Information Orientation: A critical analysis of State-Owned Enterprises in South Africa

by

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Thesis presented in fulfilment of the requirements for the degree of MPhil: Information and Knowledge Management (MIKM) in the Faculty of Arts and Social Sciences at Stellenbosch University

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March 2023

Declaration

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Abstract

The South African State-Owned Enterprises (SOEs) generate and use large volumes of information on a daily basis as they operate business processes in documents, emails, websites and IT processes, thereby making information a key organisational asset that can provide a competitive advantage when managed accurately and efficiently. The generation of substantial volumes of information tends to compromise an efficient and effective application of information and knowledge in organisations.

This study seeks to analyse and determine the Information Orientation (IO) maturity levels of SOEs, using the Information Orientation Model of Marchand and Kettinger (2011). The study further attempts to understand how the implementation of the Michael Porter's Competitive Model impacts the Information Technology practices, Information Management practices and Information Behaviours and Value (IBV) of SOEs in South Africa. Additionally, the study further explores the three information capabilities, namely; IT, IM and people's behaviour and values (IBV), in relation to their current application in SOEs.

A sample of SOEs have served as the study population in this research. Data was collected from astute organisational representatives because of their understanding of organisational strategies, processes, culture and climate. Senior managers were the targeted respondents to solicit their perspectives and understanding regarding the management and use of information within their organisations. This research was conducted through a survey administered by means of a questionnaire that was sent to respondents through email. Covid made it impossible to conduct in-person and virtual interviews, as some respondents had no technological means to respond through person-to-person interactions. Many of the SOEs were not reachable, even virtually. During the time of the study it was an abnormal period in SA.

A thematic analysis was used. The analysis is framed on the three main capabilities of Information Orientation. The collected data indicates that SOEs embrace the notion that it is important to sense information internally and externally in order to identify areas that might negatively or positively affect business.

The study determined that a systematic, standardized and centralised approach is needed in the organising and enhancing of easy access into information. The findings show that most SOEs in South Africa have a high proportion of the IMP and ITP in their decision-making processes but the portion for IBV is comparatively low. The results confirmed that the human element of the IO model is neglected by most organisations, putting more investment into IT infrastructure. Therefore, IBV needs to be mainstreamed and integrated into SOE information strategies in order to improve outputs and to facilitate the achievement of their socioeconomic mandates.

Opsomming

Die Suid-Afrikaanse staatsondernemings genereer en gebruik groot volumes inligting op 'n daaglikse basis, terwyl hulle besigheidsprosesse in dokumente, e-posse, webwerwe en IT-prosesse bedryf. Dit kan inligting 'n belangrike organisatoriese bate maak wat 'n mededingende voordeel kan bied wanneer dit akkuraat en doeltreffend bestuur word. Hierdie skepping en gebruik van hoë volume inligting, kompromitteer doeltreffende en effektiewe gebruik en toepassing van inligting en kennis.

Hierdie studie poog om die inligtingsoriëntasie-volwassenheidsvlakke van Staatsondernemings te ontleed en te bepaal, deur die inligtingsoriënteringmodel van Merchand en Kettinger (2011) te gebruik en verder te probeer verstaan hoe die implementering van die Michael Porter se mededingende model die Inligtingstegnologie praktyke, Inligtingsbestuurs praktyke beïnvloed en Inligtingsgedrag en -waarde (IBV) van Staatsondernemings in Suid-Afrika.

Dit poog verder om die drie inligtingsvermoëns te beantwoord, naamlik; IT, IM en mense se gedrag (IBV) en waardes met betrekking tot die gebruik van inligting in Staatsondernemings:
Staatsondernemings het as die studie bron in hierdie navorsing gedien. Data is van skerpsinnige organisatoriese verteenwoordigers ingesamel weens hul begrip van organisatoriese strategieë, prosesse, kultuur en klimaat. Senior bestuurders was die teiken respondente vir die navorser om hul perspektiewe en begrip van die bestuur en gebruik van inligting binne hul organisasies te kry. Hierdie navorsing is gedoen deur middel van 'n opname geadministreer deur middel van 'n vraelys wat per e-pos aan respondente gestuur is.
’n Tematiese analise is gebruik. Die ontleding is gebaseer op die drie hoofvermoëns van Inligtingoriëntering.

Die versamelde data dui daarop dat Staatsondernemings die idee omhels dat dit belangrik is om inligting intern en ekstern aan te voel om areas te identifiseer wat besigheid negatief of positief kan beïnvloed. Die studie het bepaal dat 'n sistematiese, gestandaardiseerde en gesentraliseerde benadering nodig is in die organisering en verbetering van maklike toegang tot inligting.

Die bevindinge toon dat die meeste SOE's in Suid-Afrika 'n hoë persentasie van die IMP en ITP het, maar die persentasie vir IBV is laag. Die resultate het bevestig dat die menslike element van die IO-model deur die meeste Staatsondernemings verwaarloos word, en meer belegging in IT-infrastruktuur is nodig.

Acknowledgements

To God be the glory. I would like to express my sincere gratitude to my supervisor, Mr Dewald Blaauw for his support and guidance throughout the project. To my husband, Vuyani Bekwa (Jolinkomo), thank you for walking this journey with me, your understanding and support is much appreciated. To my children, Athenkosi, Siyabonga, and Avuyile, thank you for always reminding me why I started this journey, you are amazing.

This work is dedicated to my late grandparents Joseph and Lomjwi, your teachings have been part of this journey, and I thank you

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List of Abbreviations

4IR	Fourth Industrial Revolution
AI	Artificial Intelligence
BEE	Black Economic Empowerment
CEO	Chief Executive Officers
CIO	Chief Information Officer
COO	Chief Operations Office
CRM	Customer Relations Management
DIKW	Data, Information, Knowledge, Wisdom
DSS	Decision Support System
ECM	Enterprise Content Management
ERP	Enterprise Resource Planning
HoD	Heads of Divisions
IA	Information Architecture
IBC	Information Behaviour and Culture
IBV	Information Behaviour and Values
ICT	Information & Communication Technologies
IMF	Information Management Framework
IoT	Internet of Things
IM	Information Management
IMLC	Information Management Life-cycle
IMP	Information Management Practices
IE	Information Ecology
IO	Information Orientation
IS	Information Strategy
IT	Information Technology

ITP	Information Technology Practices
MISS	Minimum Information Security Standards
NARS	National Archives and Record Service of South Africa
NRF	National Revenue Fund
OECD	Organisation for Economic Co-operation and Development
PAIA	Promotion of Access to Information Act
PFMA	Public Finance Management Act
POPIA	Protection of Personal Information Act
PSEC	Presidential State-Owned Enterprises Council
SA	South Africa
SOE	State Owned Enterprise
RoI	Return on Investment
www	World-wide Web

Definition of Key Concepts

The following key concepts are defined hereunder to provide the context in which they are used in the study:

a) *Capability* – an ability in the use of information
b) *Information Behaviour and Values* – the capability for organisations to instil in their people, the right behaviour and values associated with good use of information
c) *Information Culture* - beliefs and values associated with the use of information
d) *Information Ecology* - an ecological approach in the management and use of information that include six aspects namely; information strategy, information politics, information architecture, information culture, information workers, and lastly, information management processes.
e) *Information Management* – the process of managing information throughout its life cycle in any format through any available channel of dissemination
f) *Information Management Capability* - the capability of the IO theory that encourage organisations to manage and use information over its life cycle.
g) *Information Orientation* - an integrated approach that includes people-centered activities, information technology and information management practices in the use of information to improve performance of any organisation
h) *Information Strategy* - a strategy that directs on what an organisation wants to do with its information as a strategic resource
i) *Information Technology Capability* – the capability of the IO theory that involves the development and maintenance of information technology applications and infrastructure that support the strategy and objectives of the organisation at all levels.
j) *State owned enterprise* - companies that are controlled by their governments, depending on the share size of ownership. Governments have either partial or full ownership of their SOEs', depending on the rationale behind their establishment, which may or may not have a profit motive.

Chapter 1: Introduction

1.1 Background

Organisations generate and use information on a daily basis as they operate business processes in documents, emails, websites and Information Technology (IT) processes. This makes information a key organisational asset that can provide a competitive advantage when managed accurately and efficiently (Erogˇ lu & Cakmak 2020). Managers are beginning to accept information as important like other strategic resources albeit at a slower pace than expected. Organisations in the 21st century will be able to use information in its lifecycle that allows them to accomplish their information management objectives. It is therefore crucial for organisations to realise the power of information, to know and understand its value and be able to manage it at all organisational levels. Hulme (2009) outlines the concept of 'Information on Demand' as a strategic organisational resource to deliver valuable information to the right people, timeously. Ward and Carter (2019) warned that information is an indispensable asset that require to be managed under the same managerial, budgetary and audit processes like the other human, physical and financial resources. According to the authors, management of information is the key contributing factor for the success and/or failure of thriving organisations. Organisations need to change the way they handle information with the introduction of the unprecedented Fourth Industrial Revolution (4IR). It is rather not an option but necessary to remain relevant and stay competitive.

For a number of years, scholars and researchers have formalised the management practices of both the Information Management (IM) and IT disciplines into established functional departments, such as the Records Management function, the library and the IT department in companies (Marchand & Kettinger 2011). However, it should be noted that these schools of thought have never formalised nor incorporated the responsibility to actively improve employees' behaviours and values when it comes to the use of information. An integrated approach in the effective use of information should combine the two capabilities and also integrate the component of people's behaviour and values (Marchand & Kettinger 2011). Marchand, Kettinger, and Rollins (2001) conducted a study on senior managements'

perceptions on Information Orientation (IO) represented by 25 different industries, from 22 countries in North America and Western Europe.

The study concluded that organisations need to have the three IO capabilities in totality to get Return on Investment (RoI). In South African (SA) context, Tshirado (2013) conducted a qualitative case study on the IO of a public organisation specifically in the Department of International Relations and Cooperation. The study concluded that the Department had a low Information Behaviours and Value (IBV) capability while Information Technology Practices (ITP) and Information Management Practices (IMP) were in place but needed to improve. The contribution of Marchand & Kettinger will guide this study from the IO model's perspective.

IO model is defined by Marchand et al (2001), as a framework that serves to orientate people's behaviours and values, in an organisation, towards an effective use of information for the purpose of improving business performance. The implication is that, organisations and businesses have conventionally elevated and invested in information collection, management and on IT infrastructure while neglecting people's behaviours in deploying IT and IM. It will be argued later in the discussion, that South African State-Owned Enterprises (SOEs)' service delivery is constrained by un-oriented people or employees' behaviours and values, which are not strategically positioned to optimise IM and IT for improved outcomes. The IO model presents an integrated approach to effective management of information that may lead to effective and efficient problem-solving, strategic decision-making and coordination. The IO model asserts that organisations should have all three capabilities, i.e. a) people information behaviour, b) information and technology, and c) information management. According to Aytes and Beachboard (2007), the developers of the IO model have blended and described the following disciplines of management into a comprehensive and coherent model;

(1) The Information Management (IM) school puts more emphasis on the Information Management Life-Cycle (IMLC). Managing information in its life cycle is a comprehensive approach whereby information is consistently managed from its creation until it is disposed of. The life cycle can be explained through Figure 1 below. This strategy or approach assist organisations to reduce the cost of storing information, and to comply with legal compliance and security prescripts of managing information;
(2) The Behaviour and Control school highlights the significance of behaviours that influence information use at individual and organisational level. The emphasis is on how

behaviour and values contribute towards business performance and the role that "Control" plays in motivating employees to contribute towards the organisational culture; and

(3) The IT school which promotes the role that IT plays towards improved decision-making in organisations. It also encourages the practice of identifying and establishing IT Management practices to automate tasks at all business levels and for managerial and strategic decision-making.

Figure 1 : Information Management Life Cycle (IMLC)

The above mentioned three schools of thought have key weaknesses which proved them inadequate in providing an integrated approach for the three information capabilities to improve business performance. There is no linkage between the three schools as they each concentrate on their individual core focus rather than connecting to each other.

The IO model is a unique and valuable tool that organisations can use to link an integrated approach and its impact on business performance. It suggests that an organisation that demonstrates maturity or effectiveness in all three capabilities is more than likely to experience superior business performance. Marchand and Kettinger (2011) presented a people-centric view of business performance, arguing that people play an integral part in the life cycle of information and technology as an enabler and facilitator. A sound investment and management

of IT alone may not yield better business performance without a shared organisational information culture which is as important as the IT itself (Popovič and Coelho: 2015, Marchand et al., 2000). Oliver (2008) and Popovič (2015) defined organisational information culture as shared values and behaviours in the use of information. These IBVs include information sharing, information transparency, information control, information proactiveness, and information integrity. *Information Sharing* is defined as willingly sharing appropriate information with other colleagues, *Information Transparency* is regarded as openly reporting failures of the organisation with employees, *Information Control* refers to openly discuss the performance of the organisation with employees, *Information Proactiveness* is regarded as the use of information to bring about new ideas and innovations that will contribute to business performance, and *Information Integrity* is using information in an ethical manner. IBV has been recognised as one of the information capabilities that can assist organisations to predict their performance.

Hwang (2011) regards technology as a platform that allows for information to be created, stored, shared, and used but people are the ones who put information to use. Hwang (2011)'s argument is based on the notion that the behaviour of people in information use was never formalised as compared to IM and IT practices which were formalised to a certain degree. In their conclusion, Marchand and Kettinger (2011) stated that, for any organisation to achieve improved business performance, all three information capabilities, i.e., Information Management Practices (IMP), Information Technology Practice (ITP) and IBV must be integrated and considered equally. Companies that incorporate a people-centric approach, rather than merely techno-centric view on information use, and that are good at all three information capabilities, are more likely to improve their business performance (Marchand, Kettinger and Roliins:2011). The contribution of Marchand and Kettinger (2011) on the IO model will form the basis of this study to determine the perception of senior managers in SOEs in SA on IO capabilities in their organisations. Understanding their IO maturity, is critical for SOEs as they are required to effectively and efficiently improve their performance, plan for the future, solve challenging areas in their business, improve financial stability and remain competitive. Managing and using information as a key strategic resource on services, products and clients will help them create organisational value.

1.1.1 The benefits of having a high IO Maturity in organisations

Creating an environment whereby information is efficiently and effectively managed takes some time, it does not happen overnight but the benefits are overwhelming. It is important to create synergy between the three IO capabilities for organisations to realise a high maturity.

The benefits of having a high IO maturity in organisations can yield the following:

a) Improved business performance;
b) Informed decision-making process;
c) Ability to have a baseline framework to identify good and bad information use by employees;
d) Building a sustainable competitive advantage in the industry;
e) Establish innovative ideas to develop new services and products;
f) Ability to easily respond to the ever-changing business environment;
g) Avoiding recollection and duplication of existing information; and
h) Building a knowledge based and sharing organisations.

The implementation of the IO model by SOEs have a number of benefits as recorded by different authors (Hsieh, Lai and Shi: year). They indicated that organisations that have a solid orientation regarding information management and use could achieve better performance and reducing information asymmetry. Such organisations are become more capable to make appropriate decisions based on existing and well managed information.

1.2 Problem Statement

The rationale for undertaking this study was based on anecdotal observations which indicated that South African SOEs were generally ineffective, failing in their mandates and were a risk to the country's credit ratings. Although many reasons were advanced in an attempt to analyse SOEs' perceived failures, very few have explored the current IO models in SOEs as potential causal factors to their underperformance. Therefore, the study seeks to determine the IO of the SOEs in SA from the perspective of senior managers. It will explore Marchand and Kettinger (2011)'s IO model with a different population in a new setting that has not been published in literature before, as proven by an extensive literature review. Research that has been done on

the topic of IO has focused on organisations in different fields, and a gap in literature indicates that there is limitation in the study of IO specifically in the context of South African SOEs.

The following challenges have been identified in SOEs in South Africa;

a) SOEs have not identified a model that they can use to measure their information capabilities to become competitive in their respective fields;
b) Most of the SOEs invest in IT infrastructure with the hope of getting a return on investment;
c) Information is not managed in its life cycle as recommended by the IO model; and
d) Most have not developed and implemented an information strategy that will guide them how they manage and use information at a strategic level.

1.3 Research Objectives

The study seeks to explore the perceived IO held by senior management at SOEs in SA. To achieve the aim of the study, the following primary objectives should be addressed;

a) To identify the perceived capabilities of IT practices;
b) To identify the perceived capabilities of IM practices; and
c) To identify the perceived capabilities of IBV practices of SOEs.

The secondary objectives of the study are the following;

a) To determine the perceived relationship between the capabilities of IT practices, IM practices, and IBV using the IO model; and
b) To identify ways to raise awareness about the value of an effective IO model in SOEs.

1.4 Research Questions

The study seeks to answer the following questions about the three information capabilities, namely; IT, IM and people's behaviour and values pertaining to the use of information:

a) What are the capabilities of IT practices in SOEs?
b) What are the capabilities of IM practices of SOEs?
c) What are the capabilities of IBV of SOEs?

d) What is the relationship between capabilities of IT and IM practices, and IBV?

1.5 Importance of the research

It is envisaged that the outcomes of this study will provide some guidelines for SOEs to guide them on how they can manage information in an integrated manner for improved business performance. The findings of the study could generally benefit SOEs particularly in SA, adding value in using and dealing with information as a strategic resource, and that will extend to increased productivity on the provision of service to all spheres of government departments, related agencies and the community. Additionally, the results of the study could help SOEs to know their capacities with regards to the three information capability areas, and will be useful to help them to improve performance and decision-making. Lastly, the study will make final recommendations regarding the IO model and strategies for the future.

1.6 Delimitation of the research

This study is limited to the IO model in the use and management of information more on the three capabilities of IMP, ITP and IBV of SOEs in South Africa. Related areas such as Data, Information, Knowledge, Wisdom (DIKW), factors contributing to the IO maturity, and legal frameworks are discussed to provide clarity and baseline. They do not necessarily form the core aspect of the study. SOEs in South Africa are the only organisations that fall within the scope of the study. Other models such as Information Ecology and the DIKW are mentioned in the study as references but the analysis and interpretation are mainly on the IO model by Marchand, Kettinger and Rollin.

1.7 Layout of Chapters

The chapters of this study are laid out in the following format:

Chapter 1: Introduction and Background of the Study

Chapter 1 provides the introduction and background information to the research and the under study, including the research problem, objectives of the study as well as the research questions

Chapter 2: Literature Review

The second chapter outlines the review of existing literature on the subject of Information Orientation. It also shapes the debates and the framework on IO, and the introduction of the Porter's five forces model

Chapter 3: Research Methodology

Chapter 3 highlights a comprehensive discussion on the research methods chosen for this research. It discusses the data instrument used and sampling of participants.

Chapter 4: Data Analysis

The 4th chapter presents the analysis of the data and the findings of the study based on the collected primary data.

Chapter 5: Discussion of Findings

Chapter 5 provides an in-depth discussion of the findings on the study.

Chapter 6: Future research, Recommendations and Limitations

The final chapter provides recommendation for future research and draw conclusions and implications derived from the study findings, in relation to the research questions. It also provides the limitations of the study.

Summary

Chapter 1 has introduced this study by outlining the background of the current state of South African SOEs, framing it through Porter's competitive model. A problem statement has highlighted four challenges that have been identified in SOEs in South Africa. Primary and secondary research objectives which identify the perceived capabilities of IT, IM and IBV, were emphasized, together with four related research questions. Chapter one has also clearly indicated the importance of this research which shows that information is a strategic resource that potentially can enhance productivity in SOEs. A section in the delimitated of research has shown that the scope of this study is limited to the IO model on IMP, ITP and IBV capabilities of SOEs in South Africa. This chapter concludes by outlining the layout of the chapters in this research. Chapter two will review the literature which was used in informing the conceptual and theoretical frameworks that underlie this study.

Chapter 2: Literature Review

2.1 Introduction

This chapter defines and provides the definition of SOEs, background information and governance of SOEs in the South African context. It further addresses several notions such as information as a strategic resource, the concepts of data, information, knowledge and wisdom, as well as the theoretical framework on the use of information and how it is managed. The theory of IO will be discussed further with its capabilities that are important in the use of information, to advance the objectives of organisations. Factors that contribute to high IO maturity within organisations, such as information strategy, information politics, information culture, information architecture, information processes and information professionals. Legislative compliance applicable to management and use of information will also be discussed. To conclude the chapter the Porter's five forces model will be introduced.

2.2 State-Owned Enterprises in South Africa

2.2.1 Definition of SOEs

The Organisation for Economic Co-operation and Development (OECD) defines SOEs as enterprises that are controlled by their governments, depending on the size of their of ownership stake. Governments have either partial or full ownership of their SOEs', depending on the rationale behind their establishment, which may or may not have a profit motive. According to Mutize and Tefera (2020) SOEs public institutions that have been independently established through legislation to partly or wholly assist government to deliver services to the public. To match with international trends, most African countries follow the commercialisation strategy in which state assets in key sectors are transformed into independent state-owned entities to promote effective and efficient service delivery. In doing that, governments are able to fulfil their objective of creating job opportunities and providing social welfare services to their citizens.

In South Africa the definition of SOEs is based on the listing of the Public Finance Management Act, 1999 (Act 1 of 1999) and is derived from the explanation provided by Bronstein (2011, p.5). The annexure highlighted that the legislative definition of SOEs is not comprehensively covered in any statute book. Mamaile (2020) and Matsiliza (2017) refer to SOEs as legal entities or government owned corporations pursuing both commercial and developmental growth with most of their operations and infrastructure owned by the state. These enterprises are at national, provincial as well as municipality level as governed by the Public Finance Management Act (PFMA) and the Companies Act.

Fourie (2014) states that the challenging demands of globalisation and increased consumer demands have led governments to change the way they deliver services. Even though many countries have developed a policy framework to create job opportunities and grow productivity, improvement in that regard remains extremely low. Public entities became critical mechanisms that assist governments in building a platform for growth through infrastructure, transport, energy, information technology & communication, innovation and partnerships. The role that SOEs play in the economy is based on the influence they have in industrialization and development. SOEs serve as agents for development and change as they are able to create job opportunities in various sectors of any economy. Additionally, SOEs play a central and critical role of creating financial returns in the course of their economic ventures. Profits that are produced by these enterprises are reinvested to enhance their processes, which in turn, meet the needs and expectations of the population. SOEs also serve a crucial economic purpose of stimulating a healthy competition in the market in order to produce improved goods and services for consumers. Their objectives include acting as catalysts for economic development, agents for social change and infrastructural development to grow the economy and deliver effective and efficient services to citizens (Sithomola 2019:69).

2.2.2 Background of SOEs in South Africa

At the advent of democracy, the new government in South Africa inherited many SOEs that were under performing from the previous apartheid government, with some being privatised during the Nelson Mandela administration (Thabane & Snyman-van Deventer: 2018). All these caused debated of whether all the underperforming SOEs should be privatised or nationalised, and other are of the view that government intervention is critical to deliver to the poor through

SOEs. Marimuthu (2020) asserts that SOEs in South Africa drive the local economic growth and vehicles to provide infrastructure such as transportation, energy and telecommunications. The rationale behind their establishment depends on their classification as commercial or non-commercial. Commercial SOEs are revenue driven with their main objective of economic development. Non-commercial SOEs, on the other hand, are not financially driven and provide services and goods to citizens on behalf of the government. SOEs contribute towards domestic output, investment and employment creation in countries where they exist around the globe (Cuttaree & Salazar 2018).

In South Africa, SOEs were established to expand the economy in different sectors, although their growth was dependent and driven primarily by the mining sector. They play a critical role in sectors such as mining, finance, agriculture, energy, transport and others. According to the Constitution of the Republic of South Africa (Act 108 of 1996) SOEs, as strategic partners to government, are responsible for the delivery of public goods and services to citizens, and further drive service delivery, create job opportunities, and generate economic value. Thabane and Snyman-van Deventer (2018) agree that South Africa is characterised by societal segregation and a high rate of unemployment thus really needs SOEs to improve socio-political and economic dynamics.

