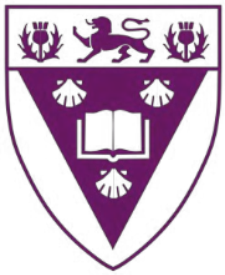


RHODES UNIVERSITY

Where leaders learn

IT BUSINESS CONSULTING: CONSULTANT COMPETENCIES TO ADDRESS BUSINESS INTELLIGENCE AND ANALYTICS CHALLENGES IN SOUTH AFRICAN ORGANISATIONS

by

Ruvimbo Chatapura
G18C1203

IT BUSINESS CONSULTING COMPETENCIES TO ADDRESS BUSINESS INTELLIGENCE AND ANALYTICS CHALLENGES IN SOUTH AFRICAN ORGANISATIONS

by

Ruvimbo Chatapura
G18C1203

Thesis

submitted in partial fulfilment of the requirements for the degree

Master of Commerce

in

Information Systems

in the

Faculty of Commerce

of

Rhodes University

Supervisor: **Mr Chris Upfold**

November 2023

ABSTRACT

Background: In today's dynamic environment, the importance and popularity of business intelligence and analytics (BI&A) has increased due to the rise in big data being generated across the globe. BI&A is an essential emerging business competency area and dynamic capability that serves as an enabler for organisations to harvest value from their big data. When implemented correctly, BI&A is a powerful tool that leads to increased competitive advantage. However, organisations in South Africa are facing major challenges when it comes to adopting and harnessing it. As such, it is IT business consultants that South African organisations turn to for acquiring BI&A expertise.

Objective: Using the Theory of Dynamic Capabilities as an underpinning lens, the purpose of this study is to investigate the relevant competencies IT business consultants need to address BI&A challenges in South African organisations. This study focuses on developing a BI&A competency framework based on these competencies that IT business consultants can consider when addressing the BI&A challenges in South African organisations.

Methods: A qualitative research approach was utilised in this study by making use of an interpretive paradigm, abductive reasoning, qualitative description research strategy, as well as semi-structured interviews and questionnaires as data collection methods to elicit feedback on this study's BI&A competency framework. Content analysis was conducted to categorise and code the interview data, and descriptive analysis was conducted to rank the competencies in order of relevance.

Findings: It was found that the relevant business competencies to consider are business acumen, industry knowledge and strategic conceptual abilities. The relevant technical competencies are categorised into three categories: analytical skills (logical thinking, problem-solving, statistical analysis and what-if analysis), data engineering (data modelling skills, data warehousing, database management, data governance, data interpretation, data stewardship, data visualisation tools and data processing languages) and supplementary skills (project management, consulting skills and artificial intelligence). The relevant values and behavioural competencies to consider are integrity, communication, teamwork, resilience, commitment, creativity, emotional intelligence, humility, behavioural analysis, curiosity, leadership and social intelligence.

Key Words: *IT business consulting, Business intelligence and analytics, Competency framework*

DECLARATION

I, Ruvimbo Chatapura, hereby declare that:

- The work in this thesis is my own work.
- All sources used or referred to have been documented and recognised.
- This thesis has not previously been submitted in full or partial fulfilment of the requirements for a qualification.
- I am fully aware of Rhodes University's policy on plagiarism, and I have taken every precaution to comply with the regulation.

20 November 2023

_____

Date

ACKNOWLEDGEMENTS

First and foremost, I would like to thank God for getting me this far. I thank Him for the divine knowledge, wisdom and guidance He imparted to me throughout this journey. I thank my supervisor, Mr Chris Upfold, whose continuous encouragement and wise academic counsel that was the pillar of strength for this study.

I thank all the gatekeepers and research participants who took the time to be a part of this study and contributed towards its success.

Thank you to my wonderful parents for their countless sacrifices, endless love and support throughout this journey. Last but certainly not least, I thank my siblings and my friends for their constant encouragement every step of the way.

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

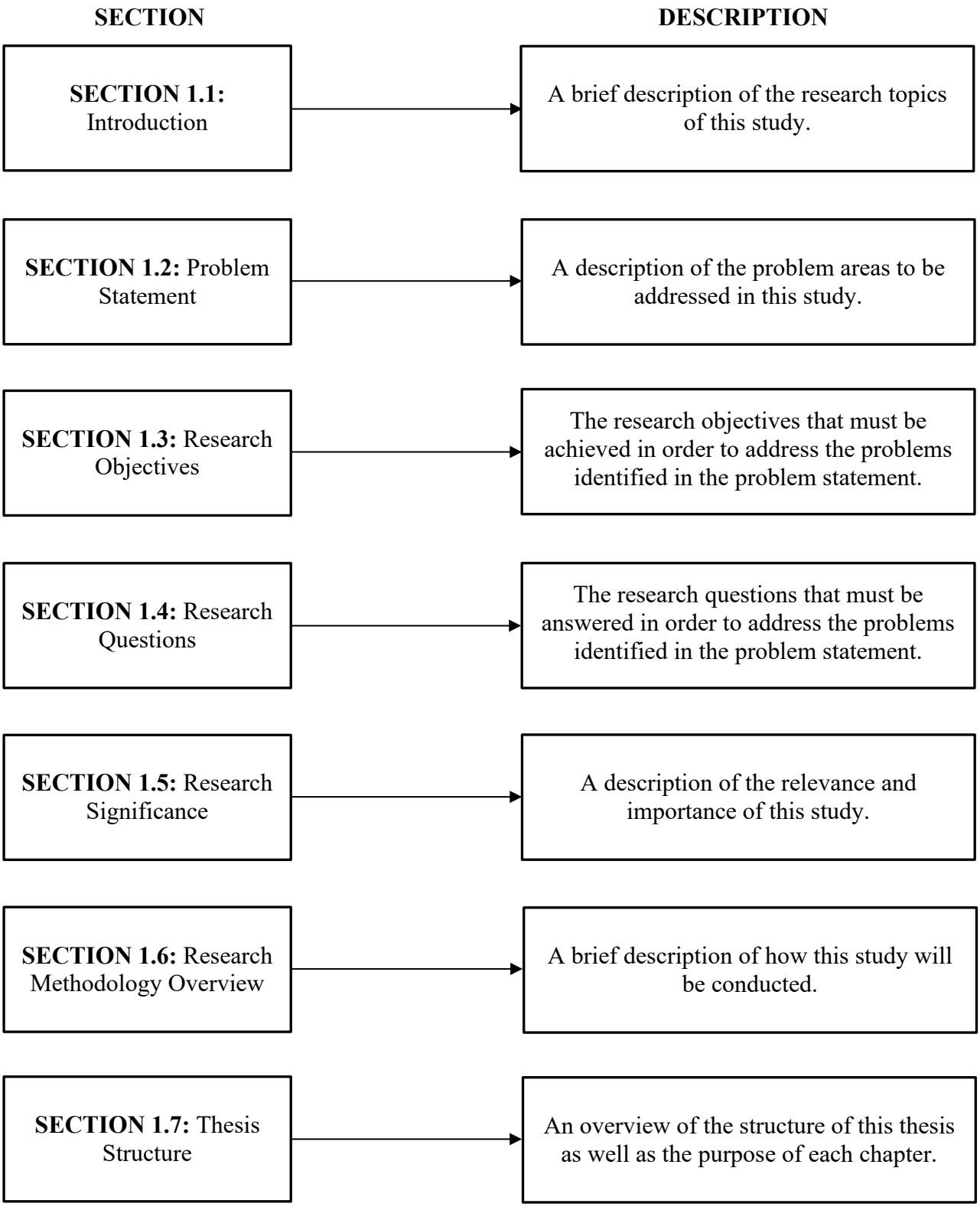
ACRONYMS

ACRONYM	DESCRIPTION
AI	Artificial Intelligence
BA	Business Analytics
BI	Business Intelligence
BICC	Business Intelligence Competency Centre

BI&A	Business Intelligence and Analytics
CAQDAS	Computer-assisted Qualitative Data Analysis Software
CMC	Council of Management Consulting
CSS	Cascading Style Sheet
DBMS	Database Management System
HTML	Hypertext Markup Language
ICT	Information and Communication Technology
IT	Information Technology
ML	Machine Learning
OLAP	Online Analytic Processing
PHP	Hypertext Preprocessor
PSC	Problem-solving Cycle
QD	Qualitative Description
RBT	Resource Based Theory
ROI	Return on Investment
SMEs	Small and Medium-sized Enterprises
SQL	Structured Query Language
TDC	Theory of Dynamic Capabilities
USD	United States Dollar

CHAPTER 1: RESEARCH BACKGROUND

OVERVIEW



1.1 INTRODUCTION

1.1.1 BUSINESS CONSULTING

Business consultants are professional individuals whose job requires them to consult with various organisations and provide advice, expertise or assistance in a particular field of specialisation (Banai and Tulimieri, 2013). Being an integral part of the corporate world, business consulting as a service is now an essential component of the everyday operations of many small, medium and large organisations across the globe (Bruhn et al., 2016; Vukotić et al., 2017). For this reason, client organisations have high expectations of business consultants, as Krüger and Teuteberg (2016) and Vukoti et al. (2017) suggest that a business consultant's competencies are one of the most valuable intangible resources they can offer to a client organisation in meeting their needs. Teimori (2019) argues that by improving these competencies, business consultants can increase their effectiveness and business performance within client organisations, adding value to their clients' operations.

