
<td>Project manager in all technology driven projects</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Consultant</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Male</td>
<td>Technology Lead</td>
<td>Leads a team of software developers</td>
</tr>
<tr>
<td>8</td>
<td>Male</td>
<td>Managing Director</td>
<td>Oversees the organisational operations</td>
</tr>
<tr>
<td>9</td>
<td>Male</td>
<td>IT Analyst</td>
<td>Manages the contractual obligations between the organisation</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>and the suppliers</td>
</tr>
<tr>
<td>10</td>
<td>Male</td>
<td>Managing Director</td>
<td>Oversees the organisational operations</td>
</tr>
</tbody>
</table>

Empirical findings from the data analysis was confined to four main themes (Table 2) that formed a basis for discussions on the ensuing sections below under the following sub-headings; understanding the role of the CIO, importance of a CIO in the digital economy, competency skills and qualifications and the impact of a CIO in organizational performance.

<table>
<thead>
<tr>
<th>Theme</th>
<th>Main Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>The role of a CIO</td>
<td>• Senior IT Managers</td>
</tr>
<tr>
<td></td>
<td>• Reports to the CEO, Chief Financial Officer (CFO), Chief Operations Officer</td>
</tr>
<tr>
<td></td>
<td>(COO), Chief Technology Officer (CTO)</td>
</tr>
<tr>
<td>Digital economy as 4th Industrial Revolution</td>
<td>• Technology and data driven</td>
</tr>
<tr>
<td></td>
<td>• Transacting online</td>
</tr>
<tr>
<td></td>
<td>• Data as a currency</td>
</tr>
<tr>
<td>Operational and strategic tasks</td>
<td>• Daily activities are operational</td>
</tr>
<tr>
<td></td>
<td>• Monthly activities consists of looking out for opportunities or disruptions</td>
</tr>
<tr>
<td></td>
<td>• Annual activities include drafting strategies</td>
</tr>
<tr>
<td>Importance</td>
<td>• Strategic role</td>
</tr>
<tr>
<td></td>
<td>• Gives direction</td>
</tr>
<tr>
<td></td>
<td>• Organisation’s competitive edge</td>
</tr>
<tr>
<td></td>
<td>• Strategic planning around technology and innovation</td>
</tr>
<tr>
<td></td>
<td>• Gives business insight</td>
</tr>
<tr>
<td>Influence on strategy formulation</td>
<td>• Technology determination</td>
</tr>
<tr>
<td></td>
<td>• Input in drafting the organisational strategy</td>
</tr>
<tr>
<td>Cost saving and Operational efficiency</td>
<td>• Strategy encompass business and technology</td>
</tr>
<tr>
<td>Qualifications</td>
<td>• Cost driven</td>
</tr>
<tr>
<td></td>
<td>• Trusted with budgetary requirements</td>
</tr>
<tr>
<td></td>
<td>• Technology determines organisational performance</td>
</tr>
<tr>
<td></td>
<td>• Too risky not to have one</td>
</tr>
<tr>
<td>Competing roles</td>
<td>• Interpersonal and soft skills</td>
</tr>
<tr>
<td></td>
<td>• Bachelor’s degree</td>
</tr>
<tr>
<td></td>
<td>• Basic understanding of IT</td>
</tr>
<tr>
<td></td>
<td>• Chief Digital Officers</td>
</tr>
</tbody>
</table>

Table 2: Main Findings

### 4.1 Understanding the role of a CIO

The first question was about the reporting line of the CIO and digital economy. It was included in the questionnaire to find out if the participants were aware about the existence of a CIO role in the organization. The question also served as a screening question and its purpose was to assist the researcher in identifying participants who could add value to this study by demonstrating their understanding of the research topic.

In comparison to the numerous researches done previously on the role of a CIO, the participants in this study did acknowledge that the role of a CIO could be played by anyone who is most senior in the IT department and has a seat in the executive committee or is part of the C-Suite. This is in accordance to most studies depicted in the literature review such as a research done by Hu, Yayla, & Lei, (2014b), which narrated that many organizations are starting to find relevance in having CIOs in their top management teams for various reasons such as governance, IT alignment and competition. Another, notable finding in this study pointed to the title or position name of the role which the participants reached a consensus on it, that it did not bear any significance as long as there was someone in the organization who executed the activities of a CIO. This was in contrast to most of the research done on the role of the CIO because by assuming different titles or role definition, the perceptions and the expectations of the CIO role changes which contributes towards the ambiguity of the role of CIOs (Haffke et al., 2016), adding more towards the difficulty in deciphering their core mandate.