During the Apartheid era, a number of SOEs were established to oppose the impact of international sanctions against the country. Post 1994, in the new dispensation, the government used SOEs to address the inequalities of the past, reduce poverty and promote policy objectives of Black Economic Empowerment (BEE). In addition, government wanted to intensify business performance in all the SOEs for the improvement of capital market to meet the objectives of the government's plans. Kikeri (2018) posits that South Africa is faced with key challenges including high levels of unemployment, crooked distribution of infrastructure, unequal distribution of land, and increasing disproportions between the rich and poor. With all these challenges, SOEs are vehicles to be used by government to push the agenda of economic and social developments.

2.2.3 Corporate Governance of SOEs in South Africa

Corporate governance is instituted to provide structures and processes to control and monitor the financial performance and reporting within organisations. Good corporate governance assists in the management of risks, safeguard against mismanagement, and boost investor and public confidence. It improves accountability and transparency and provides organisations with the tools to respond to stakeholder concerns (Mamaile 2020). It should be noted that resources that are used in SOEs are financed partially or fully through the National Revenue Fund (NRF) or by public tax and should be governed transparently (Bronstein 2011). It has been noted that poor corporate governance contributed towards poor performance around the globe and has crippled a number of SOEs in South Africa specifically. South Africa has good and balanced policies that serve as the baseline for appointment of Board of Directors, monitoring and the oversight role. However, there are serious concerns regarding how these mechanisms are not used as they should to safeguard the SOEs against abuse and mismanagement of the enterprises. It is therefore important for SOEs to put checks and balances in place by having good leadership as one element required for sound corporate governance.

The oversight role over SOEs rests with the National Parliament, the Executive, and the Boards of Directors of the enterprises. SOEs are governed by different Acts of Law among which are the Constitution of South Africa, The Companies Act 71 of 2008, the PFMA, and Protocol on Corporate Governance, e.g. King II code. The Companies Act provides guidelines on the establishment powers and functions of the SOEs' Board of Directors. The Board reports to the shareholder about performance and affairs of SOEs. The PFMA provides the standards under which finances should be managed. According to the PFMA, the Boards must ensure reasonable protection of the key resources of the SOEs; and act in the best interests of the SOE in managing their financial affairs.

The PFMA has listed about 300 SOEs in different categories as outlined in schedules 1, 2, and 3 as well as provincial entities of the Act, according to their autonomy regarding shareholding by the government. All these SOEs operate in different sectors such as telecommunication, transport, energy, finance, defence, mining, agriculture, and others. The SOEs report to the respective minister as the shareholder representing government. On the other hand, they report to other ministries (executive authority) as per sector - specific mandates, e.g. the transport

sector SOE reports to the relevant department. The role of oversight on SOEs is the responsibility of Parliament, the Executive and the appointed members of Boards, as illustrated by the diagram Figure 2 below.

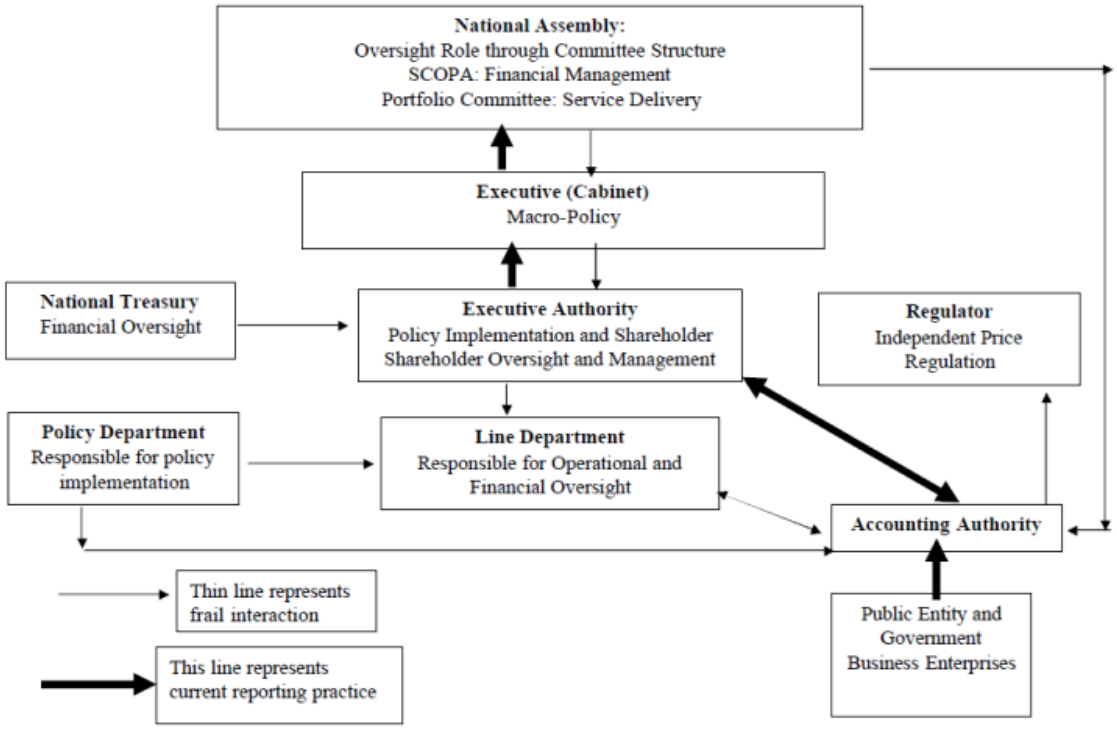

Figure 2 : Governance oversight role over SOEs:

Practicing good corporate governance in SOEs can address the following key areas:

a) *Clearly defined objectives of SOEs*. When objectives are clearly defined it allows for the mandates of the SOEs to be realised through greater funding to deliver on the objectives. Most SOEs have multiple and conflicting objectives.

b) *Improved legal and regulatory framework*. Good corporate governance in SOEs is a necessary foundation and a basis for accountability;

c) *Professionalizing SOE boards and management*. Boards of Directors appointed at SOEs must have the necessary competencies, expertise, and authority to carry out their core responsibilities. They provide strategic direction and to act with integrity and be held accountable for their actions;

d) *Financial stability*. Corporate governance will promote financial sustainability of SOEs;

e) *Enhancing the transparency and accountability of SOEs*. Good corporate governance practices improve effective performance monitoring that will enhance transparency and accountability in the use of public funds; and
f) *Attraction of investments.* Private sector investment and participation can be attracted in the operations of SOEs, especially where they are critically needed.

Sithomola (2019) emphasises that leadership in SOEs is an essential determining factor in enabling delivery of cost-effective services according to relevant legislative prescripts and remaining financially sustainable. Wong (2004) maintains that governance structures and policies are put in place to address issues of governance deficiencies including political interference, conflicting objectives and lack of transparency. Mutize and Tefera (2020) concluded that SOEs found themselves accused of many wrong doings such as monopolising certain sectors, sabotaging of structural reform programmes, gross inefficiencies, poor corporate governance, battleground of political games and being conduits for corruption. Within the South African context, a number of SOEs have been plagued with failed corporate governance due to lack of diligent oversight, over interference by politicians, multiple conflicting objectives, and lack of transparency. All these can be corrected through sound structures of corporate governance, clearly defined and prioritised objectives, political insulations, and transparency at all levels.

2.3 Information as an Organisational Strategic Asset

Ward and Carter (2019), Milkovski and Bogdanoski (2015) posit that information is critical in the operations of any organisation as a strategic resource as should be treated as an asset. Information technologies has changed the way information is created, stored, and used which requires organisations to change the way they handle information. Erog˘ lu & Cakmak (2020) concluded that when properly managed, information has the power to give a competitive advantage and improve business performance. Opoku and Enu-Kwesi (2017) view information as a useful resource as seen in the various roles that it plays in achieving organisational objectives. Information must be accurate and relevant for its purpose, and be delivered in required format at the right time. All these can only be achieved through effective information management.

According to Hsieh et al. (2006), an organization can achieve improved business performance if it has a high level of maturity on its information orientation. Kettinger and Marchand (2011) point out that many attempts have been made in previous years to define organisations that manage information in its lifecycle for improved business performance.

Ward and Carter (2019), Roos and Svensson (2012) accentuate the importance of organisational leadership in treating information as a critical and strategic organisational asset. This means that information should be included in strategic plans and be budgeted for like any other assets such as human and physical resources. It is clear that organizations should manage and use information from being information-based organizations to knowing organizations. Failure to manage information in organizations may result in the leadership having to take uninformed decisions, duplication of effort and time, increased operational expenses, information overload, decrease in business performance, and loss of information and opportunities. Managing information by organisations as a strategic resource has the following benefits (Ward and Carter: 2019)

a) The ability to comply with local and international data laws and regulations for sound information governance;
b) The ability to create a competitive advantage requires information;
c) The ability to stimulate creativity, innovation, opportunity across the organization;
d) The ability to integrate information from stakeholders, suppliers and customers; and
e) The ability to increase operational efficiency and effectiveness through organizational information flows integrated within business functions.

The Information Management Framework (IMF) will be highly beneficial to SOEs as a radar that will guide how they plan for the management of information from a strategic point of view, cascading down to lower operations as depicted in Figure 3 below. The primary purpose of the IMF in organisations is to create the fundamental foundation and structure that are essential in facilitating efficient information management in its entire lifespan. IMF serves to advance a robust, safe system in which data can be transacted in a coordinated way, from end to end.

Accordingly, the vision of any organisations should be realised by implementation of policies, processes and the information strategy at leadership level. This can be achieved by creating a culture that is information-driven where the organisation identifies and manages information

as asset, build good IM governance, identifies new business opportunities, and develops an information base for future use.

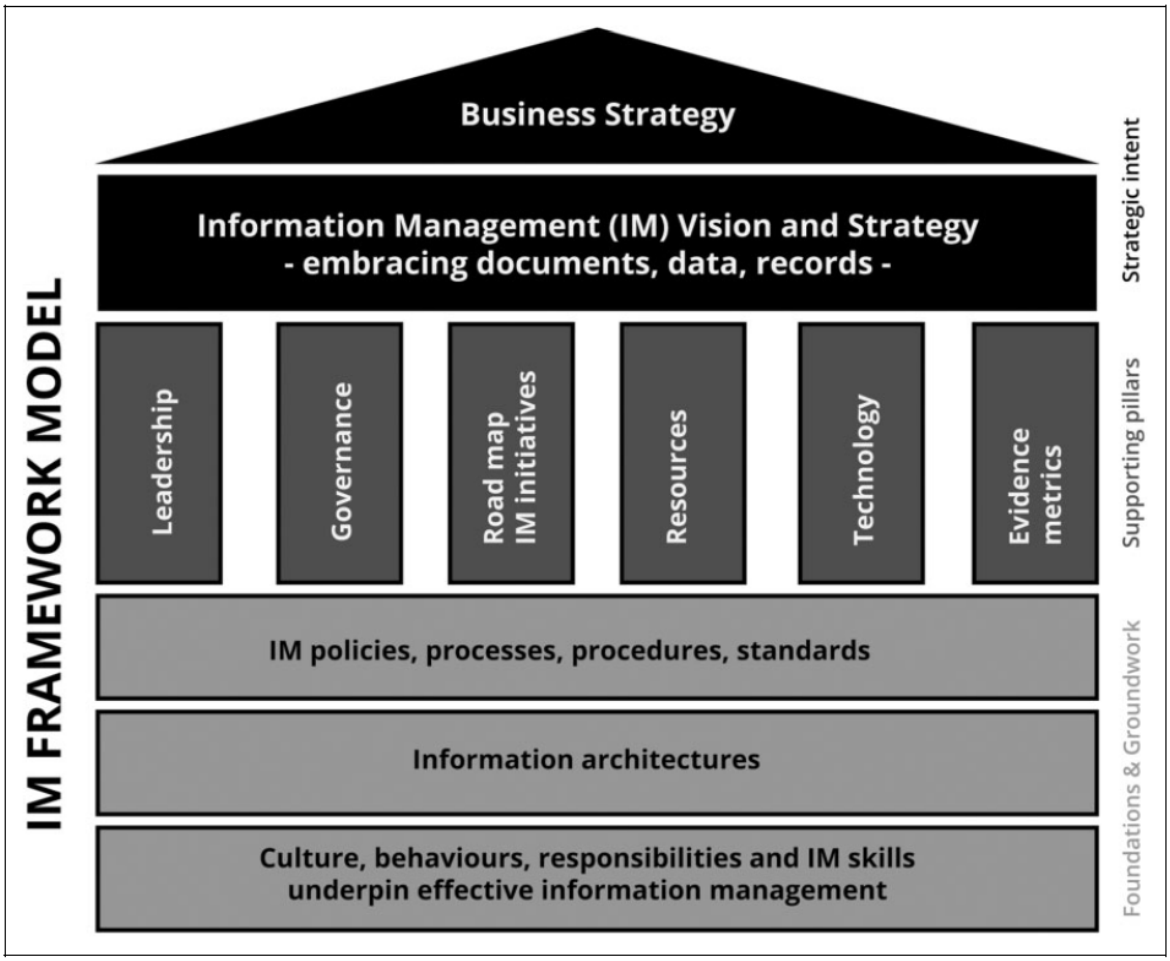

Figure 3: Information Management Framework Model. Adapted from Ward and Carter 2019

2.4 Conceptualization of Data, Information and Knowledge

The starting point in understanding the importance of information as a strategic asset is by defining these terms; data, information and knowledge. Ahenkorah-Marfo and Nkrumah (2012) posit that many authors in different fields argued and counter argued around the definition of the terms data, information and knowledge but concluded that they are related, although they exist separately with similarities and differences. Liew (2007) agree with the statement above that many authors defined the terms and identified that the terms depend on

each other in their definition; “i.e. data is defined in terms of information, information is defined in terms of data &/or knowledge, and knowledge is defined in terms of information.”

These terms are sometimes used interchangeably in literature but there is a distinction between them and, the approaches to managing them are quite diverse. Even though the definitions for data, information, and knowledge are interrelated it does not mean that they can be used interchangeably. They do not have the same meaning and purpose. Liew (2007) describe the transformation of raw data to information to knowledge in diagram Figure 4 below.

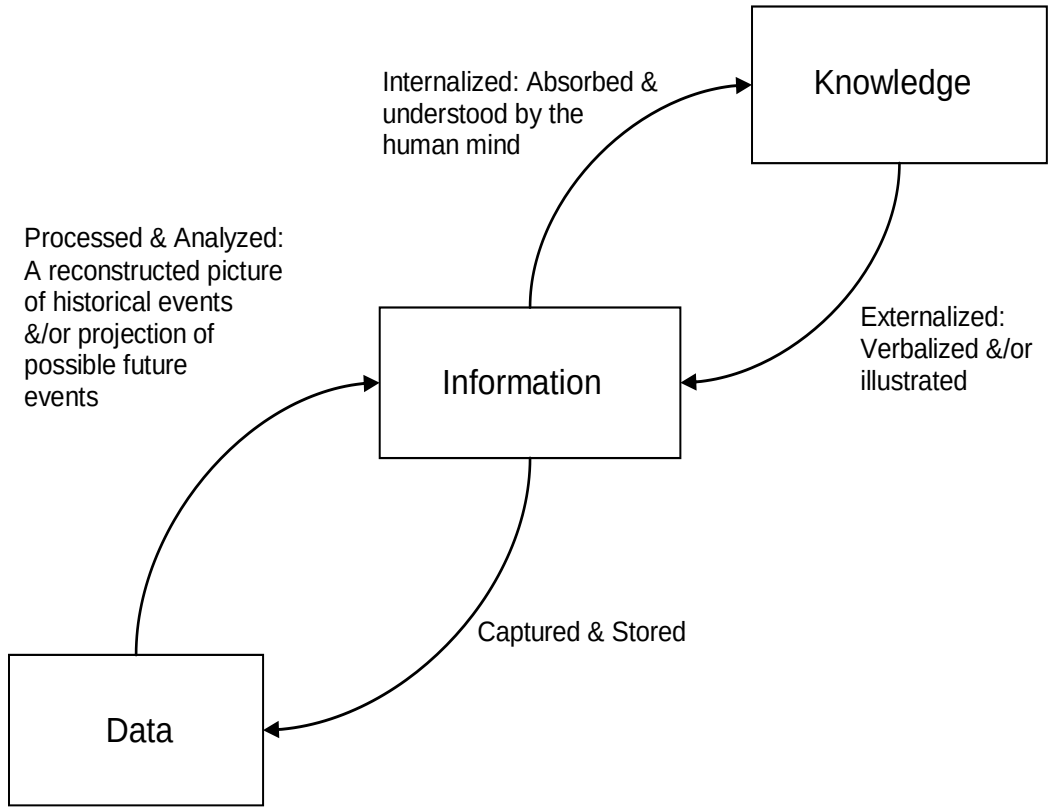

Figure 4 : The Transformation Process : From raw data into knowledge: Adapted from Liew (2007)

The relationship between the terms outlined in a form of a pyramid, which is known as the DIKW model, as defined in Figure 5 below. Cooper (2016) interpreted the model that raw data such as numbers or symbols with no meaning. Once the data has been processed and interpreted in a meaningful way, it becomes information. Information requires some sort of analysis and therefore gains significance and understanding to become knowledge either explicit or implicit. Explicit knowledge is data that is processed and recorded, and is readily available which makes it easy to share. Implicit knowledge, which is also called tacit knowledge, on the other hand, is

gained through experience and is in the head of people, making it difficult to share and manage. Cooper took it further than Bogdanoski and added wisdom. Wisdom is the application of past experiences and knowledge to best solve challenges, particularly when other decisions are applied. It is the ability to act appropriately using knowledge. The involvement of humans in the process increases proceeding from data to information to knowledge. Technologies are assisting well in storing and managing data but become less in managing information, and even less in managing knowledge (Davenport:1997)

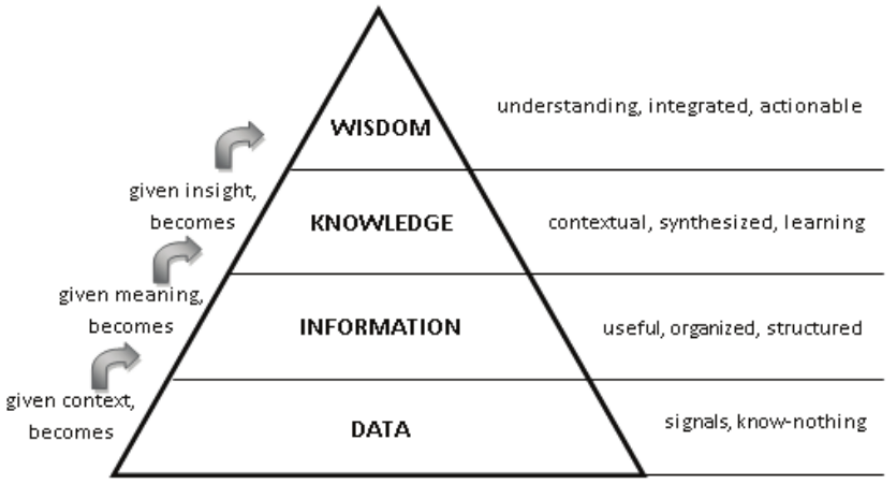

Figure 5: DIKW Model

Globalisation and technological advancement in the 4IR are some of the forces in the information age that should drive organizations to understand the DIKW model in order to have the right skills and resources to manage information strategically. Ward and Carter (2019) maintain that information is an important organisational asset that senior management should treat with the importance it deserves. It is important for organisations to know the value of their information assets to allow them to manage them strategically, to realize the value of information. Information technology, on the other hand, continues to be an enabler for organisations to use, to increase the potential value of information. The question we need to ask is; “Do SOEs in South Africa know their information assets? If the answer to the question is no, then they need to put policies and procedures in place to manage corporate information.

2.5 Theoretical framework on the management and use of information

2.5.1 Introduction

The theoretical framework for this research stems from the IO theory that was developed by Marchand, Kettinger and Rollins (2001). The theory of IO and its three vital information capabilities will be defined (Marchand et al. 2000; 2001; 2002). Ke (2011) highlights that the IO model explains the interactive role between people and technology on the effective use of information. IO is a measure that determines how senior managers perceive the information capabilities their organisations possess for use to improve business performance. Hwang (2011) substantiates that information intensive organizations should strive to excel at combining the IO practices rather than investing in and deploying information technology alone. Such organisations can instil in their people, the right behaviour and values associated with good use of information. The IO theory as explained in 2.5.2 below, has been developed to promote an integrated approach in the use of information that can improve service delivery, increase productivity and give organizations a competitive advantage. The different theories of effective use of information forms the basis of arguments around concepts but this study is mainly focused on the interpretation and analysis of IO.

George *et al*. (2012) postulates that IM is an ongoing process whose beginning and ending cannot be easily defined. This means that information should be managed when it is created either internally or sourced from outside the organisation, when it is shared, stored or used until it is discarded. It is therefore important to put strategies in place that will effectively and efficiently manage information in its totality.

2.5.2 The Information Orientation (IO) Theory

The IO theory promotes a more people-centered approach that encourages people to embrace good behaviours and values when they use information rather than focusing only on a technology-centered approach. This approach is supported by Marchand et al. (2000; 2001; 2002), that organisations must combine the above-mentioned approaches when investing in and deploying information technology. Organisations must also instil behaviour and values to their employees on how best they can use information. Kettinger and Rollins (2000, 2001; 2002) confirm that the theory provides the foundation to understand a holistic approach that

combines people, technology, and information values. The theory was introduced by Marchand et al. (2000) which originated from a study they did over senior management in different disciplines. The study investigated the connections between the comprehensive combinations of the three information capabilities as depicted in Figure 6 below. The theory is operationalized through an optimum "metric of information use" (Kettinger et al. 2011) or as a new metric to measure the effective use of information across companies and industries. It evaluates the strengths and weaknesses of the capabilities that are associated with the management of information to improve business performance and to have a strategic competitive advantage.

The authors concluded that treating one capability separately can demonstrate key weaknesses that will result in difficulty to link business performance to good use of information. The IO theory is unique in that it links the three capabilities and their combined effect on business performance, displaying a high maturity that will lead to superior business performance. Ke (2011) agrees that any organization should determine their information capabilities to create an enabling environment to improve business performance as encouraged by the IO theory. The IO theory provides organisations with an opportunity to do an assessment of their information capabilities, thus allowing them to have a perspective of their information management.