Business consulting can be found in any sector where human interactivity takes place. Within the Information Technology (IT) domain, IT business consulting firms focus on a client organisation's industrial digitalisation and digital transformation and offer the know-how and unique knowledge in response to specific IT needs the organisation seeks to address (Vukotić et al., 2017; Tavoletti et al., 2022). Industrial digitalisation, a major driving force in today's economy and society, can be described as a process aimed at improving the way an organisation functions by introducing significant changes and innovations by combining computing, information connectivity and communication technologies (Matt et al., 2022).

1.1.2 BUSINESS INTELLIGENCE AND ANALYTICS

Big data leading to business intelligence and analytics (BI&A) has been identified as a technological enabler of industrial digitalisation, and its significance and importance are increasing (Poonnawat et al., 2017; Johnson et al., 2021). BI&A technologies assist organisations in making decisions by facilitating data collection, data analysis and information delivery (Rikhardsson and Yigitbasioglu, 2018). With the emergence of BI&A, organisations can now benefit from valuable insights acquired through the integration of diverse data (Sharda et al., 2013).

Since the last decade, the number of organisations embracing BI&A has constantly been rising as it enables the creation, processing, transmission, and storage of data in a way that is linked with competitive advantage and growth, value creation and increased organisational

performance (Al-Sakran, 2015; Cosic et al., 2015; Azmat et al., 2020). In the midst of BI&A's popularity, the demand for BI&A-skilled employees is growing at an exponential rate. This exponential growth is fuelled by the increase in the number of organisations that are adopting BI&A (Chahal et al., 2019). Multiple studies cited by Johnson et al. (2021) and Ayoubi and Aljawarneh (2018) suggest there is a BI&A talent shortage and a competency gap between what the labour market demands and what the workforce currently provides. Particularly in the South African context, Lautenbach et al. (2017) state that there are talent management challenges as BI&A talent is scarce and, therefore, expensive to hire. It is also challenging to find BI&A-trained employees, along with BI&A internal staff training being both time-consuming and expensive.

In order to address the BI&A talent management challenges within organisations in South Africa, IT business consultants possessing the appropriate competencies could potentially fill this competency gap and assist organisations facing BI&A-related challenges (Nam et al., 2019). Furthermore, in order for IT business consultants to serve their clients effectively, there is a need to investigate the key/requisite competencies that IT business consultants require.

1.1.3 THEORY OF DYNAMIC CAPABILITIES

This study draws upon the theory of dynamic capabilities (Teece, Pisano, and Shuen, 1997). Dynamic capabilities are defined by Teece, Pisano, and Shuen (1997) as an organisation's ability to develop, enhance and reconfigure internal and external expertise so as to respond to a rapidly changing environment. The notion of dynamic capacities is further developed by Samsudin and Ismail (2019) in the context of the continuously changing global corporate environment. In this dynamic world, where change is the only constant, organisations must strive to remain relevant and competitive in the markets they operate in. It is, therefore, essential and highly advised that it evolves with the changing environment (Samsudin and Ismail, 2019; Taşkın et al., 2022). The theory suggests that this evolution is a dynamic process and is possible through continuous learning and the development of specific dynamic capabilities. These dynamic capabilities are also seen as an organisation's way of developing new avenues for boosting competitive advantage (Samsudin and Ismail, 2019). This research project aligns with this theory as IT business consultants are seen as some of the most useful resources in enabling continuous learning within organisations, and BI&A can also be regarded as a competency area and dynamic capability that organisations can utilise to increase their competitiveness (Zhao, 2021).

1.1.4 COMPETENCY FRAMEWORKS

According to Bonesso et al. (2020), competencies refer to an individual's characteristics or inputs that they must possess or acquire in order to perform effectively in a particular task or field of work. There are three main types of competencies i.e., technical, business and values and behavioural competencies (International Council of Management Consulting, 2018). A competency framework is a structure that outlines and clarifies each specific competency needed in a particular field so as to guide individuals to increased organisational performance (George, 2021). Therefore, by producing a competency framework centred around BI&A, this study will highlight what these competencies are in order to ensure that IT business consultants are well-equipped to add the most value that enhances the BI&A capabilities of South African organisations and, ultimately, their competitive advantage and overall organisational performance over time.

1.2 PROBLEM STATEMENT

An external business consultant is contracted by a client organisation in order to provide expertise and services in areas where the organisation lacks in-house knowledge, such as how to exploit big data extensively for strategic business decision-making (Vukotić et al., 2017; Laffitte, 2023). As big data is being generated at an exponential rate by organisations all over the world, BI&A is an essential emerging business competency area that can serve as an enabler for organisations to harvest value from their big data and increase their competitive advantage (Chahal et al., 2019). Lautenbach et al. (2017) and Johnson et al. (2021) suggest that South African organisations face challenges in doing so due to a competency gap and talent shortage of those knowledgeable in BI&A. Existing competency frameworks and business consulting frameworks used to guide business consulting processes do not appear to address the relevant BI&A competencies needed by IT business consultants. Kalaimani (2015) and Mukerjee et al. (2022) argue that in order to stay relevant, IT business consultants need to embrace BI&A competencies, especially considering it is IT business consultants that South African organisations turn to for acquiring BI&A expertise that is not necessarily available in-house. Therefore, given the aforementioned problem, this study intends to create a competency framework that outlines the relevant competencies needed by IT business consultants in order to assist organisations in combatting BI&A-related challenges.

1.3 RESEARCH OBJECTIVES

1.3.1 PRIMARY RESEARCH OBJECTIVE

To investigate the relevant competencies IT business consultants need to address BI&A challenges in South African organisations.

1.3.2 SECONDARY RESEARCH OBJECTIVE

To create a competency framework of relevant competencies IT business consultants need to address BI&A challenges in South African organisations.

1.4 RESEARCH QUESTIONS

1.4.1 PRIMARY RESEARCH QUESTION

What are the competencies needed by IT business consultants to address BI&A challenges in South African organisations?

1.4.2 SECONDARY RESEARCH QUESTIONS

- What business competencies are needed by IT business consultants to address BI&A challenges in South African organisations?
- What technical competencies are needed by IT business consultants to address BI&A challenges in South African organisations?
- What values and behavioural competencies are needed by IT business consultants to address BI&A challenges in South African organisations?
- How can the business, technical and values and behavioural competencies that IT business consultants need to address BI&A challenges in South African organisations be ranked in order of relevance?

1.5 RESEARCH SIGNIFICANCE

BI&A is seen as a revolutionary tool that organisations can use in order to gain valuable insights from the voluminous amounts of data they generate (Johnson et al., 2021). Organisations in South Africa, however, face challenges with adopting and harnessing BI&A due to a talent shortage and competency gap existing in the workforce. As noted by Kalaimani (2015), it is understood that due to the reluctance of organisations to cross-train employees, external IT business consultants are needed to guide and assist organisations in successfully adopting and leveraging BI&A. IT business consultants could bridge this gap by acquiring the relevant BI&A competencies that organisations lack. This study will be of great significance as it highlights and ranks these competencies and consolidates them into a competency framework that can be used by:

- Consulting organisations to guide them in putting together viable portfolios of BI&A professionals,
- Current and aspiring IT business consultants to evaluate and develop their competencies and,
- Academic institutions for curriculum development purposes.