Upon analyzing the subscripts it became apparent that there was a significant meaning attached to having a CIO directly reporting to the CEO instead of the traditional way of reporting to the CFO or COO.
Although the results from the data analysis showed that the IT Managers who played the role of a CIO reported to either the CFO, CTO or COO, a homogenous understanding of the way the reporting structure was in their respective organizations was purported to be unsustainable as it was perceived to be susceptible to pockets of miscommunication between top management and the CIO. Instead, suggestions were made on an appropriate reporting structure, which was to have a CIO directly reporting to the CEO, to allow the CIO an opportunity to give a better representation of technology initiatives to the executive committee and the board members. This finding was in line with Coertze & Von Solms (2014)’s study on the importance of having a CIO in top management and reporting to the CEO or board for IT alignment.

The second empirical results from the data analysis pointed out to digital economy as the 4th industrial revolution which is a data driven economy that uses technology to provide insights and online transaction. As stated by one of the participants; IT Manager – Information Services during the interview, that data is considered to be a currency and valuable commodity in the digital era and transacting online has become a norm. It is also considered to be a movement from labour intense operational processes to computerized and automated processes. Therefore the definition of digital economy given by the participants was in accordance to the study done by Dahlman et al (2016). It portrayed digital economy as the adoption of technology to foster productivity and growth by a large number of consumers, reducing transaction costs and calls for organizations to have a digital strategy in place.

When tying the two, the CIO role and the digital economy, the participants perceived the CIO to be someone who gives strategic direction, is innovative and gives more insights to the business community in terms of the technology trends. The perception of the participants in this regard reinforced the view of the role of the CIO in the digital economy as being the driver of change, because digitization was described as not just one technology but several technologies that change the way business performs, the type of relationship that the organization has with its customers and its business model. The whole process required the CIO to be at helm of it with more emphasis put on the CIO to be the one to spear head the organization in that direction. Implications of these findings were in accordance to the literature review because the CIO should be more involved in transforming and equipping business with technology (Drachmann, Freisner, & Müller, 2014)
4.2 The importance of a CIO in the digital economy

One of the objectives of this study was to find out the importance of the CIO role in the digital economy and as such the participants were asked for their opinions on the importance of having a CIO in the organization. While all the participants stated various reasons on the importance of the CIO, they all had similar views on why the CIO was needed in the organization.

One of the reason advanced was that it was too risky not have a CIO especially for medium to large organizations. The participants considered CIOs to be critical to business especially for medium to large organizations, small to medium organizations could get away with it especially if they are not technology driven however an organization that is on a large scale needs to have someone to drive technology. This is in line with the finding on the strategic role played by the CIO in an organization (Chun et al., 2014).

Another reason given was that a CIO can give an organization competitive advantage, depending on how the organization has positioned its business model and corporate strategy. It is only those organizations that have CIOs at the forefront of technology that perform better. A comparison between parastatals and banking institutions was given as an example of how technology can be used as a leverage against other organizations, and most often banking institutions have CIOs who drive the technology and they are perceived to have automated processes in comparison to other industries. This finding is in accordance to the research done by (Drachmann et al., 2014)

The other finding on the perception of the participants with regard to the importance of the CIO role in the organization showed that, the CIO had the capability to influence top management or executive management to make positive strategic choices towards technology and digitalization, by giving better representation of any technology matters. By so doing the CIO bridged the gap between business and technology, as a consequence business has better understanding of IT (Varajão, Trigo, & Soto-Acosta, 2016).