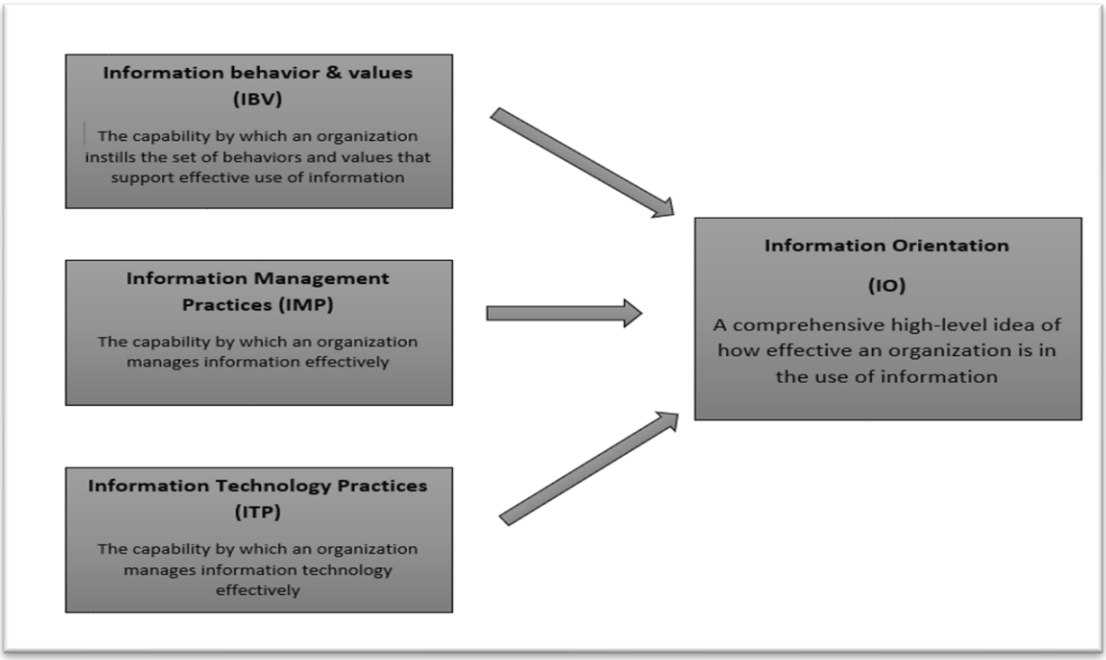

Figure 6 : Conceptual Model of the Study: Information Orientation Model (Adapted from Marchand et al. 2001)

2.5.3 Information Management Practices (IMP)

IMP is one of the capabilities of the IO theory that encourage organisations to manage and use information over its life cycle. Information life cycle starts from when the information is created until the stage when it is disposed or archived. This capability recognises that information exists in organizations in different formats, including knowledge that is with employees that needs to be formalised. Managing information includes the following phases:

a) *Sensing information* - information is spotted or recognized from the external environment including competitor's information, trends, market shifts; customer demands as well as social, economic, and political changes to make an assessment to take a decision or solving internal problems;
b) *Collecting information* – includes gathering relevant information, developing filter mechanisms, providing access to existing collective knowledge;
c) *Organising information* – information is organised by indexing and classification to allow easy access across business units and functions;
d) *Processing information* – includes accessing and disseminating information; and
e) *Maintaining information* – involves the use and updating of existing information. It helps to avoid duplications and collecting information all over again, and keeping information current and up-to-date for future use.

The diagram in Figure 7 below depicts the phases of the Information Management Practices as it should happen in organisations that aspire to manage information efficiently and effectively. The phases can be repeated until the desired output is achieved.

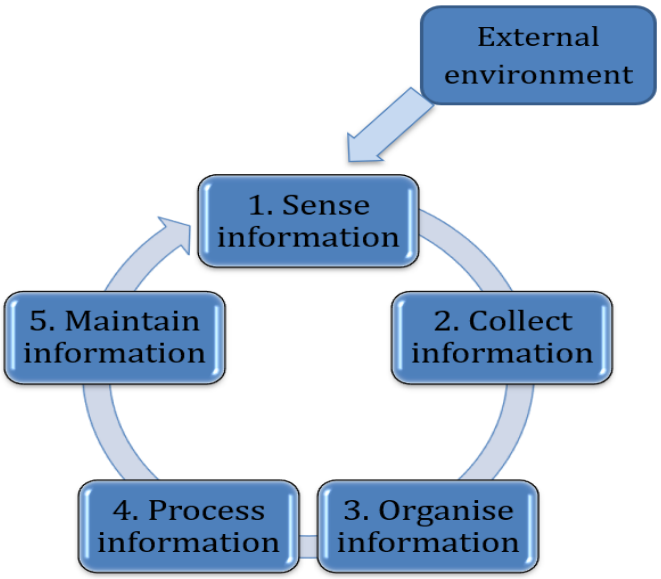

Figure 7 : Phases of the Information Management Practices

2.5.4 Information Technology Practices (ITP)

ITP is the second capability of the IO theory that involves the development and maintenance of information technology applications and infrastructure that support the strategy and objectives of the organisation at all levels. The support should cater for the following;

a) IT for operational support – support at operational day to day responsibilities including operations and transactional systems and processes;
b) IT for business processes – support for the coordination of cross-functional or horizontal business processes within the organization, as well as from external stakeholders;
c) IT for innovation support – the support for innovation at the level of professional and technical workers; and
d) IT for management support – the support for executives and senior managers on strategic direction of the organization.

2.5.5 Information Behaviours and Values (IBV)

Hwang (2015) emphasises that the human element is ultimately crucial in the information life cycle. Investment in technology to support these activities should go hand-in-hand with the promotion of information behaviour and value, which will benefit the organisation. The

argument is based on the capability of an organization to encourage their employees to use information effectively for the benefit of the organisation. Employees' behaviour in the course of using information should be based on organizational information values. IBV includes the following dimensions:

a) *Information integrity* - the dependability and trustworthiness of information;
b) *Information formality* - using and trusting the approved organizational sources of information;
c) *Information control* – disclosure of business performance to all employees;
d) *Information transparency* – openly discussing business failure and mistakes within the organization;
e) *Information sharing* – exchange of information within the organization across all divisions; and
f) *Proactive information use* – using existing information for innovative ideas and new products and services.

The diagram in Figure 8 below details the three capabilities of the IO Theory and their aspects.

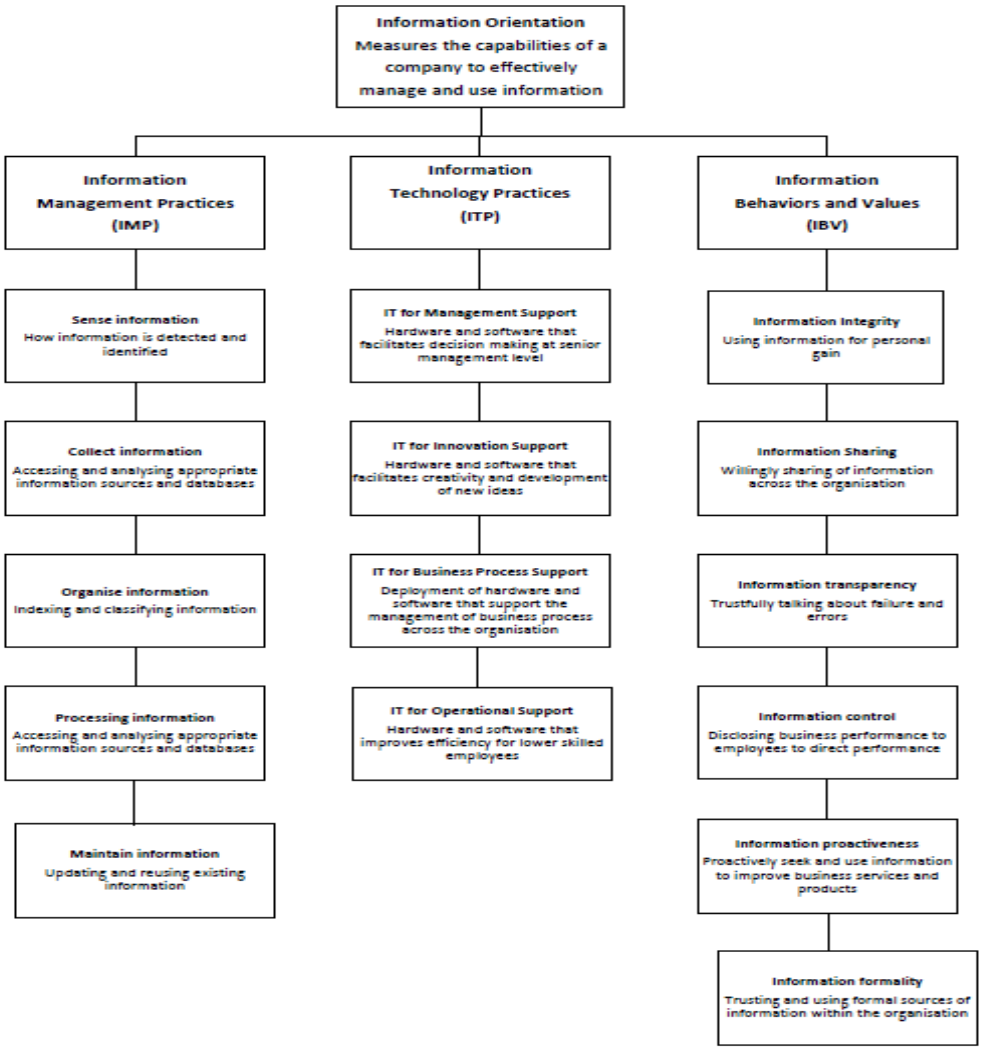

Figure 8 : Information Orientation (Marchand et al. 2001)

2.6 Factors that contribute to IO maturity

2.6.1 Introduction

The factors discussed in this section are taken from the model of Information Ecology (IE) that was introduced by Davenport (1997), which emphasize the totality of the information environment. The author posits that even organisations can invest in expensive technology, they will never be able to manage information effectively and efficiently if people are not given the primary role. The model human-centered as it puts people back to the centre of information use. It is rooted in the overlapping organizational environment and influenced by the external environment, as depicted in Figure 9 below. The diagram shows the three interconnected environments (information environment, organisational environment, and external

environment) that forms part of the information ecology. Managing information ecologically means understanding the landscape in which information is utilised and allowing for any changes in the environment to happen naturally. The approach of only investing in technologies for the purpose of managing information is not working for organisations (Davenport 1997).

According to the Information Ecology model, the information environment is the central and encompasses the six key aspects. The total information environment includes information strategy, information politics, information architecture, information culture, information workers, and lastly, information management processes. In a nutshell, the ecological model for managing information speaks to all the aspects that the IO Model presents in organisations and emphasises the fact that technology alone cannot solve business challenges. It has been noted that the effective use of information in many organisations, even in SOEs, have not improved at the same rate as investment in technology has. Below is the high-level description of the aspects of IE

a) *Information Strategy* – A strategy on what an organisation wants to do with its information as a resource;
b) *Information Politics* – Aspects that may interfere with the sharing of information;
c) *Information Architecture* – Information systems flow process;
d) *Information Culture* – Beliefs and values about information;
e) *Information Workers* – The professionals who deals and work with information; and
f) *Information Processes* - How people use and behave when they have information.

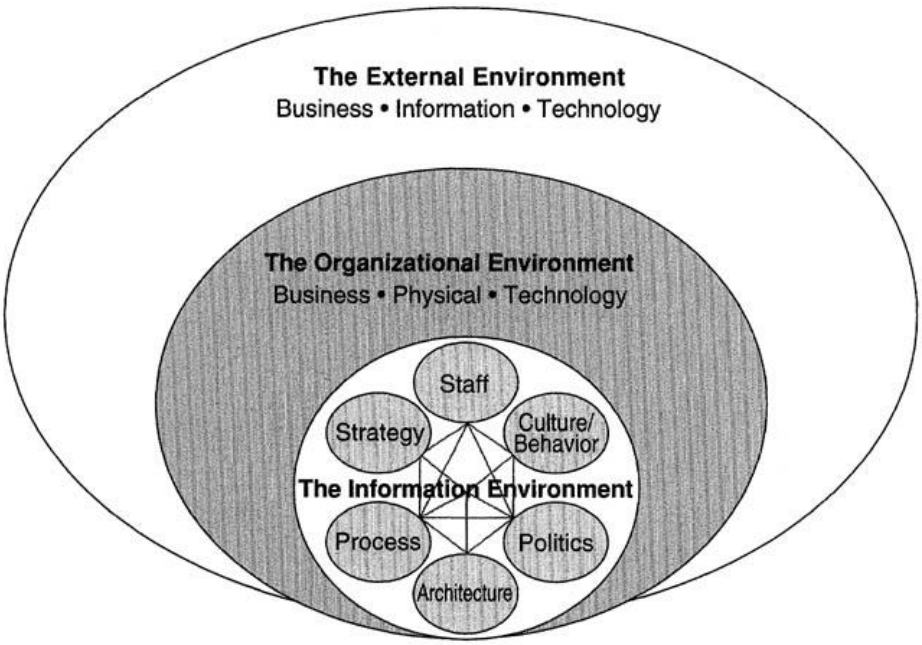

Figure 9 : An Ecological Model for Information Management (Davenport 1997)

The information ecology presents an ecological approach in the management and use of information many avenues that does not promote technology alone but include work processes, politics, culture, and information workers to meet information objectives. There are ecological attributes that organisations need to consider while building their information;

1) Integration of different types of information in different formats,

2) Recognizing the changes in the environment,

3) Understanding and describing the existing information environment on how information is collected, stored or used to help shape the future, and 4) shaping the values and 7 behaviours of people in the use of information to facilitate effective use.

2.6.2 Information Strategy

As much as companies have strategies to manage financial and human resources, it is important to have a strategy to manage information. An information strategy (IS) describes the process through which an organisation is going to achieve its long-term objectives (Waldron 2008). It must cascade down from the information strategy which addresses what the organisation's information needs are, to all the different levels starting at the strategic to lower levels.

Davenport (1997) defines IS as a continual process that guides the strategic direction on what organisations want to do with their information, and selecting the information activities needed to achieve the information strategy. Developing a strategy for information management has a potential to comprehensively embrace the other aspects of the Information Ecology, so it is recommended it is where managers should start. IS is implemented to support the overall organisational objectives in the management and exchange of information between divisions, clients, stakeholders and compliance institutions. It forms part of the building blocks of the corporate strategy and the demand for compliance to information standards at corporate, national and international levels. IS facilitates how information should be easily accessible, re-usable and controlled in such a way that the organisation gains to outperform its competitors. Developing and implementing a well IS has the following benefits;

a) Easy access to relevant and up-to-date information for operational and decision-making purposes;
b) Creation of good corporate memory;
c) Understanding and knowing what information the organisation has thus allowing planning and improvement in operations and services;
d) Ability to account and comply with legal prescripts at all levels;
e) Identify redundant information and process for review;
f) Reduction of information overload;
g) Build the IO maturity level;
h) Better allocation of information resources;
i) Ability for organisations to adapt to environmental changes; and
j) Promote communication and debate among managers to come to a consensus in a more constructive way.

IS will assist organisations to determine information they need, who needs the information and for what purposes, including access control to the information, as well as the format of the information needed in order to allocate the necessary resources and the implementation, monitoring and evaluation thereof. SOEs like any other organisations need to follow the guide of developing and implementing IS by focusing on choosing the right and relevant information content, encouraging employees to share common information and using same terminology, and lastly improving on internal processes with the participation of senior management.

2.6.3 Information Politics

It is no doubt that the flow of information in many organisations has been affected by politics and power. As information has become an asset in many organisations, information politics has increasingly become a concern. Information politics outlines the behaviours of individuals or divisions to keep information for their gain instead of the entire organisation. According to Davenport (1998), jobs and responsibilities within the workplace are defined by the uniqueness of the information they have, and that becomes a source of power and more so, for job security. In such instances, employees are not willing to share the information. The best way to manage information politics is to introduce information governance that will benefit the interests of the entire organisation. Information governance might be critical in the management and sharing of key information, but there needs to be a consensus on what the information needs of the organisation are, to avoid more politics.

Information politics should be acknowledged and willingly discussed at strategic level so that it can be managed appropriately to the benefit of the organisation. It is therefore crucial that senior manager openly and honestly talk about the politics surrounding information within organisations. Davenport *et al* (1992; 1997) provided a guideline on how organisations can manage information politics. They suggested that organisations can build their information polity by choosing the information politics model from the five that best suit them as per the table 1 below:

Table 1 : Models of Information Politics: Adapted from Davenport et al, 1992. p56

Information Politics Model	**Description**
Technocratic Utopianism	This is an approach to information management that is fully dependent on technology and the modelling and categorisation of information. It deliberately avoids information politics but providing technology infrastructure that can deliver information to everyone. The assumption with this approach is that technology will solve organisational and political issues that employees will willingly share information, and that free flow of information will not be restricted by managers.

Anarchy	This approach emanates from a centralised management of information or whereby the Executive develop strategies on how information will be managed get down to individual level. It is characterised by individuals deciding on their information management. The downside of this approach is inaccurate reporting and reinventing wheels which cost more time and resources. There is no coordination of important and key information to inform decisions.
Monarchy	This approach is more on the level of business units having to obtain and manage information according to their information needs. There is no centralised management of information nor overall organisational policy. Anarchy results in duplication of costs and inconsistent flow of information across the organisation. It becomes more challenging if the monarch is at a junior level because no one will ever follow instructions especially seniors. The monarchy approach has benefits such as standardised terminology, less duplication of information, efficient delivery and flow of information.
Feudalism	This approach encourages the management of information within business units/functions. Business units decide on the type of information that can be collected, in what format, and the terminology to be commonly used. The downside of this approach is that business units sometimes do not report negative performance at organisational level. Duplication of information cannot be avoided and there is a lack of standardisation in the terminology across the organisation. This approach can work in organisations where business functions have different clients, performance measures, products and services, except for reporting and regulatory purposes.

Federalism	This approach recognises the significance of information politics and participation of all role-players. A democratic shared information vision is created through negotiations to reach a consensus, whereby some elements of information are centrally managed and the rest left to business units. A collective purpose is defined and how it is going to be achieved. This approach has more benefits but can have challenges such as difficulty in reaching consensus and persuading business units to share information to the central databases.

2.6.4 Information Behaviour and Culture (IBC)

According to Choo et al (2008), information culture is regarded as a sub-set of a macro culture that exists within an organisation. It includes those elements of an organization's culture that influence its management and use of information. As explained above, information culture is thus displayed in the norms, values and practices that influence how information is perceived, created and used. Norms, in this case, refer to standards of behaviour that are applied in the handling of information within an organisation. Norms set parameters of what behaviours are acceptable and expected around information, in an organisation. Values are fundamental and deeply held beliefs that motivate attitudes and behaviours. In relation to information, values can determine what is important in it and how it can be managed. Values inform assumptions and beliefs about the function and impact of information in an organisation. Therefore, values play a crucial role in determine how information must be generated and utilised. In all this, people play an important part in displaying the information behaviour and values on information management.

Information Culture is realised when information becomes the basis for decision-making processes and Information & Communication Technologies (ICTs) are enablers of information flow. The value of information culture is recognised when operational and strategic goals are achieved. Choo (2013) defines information culture as the shared values, norms and behaviours that outline the management and use of information within organisations. They shape the

perception through which information is viewed, managed and used. The information culture explains the beliefs on the role that information plays, and the accepted standards of information behaviours that can be accepted in the organisation. Oliver (2008) cautions that whether we like it or not, information culture exists in organisations even when it is not strategically supported and managed. Information orientation needs an organisational culture that will enable employees to use and share information for the benefit of the organisation. With this in mind, technological infrastructure is needed to support the dissemination of information packaged in a manner that guarantees uncompromised confidentiality of and accessibility to the information. It is imperative that organisations encourage employees to contribute positively into the organisation's information culture that facilitates the management of information in its entire life cycle. Davenport (1997) identified three behaviours that organisations can implement to improve their information environment, namely 1) sharing information, 2) handling information overload, and 3) ability to deal with multiple meanings

2.6.5 Information Professionals

Choo (2006) defines information professionals as the personnel that create, use, train and coordinate the use of information. Traditionally, information professionals included librarians, archivists, and records managers. Amin, Wahid and Aziz (2003) agree that these professionals were the only ones that were associated with managing information, but in the advent of the digital development in the 21st century, that perception has changed dramatically. Information professionals now include professionals such as information technology technicians, knowledge managers and researchers. Information personnel in an organisation play an important role in the management and use of information.

2.6.6 Information Architecture (IA)

In 4IR, an increasing large amount of information is available from sources including the World Wide Web (www), intranets and other online communities (Seddighi 2020). Thus, access to information from the web needs to be arranged in a way that allows for easy navigation. Information Architecture (IA) refers to the way content in websites is organised and structured

in a way that allow users to find information easily (Danaher et al, 2005). IA plays an integral role in the presentation and access of information to meet different needs of users. It helps users to understand how to navigate different pages and what information is available for their search. Choo (2006) describes IA as the framework that guides on the location of information as well as how it should be presented on organisational websites.

Barker (2005), agree with the view that IA demonstrates how a system is navigated and the category of information is used. It allows people to navigate through the system in order to get the information they want. In most cases, it is used in the structuring of websites and intranets using different technology stacks. For organisations to be able to manage their information effectively, they need to consider their information environment which includes business objectives, the content to be displayed, organisational culture and their users when they design their IA. Flett (2011) emphasises that IA is very important for Information Management as it enables and accentuates the net worth of IM by means of strategies and frameworks which efficiently organise the processing of information. The value added by IA in IM is how it helps organisations to source, assimilate, interpret, configure, present and use as shown in Figure 10 below.

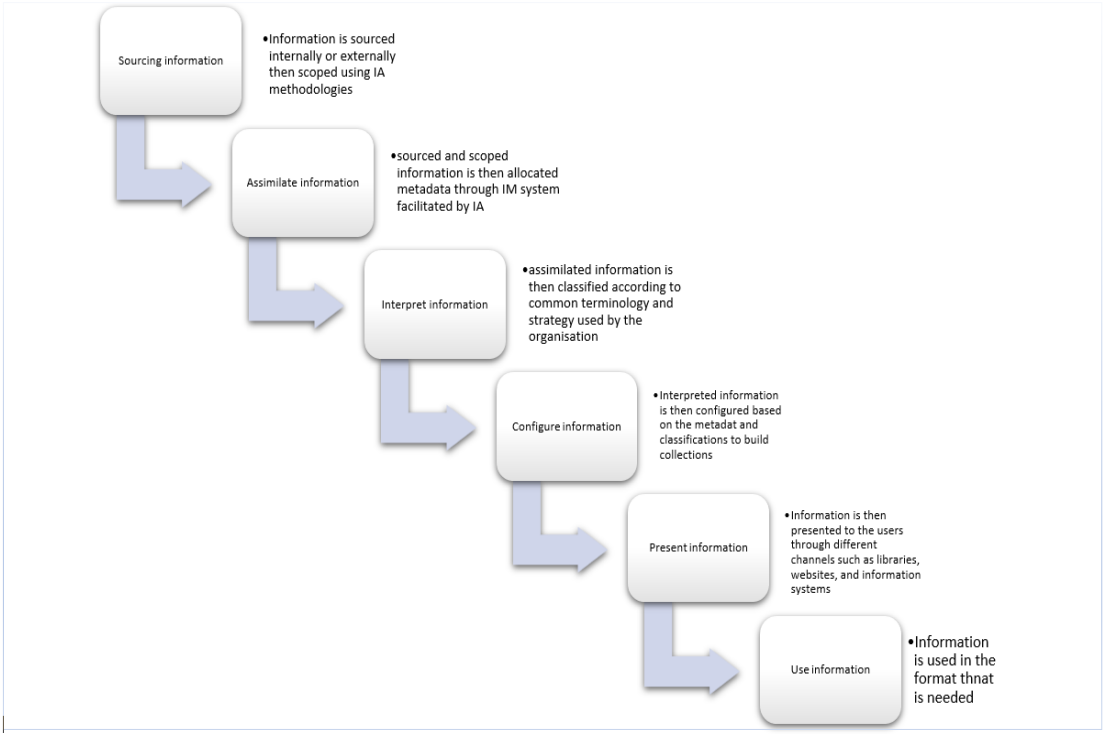

Figure 10: Information Architecture facilitating Information Management activities

2.6.7 Information Management Process

Information Management Process involves a life cycle which starts when information that is regarded as important to the organisation, is created until it is disposed. The life cycle includes the process by which information is sensed, collected, organised, processed and maintained as proposed by Marchand (2011) in the IMP capability of the IO model. It further ensures that information is managed as a strategic resource and is thus aligned with the requirements of the organisation in terms of its vision, mission, strategies and plans. This process will eventually create a competitive advantage that will also contribute to enhance organisational decision making and improved business performance. According to Choo (2006), Information processes describe how information goals are accomplished through determining information requirements, as well as capturing, distributing and using information.

2.7 The Relevance of Porter's Five Forces in SOE's

2.7.1 Introduction

Competition in any industry is one of the driving forces of operation and important element for achieving efficient resource allocation. It is important that competition is analysed in one way or another. Various tools for analysing the competitive advantage are available such as the Five forces analysis, Game plan, Value Chain model, PESTEL model and the Strategic group analysis, the researcher chose the Five forces analysis model because of the role it can play in SOEs. Porter's Five Forces model was developed by Harvard Business School professor Michael Porter as a framework to assess and evaluate the competitive muscle and position for businesses. Indiatsy et al (2014) posit that Porter's competitive force model has been identified as one of the best tools for strategic analysis. Rajasekar and Raee (2013) agree that Porter's (2008) model is recognised by both academics and professionals to be an analytical tool for assessing competition in any industry.