1.6 RESEARCH METHODOLOGY OVERVIEW

This study will be conducted using the interpretivism paradigm that utilises qualitative research methods as non-numeric data will be collected and analysed as the basis for answering the research questions. This research method is considered suitable as this study focuses on incorporating findings of previous scholarly work and the opinions of experts to validate the findings (Bhandari, 2021). This study uses the abductive reasoning approach, which relates to both deductive and inductive approaches, as it is used to construct theories and make logical inferences (Bryman and Bell, 2015).

This study utilises a two-step data collection process. The two steps are discussed below:

- Step 1:
  - *Method* – A literature review guided by systematic methods was conducted in order to have a comprehensive understanding of IT business consulting and BI&A and their respective competencies.
  - *Data* – The data comprises secondary data from scholarly journals.
  - *Output* – A BI&A competency framework is proposed, resulting from a consolidation of the relevant competencies as informed through the literature.
- Step 2:
  - *Method* – Semi-structured interviews were conducted virtually with ten pre-qualified IT business consultants with an awareness of the use of BI&A from South African business consulting organisations who consult within the IT business domain. These interviews were framed around open-ended questions that elicited feedback about the relevance and accuracy of the proposed BI&A competency framework.
  - *Data* – The data collected during Step 2 consisted of audio recordings captured during the individual interview sessions. Transcripts of the interviews were drafted from the audio recordings of the interviews.
  - *Analysis* –
    - Using NVIVO, content analysis was conducted from the transcripts by:

i) Familiarising oneself with the data.
ii) Formulating codes.
iii) Developing categories for the codes.

- Using Google Forms and Microsoft Excel, descriptive analysis was also conducted in order to rank the competencies in order of relevance. This process will include:
  i) Having the research participants rate each competency on a scale of 1 (extremely irrelevant) to 5 (extremely relevant).
  ii) Performing statistical calculations on these ratings to see which competencies have the highest average and modal scores.

- *Output* – A revised and finalised BI&A competency framework, with ranked competencies, based on the data gathered through the data collection process.

1.7 THESIS STRUCTURE

The first chapter outlines the research background, problem statement, research objectives, research questions and the significance and methodology of the study. Chapters two and three will detail the relevant literature explored on IT business consultants, BI&A and their respective technical, business and values and behavioural competencies. Chapter four discusses competency frameworks and presents the proposed competency framework of this study. Chapter five addresses this study's research methodology (i.e., the rationale behind the research approach, data collection method and data analysis method) utilised to answer the main research question. The sixth chapter of this research project details the data collection analysis methods and presents the primary research findings of the study. Chapter seven discusses these findings. Lastly, the study is concluded in Chapter eight with a summary of the highlights of the previous chapters and provides recommendations, limitations and suggestions for future studies. Figure 1 below presents the layout of this structure.

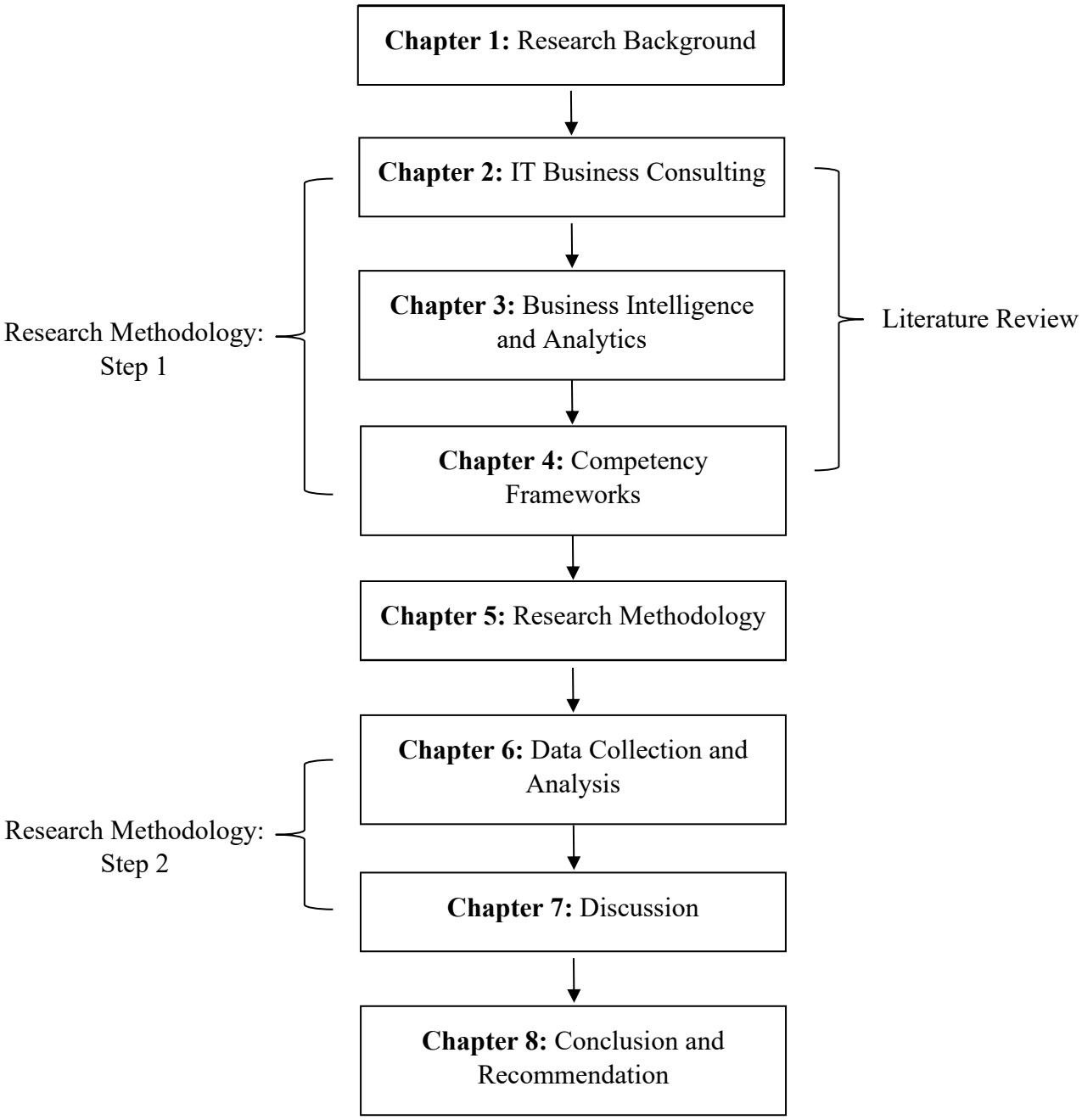


Figure 1: Layout of Thesis Structure

CHAPTER 2: IT BUSINESS CONSULTING

OVERVIEW

SECTION	DESCRIPTION
SECTION 2.1: Introduction	A brief summary of the contents of this chapter.
SECTION 2.2: The Business Consultant Defined	In order to have a clear understanding of the business consultant, this section details the role, the difference between internal and external business consultants, the forms, the categories and the success factors of business consulting.
SECTION 2.3: Business Consulting Frameworks	Frameworks are fundamental tools utilised by business consultants; therefore, this section discusses the frameworks that are commonly used by business consultants during consulting engagements.
SECTION 2.4: IT and Business	This section discusses the IT sector within South Africa and highlights the competency gap within the sector.
SECTION 2.5: IT Business Consultants	This section delves into the roles of external business consultants operating in the IT industry and how they can bridge the competency gap.
SECTION 2.6: IT Business Consulting Competencies	The technical, business and behavioural and values competencies needed by IT business consultants are discussed in this section.
SECTION 2.7: Summary	A summary of the topics discussed in this chapter.

2.1 INTRODUCTION

This study relies on having a comprehensive understanding of the role of business consultants in the IT domain and their perceptions of the competencies relating to BI&A. In relation to the objectives of this study, this chapter defines business consulting, discusses various business consulting frameworks, and gives insight into IT business consulting as well as the competencies needed by IT business consultants.

2.2 THE BUSINESS CONSULTANT DEFINED

With the substantial amount of research that has been carried out on business consulting (or simply consulting), there are varied definitions of what a business consultant/consulting is. Table 1 below provides a variety of definitions found in the literature.