The CIO is also influential on the organization’s strategy formulation and technology determination. By virtue of the CIO being part of the C-Suite, he/she becomes part of the team that drives the business strategy although the business strategy is driven by the digital strategy. Most of the participants expressed the view that a business strategy must have a technology component to it which reinforces the understanding that technology and digitization drives the business strategy, not the other way round.
Roles and responsibilities

Shifting into the roles and responsibilities of a CIO, there were several factors that were considered and the participants categorized the CIO tasks into time dimensions, that is, daily, monthly and annual activities (Table 3) that make up the responsibilities of a CIO. From a daily point of view, the activities constituted operational tasks such as ensuring that there was minimal business disruption. From a monthly point of view the tasks were much more about looking out for opportunities to improve the environment whereas the tasks done annually were more strategically focused. From in-depth conversations with the participants, they all had different views on what the make-up of the daily activities of the CIO, which depended on the business model of the organization. For example, a CIO from an Insurance company was more concerned about the uptime of IT resources to enable business to function and in a Mining Company, the CIO was concerned about having an Operational Technology and Information Technology (OT/IT) to drive operational efficiency.

Although there was a variation on other activities, the common feature on annual activities was described as more strategic than operational therefore annual activities composed of drafting IT strategies and roadmaps and making sure that they are implemented as well as making meaningful contributions towards executive and board meetings.

<table>
<thead>
<tr>
<th>Time Dimension</th>
<th>Tasks</th>
</tr>
</thead>
</table>
| Daily          | • Keeps the lights on  
• Makes sure that business is not disrupted  
• Is an ambassador, translating business requirements  
• Maintaining a business case or reason why the business is in existence and maintaining the strategy  
• Uptime and availability of power and the systems  
• Normal routine like running the department  
• Play a role in strategic projects that transform the organisation  
• Executes what has been planned  
• Monitors resources  
• Manages programmes to ensure quality |
| Monthly        | • Maintains the balance scorecard  
• Manages the org to measure the KPIs  
• Oversees the budget  
• Manages resources including people, vendors, infrastructure Service Level Agreements and Contracts |
Look at ways of improving the way business operates by watching out for disruptions and opportunities

| Annual                           | Drafts IT strategy |
|                                 |                    |
|                                 | Contributes towards executive committee or board meetings |

Table 3: CIO Tasks

- Competency skills and qualifications

As a follow-up to the roles and responsibilities of a CIO, the participants were asked for their views on the competency skills and qualifications. Seven participants mentioned that the role can be fulfilled by someone who was good at communicating or expressing themselves, analytical and having business acumen. The skills were expressed as essential to translate technical requirements to business and seamlessly articulate the requirements to the executive committee as well as the board members. Interacting with executive committee and having a common understanding of the CIO’s role in the organization strategy was of utmost importance. Thus, the soft skills were seen to be a balancing factor, intertwined with the role of the CIO.

With regards to the qualifications, the participants were confident that the role of a CIO needed someone with a Bachelor’s Degree qualification, however it doesn’t necessarily have to be a Computer Science or IT degree. Rather emphasis was put on having basic IT understanding and an interest in technology trends to have a foresight on any opportunities that could yield benefits to the business community.

The implications of the competency skills and qualification of the CIO were in accordance with the literature review (Valentine, 2014), in addition to the innovation capability and the ability to think outside the set boundaries.

4.3 Impact of the CIO on the organizational performance

The second objective of the study was to find out the impact of a CIO on the organizational performance. From the literature review, a CIO’s impact was not only limited to his influence on the business strategy but also to the organizational bottom line. This is in line to the findings in this study, because according to the participants, CIOs do contribute towards the top and bottom line of the organization. A CIO has influence on the operational costs because of the use of technology in
automating most of the processes which cuts down on the turnaround time of the service offered to external customers and the administration of manual processes. In addition, most studies do highlight the heightened value of IT alignment in reducing investment wastage by focusing on non-strategic causes (Luftman, Lyytinen, & Zvi, 2017).

Another impact that the CIO has on the organizational performance as outlined in the findings was becoming a gatekeeper for all the digital initiatives because of the expectation to understand the initiatives that are realistic and achievable looking at the budget and benefit realization. Impact can also be cost driven, when a baseline of technology cost is put up against capital expenditure and operational cost. An example of organizations in the insurance and banking fraternities that have invested in technology was given as demonstration that the maturity of an organization also determines what the impact of a CIO can have on the performance.

As expressed by one of the participants, the CIO’s impact on the organizational performance is not acknowledged or does not materialize if he/she reports to a CFO because of the limitations that the CFO may have in understanding all IT issues and opportunities. This finding reinforces the previous one about the importance of having a direct reporting line to the CEO to remove scenarios of being inappropriately misrepresented.