It is perceived that any organisation's strategy should identify the threats and opportunities from the outside-in perspective. For SOE's to be competitive, their strategies should be able to respond to changes that are happening in their external environment, such as technological advancement, globalisation, and innovation thinking. These aspects, if not assessed

appropriately, can jeopardise the ability of SOEs to generate revenue and sustainability. Porter's model is a comprehensive framework that provides analytical techniques to assist enterprises analyse their industry holistically, to predict the industry's trends, to understand their position against competitors, and finally use the analysis output to build competitive strategies.

According to the five forces model, it is recommended that the strategic direction of SOEs should be determined by assessing both direct industry competition and other external forces in their environments as shown in Figure 11 below. The central part represents the concentration of rivalry among industry competitors. External forces include industry factors namely threat of new entry, threat of substitution, supplier power, buyer power, and competitive rivalry (Rice: 2022).

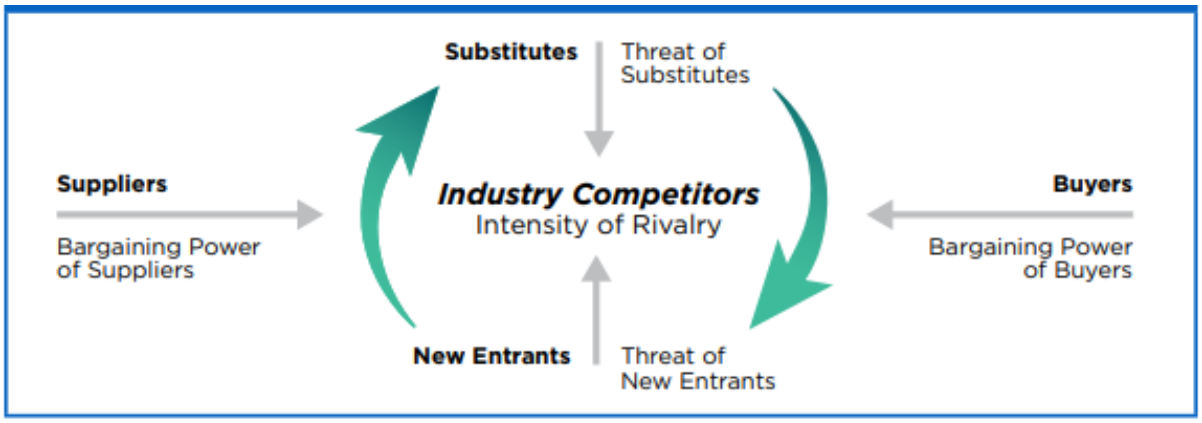

Figure 11 : The overview of Porter's five forces model explained (Adapted from Rice 2022)

The main purpose of analysing environmental threats is to assist senior managers in become more successful in creating strategies to neutralize or mitigate them. All these forces can determine market competitiveness and assist SOEs in shaping their strategies to the right direction to improve business performance. The relevance of Porter's model for SOEs is seen on the power it has to thoroughly analyse external environmental forces and to assess industries competitive pressures. The central position of the model is an industries potential competitiveness is determined by the one or the combination of the five forces within an industry. SOEs should be competing with their counterpart in the private sector, hence it is

important for them to use Porter's five forces as a baseline framework to analyse their competitiveness in their industries.

This study chose to use Porter's Five Forces Model because of the role these five forces can play in analysing the operating environment of SOEs and thus improving their competitiveness and productivity particularly in SA. The model can assist in determining the weaknesses and strength of the industry, which will play a key role in the development of the organisation's strategies. Porter argued through his model that the power of competition is not only between existing competitors or market players within any industry, but goes beyond that and include competitive forces that influence prices, investment, costs, and other strategies that are necessary to compete. The forces of the model are discussed below.

2.7.2 The aspects of Porter's Five Forces Model

2.7.2.1 Threat of New Entrants

New entrants in any industry can result in significant decrease of profitability and compromise returns to existing competitors. The power of new entrants into any sector is largely dependent on the level of entry barriers including how easy or difficult it is to enter a particular market. New technologies such as Artificial Intelligence (AI) and Internet of Things (IoT) as well as globalisation have introduced new entrants into different markets that are shaping and disrupting exiting businesses thus affecting their competitive advantage. SOEs like any other organisations should be aware of the threat of new entrants in their different sectors so that they can proactively create strategies to positively respond to the competitive environment (Mugo:2020). According to Ryu (2018) as cited by Mugo (2022) factors contributing to new entry into markets include the cost to switch suppliers, access to capital funds, and restrictive policies by government. Possible barriers to entry include patents, brand reputation, high capital costs, and distribution channels that are controlled by existing competitors. Examples of barriers that SOEs needs to analyse in their industries include fixed costs for changing suppliers by consumers, access to capital finances, and restrictive government policies.

2.7.2.2 Threat of Substitute Products and Services (Potential substitutes)

Threat of substitute products and services refers to when clients are able to easily switch from one product to another or can get quality service at a lower cost. In most cases the product or service that are potential substitutes basically perform the same function as the industry but by different means. New technologies have given businesses an advantage to provide services/products for the same economic need. Competition in the same sector requires that businesses identify factors that influence threat of substitutes, such as differentiating their products/services from those of competitors, and keeping customers loyal (OECD 2016, Evans & Neu 2008). Alternative substitute products pose a competitive threat if they are regarded and reputed as superior in quality and graded higher in worth but are selling at a reasonable cost.

2.7.2.3 The Power of Customers

Factors that influence the power of customers according to Porter's model are price sensitivity, the perception created with regards to the quality of service, and lastly, the availability of information regarding products and services available in the market (Rajasekar 2013). Porter argues that the power of customers is in the buyers' competition with the industry having the influence to reduce prices, and bargain for higher quality or more services. In other words, customers contend effectively with the industry sector by means of pushing prices down, negotiating for enhanced quality or a greater range of services and pitying market competitors against each other. These customer tactics negatively impact the bottom line in the industry. According to Indiatsy et al (2014) bargaining power of customers means that customers have the power to demand low price and high-quality products/services. In other words, if customers' loyalty to the company is very low, then it will become difficult to increase prices on products or services offered. Businesses suffer the consequences as profit becomes low and as costs of production increases. In most cases bargaining power of customers is high when the cost for customers to switch to competitors is low, and when there are many options for customers to choose from. In this case buyers determines the prices

2.7.2.4 The Power of Suppliers

The power of suppliers is shown where an industry is highly fragmented but only few suppliers are dominating the industry. According to Evans and Neu (2008) the dominating suppliers dictate the terms, quality and price of products or services. These suppliers gain power through highly differentiated product and services in that way making it difficult for customers to switch over to other suppliers. Bargaining power of suppliers give more advantage to suppliers to manipulate the buying price at high cost with low quality material. The situation is created when there are few suppliers and more buyers and cost of getting substitute material is too high. This can happen mostly in fragmented sectors and when the suppliers are not even competing with substitute products and services. The power of suppliers can be evident if their product in an important output to their customers' business (Indiatsy et al 2014).

2.7.2.5 The power of industry competition (rivalry among existing competitors)

Evans and Neu (2008) posit that the power of industry competition is evident when companies are aggressively competing for a share in the market. Competition among existing industry players is the key determining factor on how profitable or competitive an industry is. Rivalry among existing competitors refers to the efforts that industry players or existing competitors make in order to sustain and improve their market share, revenue, profitability and reputation. Competing for a share in the market determines how aggressive businesses should be to gain a competitive advantage. Competition happens when there are many competitors, industry growth is negative, products and services can be easily substituted, and lastly, when there is low or no customer loyalty.

2.7.3 The Application of Porters Five Forces Model on SOEs

Using Porter's model, organisations can identify their competitive power and determine competitive intensity. SOEs in SA should also benefit from using the model to understand their strengths of their competitive position and how they can develop strategic direction to move into. The model can reveal more threats and power as a result from each of the forces. Regarding their failure with regards to IBV, this study's findings indicated that SOEs in South

Africa are not able to manage their employees' use of information but their strength is in the ITP and IMP capabilities. All SOEs are mandated to expand the economy in different sectors, and if they fail there is a possibility of threat of competitive rivalry. Globalisation has forced organisations to seek for information about new entrants in the market, competition, customers, service providers, and foreign markets. It is therefore crucial for SOEs to apply Porter's model in relation to their managing and use of information. Hole, Pawar and Bhaskar (2019) indicated that there are three steps to be considered when performing analysis of the organisation, these are*:*

a) *Information Gathering*: SOEs should collect information from the external environment about their industry when they apply Porter's five forces to further classify the collected information. This is also supported by the capability of IMP which states that organisations should sense information from their external environment to help them shape their strategic direction;

b*) Analyse and identify factors:* After information has been gathered, it is important to then analyse and identify all the factors that affect the industry, more so with SOEs as they are structured in different sectors as each industry has different factors and challenges; and

c) *Develop and define strategy:* Conclusion is drawn from the analysis and strategies to improve performance are developed. It is crucial that SOEs start to develop their information strategy to guide what they need to do with their information.

It should be noted that SOEs should assess their external environment using Porter's five forces model, even though they enjoy privileges from government's legislation and preferential treatment, which are not based on better performance, expertise, technology nor superior efficiency (Capobianco:2009). SOEs have an advantage of benefiting from information asymmetries because they have access to government information that is not available to private business competitors. Threat of new players in business shake the competition of existing businesses. An example for SOEs in South Africa can be in the telecommunication sector where we have seen a number of new entrants because of the introduction of new technologies. For the longest period, Telkom enjoyed being the key player in providing products and services. Once there were new entrants into the market like Vodacom and MTN, Telkom lost customers to the new players. This is because their strategy was not meant to deal

with new entrants into the market. For SOEs to assess possibilities of new players in their sector, they need to assess related barriers to entry such as cost that customers have to pay for switching suppliers, access to capital funding, and government policies. Indiatsy et al. (2014) proposed that barrier to new entry can be created through product differentiation and customer loyalty, which can force new entrants to spend heavily to overcome existing customer loyalties.

Threat of substitute in relation to SOEs in South Africa can be seen in the energy sector where ESKOM has been the sole supply of electricity. Their strategy has never focused on being competitive and this has led outages of power supply since 2015. Citizens and the business community have resorted in substituting electricity with alternatives sources of energy such as renewables, gas, and solar. Government is also considering nuclear energy and providing licenses to Independent Power Producers (IPP). It has been said that the power utility was doomed to fail because of its monopoly as the sole provider of electricity. An open market for electricity could have introduced price competition which are market driven for sustainability. For ESKOM to survive, they need to assess the strength of the new suppliers of energy in terms of their employees, the infrastructure and the technology they are bringing.

2.8 Legislative Compliance for Information Management and Use

2.8.1 Introduction

In South Africa, institutions are required to comply with various applicable legislations and prescripts with regards to the management and use of information. SOEs, as public institutions funded by the government handle a lot of information, must comply with the following;

2.8.2 The Constitution of the Republic of South Africa

The Constitution of the Republic of South Africa Second Amendment Act, No. 3 of 2003 requires public and private institutions to report to Parliament, the National Council of Provinces and the Provincial Legislatures when information is required from them. SOEs are not exempt from compliance and for that reason, they should provide information in accordance with the Constitution. It becomes easy to do so when information is managed and used effectively.

2.8.3 The Promotion of Access to Information Act (PAIA)

The PAIA promotes the constitutional right of everyone to access information that is held by institutions of the state or privately held, to promote transparency as well as allowing citizens to be involved in decision-making processes. SOEs are public institutions and are always obligated to adhere to PAIA. It is therefore important that they have the capabilities to manage information and to adhere to the Act.

2.8.4 The Protection of Personal Information Act (POPIA)

POPIA was enacted with the purpose of protecting individual's information from harm, as one of the basic human rights. The Act prescribes how personal information can be lawfully processed by organisations, to protect individuals 'personal information from being stolen.
In order for SOEs to protect personal information of their employees, clients and stakeholders, they need to manage information at all levels within the organisations.

2.8.5 Minimum Information Security Standards (MISS)

The Minimum Information Security Standards prescribe minimum standards by which organisations must protect and securely classify information they hold. Organisations must put standards in place for safekeeping of sensitive information, to protect national security and to classify it into categories of restricted, confidential, secret and top secret as per legal prescripts. Such information must be protected and Senior Management of public institutions such as SOEs, must be responsible to ensure compliance and additionally provide information security policy for the organisation.

2.8.6 Copyright

Copyright Act, 1978 (Act no. 98 of 1978, as amended up to copyright amendment Act 2002) seeks to protect authors from potential exploitation of their work and to secure it against unlawful usage and distribution. Individuals are expected to acknowledge authorship of any work found in any publications such as books, journals, audio, internet and others, whether it

is formally or informally published. South Africa recognises foreign copyright protected works of member states provided that the works meet the criteria stipulated in South Africa's copyright law. It is therefore important for SOEs to protect the rights of authors to avoid infringement.

2.8.7 National Archives and Record Service of South Africa (NARS)

The National Archives and Record Service of South Africa, Act No. 43 of 1996, regulates the management and use of all government records and how they should be archived. SOEs have records that need to be archived as per NARS regulations. It becomes easier to adhere to the Act if all the records that are part of information management are managed accordingly.

2.8.8 Electronic Communication and Transaction Act

The Electronic Communications and Transactions Act, No. 25 of 2002 serves to enable and regulate electronic communications and transactions, thus preventing abuse of information systems. With the ongoing advancement in digital technologies, SOEs are adapting as more technologies are introduced. It is crucial for SOEs to manage their electronic transactions such as emails and others, effectively.

2.8.9 Public Finance Management Act (PFMA)

The Public Finance Management Act, 1999 (Act No. 1 of 1999) obliges SOEs to account to Parliament and the general citizenry for financial resources allocated to them. Institutions under this Act must apply the principles of effectiveness, efficiency and economics when purchasing or using the resources entrusted to them. Accounting means that the institutions should keep records and manage financial information in compliance with the PFMA. The PFMA is the engine that helps to provide a framework for financial reporting and accountability and helps to bring consistency and standardization across SOEs and all government institutions. It is therefore important that SOEs manage such information in conjunction with the IO model in order to fulfil the requirements of the PFMA.

Summary

The primary aim of this literature review chapter was to provide an overview of the current state of knowledge and key debates on information orientation in SOEs in South Africa. Secondary to that, the aim was to identify knowledge gaps and unresolved challenges in SOEs that this study could address. The chapter started off by defining SOEs as enterprises that are controlled by governments, with either a partial or full ownership stake to achieve a public service motive. A review of information as an organisational strategic asset was done as well as an appraisal of concepts that relate to corporate governance on information in SOEs. Additionally, this chapter conducted a scoping of literature on pertinent topics and research areas such as the Information Orientation (IO) model that promotes the integration of IMP, ITP and IBV for effective information management. The author also assessed the crucial factors that could assist SOEs to achieve optimal Information Maturity levels.

The Relevance of Porter's Five Forces was examined in identifying challenges in SOEs. The chapter served to identify key theoretical concepts, gaps in literature on the topic and potential sources of evidence to inform this research. The next chapter will focus on research methodology adopted in this study.

Chapter 3: Research Methodology

3.1 Introduction

In research, the phrase methodology means approach that is taken to seek answers for a problem. The focus of this chapter is to outline the research methodology and the process undertaken for the research. A background of the research methodology is defined. The following aspects of the research methodology are also discussed: a) study population, b) sampling for the study, c) data collection, d) data analysis and interpretation, e) ethical considerations, and f) reliability and validity.

3.2 Research Design

3.2.1 Introduction

A research design defines a procedure and course by which a study is going to be completed with the aim of getting answers for the research question at hand, including how data will be collected and analysed (Kumar 2018). It is a blueprint that outlines in more details how the chosen research method will be applied, including the research instruments to be used to collect data, data sources, sampling of respondents and ethical issues to be considered. According to Creswell (2019), a research design is a plan involving several decisions that the researcher has to take regarding assumptions of the study; how the research will be carried out, and the collection, analysis as well as the interpretation of data.

3.2.2 Types of research approaches

The type of research approach to be used should be decided based on the objectives of the research, not one approach is better than the other. There are various major approaches of research design in the Social Sciences that researchers can use to find answers. These are qualitative, quantitative, and mixed methods approaches. The difference between the three approaches lies in their flexibility in the research process (Kumar 2018). The qualitative approach focuses on understanding, explaining, exploring and clarifying people's perceptions, feelings, situations, values, beliefs and their attitudes. The approach focuses at exploring

diversity, openness and flexibility while putting more emphasis on human experiences and perceptions. Some qualitative approach presents findings that cannot be quantified or arrived at through statistical procedures or numerically (Rahman: 2017, Queirós, Faria, and Almeida: 2017).

It attempts to expand societal understanding of how things came to be the way they are. Quantitative research, on the other hand, places emphasis on elements of social behaviour that can be counted, computed and quantified in order to draw patterns out of them. This is opposed to identifying and exploring aspects of social behaviour with a view to understanding and interpreting meanings that people associate to their own actions. Its approach is aimed at counting, enumerating and measuring variation in a phenomenon, and follows a structured procedure.

Lastly, the mixed methods approach uses a sampling mixture of both quantitative and qualitative in the research process to get the results (Creswell 2019, Hafsa 2019). It encompasses using both qualitative and quantitative approaches when collecting and/or analysing data in a single study. In other words, drawing inferences from both approaches. Good quality mixed methods research entails mixing at all stages of the study including phrasing research questions, sampling, data collection, data analysis, and interpretation (Yin 2006). According to Johnson and Onwuegbuzie (2004), mixed method offers the scope of blending various research designs in order to get the best solution to the research problem.

3.2.3 Strengths and Limitations of the different Approaches of Research

All three research approaches (qualitative, quantitative, mixed method) have their own strengths and limitations. The qualitative method details the description of the participants' perceptions and experiences. In that way it allows the reader to understand the meanings of people's voices through their answers. Its flexibility allows for an interactive approach allowing participants to respond to questions in details. The limitations of the qualitative approach include the use of small samples which has a negative effect on the generalisation of the findings to the whole population of the research. The complexity in the interpretation and analysis of data is also another down side of the qualitative approach.

The quantitative approach deals with a comprehensive sample and quantifiable data which allows for good representation of the population and generalisation of the findings. Analysis of data is efficient as it can be done by software e.g. SPSS. The limitations with the quantitative approach are that it becomes difficult to explain the underlying meanings and explanations on the collected data. The respondents' perceptions and experiences are usually overlooked especially in highly controlled settings. Hafsa (2019) alluded that the mixed method approach has been applauded for allowing the qualitative and quantitative approaches to complement each other and providing a holistic view of the study regarding the study phenomenon especially for complex and dynamic research. It also improves on the validity and reliability of the study. Though the mixed method has good benefits, it has shortcomings as well. Lack or insufficient resources such as time, expertise and knowledge can be an issue and a daunting task for the researcher using a mixed method approach.

This study in particular, has used a qualitative approach to collect information that is relevant to answer the research question broadly rather than to measure it. The researcher was able to collect rich and detailed information about the respondents' views, opinions, motivations, thinking, and attitudes on the topic of the study.

3.3 Study Population

Lapan et al. (2012) refers to the study population as participants in the study who are selected in relation to their understanding or perception of the study topic. Sedgwick (2014) concludes that the study population is the first and most important aspect in a research project, which must be clearly defined at the beginning of the study. The inference is that researchers need a population that best fits the study.

SOEs have served as the study population in this research. Mamaile (2020) defines SOEs as legally developed entities in terms of the Companies Act of 2008, which are controlled by the PFMA. The PFMA lists constitutionally established institutions, provincial and national public entities, as well as business and governmental enterprises. Data was collected from astute organisational representatives because of their understanding of organisational strategies, processes, culture and climate. Senior managers were the targeted respondents for the

researcher to get their perspectives and understanding of the management and use of information within their organisations.

Their responsibility and function have the potential to predict strategic choices and performance, as they reflect what is happening in their organisations. Senior managers in the study refers to Heads of Divisions (HoDs), Chief Information Officers (CIOs), Chief Executive Officers (CEOs), Chief Operation Officers (COOs), Senior Knowledge Managers and any other office bearer at senior management level.

3.4 Sampling for the Study

There are different ways to determine a sample or subset that represents the entire population. Firstly, the researcher should have a sampling frame from where the sample cases of the study will be extracted. In simple terms, according to Kumar (2018), sampling includes the selection of a few cases from the sample population to estimate the outcome of the study. Babbie and Mouton (2012) concluded that through sampling, a researcher is able to select certain cases that represent the entire population, to study in detail. Omona (2013) emphasises that sampling should be compatible with the purpose of the study. The sampled cases should be a true representation of the entire research population in order to make generalization at the end of the study (Leedy & Ormrod 2015). The sampling frame is the PFMA, which lists all the SOEs in SA according to their schedule type. Accordingly, the sample was drawn from schedule 1, 2, and 3 organisations listed by the PFMA, as amended. Schedule 1 consist of Constitutional Institutions, schedule 2 consist of major public institutions, and schedule 3 have other public institutions at national level (Part A). The study did not consider Part B of Schedule 3 institutions.

Sampling consists of probability and non-probability strategies that are determined by the research approach selected by the researcher as indicated in Figure 12 below. A random or probability sampling will be preferred for this study, as all elements has a fair opportunity to be part of the sample. It means that the sampling is not influenced by other considerations nor dependent on other elements. The researcher is confident of the likelihood that each member of the population was selected for the study sample. Permission to participate in the study was requested from the SOEs, and after that, each institutional participant was asked to complete the study questionnaire.

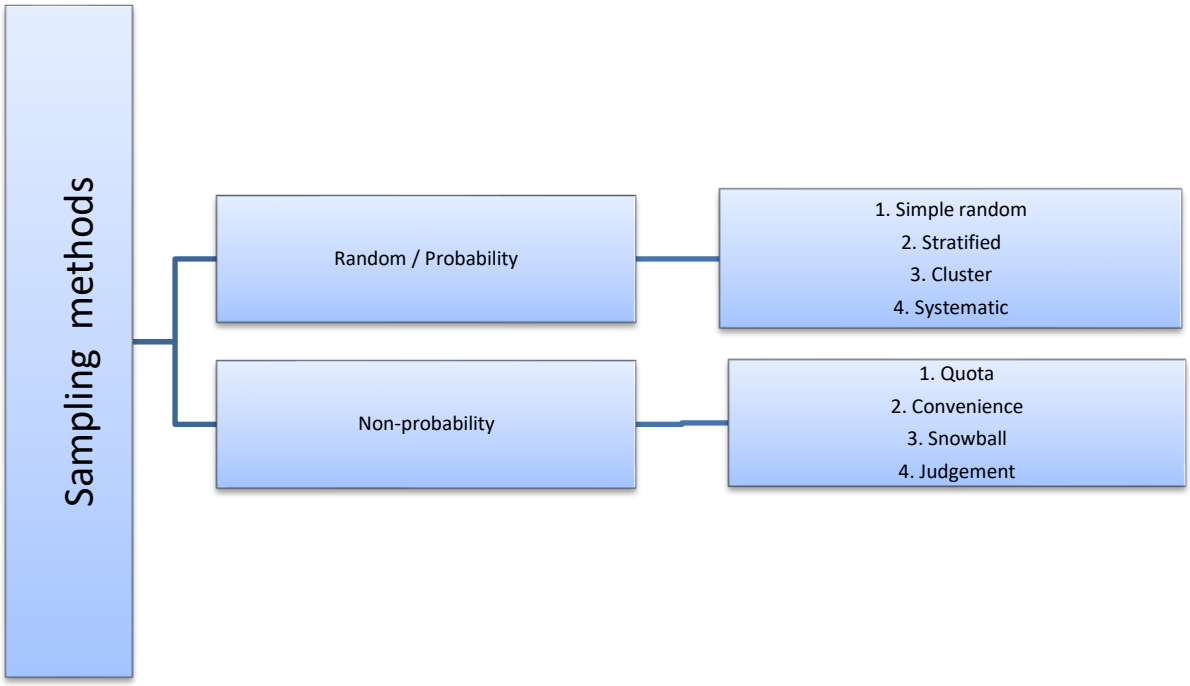

Figure 12 : Sampling Methods

The primary inclusion criteria in this study were; senior roles in SOEs, decision making capacity in information departments, medium to long term employment tenure and specifically, state employees who are employed on a permanent basis. A relatively small sample was chosen in 30 SOEs due to the anticipated difficulty of securing an ideal number of participants in all SOEs. The size of the sampling in this study was constrained and informed by COVID 19 pandemic which confined participants to their homes for extended periods of time and restricted their access to email only. For this reason, questionnaires were distributed through emails that were obtained ethically from their executive directors.