Table 1: Definitions of Business Consultant/Consulting

REFERENCES	DEFINITIONS
Banai and Tulimieri (2013, p.887)	"A professional who helps organisations improve their performance, primarily through the thorough analysis of existing business problems and the development of plans for improvement."
Block (2011)	"The consultant assumes the position of persuading others to accomplish various tasks, oftentimes with little or no authority over making change happen. As a result, the consultant must nudge others, but not too hard, or change will not occur."
Cerruti et al. (2019, p.902)	"…an independent professional advisory service assisting managers and organisations to achieve organisational purposes and objectives by solving management and business problems, identifying and seizing new opportunities, enhancing learning and implementing changes."
Deelmann (2019, p.31)	"Consulting is a professional, contractually appointed service and transformation process of an intervening attendance by a consultancy system for the description, analysis, and solution of a problem of the client system with the goal of transformation."

Grieger (2007)	"Consultants are people who, when asked, agree to use their expertise to help people narrow the gap between where they are and where they want to be."
Nissen (2019, p.2)	"Business consulting is defined here as a professional service which is done by one or more persons, generally professionally qualified, and hierarchically independent from the advised client."
Mauerer (2019, p.274)	"Consulting is a professional service that is provided by one or more persons who typically have the required expertise to solve the problem at hand and are hierarchically independent of the client organisation. The consulting engagement is limited in time, financially compensated and has the objective to define, structure and analyse business issues of the client organisation interactively with the client's employees and to develop corresponding solutions as well as to implement them in close cooperation with the client if requested."
Vukotic et al. (2017, p.70)	"Consulting is knowledge, additional value and program support for products and solutions that increase the value of the resources and assets of the client."

Common amongst the majority of these definitions is that business consultants are professional individuals who are instruments of change. They possess a set of expertise that they can utilise to identify and analyse business problems, provide assistance or solutions and significantly improve organisations.

2.2.1 THE BUSINESS CONSULTANT ROLE

As noted in the definitions above, business consulting entails offering assistance in the resolution of business-related problems. In every business consulting engagement, a client-consultant relationship is formed as business consultants only exist and are effective in relation to their clients (Hislop, 2002). Typically, the goals of a business consultant are to define, organise, and analyse business concerns of the client organisation in a collaborative manner in

order to propose solutions for concerns and, if desired, plan the implementation of the solutions to be executed within the client organisation (Block, 2011; Nissen, 2019). Vukotic et al. (2017) explain that business consultants help client organisations understand their challenges better as well as increase their capacity for putting into practice appropriate and effective solutions to these challenges.

According to Appelbaum and Steed (2005), Vukotic et al. (2017) and Laffitte (2023), the main roles of a business consultant are to:

- Bring an objective perspective relating to a variety of challenges an organisation faces.
- Probe the client organisation's problems from a diagnostic viewpoint where the business consultant uncovers strategic and organisational issues based on their unique diagnostic abilities, experience and knowledge.
- Give relevant information and expertise where there is a demonstrable need.
- Introduce innovative concepts and methods.
- Provide the client with information about frameworks or approaches that define and reveal the essence of their problems.
- Provide the client with information about the best available solutions and facilitate an environment where the client decides what to do about the problems.

The extent to which a business consultant embraces each of these roles is dependent on which form of consulting he/she chooses to adopt.

2.2.2 INTERNAL VS EXTERNAL BUSINESS CONSULTANTS

Business consultants can either be internal or external to an organisation. According to Davison (2009), the difference is that internal business consultants focus on projects concerning the organisations they are employed by, as opposed to external consultants who are a third party to an organisation and are contracted to address single or numerous problems, providing an independent external perspective. This study focuses on external consultants.

Appelbaum and Steed (2005) and Laffitte (2023) state that the main characteristics of an external business consultant are as follows:

- They offer expertise not accessible elsewhere in an organisation.
- They have diverse experience outside of the client organisation.
- Unlike an organisation's workforce, who have their own assigned tasks, external business consultants have time to research an issue and reduce the time a problem would need to be resolved.

Through exposure to a variety of organisations, external business consultants transcend organisations and are able to harness knowledge through their experiences to come up with expert management skills, advice and recommendations (Laffitte, 2023). Though the resources of a client organisation typically support external business consultants, they are described by Appelbaum and Steed (2005) as being autonomous and objective as they are independent of their client's financial, political, emotional and administrative dynamics.

External business consultants add significant value to client organisations as they are seen to reduce the problem resolution cycle time (Appelbaum and Steed, 2005; Larsson et al., 2020). However, Laffitte (2023) point out that external business consultants may be more expensive than internal business consultants since they may not be readily available. They also run the risk of having a poor awareness of the client's environment. Nevertheless, when it comes to unique challenges and when it's required to supplement internal resources, external business consultants can prove to be valuable and cost-effective.

2.2.3 FORMS OF BUSINESS CONSULTING

There are different forms of business consulting. Deelmann (2019) identifies four forms of consulting:

- *Expertise-oriented consulting* – entails information gathering, data analysis, and evaluation alternatives. This form of consulting provides responses that aid the client organisation's systems decision-making process as well as provides answers to any queries that system participants may ask within the client organisation.
- *Expert-orientated consulting* – views the client organisation as an open and socio-technical system where business consultants focus on their expertise and acquired knowledge and collaborate with the client organisation to find a solution to an existing issue.
- *Process-orientated consulting* – is based on self-learning, where the business consultant is provided with little to no content knowledge but rather analyses the activities of the client organisation so as to help the client organisation help itself.
- *Systematic consulting* – capitalises on the client organisation's internal function interdependencies. This means that instead of focusing on activities, business consultants seek to guide the client organisation down a path of self-reflection.

Factors that should be considered by a business consultant when deciding which form of consulting (or a blend) to adopt are the degree of intimacy and interaction between the business

consultant and the client organisation, as well as the extent of the client's environmental knowledge required by the consultant (Deelmann, 2019; Mihailovic and Radosavljević, 2021).

2.2.4 BUSINESS CONSULTANT CATEGORIES

Appelbaum and Steed (2005) propose five categories of business consultants. These five categories are:

- *The strategic navigator* – proposes courses of action with little regard for the client organisation's viewpoint, however, based on deep quantitative knowledge of the market and competitive dynamics.
- *The system architect* – has an impact on client organisations by working closely with them to restructure operations, routines, technologies and systems.
- *The management physician* – bases his or her recommendations on in-depth knowledge of the internal functioning of the client organisations. This type of business consultant is often prepared to give up some objectivity in order to acquire a realistic perspective on what is feasible to address the issue faced by the client organisation.
- *The mental adventurer* – employs rigorous economic techniques and draws on his or her expertise to assess complex issues, such as long-term projections for the client organisation.
- *The friendly co-pilot* – is a facilitator rather than an expert who offers advice to top managers and has no desire to impart fresh information to the client organisation.

Although business consultants can assimilate a variety of categories, consulting engagements call for the development of a connection with the client organisation that goes beyond simply offering knowledge and advice (Kipping and Clark, 2012).

2.2.5 BUSINESS CONSULTING SUCCESS FACTORS

It is widely acknowledged that the relationship between the business consultant and client organisation, and ultimately the engagement's success, is largely dependent on the form and category of business consulting the business consultant chooses (Avakian et al., 2010). Freedman (2016) is of the opinion that effective business consultants possess the domain knowledge and creativity to create value, the disposition to give wise counsel, the interpersonal skills to cooperate and mentor, and the tenacity to work within the client's parameters. Appelbaum and Steed (2005) add that other success factors leading to favourable outcomes include:

- A focus on client organisation results rather than consultant deliverables.

- Transparent and openly communicated expectations and outcomes.
- A commitment to having an in-depth understanding of the client's environment.
- A sincere cooperation between the business consultant and client organisation.
- Participation of the client organisation throughout the implementation stage of solutions.

These success factors suggest that a business consultant should have sound interpersonal and communication competencies over and above business and technical expertise.

2.3 BUSINESS CONSULTING FRAMEWORKS

Business consultants working in any industry use frameworks as a vital tool to address an organisation's issues. According to Athuraliya (2022), frameworks are useful tools for structuring business thinking and guiding organisations in achieving their goals. They can also be used to generate strategies and evaluate the problems they face. Frameworks are frequently utilised by business consultants to communicate solutions to client organisations. A variety of frameworks exist, and they can be categorised between those that focus on the consulting process (section 2.3.1 below) and those that are goal-specific (section 2.3.2 below) (Mandelbaum, 2019). This section discusses three frameworks of each type.