5 Limitations of the Study

A major limitation for this study was time constraint as many potential participants like CIOs and other C-Suites were unavailable to contribute to this study due to busy schedules. The participants were contacted via e-mail and telephonic follow-ups were made to confirm their availability however most of them did not make it to the interview. This posed as a limitation in this study because the aim was to have perspectives from a larger sample of CIOs.

By addressing the role of a CIO in a digital economy this study has contributed towards the limited number of researches that put emphasis on the importance of a CIO in organizations specifically in the digital era as the role continues to evolve. While many researches on the CIO roles, responsibilities, competencies and alignment to the board exists (Cano et al., 2013; Coertze & Von Solms, 2014; Drachmann et al., 2014; Gerth & Peppard, 2016), there is still limited research studies that ties or combines the two; CIO role and digital economy.
6 Recommendations for further Study

Reaching out to a larger sample of CIO’s was one of the limitations, it is therefore recommended in future studies to conduct online surveys with similar objectives to get as many responses as possible. One of the emerging role that came out during this study was the Chief Digital Officer (CDO). There is still room to expand more on the digitalization topics such as the impact of digital disruptions and transformation on other roles like the CDO, as recent studies are beginning to show the potential alignment or merging of the two roles; CIO and the CDO. Furthermore, research on the impact of the CIO role on the organization’s performance looking at the organizational growth or share price as the role of the CIO evolves can still be done to elevate and enrich this study.

7 Conclusion

The digital era is upon most organizations and it is up to the executive management and board to fully understand the significance of the role of a CIO in such an era. Not only does this require an understanding of the role but how that role does impact the organizational performance.

It is in this study that the aim of understanding the role of a CIO in a digital economy was addressed by answering two main questions (a) What is the importance of the CIO role in the organization and (b) what is the impact of the CIO role in the organizational performance? With reference to the first question it can be deduced from the data analysis that the role of a CIO is important and highly strategic for organizations not to have one. Furthermore the participants point out to the importance of having a CIO for strategy formulation which has an aspect of digitization to it that cannot be ignored if the organization wants to have a competitive advantage. With regard to the second question data analysis points out to the contribution that the CIO can make to the organizations bottom line through cost savings on operational cost if the processes are automated.

The appointment of a CIO in organizations does take care of a lot of digitization activities however there are other competing roles that prioritizes on digitization and less on IT operations like the Chief Digitization Officer.

As with all the other researches, carrying out this study using a survey as an instrument for data collection, wouldn’t have adequately represented the views and opinions of the participants even though the findings would have been similar. Unlike the interview process which gave in-depth information and insight on most of the questions asked the survey method of data collection would
have missed out on a lot of unspoken information. Therefore the qualitative approach was the most suitable method for this study given the back and forth questioning process that took place.
8 References


9 Appendix – Data Collection Instrument

Participant Profile:

1. Sex (Please choose only one from below):
   • Male
   • Female

2. Age (Please choose only one from below):
   • Less than 35
   • 35 to 45
   • 46 to 55
   • 56 to 65
   • Above 65

3. Academic education (Please choose only one from below):
   • Secondary School
   • Bachelors’
   • Post-Graduation
   • Masters’
   • PhD
   • Other:_________________

4. Name of your position:____________________________

5. Tenure (years) in position in the organization:______________

6. What was your previous position?:____________________________

7. Which position do you directly report to?:____________________________

8. Outline 3 main activities in your position:
   • ______________________
   • ______________________
   • ______________________
Understanding of the Chief Information Officer (CIO) Role in a digital economy:

1. Is there a CIO in your organization? If yes, what is the direct report of the CIO?

2. What is your understanding of digital economy?

3. How would you define a CIO role in the digital economy? Is there a link between a CIO and Digital Economy?

4. What are the daily, monthly activities of a CIO?

5. What kind of input can a CIO make towards the development/refinement of a business and technology strategy?

6. What impact does a CIO have on the organizational performance?
7. Is it important to have a CIO in the organization?

8. What kind of competency skills and education should a CIO have?

9. Are you aware of any other emerging or existing roles that are competing with the CIO role? Do you think the roles will merge at some point?