The targeted participants in this study were senior managers in the SOE in South Africa who have been employed for a minimum of 5 years in their respective roles. A period of the minimum of between 5 and more than 20 years in employment was opted for to ensure that only participants who have been exposed to the organisations as senior level and have the know-how and experience in understanding the research topic. Senior managers were purposefully sampled because of their in-depth knowledge of their organisations as well as having an intimate understanding of internal and external information dynamics around SOEs. The demographic information about the participants was not amplified because their gender,

race, age, education or marital status would not have much of a bearing on the study, except their ranks, roles and influence on information departments.

3.5 Data Collection

Anastasia (2017) defines data collection as the means to gather information for research purposes in an orderly manner that allows the researcher to answer the study question. Data is collected from primary sources which are defined as first-hand origins and secondary sources which are information sets that are already available. For a researcher to collect data, a choice of an instrument that has to be utilised on the sample population must be made by the researcher (Cohen, 2013; O'Leary 2004). The data collection instrument to be used depends on the type of the research methodology decided upon by the researcher.

This research was conducted through a survey administered by means of a questionnaire that was sent to respondents through email. The geographical distribution of the respondents was located in scattered areas within the country. The study was done during the period of the COVID 19 pandemic when SA was under lockdown. These are some of the factors that directed the study to use email as a channel to reach the respondents. A questionnaire is less expensive. It has been identified by some authors (Kumar, 2018; Leedy & Ormrod, 2015; Pajo, 2017) that, the major challenge with using an email questionnaire is a low response rate and that, it is likely to affect the applicability of its findings. To try and mitigate that, the researcher proactively offered to share the findings of the study with different responding institutions, as an incentive to motivate them to respond. The study hopefully will assist them in determining strategies on how to have a high IO maturity to improve business performance. This motivation on the part of the researcher was to increase the response rate.

3.5.1 The Use of a Questionnaire for the Study

A questionnaire is regarded as one of the primary instruments in social research that can be used to collect data and it varies in the method the respondents are contacted, the channel of its delivery and how questions are administered in it (Bowling 2005). Questionnaires allow the researcher to collect subjective and objective data from a large sample of the study population.

Thus, questionnaires are good tools to collect data, especially when there are limited resources and the privacy of participants needs to be protected. Abawi (2017) indicated that the validity of data collected using a questionnaire is more dependent on the honesty of the respondents.

This study collected data using a semi-structured questionnaire with open-ended questions. The questionnaire was sent to respondents through email and it covered information capabilities such as ITP, IMP as well as IBV. The research instrument had two segments: Section A and Section B. Section A focused on collecting demographic information relating to a job title, role in the organisation and number of years in service. Section B comprised 19 questions divided into 6 questions for IMP, 7 questions for ITP, and 6 questions for IBV for the collection of qualitative data on IO. Additional general information about SOEs in SA was gathered from available organisational strategic documents. Permission to conduct the research was requested from individual SOEs and each institution was allowed to forward a name of the organisational informant for the study. A consent to participate in the study was firstly sought from the respondents to assure them that they participate voluntarily and that they are free to decline or withdraw any time during the research process.

3.6 Data Analysis and Interpretation

Flick (2013) defines data analysis as the most important process in qualitative research because it informs the study results. The Open University (2014) states that data analysis helps to reduce the amount of data allowing the researcher to get answers on the research question as easy as possible. Information gathered during the data collection stage of the research can become too much to handle, hence it is essential to remove irrelevant information and keep information of value for the interpretation of the findings. The study has analysed data collected from respondents using the thematic analysis step by step guide developed by Braun and Clarke's (2006). The thematic analysis approach is a framework consisting of 6 steps as highlighted in Figure 13 below. It is mostly recommended in the social sciences because it provides a clear and usable framework for doing thematic analysis.

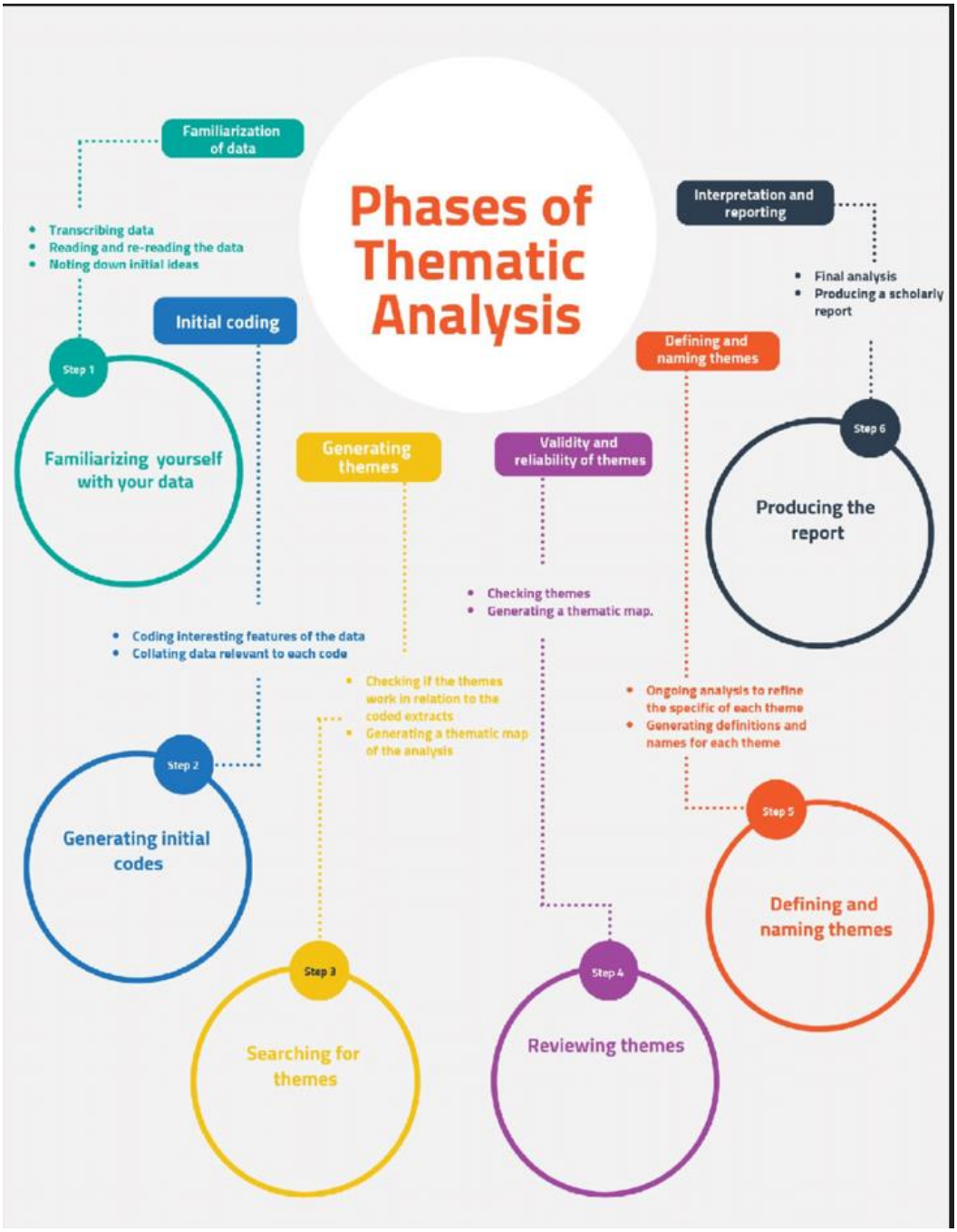

Figure 13 : An illustration of Braun and Clarke's thematic analysis approach for developing themes from qualitative data (Adapted from Braun & Clarke, 2006)

Thematic analysis is mostly used in qualitative approaches because of its flexibility allowing the researcher to determine prevalence in different ways. Thematic analysis is defined by Braun and Clarke (2006) as a technique to identify themes from qualitative data, analyse and report them in a systematic way. In this way, the researcher is able to identify shared experiences and meanings from the set of data. Thematic analysis is unique method in that it can be used in

various frameworks and is not tied to any pre-existing theoretical framework like a methodology. This means that themes should focus on the patterns and important data about the research question.

Maguire and Delahunt (2017) assert that the objective of a thematic analysis is mainly to identify themes that are important in the collected data in order to answer research questions, as opposed to just summarizing the data without organising and interpreting it. It is the prerequisite of the researcher to determine the relevant and corresponding themes that relate to the research question. A decision needs to be made by the researcher with regards to the approach on how the themes will be identified, either inductive or in a theoretical way (Braun & Clarke 2012). This study identified themes according to the theoretical approach, as it is driven by the IO theoretical area of interest. The second important decision is to choose between the levels at which the themes are to be identified, i.e. semantic or explicit level versus interpretative or latent level. The difference between the two levels is that the former identifies themes at the surface meaning of the data, and latter goes beyond the semantic level by examining the underlying assumptions and ideas. The thematic level of analysis for this study was semantic as no interpretation was required and the researcher looked at what the respondents had written or said, without considering anything else beyond that. Table 2 below details the summary and description of the 6 steps for thematic analysis

Table 2: Step by step guide for thematic analysis: adapted from Braun & Clarke 2006

PHASE	**Description**
Familiarizing with data	Repeated reading of the collected data and noting meaning and patterns (sematic or latent themes)
Generate codes	Identifying important features of the data
Search themes	Combining relevant codes into potential themes
Review themes	Reviewing themes to check if they fit perfectly to the data set
Define and name themes	Identify the essence of the themes and their relationship with the research question.
Report	Drafting the final analysis of the research including arguments

3.7 Ethical Considerations

Researchers are always expected to adhere to ethical principles that guide them on data collection from participants. Participants should be protected against exploitation of their rights and they ought to know the purpose of the research and why they are participating. Their participation in the study must be confidential, informed, and voluntary while their identity is protected and safe. The researcher ensured that all the above principles were adhered to, by doing the following;

1. Indicated the purpose of the study with clear and detailed information;
2. Indicated voluntary participation of respondents and their ability to withdraw from the study at any time for whatever reason;
3. Requested for a formal consent from the SOEs in writing; and
4. Ensured that their identity was anonymous by not using information that can personally identify them, e.g. email addresses.

3.8 Reliability and Validity

The trustworthiness of a qualitative study is largely dependent on notions of quality that Elo et al, (2014) spell out as credibility, dependability, conformability, transferability and authenticity. Lincoln and Guba (1985) assert that trustworthiness is best achieved when the validity and reliability are ensured and applied to collected data. Reliability refers to the extent to which the same results can be obtained when the study is repeated and replicated under the same circumstances (Lincoln & Guba 1985). In other words, it indicates the stability and consistency of the measuring instrument repeated under different situations. This implies that a study has to have a high measure of replicability to be considered trustworthy. Validity is the second concept of quality that enhances the trustworthiness of a research study. Validity is best depicted by asking if the researcher is actually measuring what they set out to measure and whether it adequately reflects and represents participants' actual realities (Creswell & Miller 2000). It indicates if the collected data is intended to measure exactly the area of investigation.

To achieve reliability and validity in this current study, the researcher has created a strong research design which was matched to the IO knowledge deficits in South African SOE's, thereby directly linking the study to its purpose. The same questions were asked to all participants in order to confirm findings from different environment setting. Validity was established in this study by using appropriate sampling processes, data collecting tools such as a pre-approved questionnaire and a suitable data analysis process, to ensure that research was conducted carefully, intentionally and consistently. The design, its methods, processes and tools which were used in this study were subjected to peer assessment and approved by a senior academic. For these reasons, the researcher is confident that reliability and validity have been ensured and achieved in this study.

Summary

This particular chapter highlighted the philosophical approaches which underpins the research design choices that the researcher made in this study. Specific techniques and procedures that were used to identify and select potential participants, to collect and process data as well as methods employed to analyse and synthesise collected data, were outlined. A number of senior managers in SOEs have served as the study population in this research. The sampling frame was the PFMA which provided schedule 1, 2, and Part A of schedule 3 SOEs (See Annexure B) from which participants were selected. Data was collected through an emailed questionnaire. The thematic analysis approach was opted for, as the ideal data analysis and interpretation mechanism for the purpose of this study. The researcher adhered to ethical principles of research by seeking permission from SOEs and informing participants of their rights and responsibilities on the study. The researcher has guaranteed the reliability and validity of the study by ensuring that questions on the data collecting instrument are consistent and reviewed by an academic as well as by using appropriate sampling processes and suitable data analysis techniques. The following chapter expands on the analysis of data in this study.

Chapter 4: Data Analysis

4.1 Introduction

This chapter presents the analysis and discussion around data that was collected from respondents using a questionnaire with semi-structured questions. The analysis is framed on the three main capabilities of IO. Request for permission to participate in the study was sent to 30 SOEs that are within schedule 1, 2, and 3 (Part A only) of the SOEs listed in the PFMA. 14 institutions which account for 46% of the total, gave their consent to participate. Out of the 14, only 12 (86%) responded to the questionnaire. From the 12 that responded only 1 is from schedule 1 constitutional institution, 4 from schedule 2 major public entities, and 7 from schedule 3 Part A. Two institutions did not provide feedback at all even after follow ups were made by the researcher. The questionnaire had 19 questions split into three IO capabilities, wherein six relate to Information Management Practice, seven are linked to Information Technology Practice, and six are associated with Information Behaviour and Values, as presented in Annexure A.

The researcher chose the Thematic Analysis approach because of its flexibility and its richness in the presentation of detailed data (Braun & Clarke 2006). Thematic Analysis is not rooted into any pre-existing conceptual framework, which means that it can be used within different frameworks. Thematic Analysis identifies, analyses and reports on patterns (themes) within data. It should be noted that SOEs are different in purpose and size, hence we noticed the difference in approaches in the manner that information is managed and used. In this analysis, the researcher has opted to use the following detailed information diagram in Figure 14 of Marchand et al (2000)'s Model, which best illustrates all three IO components and all the sub-components that were explored and analysed as concepts;

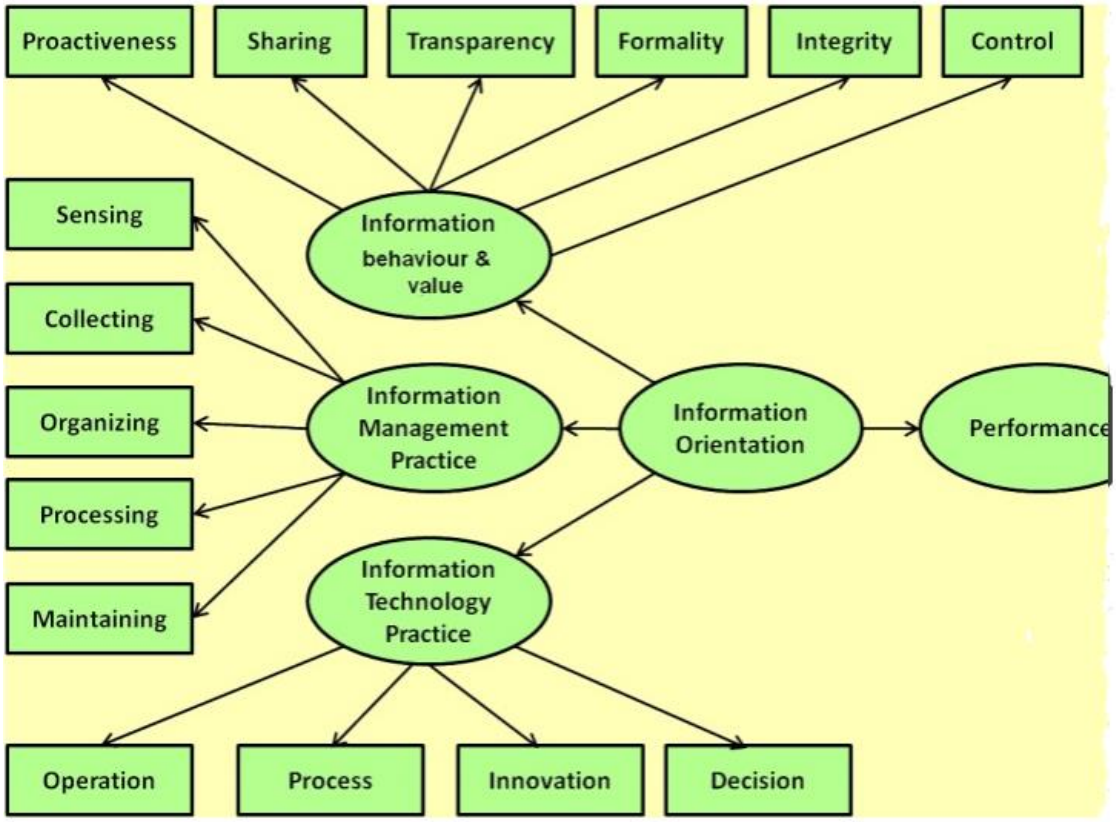

Figure 14 : Information Orientation Model (Marchand et al, 2000)

4.2 Information Management Practice

In order to get the perception of senior managers regarding their IMP capability, the study used open-ended questions whereby respondents were able to support their answers. Questions under IMP revolved around the aspects of sensing information, collecting information, processing information, organising information, and maintaining information. Kettinger and Marchand (2011) identified the IMP as a process involving these phases that are valuable in assisting managers improve the way information is managed and used and to allow them to take informed decisions. Following the IMP process has the advantage to avoid duplication in collecting information and to organise information in a formal and useful way for easy access. This process assumes that every organisation has information irrespective of whether they are new or has been operation for some time.

4.2.1 Sensing Information

The Sensing Information sub-section of the questionnaire sought to elicit more information about the involvement of employees in detecting and identifying information for any changes that might affect business, including new innovative ideas or anticipated problems. The responses showed that most SOEs do sense information from the external environment, which is backed up by the following responses;

> *"The organisation usually sense information from research reports that might highlight information flow gaps"*

> *"Our institution sense information by conducting Internal Research and by Networking with other government institutions and industry partners"*

> *"Our digital library source information resources to do research and benchmarking, as well as trends within the industry"*

> *"The organisation conducts annual strategic planning sessions involving situational analysis, where factors that may have implications on the operations of the organisation are considered"*

There are ways in which information can be sensed including getting feedback from clients, identifying problems with stakeholders and suppliers, monitor competition, and identifying changes in external environment. SOEs sense information from their external environment through different means such as benchmarking, research reports from other similar institutions, research output and situational analysis. Such activities help them to define changes regarding the need for information that needs to be collected and follow the IMP process.

4.2.2 Collecting Information

This sub-section of the questionnaire sought to obtain information on how SOEs provide access to existing collective knowledge for employees in order to prevent information overload. A majority of the respondents, as shown below, indicated positive responses showing that their

institutions have technologies that store existing collective knowledge which facilitate easy access to employees;

> *"We have collection development department that ensures we have the latest and most appropriate reading materials for the benefit of our members"*

> *"Information is collected via our internal newsletter, the ECM and the intranet"*
> *"Information is stored in a collective drive for all employees to access. However, a weakness is that there is no standard filtering of the information to ensure that only relevant information is stored"*

> *"Access to information is controlled via Microsoft's SharePoint system where you only have access to information that is relevant to you and the division you work in"*

> *"Information is available and accessible through the organization's digital platform (SharePoint)"*

SOEs has indicated that information is collected through subscription to different information sources, internal newsletters, the intranet, and shared folders. It is very crucial that the following questions are asked during the phase of collecting information:

a) Who requires information within the organisation?
b) What type of information is required and how much?
c) Where is the information situated?
d) Why is the information required? and
e) How is the information collected?

These questions will help organisations to collect accurate and relevant information that is required.

4.2.3 Organising Information

The objective of the Organizing Information sub-section in the questionnaire was to draw out and address how information is organised for easy access within and across business units in SOEs. Most respondents indicated a positive response with the following answers;

> *"The organization has the roles of Records Manager, Knowledge Manager, Digital Content Manager, and Librarian that are responsible of organizing information for easy access"*

> *"Information pertaining to administrative internal documents such as internal policies appear more organised than that which relates to the core mandate of the institution. The organisation uses a File Plan system that complies with the Archives Act. This ensure referencing and categorisation of information".*

> *"Business units still operate in a fragmented way. Initiatives are underway to improve the level of collaboration"*

> *"The SharePoint system enables right to access certain information to be granted on a need to have basis or on request"*

Some of the SOEs have specialists such as Librarians and Content Managers that have the skills and expertise needed to organise information using indexing and classification schemes. As much as information is greatly classified, it is the responsibility of the organisation to agree on the common and shared terminology and language to be used across functional business units. Other SOEs indicated that they have initiatives to improve how they organise information.

4.2.4 Processing Information

The Processing Information sub-section was designed to determine how SOEs process information into useful knowledge that can be used by employees in their daily tasks. Respondents indicated that employees do use processed information. This is supported by the following responses;

"Data collected from lessons learned reports, shared via the knowledge-sharing is mainstreamed into business process either through enhancing an existing process and devising a novel one"

"The organizational information is retained and securely archived for future references in relation to audits, statistics, research, and many other purposes"

"There are collective decision-making sessions that process and make use of the available information, e.g. quarterly performance review sessions utilising available reports to arrive at certain institutional performance decisions"

4.2.5 Maintaining Information

A sub-section in the questionnaire was dedicated to Maintaining Information and it was intended to obtain information regarding the reuse of existing organisational information. Reuse of information helps to avoid collecting the same information over again and it serves to update information databases. Respondents indicated that existing information is reused for the different purposes mentioned in the responses below;

"Since all curated knowledge processes are mainstreamed into business processes, employees constantly refer to them and review these processes from time-to-time"

"Shared folders for line functions and reports enable reuse for reference purposes and Information delivery channels also enable reuse – intranet, website"

"Relevant information databases are kept and updated for management reporting and quality checking"

"The information is stored on the database so that we make sure we are not re-inventing the wheel"

SOEs indicated that they maintain information that has been sensed, collected, and processed to keep it up-to-date for use within the organisation. The existing information is maintained to avoid collecting the same information all over again, and to avoid reinventing the wheel which can be time consuming and cumbersome.

4.3 Information Technology Practice

In order to get the perception of senior managers regarding their Information Technology Practice (ITP) capability, the study used open-ended questions whereby respondents were able to support their answers. The findings for the ITP capability are presented and discussed under the following aspects: IT for management support, IT for innovation support, IT for business processes, and IT for operational support.

4.3.1 Information Technology (IT) for Management Support

The Information Technology for Management Support sub-section in the questionnaire looked at the IT infrastructure including software, hardware, telecommunication networks. These aspects of IT infrastructure have a function of facilitating the process of making business decisions as well as to monitor and analyse business issues emanating from internally within SOEs or outside the organisations. A majority of the respondents indicated that their institutions have IT infrastructure that supports management decision making processes. The following are some of the responses;

> *"Our IT department provides IT infrastructure such as Enterprise Resource Planning for HR, Oracle for Financial Management, and Group Decision Support system to support executives and senior managers."*

> *"Partially – the IT department is working on providing business the appropriate infrastructure."*

> *"Pre-Covid, the platforms were not effectively used. However, post Covid there is a drive to digitization for quality information. Employees are more technology savvy."*

"Availability of virtual meeting platforms has enabled the institution to continue to convene decision making meetings, especially during the lockdown period and remote work arrangements".