Due to the dynamic nature of the business environment, new frameworks are emerging to ensure that business consultants are suited to the new and emerging problems organisations encounter. This means that in order to ensure that they are well-equipped to tackle problems, business consultants must be well-acquainted with new frameworks (Mandelbaum, 2019).

2.3.1 CONSULTING PROCESS FRAMEWORKS

As the name suggests, consulting process frameworks are frequently used by business consultants as they are helpful in structuring the consulting engagement process. These kinds of frameworks enable business consultants to organise their thoughts around the problems faced by the client organisations. Sections 2.3.1.1 to 2.3.1.3 are examples of consulting process frameworks.

2.3.1.1 TURNER'S EIGHT OBJECTIVES

In every business consulting engagement, a client-consultant relationship is formed as business consultants only exist and are effective in relation to their clients (Hislop, 2002). Although quite old, Turner (1982) developed a hierarchy of fundamental tasks or objectives to show what is required of a business consultant in fulfilling the relationship. Turner (1982) suggests that the client and business consultant frame the engagement around this hierarchy of objectives,

starting with the most fundamental objective of delivering information and progressing to the most sophisticated objective of long-term organisational growth and effectiveness. Furthermore, within a client-consultant engagement, it is imperative that business consultants understand the importance of adhering to these objectives for effective consulting in order to provide value to client organisations. Turner's eight objectives are shown in Figure 2 below.

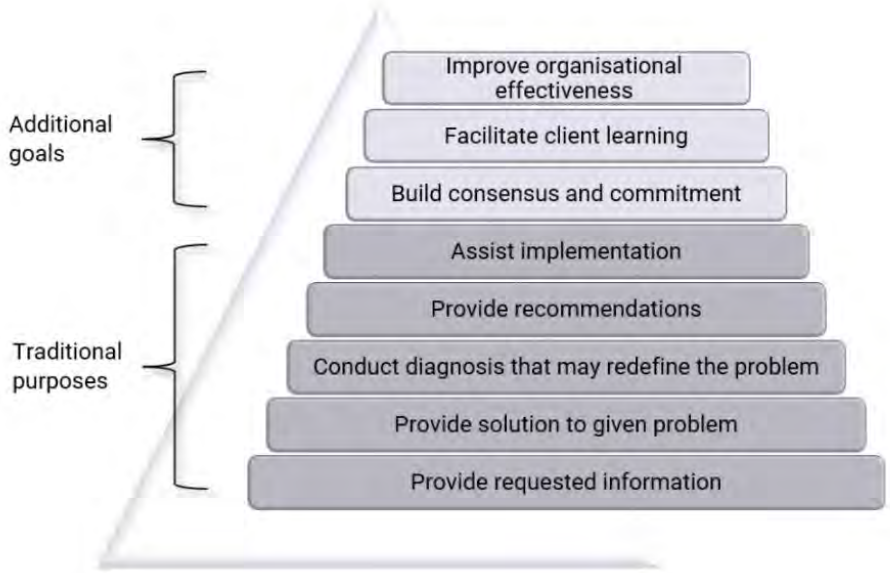


Figure 2: Turner's Eight Objectives (Turner, 1982)

Turner's Eight Objectives for business consultants can be divided into traditional objectives and additional objectives, as depicted in Figure 2. According to Turner's (1982) hierarchical approach to the framework, the initial goal of a business consultant is to present requested information, which is followed by offering solutions to the client organisation's problems. Business consultants should then carry out diagnostics to reframe the problem at hand. The next goal a business consultant needs to take into account is providing recommendations and aiding in the implementation of the recommendations. The business consultant will have served all of their traditional functions by this stage. Fostering consensus and commitment, facilitating client learning, and increasing organisational effectiveness are the additional objectives of a business consultant. It is important to note that in recent times, these additional goals have become more mainstream as these goals now speak more to sustainability and organisational learning in modern organisations.

2.3.1.2 THE CONSULTING CYCLE

Traditionally, business consultants would advise clients based on instinct and intuition, but this method is problematic as it can leave clients confused and doubting the capabilities of the business consultant. Leto and Roberts (1998) developed the Consulting Cycle (Figure 3 below) as a solution to this problem. This framework acts as a road map outlining the missions and goals that a business consultant should take into account prior to and during the consulting engagement. The Consulting Cycle models a standardised procedure that business consultants may use to direct the consulting engagement. The Consulting Cycle is beneficial as it allows business consultants to prepare in advance rather than being spontaneous and guessing what should be done next. Additionally, having a guide such as the Consulting Cycle and utilising it when engaging with clients also boosts the client organisation's confidence in the business consultant (Leto and Roberts, 1998).

Figure 3: Consulting Cycle (Leto and Roberts, 1998)

The Consulting Cycle's various phases are depicted in Figure 3 above. The cycle starts with the first interaction between the client organisation and the business consultant. After that, a contract between the two parties is established. After information gathering and analysis, the business consultant formulates recommendations. The recommendations are then used to guide decisions on a course of action. Following that, a solution is developed after conducting a prototype phase. The consulting engagement is then concluded after the completion of training, solution implementation and performance evaluation (Leto and Roberts, 1998).

2.3.1.3 THE SEVEN Cs FRAMEWORK OF CONSULTING

The Seven Cs framework developed by Cope (2003) is another comprehensive framework that serves as a road map business consultants can utilise when interacting with client organisations. The Seven Cs framework was constructed around a number of dynamic stages that represent various steps of the consulting life cycle. Each stage consists of diagnostic tools with the purpose of making the consulting engagement easier. Each step can be performed and completed individually, concurrently, or parallel to one another.

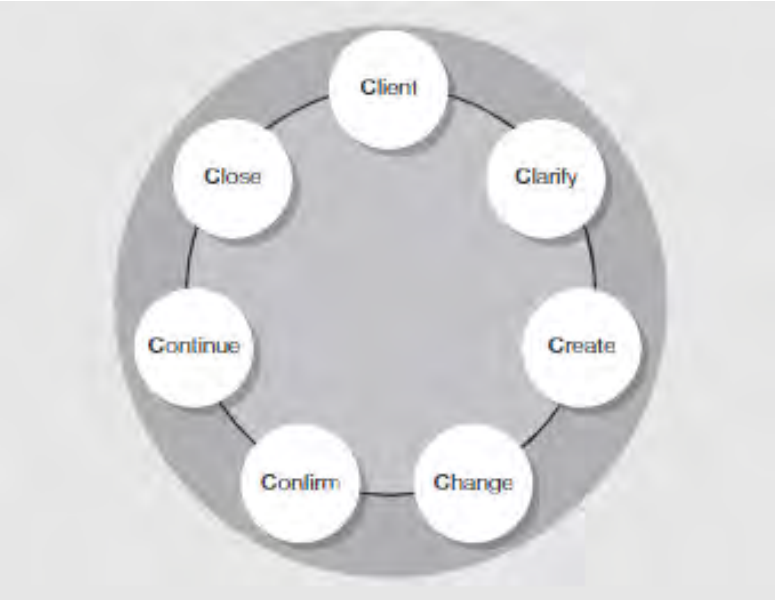


Figure 4: The Seven Cs of Consulting (Cope, 2003)

Cope (2003) asserts that:

- In the *Client* stage, the business consultant determines the client organisation's point of view and their perception in relation to the problem, what they hope to achieve out of the consulting engagement, as well as which stakeholders have the authority to influence the outcome of the engagement.
- The business consultant then identifies the specifics of the problem to be solved at the *Clarify* stage.
- In the *Create* stage, the business consultant employs innovative methods to produce a long-lasting solution to the problem.
- In the *Change* stage, the business consultant understands the core aspects within the client organisation that drive and support the change process, particularly the human resources needed to implement the change and solution.

- Using quantitative and qualitative measures, in the *Confirm* stage, the business consultant ensures that the change brought on by the solution has taken place.
- In the *Continue* stage, the business consultant ensures that the change will be maintained, using knowledge learnt throughout the transition that took place while embracing the solution.
- Finally, the business consultant concludes the engagement in the *Close* stage, where they emphasise the importance of understanding the outcomes, the value added by the solution and the further action the client organisation might undertake.