As the study was done during the COVID 19 pandemic, some of the SOEs indicated that the working from home has helped managers realise the support they have from the IT infrastructure available to them.

4.3.2 IT for Innovation Support

In this sub-section, the focus is on the IT infrastructure which serves to facilitate employee's creativity to explore and develop new ideas that will improve business performance. Organisations like the SOEs should create an environment whereby employees are able to come up with new innovations that are viable in the changing environment. Findings show that IT infrastructure deployed in the SOEs support employees' creativity as indicated in the responses below;

"Senior managers no longer rely on their experience only to make business decisions. There's well stored and secured data available on high-end IT infrastructure available at their disposal to assist in this process e.g. Policies, procedure manuals, HR reports; financial reports; library membership reports etc. are available on our servers."

"This includes the sharing of ideas and documents via the emailing system; discussion of issues and analysis through virtual platforms"

"Innovation is encouraged in our organization. An innovation projects has been developed to encourage employees to be innovative using Lotus Notes"

"Our organisation has a register for innovative ideas stores in shared folders for divisional units, the ideas come from projects reports whereby lessons learnt are managed for future reference"

The IT infrastructure deployed in the majority of SOEs allow them to come up with innovative ideas on improving their performance.

4.3.3 IT for Business Process Support

This sub-section asked about technical expertise that SOEs possess for business processes and management of people across functions internally and externally with customers and suppliers. The findings indicated that a majority of SOEs have IT hardware and software that supports internal business processes shown in the following responses;

> *"A Customer Relations Management (CRM) was introduced to very little effect initially as the usage levels were very low, but I understand now that the usage levels have increased due to the Work from Home regime brought about by the Covid-19 pandemic"*

> *"Internally there's an ICT Steering committee which is a platform where various projects in IT are discussed in ensuring that such projects support business goals. IT provides the latest trends in technology (Systems, printers, VPN networks, mobile apps etc.)"*

> *"Employees have been able to share ideas, using available IT infrastructure. They have made successful proposals for the acquisition of IT systems to enhance business efficiency, e.g. automation of payroll, leave management, and digital procurement system; digital complaints management systems – all already automated."*

> *"Our institution has the Enterprise Resource Planning system that allows divisions to share information for business process support in order to improve efficiency in service delivery"*

4.3.4 IT for Operational Support

IT for Operational Support was allocated a sub-section in the questionnaire to extract answers on the IT infrastructure and more specifically to enquire if it allows for the control of business operations and whether in ensures consistency and high-quality performance by lower skilled workers. Lastly, this sub-section served to check if the IT infrastructure improves the efficiency

of operations. Most respondents indicated a positive response towards IT support for employees at lower levels, some of the responses below support that;

> *"Currently used for storage and communication. No intelligence built into the system especially for client interfacing"*

> *"Yes, in all automated areas, the IT systems support efficiency and ensure the monitoring of responsibilities by all officials"*

> *"Without a doubt, IT supports business operations using various systems, hardware, software etc.IT is the enabler of business functions."*

> *"The organisation ensures continuous update of versions and technologies for improvement of operations"*

> *"Yes, for example working from home has been successful because of IT"*

There is no doubt that the IT infrastructure deployed in SOEs support business processes through the use of various systems.

4.4 Information Behaviour and Values

In order to get the perception of senior managers regarding their IBV capability, the study used open-ended questions whereby respondents were able to support their answers. The finding for the IBV capability is presented and discussed under the following aspects: Information integrity, proactiveness, sharing of information, transparency, control and formality.

4.4.1 Information Integrity

This section sought to determine if employees behave in a manner that exploits business information for personal gains or to benefit their organisations. More respondents indicated negative views as shown below;

> *"Not certain about that"*
>
> *"There are no systems in place to block employees to use organisational information for their benefit"*
>
> *"I will assume that because we do not have a monitoring tool as yet, people will from time to time use business information for personal gain, yes"*

4.4.2 Proactiveness

This part was designed to assess information behaviour of employees and if they proactively use information to develop innovative ideas on services and products for their organisations. Most respondents indicated that this part was lacking in their organisations, as indicated in some of the responses below;

> *"Not proactive but enforced hence the lack of buy-in or resistance to change"*
>
> *"Usually employees use information to enhance business services but not most of the time proactively"*
>
> *"The organisation is highly compliance driven which dampers innovation and or proactiveness in staff."*

4.4.3 Sharing (Non-Sensitive Information)

A sub-section was dedicated to Sharing (Non-Sensitive Information) where it sought to get information from senior managers on whether their employees share information internally in teams, within functional business units or externally with clients, suppliers & stakeholders. Some indicated that sharing is done but needs some improvements, whereas some indicated no sharing at all. The responses are backed up by some of the responses below;

"Business operations is supported by sharing of information across all levels of stakeholders. It's a continuous process and effective if done timely. Although there is room for improvement"

"Sharing of information is identified as an area of development/improvement for the organisation"

"There is a hoarding culture within the organisation where the sharing of information is very difficult and the ease of sharing depends on personal relations and familiarity with people"

"Our information policies regulate access to and sharing of information across organizational boundaries"

4.4.4 Transparency

The Transparency sub-section investigated if employees do talk openly and constructively about failures without fear of unfair consequences. Most respondents indicated that transparency in talking about failures is not done across the organisations and sometimes depends on individuals or business units, as indicated in some of the responses below;

"Employees trust each other at their peer level but sometimes not with senior management"

"Culture does allow communication especially in smaller teams. Not necessarily the case within the wider organization"

"This is mostly the case at the level of employee to employee. However, it is not so much the case from ordinary employee to line management and ultimately to executive authority"

"It depends on the individuals, some do and some don't"

"Employees through formal platforms such as the Digital Information Sharing sessions do honestly and openly discuss business successes and failures"

4.4.5 Control

Control was explored in a different sub-section which enquired on the perception of senior management. They were asked if they can freely reveal the performance of the organisation to all employees. A majority of senior managers indicated that they do talk to employees about the performance of their organisations, as backed up by some of the responses below;

"Corporate performance department distributes/publish quarterly reports on the intranet to ensure visibility"

"Regular Senior Management meetings are hosted from where information is cascaded down. Quarterly meetings with the full Management and Supervisor team is also re-instated now that Covid-19 restrictions have been lowered to adjusted level 1"

"Now recently we see Senior Management sharing information about company performances"

4.4.6 Formality

This sub-section set out to obtain information on whether employees use and trust formal sources of information provided by their organisations. Respondents indicated

positive formality in the use of organisational formal sources of information as indicated in some of the responses below;

"The organization subscribes to industry approved information resources"

"Yes, to a large extent. Formal sources of information have related evidence of decisions, be it through official minutes of meetings, or memos and directives"

"Policies and procedure documents are often updated and circulated to staff"

"Yes- There is always a section of employees who may suspect that less information is shared"

Summary

This chapter has analysed the data that was collected and presented in chapter 3. The Thematic Analysis technique was the preferred approach because it offered flexibility and richness in examining and probing detailed qualitative data. The researcher analysed senior managers' perceptions on ITP, IMP and IBV that are practiced in 14 SOEs in South Africa. Additionally, the researcher used literature and theory to frame the analysis of themes that emerged out of participants' responses. The analysis generally revealed that IMP and ITP are the two components of information that are given priority in terms of investments and resources at the expense of IBV, in South African SOEs. The analysis also showed that senior managers are aware of IBV practices but admit that staff behaviour around organisational information, is not streamlined and integrated in the information strategy thereby, SOEs have been achieving lower levels of IO Maturity. Chapter 5 delves deeper into the discussion of research findings.

Chapter 5: Discussion of Research Findings

5.1 Introduction

The study sought to explore the extent to which SOEs in South Africa possess the IO capabilities. Identifying the capabilities will allow the institutions to understand their IO maturity and be able to strategise accordingly. The researcher intended to get to the findings that may assist in gaining knowledge on the maturity of the SOEs in their management and use of information in order to recommend strategies for improvement. The research used an emailed questionnaire to gather the required data from senior managers in SOEs. Data was analysed using the thematic analysis method which allowed the researcher to code, analyse and report according to the identified themes. Questions were based on the IO dimensions of IMP, ITP, and IBV, with each having sub-questions.

A sampling was done with senior managers in SOEs as the purpose of the study was to determine their perception on the information capabilities of their organisations. The researcher wanted to explore the perceptions of senior management at SOEs in SA regarding their organizations' IO capabilities associated with the management of information, including behaviours and values. Understanding the IO maturity of their organisations will allow senior managers to develop strategies and integrated approaches to manage information and further identify areas of improvement. The findings of the study relate to the three capabilities of IO, as per the responses received. The research key findings were received through a questionnaire sent via email to senior management from different SOEs.

5.2 Discussion of Research Findings

5.2.1 IMP

A set of specific questions in this category of the questionnaire was designed to assess the capability of SOEs to effectively manage information according to the principle of information management life cycle. The sub-section included questions on the following aspects of IMP;

5.2.1.0 Sensing Information

Sensing information determines how employees detect and identify any new information changes, innovative ideas or any anticipated problems that might affect business. Sensed information allows organisations to effectively deal with the ever-changing demands associated with socio-economic and regulatory changes. The collected data indicates that SOEs embrace the notion that it is important to sense information internally and externally in order to identify areas that might negatively or positively affect business. Most of the respondents, i.e. 83, 3% of them, indicated that networking with industry, research and projects reports, feedback from clients, industry trends, situational and SWOT (strength, weakness, opportunity, threats) analysis reports, assisted their organisations to detect and identify critical information that enhanced decision-making.

It is good that SOEs are sensing information as they are able to collect the right information that will help them to respond to identified changes that informs appropriate strategic direction and decision making. Marchand, et al. (2001), Kettinger and Marchand (2011) outlined this phase of the information life cycle whereby organisations assess external situations that might affect business, in terms of;

- environmental, social, technological, economic and political changes in relation to business performance;
- innovations by competition;
- supply and demand regarding new service or product; and
- anticipated business risks

Ajibade (2016) concluded that sensing information put organisations to the level where they are well equipped with appropriate information required to escape the problems caused by unforeseen circumstances that can directly or indirectly disrupt operations or lower levels of efficiency. It is therefore important that SOEs are able to sense information from external forces to forecast and budget for the future. For companies to make appropriate decisions and strategies, they need to be able to make sense out of the new trends and changing business conditions. This makes sensing practice critical to high level of IMP maturity.

According to Kettinger and Marchand (2011), sensing should be considered a crucial valuation phase of the IMP process. SOEs should begin to recognise changes in their internal and external environments in order to define new information needs. Perceptual skills are crucial to identify changes in external competitive environments and business stimuli that are relevant to a particular business context. These skills are necessary for new information requirements and to correctly identify new sources of information. At this sensing stage any organisation will be able to effectively develop competitive strategies to address changing business demands or respond to changes in customer needs or to competitors' product innovations that are influenced by social, economic, regulatory and cultural shifts in the company environment. Sensing information influences how and what information should be collected as the next phase of IMP.

5.2.1.1 Collecting Information

Collecting information is the second phase of the IMP process. There are a number of steps that organisations should perform during this phase including the following steps;

a) Identify and profile employees' information needs to enable the delivery of quality information to them at the right time in the right format;
b) Collected information should be filtered for managers and employees to avoid information overload;
c) Identify key formal sources of information and knowledge base knowledge allowing employees to use organisational collective resources; and
d) Provide ongoing training and rewarding employees for accurately and completely collecting relevant and appropriate information for organisational use.

Collecting information involves access to collective information provided by organisations to prevent information overload. Organisations should understand the information needs of their business functions, the type of information needed, location of the information and the technology used to collect such information. It should be noted that all the respondents (100%) indicated that they use different technologies or digital platforms and print resources to access collective information within their organisations. Technologies included repositories, Intranet, Online Newsletters and Shared Drives, as well as printed resources included library collections, including the use of knowledge sharing sessions. Information that is collected needs to be

properly organised for easy accessibility whenever it is needed for fulfilling tasks or informing decisions.

Changes to business conditions allow for the collection of relevant information that will assist organizations to take decisions based on those changes. It is important that employees that are collecting information for the organisations have the necessary skills and expertise to profile information needs, filter the information in such a way that overloading of information is avoided, and to identify sources of information for the benefit of their organisations.

5.2.1.2 Organising Information

Organising information in the information management life cycle focuses on:

- indexing and classifying information for easy access;
- linking databases across business functions within an organisation; and
- training and rewarding employees for accurately and completely organising the information for which they are responsible.

In this sub-section, the question intended to find out if SOEs organise information for easy access within and across business units. Once information is collected, it needs to be indexed and classified for easy access to business functions. The indexing, classification scheme and the terminology to be used in processing information must be decided upon at managerial level, to avoid misalignment by business functions. 75% of respondents indicated that they have professionals such as Records Managers and Content Managers who are responsible for the processing of information through technologies such as Enterprise Content Management (ECM). Organising information depends entirely on the decisions made when sensing information as well as on the IT systems that supports appropriate information for good decisions.

A systematic, standardized and centralised approach is needed in the organising and enhancing of easy access into information. It requires that SOEs standardize the terminology categories, and indexing schemes that should be used across business functions and throughout the organisations. Kettinger and Marchand (2011) recommend that training of employees is important as organising information requires a certain level of skills and expertise.

5.2.1.3 Processing Information

The purpose of a question on 'Processing Information' was to determine if SOEs process information and package it into useful organisational knowledge for easy access within and across business units, to assist in the decision-making process. The processing of information stage is called the Critical Valuation Point by Kettinger and Marchand (2011). The authors refer to this stage as 'critical' because organisations have to be able to determine if the sensed, collected and organised information will assist in the process of decision-making to meet the mandate of the institution.

Marchand, et al. (2001) emphasized that processing information into useful knowledge is crucial at this stage, as it allows managers to use such information for decision making without wasting time in searching for it. 75% of respondents alluded to the fact that information is retained and securely archived for future references using different technology platforms such as ECM and shared drives, while others use sharing sessions whereby existing information is processed into useful knowledge. Processing is another critical component of information management as it is at this stage that information which has been sensed, collected and organised is translated into knowledge that can benefit organisations. It is at this level where the relevance and the importance of information that meets organisational needs is evaluated and where final decisions are made whether such information should be maintained for future use or discarded.

5.2.1.4 Maintaining Information

Maintaining information includes:

- reusing existing information to avoid collecting the same information again;
- updating information databases so they remain current; and
- refreshing data to ensure that people are using the best information possible.

This part of the questionnaire sub-section sought to find out if employees in SOEs use available information and they do not collect it again to keep databases updated. There are reasons why

employees do not reuse existing information. The possibility is that the information is not readily available to them or they are not aware that such information does exist in the organisation, and such information might not be easily accessible. Management should ensure that existing information is well organised and processed to encourage employees to reuse it. Seven respondents (58, 3%) reported a positive response in the reuse of existing information in their organisations by means of information delivery channels such as the Intranet.

Marchand et al (2001) introduced refreshing information as another aspect of maintaining information using technologies such as Lotus Notes.Maintaining information includes reuse of existing information to avoid the costs that will be incurred when recollecting such information. This practice may be hampered by people's attitude towards reusing information due to different reasons such as these indicated below:

a) Assumption that existing information is useless;
b) Not aware of existing information
c) Change in strategic direction that requires collection of new information
d) Difficulty in accessing existing information due to bad information organizing; and
e) Reluctance to use information from outside their environment that they do not own.

5.2.2 Information Technology Practices (ITP)

The ITP category was designed to assess the capability of SOEs for their management of IT applications and infrastructure to support decision making and communication processes, including additional support for business functions such as management, innovation, business processes and operations through IT applications and infrastructure. The IO model emphasises that organisations that effectively uses their IT infrastructure will have a competitive advantage and benefit in all the four aspects of IT support at all levels as mentioned below.

5.2.2.1 IT for Management Support

The question on ITP sought investigate if SOEs have IT infrastructure including software, hardware, technical expertise and telecommunication networks that facilitate the monitoring and analysis of internal and external business issues to assist in decision making. At this level, the role of IT should be to assist executives and senior managers in making decisions for resource allocation, management control and strategy for their organisations. A 58,3% majority of respondents indicated that their organisations have IT infrastructure that facilitates decision making to support executives and senior managers. Technologies that are used for that purpose include Enterprise Resource Planning (ERP), Decision Support System (DSS) and Virtual platforms that allow senior managers to discuss and take decisions online without having to physically sit for meetings. Having IT infrastructure that supports management benefits SOEs in that they are able to identify business risks and plan ahead and anticipate trends in the market.

Marchand et al. (2001) highlighted that senior managers in the 21st century have a wide range of IT infrastructure that they can use to take decisions, with the development the internet of things. Roos and Svensson (2012) agree that organisations in the information age should have IT infrastructure in the form of information and knowledge systems as enablers to effectively manage and process the amount of information that is increasing daily and to gain a competitive advantage thereby. For many companies IO maturity should be increased in such a way that it can support strategic and tactical decisions.

5.2.2.2 IT for Innovation Support

This sub-section's aim was to explore the IT infrastructure that facilitates employees' creativity to explore and develop new ideas. SOEs have the IT capability for innovation support, as evidenced by 66, 6% of responses received. Innovative ideas registers extracted from projects reports and lessons learnt are kept. Organisation also retain technologies that allow employees to be innovative in the way they are doing their tasks. Globalisation and the internet has allowed organisations to access opportunities for service development and new products. Marchand et al. (2001) assert that IT for innovation support has been spread by the growth and development in software-based innovation, the internet and globalisation.

5.2.2.3 IT for Business Process Support

A question on 'IT for Business Process Support' was posed to determine if the IT infrastructure and technical expertise in SOEs facilitated the management of business processes and people across functions, both internally and externally with customers and suppliers. IT for business process support reflects on the capabilities that organisations should possess to allow the sharing of information to expand coordination of business processes in the value chain. The majority of the responses i.e. 66, 6%, showed that SOEs have IT infrastructure that supports cross-functional sharing of information in the coordination of business processes to improve efficiency. Technologies that they use include Enterprise Systems such as Enterprise Resource Planning (ERP), Customer Relationship Management (CRM), and Supply Chain Management (SCM) system. SOEs are able to connect their decisions to the information flow in the organisation and even externally from clients, suppliers and competitors.

5.2.2.4 IT for Operational Support

This part of the questionnaire sought to enquire if the IT infrastructure in SOEs is provided for business operations in support of lower skilled employees to consistently perform their responsibilities with high quality. Marchand et al. (2001) stressed the fact that IT for operational support provides benefit to organisation in that it increases the scale of efficiency, reduce transaction costs through automated tasks and monitoring of lower skilled personnel. IT infrastructure should provide organisations with platforms to improve business performance by monitoring the functions and behaviour of lower skilled employees at an operational level.

The responses received for this question show that 75% of the SOEs in general, provide IT software and hardware that facilitates efficiency in business operations for lower levels employees.

5.2.3.2 IBV

The aim of the IBV category was to determine the capability of the SOEs to encourage their employees to use of information with good behaviours and values. The questions were related to integrity, formality, control, transparency, sharing and proactiveness. These are behavioural aspects in the use of information, which has not been given much attention like IT and Information Management. It becomes important for IBV to be properly managed if organisations are to improve information usage and productivity. This assertion is supported by Gaghman (2020) who states that organisations (by extension, SOEs), can improve productivity and enhance management decision-making processes by harnessing and promoting the sharing of tacit knowledge between employees. People are at the centre of knowledge sharing processes. Willingness to share knowledge by individuals is part of IBV that organisations should promote. Tacit knowledge relates to an individual's experiences, thoughts and beliefs, it is the "know how". Such knowledge, when shared can encourage innovation, creation of new knowledge that may result in improved performance. Mahajan (2016) posits that tacit knowledge transfer plays a crucial role in organisations, to develop and sustain the modern global economy. Tacit knowledge is demonstrated in the behaviour of employees and for this reason, management has to ensure that this information behaviour is shaped in integrity. The implication is that people who are information custodians need to be drawn into decision making processes.

Obrenovic et al (2020) agree that knowledge that has been recorded (books, reports, financial transactions, etc.) is easy to share, but there is tacit knowledge in the minds of people that is difficult to record and share. Organisations should create a conducive environment for employees with experience to share tacit knowledge, especially before they leave employment due to retirement or other reasons. Such knowledge should be recorded and made accessible through information technologies such as Enterprise Content Management. Knowledge management tools are set up by organisations to store and share knowledge. However, such

tools create a platform for explicit knowledge to be shared but are not able to motivate employees to share their tacit knowledge or engage in internal knowledge sharing initiatives (Burnette: 2017)

5.2.3.3 Information Integrity

Marchand et al. (2001) asserts that information integrity forms the basis of good ethical behaviour in the use of information, when it is used either digitally or manually. Employees should be able to trust each other and be willingly proactive in their behaviour to use information for assisting business but not exploit business information for personal gains. Choo et al. (2008) agree with the point that information should be used in an ethical manner at all levels within an organisation. Responses for information integrity shows that 58,3% of senior managers are not able to point out if employees in their organisations are using information in an ethical manner, as there are no systems in place to monitor that.

5.2.3.4 Proactiveness

Information proactiveness involves following trends in order to respond to changes that may affect business performance or the use information to improve service and products. Naseer et al. (2021) posits that globalisation in the 21st century requires individuals to willingly and actively seek, use and share information that will assist their organisations to face the changing business environment and come up with innovative ideas. They believe that employees who proactively look for information are able to use their cognitive skills to interpret information and come up with innovative ideas to improve business.

Responses from the SOEs show that in some instances their employees use information to develop new ideas for services and products, although it is not done proactively. 58, 3% of the SOEs indicated that there is no proactive use of information. In other instances, it is because of the nature of the institutions that are compliance driven. It is evident according to the responses received from the SOEs that this aspect of IBV is not part of their capabilities. Individuals have no desire to search and effectively use information to help them react better to the changing environment.

5.2.3.5 Information Sharing

Naseer et al. (2021) defines Information Sharing as the desire for an individual to willingly share information with others in a co-operative manner. Marchand, et al. (2011) insist that sharing of information by employees should happen with the following preconditions, as indicated below;

* Common language and meaning;
* Clear roles and responsibilities within the organisation;
* Openness, trust and willingness to share;
* Shared purpose and owning up to the consequences of sharing; and
* Organisational culture encouraging the sharing of information.

66, 6% of responses showed that employees in the SOEs do not share information, implying that there is a hoarding culture where sharing of information is very difficult and the ease of sharing depended on personal relations and familiarity with people. It has also indicated that access to information is also hoarded for competitive reasons. Sharing information in organisations may happen between individuals and small teams, but it is difficult to share it across the entire organisation unless processes and IT are put in place to facilitate the role of sharing.

5.2 3.6 Information Transparency

Naseer et al. (2021) regard information transparency as a willingness of an individual to openly talk about negative work-related experiences to others without unfair repercussions. Such behaviour can provide an opportunity for working on organisational failures and to improve business processes, as a way of learning from the mistakes and failures. The response rate that relates to ‘open talk’ about failures within the SOEs, shows that 66, 6% of respondents are not transparent enough to talk. Indications are that, Information transparency happens at individual level but not in the entire organisation. Some indicated that management does share failures

with employees during meetings. Organisational culture in the handling of information is an important factor that determines how the organisation shares successes and failures.

5.2 3.7 Information Control

Marchand et al. (2011) point out that information control encourages awareness and use of information in organisations to control their employees and processes that influence performance. Senior management should report about business performance to employees so that they can understand their role in the overall performance environment. In other instances, it becomes difficult for senior manager to exercise appropriate control if the information is scattered in business functions. Responses on the information control from SOEs indicated that 83, 3% do not use information to control processes and employees in the entire organisation.

5.2 3.8 Information Formality

Naseer et al. (2021) state that information formality involves the tendency of an individual to use the official organisational information sources such as procedure manuals, reports, standard operating procedures and other documents. Organisations provide formal sources of information for operational efficiency, decision making processes and to avoid reinventing the wheel, for information that is relevant and trustworthy. Additionally, organisations may also use informal sources of information to supplement what is already available (Marchand 2011). Respondents indicated that 75% of the employees in SOEs do use formal sources of information provided by their organisations.

5.3 Overview of the Research Findings

The findings show that most SOEs in South Africa have a high proportion of the IMP and ITP, but regard for IBV is relatively low. The results confirmed that the human element of the IO model is neglected by most organisations, putting more investment into IT infrastructure. The graph below in Figure 15 shows the summary of the findings. This means that more needs to be done by organisations to instil behaviours and values in their employees, which will encourage them to use information effectively. It is noted by Baloh (2004) that instilling good

information usage in people is a challenging and difficult exercise. Senior management face the difficulty of defining a context or orientation that will channel their employees to possess good information behaviour and values that will benefit their organizations to achieve success. Employees should be able to use information and contribute their knowledge, skills and expertise to improve business performance.

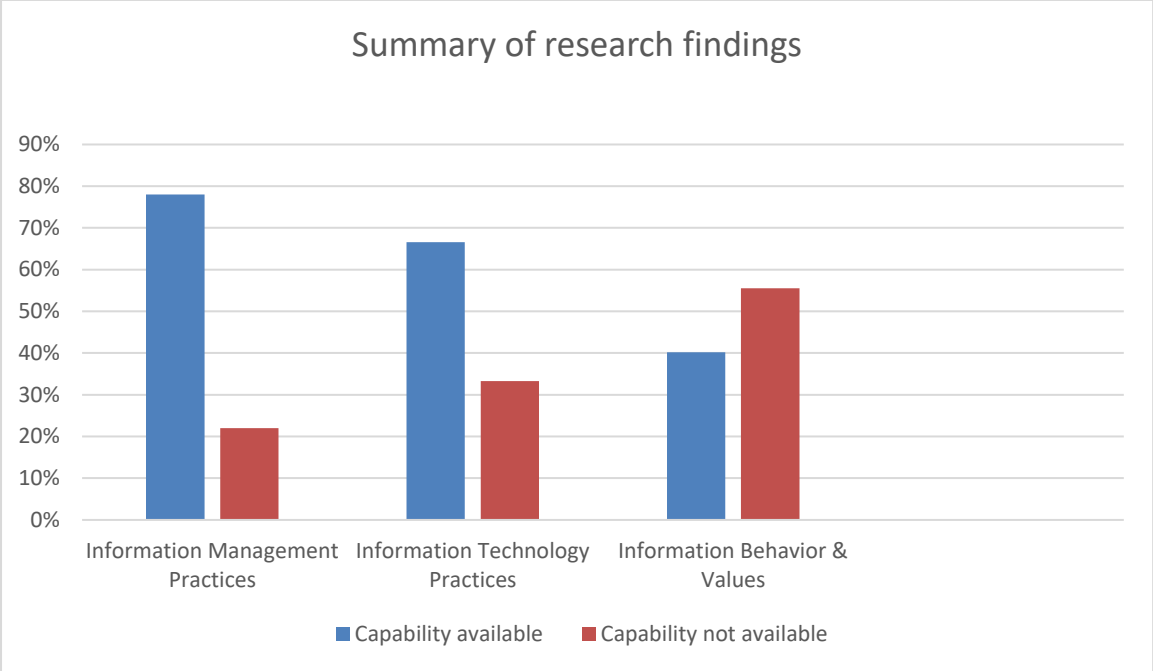

Figure 15 : Graphiic overview of the Research Findings

The findings of the study show that SOEs in South Africa are failing dismally in developing and managing their employees' behaviour and values in using information to benefit their organisations. Their failure is associated with information integrity, information sharing, information transparency, proactiveness and information control. It should be noted that SOEs are not competitive in nature as they are established to serve a unique purpose. SOEs that are determined to have a competitive advantage should start to instil in behaviours and values in their employees that are good for managing and using information for improved performance. SOEs around the globe are faced with ongoing financial and operational crises and are fighting for their survival. The SOEs in South Africa are no exception in this. For example, the electricity sector is experiencing shortages in infrastructure which led to citizens facing load shedding from 2014 to date.

South Africans are faced with poor service delivery due to poor governance and failure by some SOEs in delivering on their mandates and resulted in bailouts and cash injection by the government. Dullah Omar Institute (2020) associates these failures to a lack of proper information sharing with the public about the operational matters and how SOEs are run. Parliament, the Board of Directors in SOEs, and the relevant ministers should be transparent and provide the public with the right and important information on a regular basis as required by the law. Information and knowledge sharing should be embraced by SOEs to create change for new innovative ideas to serve society.

5.4 IBV as the contributing factor to the success or failure of SOEs in South Africa

In this study, the researcher has made a few but important observations and has explored additional sources of evidence such as reports and media to supplement the research findings. It is the contention and assertion of this study that the non-integration and misalignment of IBV with IMP and ITP in SOEs, had adversely impacted performance and service delivery. More specifically, crucial elements of IBV such as integrity, formality, control, transparency, sharing and proactiveness of information in SOEs have not been properly applied for the benefit of organisations. SOEs have not developed an information culture that can positively influence organizational practices that leads to successful business performance. Developing a good information culture within SOEs in the most important aspect of improving IBV capability than investing in technologies. The Return on Investment in IT can only be realised once employees change how they use information

The limited IBV capability in SOEs was validated in this study by evidence from respondents. Statements such as “hoarding culture within the organisation where the sharing of information is very difficult”, “sharing depends on personal relations” and “sharing of information depends on the individuals”. Using information in a trustworthy manger shows information integrity, which is not the case in the SOEs studied. Additionally, notions of relational mistrust with information are commonplace in SOE’s, as evident in the following statements;

a) “Employees trust each other at their peer level but sometimes not with senior management”; and

b) “Culture does allow communication especially in smaller teams, not necessarily the case within the wider organization”.

It is therefore evident that employee behaviours and values around information are informed by suspicion, self-serving aims, potential political motives, hoarding and malice, to the detriment of the developmental objectives of SOEs. It is arguable that the IBV capability is a crucial weakness that brings about dysfunctionality in the information orientation of SOEs. This IO weakness in SOEs occurs despite the relative functional successes at both IMP and ITP levels. Hsieh et al. (2006), posit that an organisation’s capability can be enhanced and is able to attain optimal results if all three components are well integrated, resulting in a high level of IO maturity. Marchand et al (2001) concurs by asserting that when any one of the three IO elements, i.e. IBV, IMP and ITP are not well integrated at a personal and corporate level, an organisation is likely to underperform. Evidence given in this study has proved that South African SOEs do not have the right mix of all three IO components. This is just but part of the reasons why SOEs are characterised as underperforming by commentators, researchers, observers, media and some politicians (Chauke 2018; Dullah Omar Institute 2021; Gumede 2016; Lukani 2022; Madumi 2018; Thabane & Snyman-van Deventer 2018).

An IO approach that is not integrated with all three information capabilities may result in inadequate, inaccurate or unavailability of information within SOEs. This could damage the reputation of SOEs externally to other state institutions, stakeholders, media and the public. Several reports that have been compiled and published by local and international media houses have noted a general trend of information unavailability, secrecy, inaccuracy and to some extent, misinformation emanating from South African SOEs (Auditor General 2016/17, Daily Maverick – Gumede 2022; National Energy Regulator and the Centre for Competition, 2014; Thomas 2012; World Bank - Kikeri 2018). This has been supported by some literature regarding information that is publicly reported by SOEs as distortion, asymmetry or deception and manipulated (Kathrada et al., 2021; Mbele 2015, Wasara 2021). The preceding evidence in literature, reports and media supports the findings of this research that IBV is as important as the other two capabilities of ITP and IMP. These factors are detrimental to the success or failure of SOEs locally and globally.

5.5 Information Behaviour: Facilitator of Information Politics

A general observation indicates that in a decade and a half, SOEs have been dogged by instances of poor governance, political interference, operational ineptitude and financial inefficiency, as reported widely in the media, grey literature and studies mentioned in this research. There were, however, a few outliers which were bucked the trend. Lukani (2022) reported that a number of SOEs in South Africa are burdened with a lot of debts that require government's intervention through bail out processes. Such debts have contributed to the slow improvement in global and local economic growth, as well as service delivery in health, water, electricity, education, and housing.

The fact that SOEs are not operating in competitive markets, they are eligible to the so called "soft budget constraints" which gives the government to bail them out in cases of financial constraints. This then open doors for mismanagement of funds and abuse of power within the SOEs by executives and politicians alike (Gumede 2016). SOEs are expected to develop and implement turn around strategies to mitigate their risks of being closed down or incorporated as their existence is under scrutiny by the Presidential State-Owned Enterprises Council (PSEC). The PSEC was established in 2020 and its main task is to provide advice government on the repositioning of SOEs and review their mandates in the direction that will improve their financial performance and economic transformation. Factors that affects the smooth running of SOEs in South Africa includes: behaviour in the use and management of information, corruption, political interference, to name a few. For this study we will discuss the information behaviours as it relates to the IO Model.

Among the many variants of IBVs in SOEs, the appeal of information politics and the enticement of financial corruption are seemingly the top two ranking motives that are attributable to failures in the current SA state institutions (Chitiga-Mabugu 2022; Kanyane & Sausi 2015; Public Protector 2016; Thabane & Snyman-van Deventer 2018; Thomas 2012). Essentially, information is regarded as currency and a powerful device, hence respondents on this research stated that it was hoarded and shared only among a few. This particular information belief and behaviour in IBV, allows for the manipulation of ITP and IMP for self-enrichment and advancing political motives within SOEs.

It is public knowledge that has been backed by research evidence that the appointment of executives and Boards of Directors in South African SOEs is done through the 'Cadre Deployment Policy' (Cameron 2010; Twala 2014; Umrabulo 1999). Essentially, the cadre policy determines how information is handled and 'protected', thereby affecting and influencing IBV in SOEs. Equally, individuals who are intent at defrauding SOEs develop their own information behaviours and values. Davenport and Prusak (1998) refer to these behavioural values and tendencies as Information Behaviour and Culture, Information Politics by Information Staff. The extrapolation from the preceding discussion is that, human and social factors around information in SOEs, are crucial elements that determine the integrity, formality, control, transparency, sharing and proactiveness of information.

In turn, IBV as one of the three components of IO, tends to be the most significant and dominant in determining success or failures of SOEs in South Africa. Gumede (2016) supports this argument by saying that SOEs should be compelled to share information about their activities to the public, government, and parliament to allow for the oversight role. Non-sharing of key information between executive directors and non-executive directors that informs decision making is a challenge that is crippling SOEs in general. The King III recommends that sharing of information between the directors is done to help in the decision-making processes.

For SOEs in South Africa to succeed in using information to increase their performance, they need to have an integrated approach in their management of information as an asset as depicted in Figure 16 below.

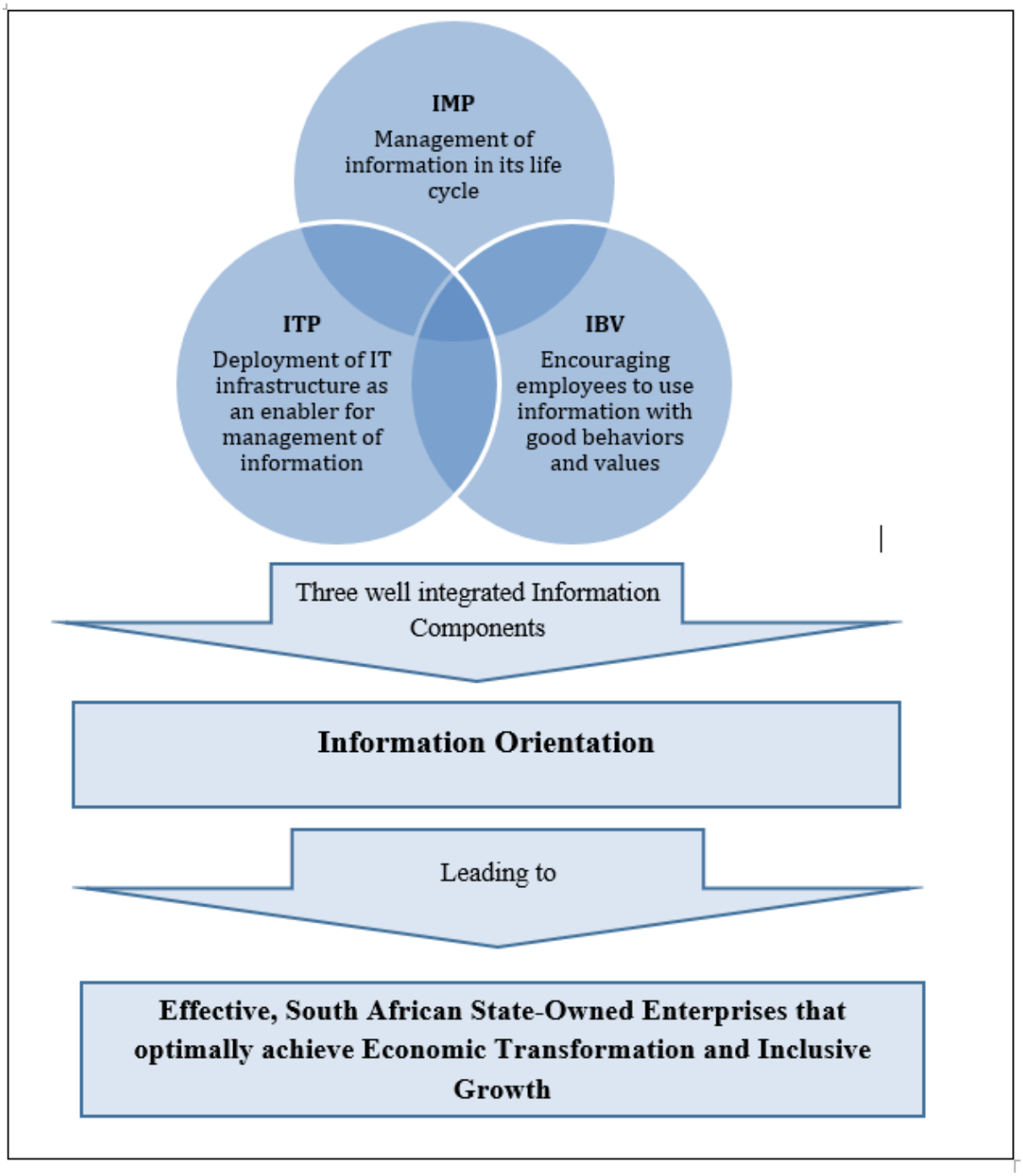

Figure 16 : Recommended IO capability for SOEs in South Africa (Bekwa 2022)

As indicated earlier in this study, improved information capacities have a direct positive bearing on productivity and an organisation' bottom-line. It is fundamentally important for South African SOEs to initiate a detailed review of their information capacities in order to manage information effectively. Therefore, it is essential that all South African SOEs must have an integrated Information Strategy to achieve their socio-economic aims. The next chapter will further discuss the development of an Information Strategy, as it relates to SOEs.

Summary

The main purpose of this discussion chapter was to mainly interpret meanings and relevance of analysed results. It was also intended to focus on explaining and evaluating the findings in relation to reviewed literature, to bring about new insights on the current IO state of SOEs. Findings in this study have shown that 83,3% of SOE participants indicated that senior information managers excel at respective components of IMP which include Maintaining Information as well as Processing and Organising Information while they are proficient at Sensing Information. It is clear that IMP is highly regarded and resourced at SOEs. In term of ITP, 58, 3% of respondents declared that their SOEs have IT infrastructure that facilitates decision making. Equally, 66,6% of senior managers stated that their SOEs offers them IT for Innovation and Business Process Support while 75% are provided with IT software and hardware that facilitates efficiency in business operations. These are components of ITP. On the other hand, IBV components such as Information Integrity, Proactiveness, Sharing, Transparency, Control and Formality range between 58, 3% and 83, 3% but IBV is dogged by politics, mistrust and loyalty fiefdoms, thereby remaining underdeveloped. These findings indicate that IBV is neglected and less resourced in the SOE information governance. It proves this study's hypothesis which stated that if IBV is not well integrated in SOEs, they are likely to lack IO maturity and will tend to under-deliver on their socio-economic mandate.

Chapter 6: Conclusion and Recommendations

6.1 Introduction

This chapter draws a conclusion on the findings of this study and on the reflection of the results to the IO Model. The chapter further provides recommendations to organisations on an integrated approach that can be adopted to manage and use information, basing it on the IO model. Areas of possible research for the future are also highlighted, as premised on the findings of this research study. This current research contributes to the body of knowledge for Information Management and provides a basis for the management of information in its lifecycle, as well as promoting practices that can improve business performance, particularly in South African SOEs. It is important to note that the conclusion made in this research should be considered in the context of SOEs as dynamic organisations but can be implemented in other organisations and institutions in various other sectors.

The findings of the study have also highlighted the significant role that technology plays in the IBV of employees in any organisation. Like many other organisations in the 21st century, SOEs have invested in new technologies and e-products such as ECM, ERP, and SCM systems to manage information, yet they struggle to link the investment to improved business performance (Baloh 2004). The study confirmed the notion of other authors (Marchand & Kettinger 2011) that IBV has not been given much attention as an important aspect of managing information within organisations.

6.2 Information Technology and Information Behaviour and Values

IT in organisations has a potential to support decisions that will give them a competitive advantage, improve efficiency and performance, promote innovations, and to identify risks. Popovič and Coelho (2015) emphasise that IT has the ability and functionalities to manage and use relevant information efficiently, accurately, reliably and timely. IT plays an important role in the way people relate to, share and proactively use information to improve business processes.

Trends and the availability of different technologies have changed the way people behave due to information they access. New technology usually generates excitement when it is introduced, but the information behaviour and value that people develop around new technology, tends to be ignored and forgotten, which is a crucial factor that needs to be taken into consideration by senior management at all times. It should be noted that it is not only how people use information systems, but rather how they behave with information.

Employees' behaviour around information depends on the values that the organisation has set with regards to effective information use. SOEs should not rely solely on technology instead, an integrated approach should be adopted and implemented as advised by the IO model. Aspects of the IBV such as information sharing, proactiveness and formality can serve as important moderators to determine that deployed information systems provide return on investment. The opposite could be true if new information technology is introduced but IBV is not aligned to it. A study by Reardon (2010) has showed that employees can exhibit an array of negative or positive behaviours, even productive or destructive behavioural responses, in the adoption of new information technologies. This is certainly true in some government departments in South Africa.

In an attempt to improve service delivery for South Africans, a number of SOEs and government departments have introduced innovative IT systems and infrastructure including electricity and water Smart Meters, drivers' licence booking systems, identity documents application system, train signalling systems. A section of the SOEs and state department employees have developed new IBV as they adopt or resist the implementation of new ITP. Notably, the media has reported a disturbing trend wherein employees within state departments and SOEs, have been arrested for criminally manipulating new IT systems for the purpose of rendering them dysfunctional or syphoning money out of the state (Mahlokwane 2022, SA News 2022, Staff Writer 2022). Some reports refer to it as economic sabotage.

Incidents of 'sabotage' through tempering, manipulation or theft of state IT Infrastructure by internal employees, are IBV related outcomes in response to the introduction of new IT systems. Essentially, the reports above prove the validity of the hypothesis in this study which states that, SOEs need to intentionally and purposefully align and integrate the three IO components, i.e. ITP, IMP and IBV in order to optimally achieve economic transformation and

economic growth in South Africa, as illustrated in Figure 16. This is opposed to introducing innovative and expensive world class ITP as it happens frequently on South Africa SOEs, without upskilling, motivating and securing employees' buy-in on the vision of state enterprises to enhance IBV.

6.3 Future Research, Recommendations and Limitations

6.3.1 Future Research

The IO model dictates that organisations should have the three capabilities to enable them to use and manage information to their utmost benefit. The absence of any one of the three capabilities may have a negative impact to business performance. However, it does not indicate where they have to start in order to achieve beneficial results. IO is a tool that organisations can use to assess their strengths and weaknesses, relating to their management and use of information. There is a need for future research that will guide organisations on how and where to start in achieving the three capabilities. More research on the maturity of the IO capabilities in SOEs is also recommended. The issue of a high maturity on IO has been researched by scholars. However, there is more that needs to be done in research the way in which organisations can improve their IO maturity level. Secondly, research on why organisations in general or specifically to SOEs do not integrate the capability of IBV when they are investing in ITP and IMP is recommended. This research was not intended to provide a comprehensive exploration of all SOEs in South Africa. For that reason, only a sample of them were studied to get a sense of the nature, magnitude and extent of the challenge facing SOEs. Therefore, it is recommended that further research be undertaken, based on the findings in this study, to include all SOEs so that a broad and complete picture is presented. Based on the findings of the study, the following recommendations are put forth;

6.3.2 High level recommendations for SOEs in South Africa

Based on the findings of the study which indicated a low maturity of IBV in the majority of SOEs in South Africa, it is recommended that SOEs look at developing an Information Strategy as a baseline for managing information as an asset and further deal with information politics to

gain a competitive advantage. Other recommendations based on the findings of the study have been additionally presented in 6.3.2.3 and 6.3.2.4 below.

6.3.2.1 Recommended approach: Development of an Information Strategy

As discussed earlier in the literature review section, factors that can contribute to a high maturity of IO in SOEs, can be found in the Information Ecology approach when it is used as a baseline to implement the IO model. The first point of entry would be the development of a strategy that will guide the use and management of information as a strategic asset. The IS should include people, IT, business processes, information itself and role players who have influential responsibilities. Davenport (1997) put forward some techniques that organisations may use to start developing their strategies to suit their environment. Senior Managers may start by doing business and/or industry analysis to identify and assess information requirements. The business or industry analysis can be done using Porter's five forces as discussed in 6.3.3 below. Another approach that is highly recommended is to benchmark with successful organisations that have a good information strategy to identify aspects of own information strategy. Reinventing the wheel is time consuming and is invariably costly. Therefore, it is advisable to adopt best practices and adapt them for an SOE context. A good IS can be developed and implemented, but SOEs should also manage information politics effectively to avoid their negative effects on IO maturity.

6.3.2.2 Dealing with information politics

We cannot deny that the management and use of information in organisations are negatively affected by information politics including power. Governance to information should also be given the same attention as that of technology governance. It is recommended that senior managers honestly talk about information politics in addition to how information is governed. Individual SOEs may choose to govern their information based on their structure and the size of their organisation. They can choose any information governance model to deal with information politics as discussed in 3.5.3 above. "One size fits all" should not be applied, instead SOEs must identify what works for them as individual organisations.

6.3.2.3 Recommendations for Improving IBV

Baloh (2004) asserts that behaviours and values that are motivated by good information usage tend to drive better definition and management of information. This in turn, improves the organisation's capability to effectively use IT to enhance decision making and problem solving, which consequently reinforces good employees' behaviours and values in the use of information.

This research was done on SOEs in South Africa, based on the argument presented by Kettinger and Marchand (2011). The summary of the findings indicates that most SOEs experience challenges in meeting the IBV capability objective. Their maturity in the IBV capability is very low and needs to be improved in one way or another. It is therefore recommended that SOEs should implement the following activities in order to improve their capability of information behaviour and values;

a) SOEs should develop processes and put systems in place that will encourage good behaviours and values in the use of information. By doing this, employees will willingly use information to support business objectives;
b) SOEs should define and implement an information culture that is linked to organisational culture;
c) SOEs should develop and implement information policies that will cover the capability of information behaviour and values among their employees;
d) SOEs should create an environment where managers can project good information behaviours that will adopted by fellow employees;
e) SOEs should consistently and systematically build and improve on the IBV capability through training and in other programmes;
f) SOEs should use their IT capability as an enabler for the flow of information in a way that creates new ideas among employees;
g) It is highly recommended that SOEs information cultures should be co-created with all staff members to ensure a buy-in from all levels of staff; and
h) An all-inclusive SOE information culture should be inculcated to all new staff members during the on-boarding or induction phase. It should be revisited annually and open to revision.