2.3.1.4 A PROCESS MODEL FOR THE VIRTUALISATION OF CONSULTING SERVICES

A more recent consulting process framework was developed by Nissen et al. (2018) in order to provide a structured process for the virtualisation of consulting services. According to Nissen et al. (2018), in consulting, virtualisation is viewed as a range of potential services, with the support for and exclusive use of information and communication technology (ICT). Virtual consulting has recently gained popularity because it not only decreases the number of failed projects but also allows consulting firms to significantly alter their price points, service offerings, and geographic scope without hiring additional staff (Vider, 2020). The process framework (Figure 5 below) was created to address the challenges many consulting organisations face when designing and executing virtual consulting services.

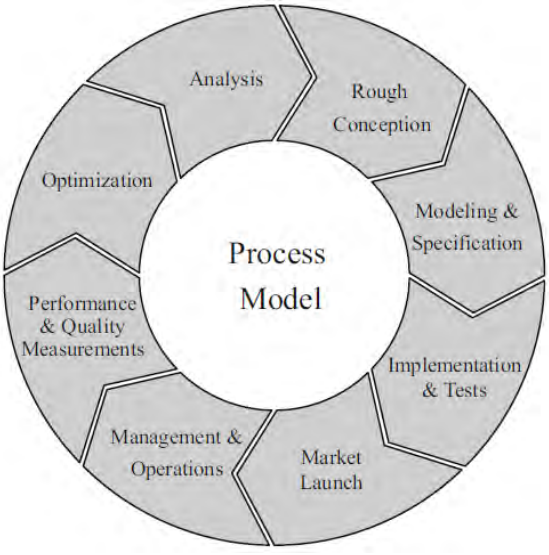


Figure 5: Process Model for the Virtualisation of Consulting Services (Nissen et al., 2018)

Nissen et al. (2018) explain that the process framework is interpreted as follows:

- *Analysis* – in this phase, the main objectives are to identify virtualisation projects, develop a virtualisation strategy and assess the potential of virtualising consulting processes.
- *Rough Conception* – virtual consulting services are unpacked and defined in detail, and suitable virtualisation technologies are selected in this phase.
- *Modelling and Specification* – in this phase, a solution along with its specifications is defined.
- *Implementation & Tests* – in this phase, the solution is tested to see if the requirements have been met throughout the implementation.
- *Market Launcher* – if the solution can meet its specified requirements, it is launched in the market.
- *Management and Operations* – at this point, the virtual consulting solution is available to users/clients, and the focus transitions to management and operations which cover all the duties necessary to guarantee profitability, client retention, and employee satisfaction in order to maintain the solution.
- *Performance and Quality Measurements* – in this phase, the goal is to assess the solution and the service quality in terms of customer satisfaction.
- *Optimisation* – this phase is the ongoing evaluation of the requirements of the virtual consulting service.

2.3.1.5 MCKINSEY 6-STEP PROBLEM-SOLVING CYCLE

According to Chia (2019), the McKinsey 6-step Problem-solving Cycle (PSC) (Figure 6 below) is an iterative framework that enables business consultants to plan, organise, and sequence project activities in a logical and methodical manner to ensure they come up with the best solutions to address client issues. The PSC was developed to address the frequent problem of ambiguous scope boundaries in consulting projects, making it difficult for business consultants to develop well-informed solutions to a given client issue (Chia, 2019).

Chia (2019) states that the six steps of the PSC are:

- *Define* – beginning with contextual facts, in this stage, business consultants formulate a concise definition of the issue in the form of a single key question that guides the following five steps of the PSC. To ensure a shared understanding of the magnitude and

nature of the problem, this question should be developed by both the business consultant and the client.

- *Structure* – this stage entails constructing an issue tree that breaks down the key question into sub-issues. The idea is that these sub-issues must be resolved in order to respond to the key question. It is important that the sub-issues be collectively exhaustive and mutually exclusive.
- *Prioritise and plan* – in this stage, business consultants prioritise the sub-issues in order to identify the main factors of the root problem. Based on the Pareto principle (also known as the 80/20 rule), business consultants determine which sub-issues are most significant to addressing the key question. The assumption is that roughly 20% of the sub-issues identified can account for about 80% of the root problem. The prioritisation may be based on straightforward analytical methods like benchmarking, sensitivity analysis, simple ratios, or qualitative stakeholder feedback.
- *Analyse* – this stage uses different analytical techniques to expose relationships and patterns in the data collected in the previous stage. The style of analysis is determined by the sub-issues that business consultants are attempting to address and the type of data that has been gathered, i.e., whether the data is from primary or secondary sources or whether it is qualitative or quantitative data.
- *Synthesise* – this stage is regarded as the most difficult part of the PSC as business consultants must convert facts from the previous stage into insights and create a narrative thread succinctly linking insights to the key question.
- *Propose* – this is the final stage where business consultants propose solutions to address the key question formulated in the first stage.

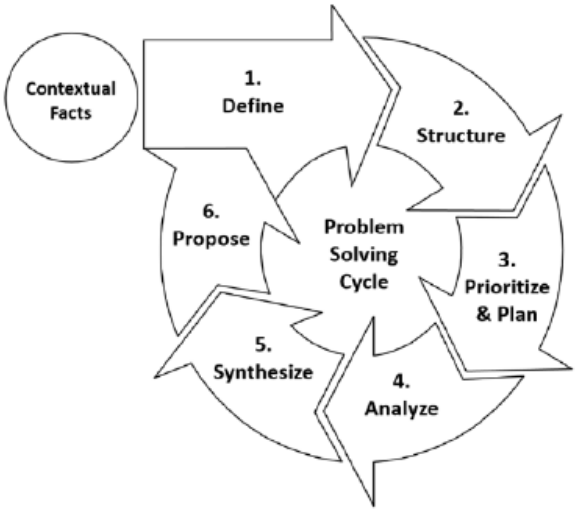


Figure 6: McKinsey 6-step Problem-solving Cycle (Chia, 2019)

2.3.1.6 COMPARATIVE ANALYSIS OF THE CONSULTING PROCESS FRAMEWORKS

Table 2: Comparative Analysis Table of the Consulting Process Frameworks

ANALYSIS CRITERIA	TURNER'S EIGHT OBJECTIVES	THE CONSULTING CYCLE	THE 7Cs FRAMEWORK	VIRTUAL CONSULTING SERVICE PROCESS FRAMEWORK	MCKINSEY 6-STEP PROBLEM-SOLVING CYCLE
DESCRIPTION	A hierarchy of fundamental tasks or objectives to show what is required of a business consultant in a consulting engagement.	A road map outlining the missions and goals that a business consultant should take into account prior to and during the consulting engagement.	A road map business consultants can utilise when interacting with client organisations.	A structured guide for the process of the virtualisation of consulting services.	An iterative framework that enables business consultants to plan, organise, and sequence project activities to ensure they come up with the best solutions to address client issues.
AUTHOR	Turner (1982)	Leto and Roberts (1998)	Cope (2003)	Nissen et al. (2018)	Chia (2019)
USEFULNESS	Business consultants are provided with a set of goals they can achieve to frame consulting	This framework is beneficial as it allows business consultants to prepare in advance for a consulting	The Seven Cs framework is useful because it comprises of a number of dynamic stages, which consist of	This framework is useful as it addresses many consulting organisations' challenges by providing	This framework addresses the frequent problem of ambiguous scope

	engagements. The goals rise in complexity from information delivery to the long-term growth of organisational effectiveness.	engagement, which boosts the client organisation's confidence in the business consultant.	diagnostic tools to guide business consultants and make the consulting engagement easier.	a systematic process for designing and executing virtual consulting services.	boundaries in consulting projects.

It is clear from this comparative analysis that regardless of when it was developed, all consulting process frameworks mentioned in this section are beneficial tools that suggest a sequence of logical/structural steps for guiding the consulting engagement. This is because they direct the consulting engagement process for the benefit of their client and find a solution to their problems. This further highlights the importance of being well accustomed to frameworks in the work process of a business consultant. The following section discusses goal-specific frameworks.

2.3.2 GOAL-SPECIFIC FRAMEWORKS

Goal-specific frameworks differ from consulting process frameworks in that they are designed to solve particular organisational challenges. It is important to consider that there are numerous goal-specific frameworks, some of which are legacy frameworks which are more domain-specific, exploring business strategy, financial strategy, IT governance, etc. Regardless of the industry, to some extent, business consultants should be familiar with the more prevalent frameworks that are emerging, as well as how these frameworks can be applied to better understand the modern challenges their client organisations are facing. Examples of some of the most popular goal-specific frameworks are discussed in Sections 2.3.2.1 through 2.3.2.3.