6.3.2.4 Recommendation for Improved ITP

Although SOEs showed that they have the capabilities on the two practices, i.e. ITP and IMP, there is still room for improvement. Senior management is urged to adopt Marchand et al. (2001a)'s modified and updated framework on ITP, which provides a baseline for the deployment of IT infrastructure at different levels in the management hierarchy. SOEs should build a high maturity level in the ITP capability by adopting an integrated approach. This approach that is modified by Marchand et al. (2001), has proven effective in the deployment of technology applications to support all the levels, as they are inter-dependent. It should be noted that IT infrastructure is only an enabler for the management and use of information, and should be treated as such.

Table 3 : Framework for ITP

	IT practice support	Types of knowledge workers	Decision making levels	Application examples
Making better things	**IT managerial support**	Executives / senior managers	Strategy Resource allocation Management control	Executive information systems (EIS), Decision support systems (DSS), Data mining, On-line analytical processing (OLAP), Group decision support systems, Financial management systems
	IT innovation support	Professional workers (R&D, engineering, product design)	New products / services Improve creativity and exploration	Groupware (e.g. Lotus Notes), Computer-aided design, Graphical simulation tools, Product modeling systems, Geographic information systems (GIS)
Making things better	**IT business process support**	Process managers	Project and process management across demand / supply chain	Enterprise resource planning systems (ERP) (e.g. SAP); Production, distribution, inventory, and sales management systems; Workflow automation systems
	IT operational support	Operational workers and supervisors	Transaction processing Direct operations	Payment systems; Order processing systems; Policy management systems; Accounting, payroll and personnel systems; Checking, credit cards systems...

6.3.2.5 Recommendation for improved IMP

South African SOEs exhibit a relatively high IMP maturity level, however some improvement is still necessary. More specifically, a holistic approach in the management of information is highly recommended. SOEs need to improve on how they sense external information as this will have a positive influence on how they collect relevant and accurate information. Collecting relevant and accurate information will provide a baseline on how such information should be

organised for easy access by employees. Well organized information will assist SOEs to process all information required for better decision-making. Effective processing, improves information maintenance which has the ability to enhance the process of information collection. This recommendation achieves the implementation of the information life cycle in totality and saves on the need to recollect the same information over and over again.

6.3.3 Applying Porters Generic Strategies to SOE's

6.3.3.1 Introduction

According to Islami et al. (2020) Porter refers to his generic strategies as the strategic action decisions to achieve organisational objectives and give a competitive advantage. The strategic focus of the Information Strategy of SOEs should be on gaining sustainable competitive advantage rather than internal operations. Porter's generic strategies can be adapted by SOEs to deal with external factors that influence their business performance. Porter presents the generic strategies that can be adopted by organisations after they have done their competitive analysis based on industry forces. The phrase "generic strategies" can be widely used and applicable to create competitive advantage in any industry regardless of type and size.

6.3.3.2 Porters Generic Strategies

Any business needs a strategy or a plan on how to meet its objectives and become successful. It is therefore a critical and important factor to choose the right business strategy. Organisations should create strategies that will enable them to adapt easily in the technological and economic changes, and thus becoming competitive in the industry they are operating in. It becomes a challenge for any organisation to select the right strategy as there are various available, and that is where Porter's strategies can assist organisations. According to Tanwar (2013) Porter presented three strategies that organisations can use as a baseline to find a niche and also to better understand their customers, namely, a) cost leadership strategy, b) differentiation strategy, and c) focus strategy as presented in Figure 17 below. These strategies are called generic strategies.

Figure 17: Porter's Generic Strategies

6.3.3.3 Cost Leadership Strategy

This is a strategy whereby an organisation targets a broad market and focuses on reducing cost below the costs of competitors for delivery of products and services to a customer at the same time ensure profitability thus can invest in other parts of the business. It is recommended that the outcome of the analysis of the organisation's market status is brought forward to be part of this strategy and consider the powers for both supplier and buyer. It is said that any organisation (SOE, for example) that can identify and use to its advantage all sources of cost and becomes a low-cost producer in the industry can benefit from a sustainable cost leadership strategy. SOEs can aggressively use the cost leadership strategy and consistently reduce costs. Islami et al (2020) posit that there is a relationship between low-cost strategy and the performance of an organisation which is evident strategy's successful way to a sustainable competitive advantage through reducing and controlling the cost that results in good organizational performance. This way organisations create a cost efficiency advantage, a value that is significantly more than that of direct competitors (Lee et al. 2021). SOEs deciding to use the cost reduction strategy should ensure that it is difficult for competitors to copy or match the strategy for their competitive advantage to last longer.

SOE's that employ the cost leadership strategy should ensure that cost drives and key elements of the cost structure are reviewed. This will include the following:

a) Inputs costs and suppliers;
b) Personnel costs;
c) Technology to improve efficiency; and
d) Skills of personnel and management team that will include analytical thinking, financial management and process driven.

When the Cost Leadership Strategy is successfully implemented, it provides several options to the profitability and sustainability of the organisation, namely:

a) Raising profit margins while keeping current operations at a reasonably low cost;
b) Putting off price hikes even when competitors are compelled to follow that route;
c) Cutting the current value of goods and services and emerging as more competitive; and
d) Re-investing earnings for the purpose of expanding a range of products and also adopting smart technology to reduce operating costs thereby improving shareholder value.

6.3.3.4 Differentiation Strategy

An organisation that choses this strategy targets a broader market, and develops a product or service that is perceived as unique in the sector. In that way it distinguishes itself from the rest of the competition through the quality of the product or service. The uniqueness of the product or service can be associated with new technology and brand image. Tanwar (2013) and Islami et al (2020) emphasise that differential strategy can be a viable option as extra costs are passed on to customers because brand loyalty decreases customers 'sensitivity to price. In most cases when customers have a good perception of the product or service they become loyal to the brand and are always willing to pay more. Customers' loyalty can also be used as a barrier for new entrants in the market. SOEs can also choose to use the differential strategy to create a competitive advantage in their different sectors. SOEs that choose this strategy should be willing to invest in Research and Development initiatives that are production-related, in innovation and technological advances to improve efficiency, increase marketing and brand-building, seek out high-quality inputs; and facilitate activities that will improve the skills, expertise, and knowledge of employees.

A successfully implemented differentiation strategy provides several options to the organisation, namely:

a) Penetrate new markets to avoid relying on one source of revenue;
b) Enhance existing revenue by securing more contracts;
c) Enhance existing revenue by increasing prices; and
d) Build brand loyalty.

Equally, a differentiation strategy facilitates the unlocking of marketing channels which disseminate newsflashes and updates about features, products and services. Similarly, a differentiation strategy establishes a specialised customer segment that follows newly developed features.

6.3.3.5 Focus Strategy

In this generic strategy also known as *"niche strategy"*, the target is on a particular segment of customers (Lee et al. 2021.). By focusing on a specific market, it provides an advantage of being able to meet the needs of the market. The focus strategy involves choosing a narrow competitive scope within the industry by selecting a segment and then tailors the service to effectively and efficiently suit the segment. Tanwar (2013) and Islami et al (2020) pointed out that the focus strategy has two options, namely: cost focus and differentiation focus.

a) *In cost focus,* an organisation seeks to attract specific target segment market by using lower prices. The organisation offers their goods and services at the lowest prices than their competitors. Islami et al (2020) agree that a low-cost focus strategy offers a product or service to a niche group of customers at the lowest price available on the market; and

b) *In Differentiation focus,* an organisation seeks to outplay its competitors by offering a product that unique and better to a narrow target market, even though its price is higher. A second type is a focus strategy that is premised on best-value which sells goods or services to a relatively small targeted group of customers, at a competitive price on the market. It is often referred to as 'focused differentiation'. This particular focus strategy is intended to provide unique goods and services that are customised to satisfy tastes and requirement of niche customers, in a manner that outperforms competitors in the market.

The various options of focus strategies outlined above are differentiated mainly by an emphasis that is placed on a target segment or particular customer population in the market. The effectiveness of a focus strategy depends on the target segment that has buyers with unusual needs. The other differentiator of an effective focus strategy is the uniqueness of the production and delivery system that effectively serves its targeted customer segment. It has to differ markedly in focus and delivery to other generics in the market. Essentially, it has to be purpose-built to address the exclusive needs of special customers. Cost focus strategy takes advantage of variances in cost behaviour segments. On the other hand, differentiation focus places an emphasis on the special needs expressed by buyers in particular segments.

6.3.3.6 How SOEs can choose the right Generic Strategy

SOEs should undergo a process of choosing the right generic strategy from Porter's strategies as explained in the Figure 18 below. The following steps are to be followed.

a) *Conduct SWOT (Strengths, Weaknesses, Opportunities and Threats)* Analysis SOEs need to start by analysing its internal SWOT on the generis strategies to choose the right one that is suitable to drive vision and objectives. The outcome of this step will assist to identify possible opportunities, increase strengths, plan to mitigate threats and improve on weaknesses;
b) *Porter's Five Forces Analysis*: The second step in the process is to perform an external environment analysis to understand the industry the SOEs are operating in. The outcome of this analysis will assist in identifying the forces that affects the sector as per Porter's model; and
c) *Compare outcome of the above two analysis:* The last step is to compare the SWOT analysis and five forces analysis outcomes. This step will assist SOEs to select the generic strategy that best suit the organisation.

Figure 18: Choosing the Right Generic Strategy.

6.4 Limitations of the Study

Theofanidis and Fountouki (2018) refer to limitations of the study as, any potential shortcomings in the study that the researcher cannot change, which may affect the outcome of the study. Examples are the sampling size, collection of data, chosen methodology or design and other related matters. It is advisable that researchers identify limitations of their study and identify ways to mitigate the challenges. The study has the following limitations;

1. *Data collection.* Data was collected through a questionnaire that had questions which needed respondents to elaborate on. It would have been ideal to make follow-ups if there were no time restrictions due to COVID. The researcher relied on the responses provided by the respondents electronically and she could not conduct face-to-face interviews with participants. The researcher could have followed up using other means of data collection tools such as interviews;

2. *Access to Data*. The researcher could not reach all SOEs to participate as she was limited by access due to the period when the collection of data was done, it was during the COVID 19 pandemic lockdown where people were working from home and access to resources was limited; and

3. *Scope of Discussions***.** The researcher does not have any research experience and equally, the depth of discussions was insufficient, which proved to be a limitation, as compared to other experienced scholars.

6.5 Conclusion

Senior Managers often rush to invest in IT with the mindset that it will solve their general business performance. Managing information is quite a challenging task and it is dependent on people, particularly on how they use information and the systems that allow them to process, organise and share organisational information. This requires a 'versatile' business and information systems manager who can play a major role in formulating a strategy for an effective use of information technology, one who does not neglect the human side of the information equation, and who is consistently cognisant that information has to be managed like any other resource.

Marchand (2001) supports the idea of approaching the management of information in a holistic manner, which integrates IT and people. Hwang (2015) asserts that the information orientation model is based on an integrated approach that includes people-centered activities in the use of information to improve performance of any organisation. Marchand et al. (2000; 2002) concur with the integrated approach that is promoted by the IO model, which proposes that organisations should not only invest in and deploy information technology, but should encourage best practices and behaviour in employees on the use of information. Employees should be encouraged to always embrace good values and behaviour. Hsieh (2006) emphasizes that these behaviours and values are able to guide management on the adoption of information-related and e-business strategies.

The results of this study show evidence which indicates that SOEs are faced with the same predicament of investing more on IT, while neglecting investments on people. SOEs should implement the IO Model through IT initiatives but ensure that they also instil good behaviours and values in their employees. The IO Model was developed to assist managers to identify critical areas for effective management of information. An organisation has to excel at using information proactively, while being equally effective at sensing and processing information appropriately. Similarly, it has to be good at deploying IT for management support and its information orientation has to be people-centric, by default.

IO plays an important role in the reduction of information asymmetry through the collection and sharing of information. Bergh et al (2019) define information asymmetry as an environment whereby one party has more information and better understanding of the subject matter than the other party. IO encourages organisations to increase their IO maturity with good IT, IM, and behaviour in the management of information so that all employees have access to information in its lifecycle. Organisations that have high IO may have little challenges with information asymmetry. In the final analysis, this study highly recommends that all South African SOEs should adopt and implement an Information Orientation that comprises three well integrated components, namely, IMP, ITP and IBV which will enhance SOE's capacity to deliver economic and inclusive growth in South Africa.

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Annexure A: Questionnaire

The following questions are based on the management and use of information within your organization. Please answer both Section A and B

SECTION A

Name of your organization: _____

What is your designation within the organization? _____

How many years have you been with the organization? Please tick where applicable

0-5 years ☐

6-10 years ☐

11-15 years ☐

16-20 years ☐

More than 20 years ☐

SECTION B

Please answer the following questions regarding the use and management of information within your organization.

1. **Information Management Practices (IMP)** – the capabilities of an organisation to manage information effectively over its life cycle, including sensing, collecting, organizing, processing and maintaining information**.**
    a. **Sensing information**
        i. How do employees in your organization detect and identify information for any changes that might affect business, for new innovative ideas or for anticipated problems?

Answer**:**

b. Collecting information

i. How is access to existing collective knowledge provided to prevent information overload?

Answer:

c. Processing information

i. Is the organizational information processed into useful knowledge?

Yes ☐

No ☐

Please elaborate:

d. Organizing information

i. Is the organizational information organized for easy access within and across business units?

Yes ☐

No ☐

Please elaborate:

e. Maintaining information

i. Do employees reuse existing information to avoid collecting the same information again?

Yes ☐

No ☐

Please elaborate:

ii. Does your organization update information databases to keep them current?

Yes ☐

No ☐

Please elaborate:

2. **Information Technology Practices (ITP)** – the ability of an organisation to effectively manage appropriate IT applications and infrastructure in support of operational decision making and communication processes.
    - **a) Information Technology (IT) for Management Support**
        - **i.** Does your IT infrastructure (Software, hardware, telecommunication networks and capabilities) facilitate business decision making?

Yes ☐

No ☐

Please elaborate:

ii. Does your IT infrastructure (Software, hardware, telecommunication networks and capabilities) facilitates the monitoring and analysis of internal and external business issues?

Yes ☐

No ☐

Please elaborate:

b) IT for Innovation Support

i. Does your IT infrastructure (Software, hardware, telecommunication networks and capabilities) facilitate employee's creativity to explore and develop new ideas?

Yes ☐

No ☐

Please elaborate:

c) IT for Business Process Support

i. Does your IT and technical expertise facilitate the management of business processes and people across functions within the organization, and externally with customers and suppliers

Yes ☐

No ☐

Please elaborate:

d) IT for Operational Support

i. Does your IT infrastructure control business operations?

Yes ☐

No ☐

Please elaborate:

ii. Does your IT infrastructure ensure that lower skilled workers perform their responsibilities consistently and with high quality?

Yes ☐

No ☐

Please elaborate:

iii. Does your IT infrastructure improve the efficiency of operations?

Yes ☐

No ☐

Please elaborate:

3. **Information Behaviour & Values (IBV)** - the capabilities of an organization to instill and promote behaviours and values in its people for the effective use of information. This includes: integrity, formality, control, transparency, sharing and proactiveness.

a) Information Integrity

i. Do employees frequently exploit business information for personal gains?

Yes ☐

No ☐

Please elaborate:

b) **Proactiveness**

i. Do employees proactively use information to enhance existing and create new products and services?

Yes ☐

No ☐

Please elaborate:

c) **Sharing** (non-sensitive information) Do employees share information;

i. Between individuals in teams
ii. Across functional boundaries
iii. Across organizational boundaries (clients, suppliers & partners)

Yes ☐

No ☐

Please elaborate:

d) Transparency

i. Do employees trust each other enough to talk about failures, errors, mistakes in an open and constructive manner without fear of unfair repercussions

Yes ☐

No ☐

Please elaborate:

e) Control

i. Do senior management disclose information about company performance to all employees to influence and direct individual and organizational performance

Yes ☐

No ☐

Please elaborate:

\

f) Formality

ii. Do employees use and trust formal sources of information provided by the organization?

Yes ☐

No ☐

Please elaborate:

Your time to participate in the study is much appreciated

Annexure B: Public Institutions listed in PFMA schedules 1, 2, and 3 (Part A)

SCHEDULE 1

Constitutional Institutions

1. Independent Communications Authority of South Africa
2. The Commission for the Promotion and Protection of the Rights of Cultural, Religious and Linguistic Communities
3. The Commission on Gender Equality
4. The Financial and Fiscal Commission
5. The Human Rights Commission
6. The Independent Electoral Commission
7. The Municipal Demarcation Board
8. The Pan South African Language Board
9. The Public Protector of South Africa

SCHEDULE 2

Major Public Entities

1. Air Traffic and Navigation Services Company
2. Airports Company
3. Alexkor Limited
4. Armaments Corporation of South Africa
5. Broadband Infrastructure Company (Pty) Ltd
6. CEF Pty (Ltd)
7. DENEL
8. Development Bank of Southern Africa
9. ESKOM
10. Independent Development Trust
11. Industrial Development Corporation of South Africa Limited
12. Land and Agricultural Bank of South Africa
13. SA Broadcasting Corporation Limited
14. SA Forestry Company Limited
15. SA Nuclear Energy Corporation
16. SA Post Office Limited
17. South African Airways Limited
18. South African Express (Pty) Limited

19. Telkom SA Limited
20. Trans-Caledon Tunnel Authority
21. Transnet Limited

Any subsidiary or entity under the ownership control of the above public entities

SCHEDULE 3

Part A: National Public Entities

1. Accounting Standards Board
2. African Renaissance and International Cooperation Fund
3. Afrikaanse Taalmuseum, Paarl
4. Agrément South Africa
5. Agricultural Research Council
6. AGRISETA
7. Artscape
8. Banking Sector Education and Training Authority
9. Boxing South Africa
10. Brand SA
11. Breede-Gouritz Catchment Management Agency
12. Castle Control Board
13. Chemical Industries Education and Training Authority
14. Commission for Conciliation, Mediation & Arbitration
15. Community Schemes Ombud Service
16. Companies and Intellectual Property Commission
17. Companies Tribunal
18. Compensation Fund, including Reserve Fund
19. Competition Commission
20. Competition Tribunal
21. Construction Education and Training Authority
22. Construction Industry Development Board
23. Council for Geoscience
24. Council for Medical Schemes
25. Council for the Built Environment (CBE)
26. Council on Higher Education
27. Cross-Border Road Transport Agency
28. Culture, Arts, Tourism, Hospitality and Sports Education and Training Authority (CATHSSETA)
29. Ditsong: Museums of South Africa

30. Education, Training and Development Practices SETA (ETDP)
31. Electricity Distribution Industry Holdings (Pty) Ltd
32. Energy and Water Sector Education and Training Authority (EWSETA)
33. Estate Agency Affairs Board
34. Fibre Processing Manufacturing Sector Education and Training Authority (FPMSETA)
35. Film and Publication Board
36. Financial and Accounting Services SETA (FASSET)
37. Financial Intelligence Centre
38. Financial Sector Conduct Authority
39. Food and Beverages Manufacturing Industry (FOODBEV)
40. Freedom Park Trust
41. Health and Welfare Sector Education and Training Authority
42. Housing Development Agency
43. Human Sciences Research Council
44. Independent Regulatory Board for Auditors
45. Information Systems, Electronics and Telecommunications Technologies Training Authority
46. Ingonyama Trust Board
47. Inkomati-Usuthu Catchment Management Agency
48. Insurance Sector Education and Training Authority
49. International Trade Administration Commission
50. iSimangaliso Wetland Park
51. Iziko Museums of South Africa
52. KwaZulu-Natal Museum
53. Legal Aid South Africa
54. Local Government Education and Training Authority (LGSETA)
55. LUTHULI MUSEUM
56. Manufacturing, Engineering and Related Services Education and Training Authority
57. Marine Living Resources Fund
58. Market Theatre Foundation
59. Media Development and Diversity Agency
60. Media, Information and Communication Technologies Sector Education and Training Authority (MICTS)
61. Mine Health & Safety Council
62. Mining Qualifications Authority
63. National Agricultural Marketing Council
64. National Arts Council
65. National Consumer Commission

66. National Consumer Tribunal
67. National Credit Regulator
68. National Development Agency
69. National Economic, Development and Labour Council
70. National Electronic Media Institute of SA
71. National Empowerment Fund
72. National Energy Regulator of South Africa
73. National Film and Video Foundation
74. National Gambling Board of SA
75. National Health Laboratory Service
76. National Heritage Council (NHC)
77. National Home Builders Registration Council—NHBRC
78. National Housing Finance Corporation
79. National Library, Pretoria/Cape Town
80. National Lotteries Commission
81. National Metrology Institute of South Africa
82. National Museum, Bloemfontein
83. National Nuclear Regulator
84. National Regulator for Compulsory Specifications
85. National Research Foundation
86. National Student Financial Aid Scheme
87. National Urban Reconstruction and Housing Agency—NURCHA
88. National Youth Development Agency
89. Nelson Mandela Museum, Umtata
90. Office of Health Standards Compliance
91. Office of the Ombudsman for Financial Services Providers
92. Office of the Pension Funds Adjudicator
93. Office of the Valuer-General
94. Performance Arts Council of the Free State
95. Perishable Products Export Control Board
96. Ports Regulator of South Africa
97. Private Security Industry Regulatory Authority
98. Productivity SA
99. Public Service Sector Education and Training Authority
100. Quality Council for Trades and Occupations (QCTO)
101. Railway Safety Regulator
102. Road Accident Fund
103. Road Traffic Infringement Agency (RTIA)

104. Road Traffic Management Corporation
105. Robben Island Museum, Cape Town
106. Rural Housing Loan Fund
107. SA Civil Aviation Authority
108. SA Council for Educators
109. SA Heritage Resources Agency
110. SA Heritage Resources Agency, Cape Town
111. SA Institute for Drug-free Sport
112. SA Library for the Blind, Grahamstown
113. SA Local Government Association
114. SA Maritime Safety Authority
115. SA Medical Research Council
116. SA National Accreditation System
117. SA National Roads Agency
118. SA Qualifications Authority
119. SA Revenue Service
120. SA Tourism Board
121. Safety and Security Education and Training Authority (SASSETA)
122. Servcon
123. Services Sector Education and Training Authority
124. Small Enterprise Development Agency (SEDA)
125. South African Diamond and Precious Metals Regulator
126. South African Health Products Regulatory Authority (SAHPRA)
127. South African National Biodiversity Institute (SANBI)
128. South African National Energy Development Institute (SANEDI)
129. South African National Parks
130. South African National Space Agency
131. South African Social Security Agency
132. South African Weather Service
133. Special Investigation Unit
134. State Information Technology Agency
135. State Theatre, Pretoria
136. Technology Innovation Agency
137. The Co-operative Banks Development Agency
138. The National English Literary Museum, Grahamstown
139. The National Radioactive Waste Disposal Institute (NRWDI)
140. The National Skills Fund (NSF)
141. The Playhouse Company, Durban
142. The Social Housing Regulatory Authority (SHRA)
143. Thubelisha Homes
144. Transport Education and Training Authority

145. Umalusi Council for Quality Assurance in General and Further Education and Training
146. uMsunduzi Museum
147. Unemployment Insurance Fund
148. Universal Service and Access Agency of South Africa
149. Universal Service and Access Fund
150. Urban Transport Fund
151. Vredefort Dome World Heritage Site
152. War Museum of the Boer Republics, Bloemfontein
153. Water Research Commission
154. Wholesale and Retail Sector Education and Training Authority
155. William Humphreys Art Gallery

Any subsidiary or entity under the ownership control of the above public entities