2.3.2.1 MCKINSEY 7-S FRAMEWORK

Tom Peters and Robert Waterman developed the McKinsey 7-S framework (Figure 7 below) at McKinsey & Company in the 1980s. Chmielewska et al. (2022) state that it is a research instrument that considers an organisation's multidimensionality and places emphasis on the idea of an organisation's "health" as it aids in the analysis of management process dysfunctions.

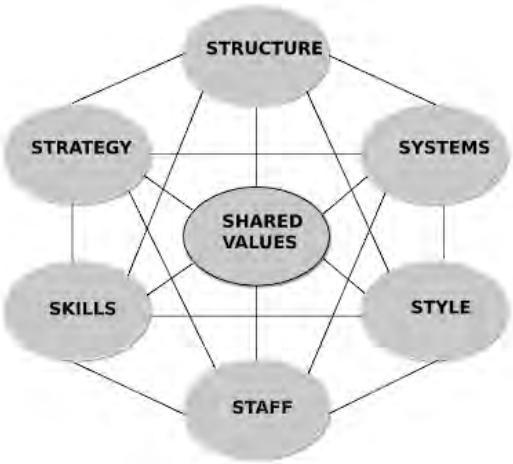


Figure 7: McKinsey 7-S Framework (Chmielewska et al., 2022)

Figure 7 illustrates that the McKinsey 7-S framework consists of seven elements: shared values, strategy, structure, system, staff, style, and skills. These seven elements are the major determinants of organisational performance as the interactions between these variables determine how well an organisation performs (Chmielewska et al., 2022). There are two sections to the McKinsey 7-S framework. There are 'hard' elements which pertain to the technical aspects of an organisation and 'soft' elements which pertain to the social components of an organisation. According to Chmielewska et al. (2022), the hard elements consist of the following:

- *Structure* – a depiction of an organisation's hierarchies, authorisations, duties, and functions.
- *Systems* – organisational processes in which specific personnel and activities are managed, coordinated and directed to fulfil the organisation's goals.
- *Strategy* – an organisation's actions focused on accomplishing its goals and objectives.

The soft elements of the framework are:

- *Shared Values* – any communication connected to the mission, vision and values that define overall objectives for all employees. This also includes common views, expectations, acceptable behaviours, and attitudes shared by employees regarding work and an organisation as a whole. All other elements draw from shared values as it is in the centre of the framework.
- *Skills* – the total of each employee's competencies within an organisation.
- *Staff* – individuals who work for an organisation and have a range of skills, abilities, training and expertise.
- *Style* – the way in which rights, duties and responsibilities are divided within an organisation.

Business consultants can utilise the McKinsey 7-S framework as a tool to evaluate and monitor changes in a client organisation's internal condition. This means that a business consultant can improve an organisation's well-being and overall performance by ensuring that the seven elements are aligned and mutually reinforcing (Baishya, 2015). Additionally, when a challenge arises, the framework aids business consultants in determining what needs to be realigned in order to boost performance and develop practical, long-lasting solutions. By understanding the McKinsey 7-S framework, business consultants can approach a number of organisational difficulties, such as restructuring, new procedures, organisational merging, new systems and change of leadership (Baishya, 2015).

2.3.2.2 THE BOSTON CONSULTING GROUP (BCG) GROWTH-SHARE MATRIX

According to Mohajan (2017), the BCG Matrix is amongst the better-known strategic frameworks for business consultants. It is a useful tool business consultants can use for strategic planning of product performance at the industry and organisational levels. This means business consultants can help organisations increase their effectiveness in making decisions such as which strategic business units to buy into, which to sell off, and which to close down. Therefore, the BCG matrix is intended to guide organisations in dispersing resources more effectively (Mohajan, 2017; Kader and Hossain, 2020).

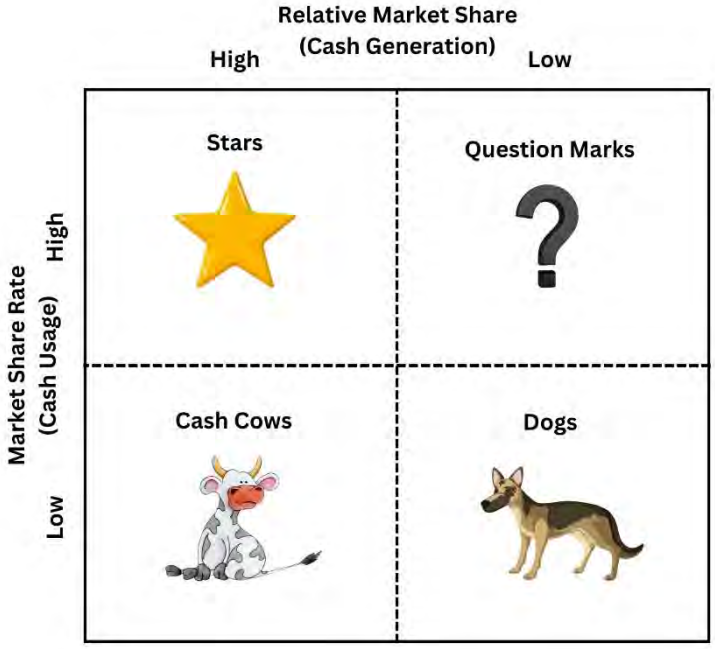


Figure 8: The BCG Matrix (Adapted from Mohajan, 2017)

As shown in Figure 8 above, the BCG Matrix is made up of four elements. These elements are defined by Mohajan (2017) and Kader and Hossain (2020) as follows:

- *Stars* – can be identified by securing a substantial market share in a rapidly expanding industry. They are regarded as the best prospects for the company's development and advantages. In this situation, they generate significant amounts of money to maintain a strong market share. Star changes into cash cows when the market share increases significantly, and the rate of market expansion slows.
- *Cash Cows* – hold a sizable market share in a slow-growing industry. These types of products produce more money than they require. Therefore, the money generated may be used to fund investments in other organisational sectors since they require very little capital.

- *Question Marks* – have a low market share in a market that is experiencing rapid expansion. They are known as Question Marks because it is unclear whether to sell them or try to develop them. In other words, it is difficult to predict if they will rise to the level of a Star or fall into the Dog. Since they have a small market share, this results in poor profit and high demand.
- *Dogs* – represent products that operate with no market growth and have weak market shares. These products have poor internal and external positions, meaning they are unable to produce or consume a significant amount of money.

The BCG Matrix pays attention to investment features while emphasising cash flow (Kader and Hossain, 2020). It also highlights that an organisation's profit is closely correlated with its market share. Therefore, by understanding the components of the BCG Matrix, business consultants can predict an organisation's future behaviour and aid in decision-making when it comes to product selection and choosing the best management approach to take (Mohajan, 2017; Kader and Hossain, 2020).

2.3.2.3 PORTER'S FIVE FORCES

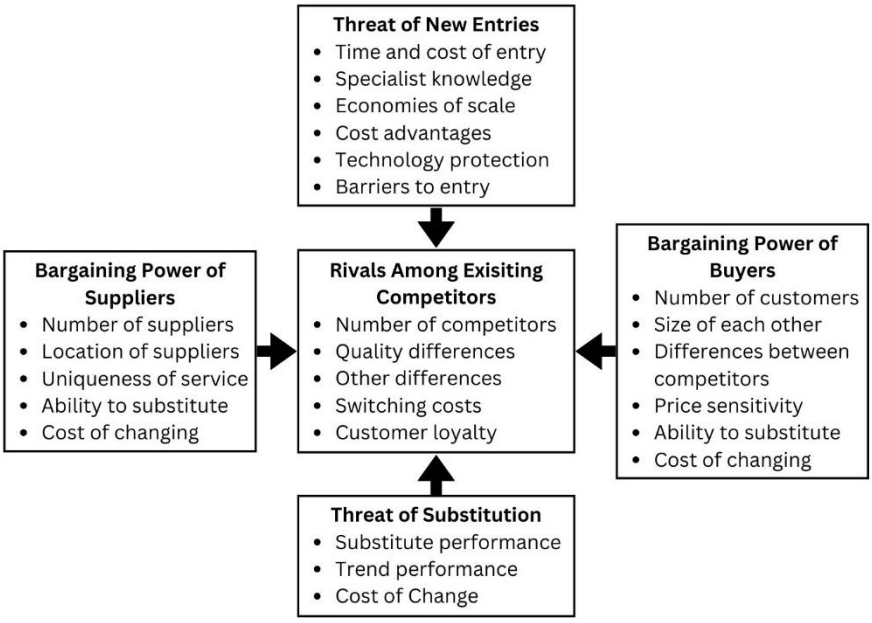


Figure 9: Porter's Five Forces (Adapted from Porter, 1985)

Porter's Five Forces framework, another well-known framework, was developed based on the notion that an organisational strategy should consider the threats and opportunities in the organisation's external environment and understand how an industry is structured and operates (Bruijl, 2018). Porter (1985) states that by utilising Porter's Five Forces framework, a business

consultant's goal is to identify and navigate an organisation's competitive environment by directly examining its competitors.

According to Porter(1985) and Bruijl (2018), the five elements that make up Porter's Five Forces are:

- *Rivalry Among Existing Competitors* – applies when there is intense competition among current rival organisations, the profitability of the sector declines, and organisations may take action by lowering prices, introducing new products, running advertising campaigns, and improving services.
- *Threats of New Entrants* – refers to new competitors directly impacting competitive advantages by causing issues in organisations in an industry, for example, higher customer retention rates. New competitors put pressure on prices, expenses, rate of investment and market share required to compete in the industry.
- *Bargaining Power of Suppliers* – could negatively impact an industry's profitability because suppliers threaten organisations with rising prices for their goods and services; if organisations are unable to recover, the cost will rise in their pricing.
- *The Bargaining Power of Buyers* – applies when there is a monopoly industry where there are numerous buyers. They have the greatest bargaining power and can easily move to alternative competitors. Buyers can also drive costs lower by competing with the industry. This is because when buyers are influential, organisations must accept the power imbalance, which leads to decreased profitability or settling for a rate of return that is nearly equal to the cost of capital.
- *Threat of Substitute Products and Services* – entails looking for goods or services that can serve the same function (i.e., butter and margarine) as those produced by an industry. Contrary to what buyers may want, the threat of substitute goods and services needs to be low from a profitability standpoint.

The Porter's Five Forces framework has been adjusted by Bruijl (2018) to accommodate the new issues modern organisations are experiencing (Figure 10 below). Figure 10 demonstrates how Porter's Five Forces have been updated to reflect today's competitive and technologically advanced business environment. The driving forces now include:

- The innovativeness levels of competitors,
- Total customer solution and bonding,
- Exposure to change management and
- Threats to digitalisation.

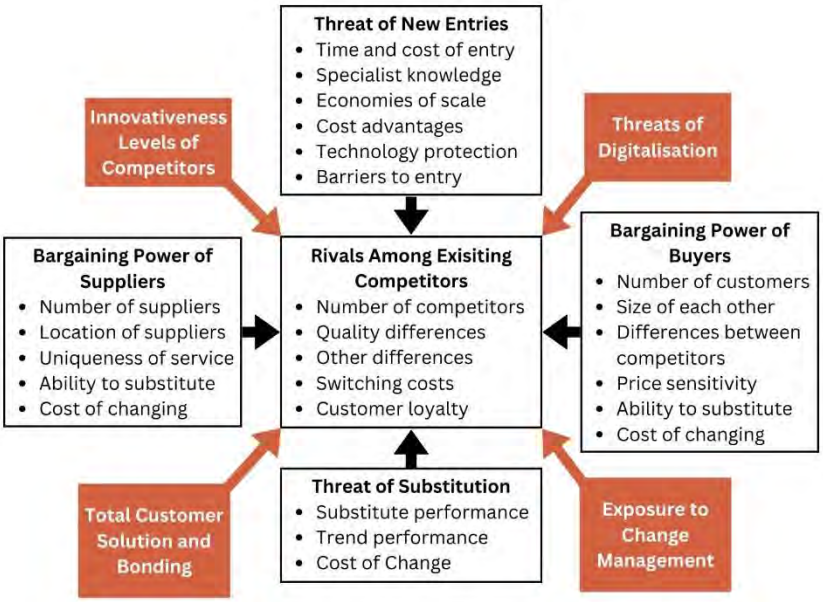


Figure 10: Porter's Five Forces Readjusted to Industry Challenges (Bruijl, 2018)

Although the original Porter's Five Forces framework is still a useful model, the adjustments made to this framework emphasise how crucial it is for business consultants to be familiar with revised and emerging frameworks. That way, they are better suited to addressing the current issues that organisations are facing in today's competitive and technologically advanced business climate. Therefore, continuous learning must take place to ensure that business consultants are well-informed about emerging frameworks, particularly when considering the IT industry. The following section delves into how the IT business industry operates in South Africa.

2.4 IT AND BUSINESS

According to Mudzana (2016) and Bell (2021), one of Africa's greatest IT and ICT sectors is found in South Africa. In 2009, it generated the most revenue in the African and Middle East region. Additionally, the sub-Saharan African BI&A market receives more than 60% of its revenue from the South African IT sector (Mudzana, 2016). With the development of technology in fields like online banking services, security software, and mobile applications, South Africa's IT sector is growing and contributing significantly to the country's GDP (Bell, 2021). According to Njenga et al. (2020), however, there is currently an imbalance between the supply (IT professionals) and demand (IT employers) for IT jobs in South Africa, with supply not sufficiently meeting demand. This contributes to the BI&A talent shortage and competency gap mentioned in section 1.1.2.

Halstein (2021) states that there is an increase in the number of IT professionals emigrating from South Africa. The loss of human capital hinders the efforts to close the competency gap and restricts the development and adoption of technologies (like BI&A) as well as the overall productivity of the South African IT sector and economy (Halstein, 2021). Since 2003, BI&A has been one of South Africa's most important IT investments (Njenga et al., 2020). However, Njenga et al. (2020) suggest that despite South African organisations being rich in data, the competency gap in the IT workforce makes it difficult for these organisations to uncover insights from the data. The following section discusses IT business consultants and how, when appropriately skilled, they can serve as the human resources needed in order to bridge the competency gap.

2.5 IT BUSINESS CONSULTANTS

Within the IT domain, business consulting is focused on the digital transformation of a client organisation and is projected to be worth $48 billion (USD), accounting for an estimated 20% of the global business consulting market (Bode et al., 2021). Appelbaum and Steed (2005, p.69) propose a comprehensive definition of IT business consulting as an advisory service outsourced for and offered to organisations by specially trained and certified persons within the IT domain, who assist the client organisation in identifying management problems, analysing such problems, and assisting, when requested, in the implementation of solutions in an independent and neutral manner.

IT business consulting provides added value through the application of knowledge from an IT perspective, which in turn, increases the value of a client's resources and assets (Vukotić et al., 2017). IT business consulting firms offer consulting services such as providing specified advice, suggestions, and expert opinions within a specialised IT area and designing customer-specific IT solutions. An IT business consultant is constantly willing to adapt their consulting practices in order to leverage the advantages of new technologies (Nissen et al., 2019). Bascomb (2010) and Vukotić et al. (2017) state that it is necessary to engage with an IT business consultant when it is evident that an organisation does not possess the adequate resources, time, knowledge or skill set to address a particular IT-related challenge. IT business consultants serve as a bridge between managerial theory and practice. They perform an important role in enhancing various IT management processes and strategies and then passing on this knowledge to client organisations. Furthermore, IT business consultants can provide an organisation with the know-how and unique knowledge in response to specific IT needs the organisation seeks to address (Vukotić et al., 2017).

In light of the significance of frameworks covered in Section 2.3, IT business consultants frequently use frameworks as tools to assist them in addressing the challenges their client organisations are facing. Additionally, as mentioned in Section 2.3.2, it is particularly useful for IT business consultants to be aware of the emerging frameworks that are related to the challenges that are developing with the emergence and growth of big data.

2.5.1 EXTERNAL IT BUSINESS CONSULTANTS AND DIGITALISATION

Werth and Greff (2018) suggest there are significant developments in digitalisation which are impacting the way organisations operate. Organisations need external talent who are knowledgeable in the technical domain to help them navigate a fast-evolving business environment that is being influenced by a rise in digitalisation (Mukerjee et al., 2022). Now more than ever, client organisations expect external IT business consultants to bring a deep understanding of both business and technology to the table as organisations grow increasingly complex as a result of globalisation and digitalisation (Banai and Tulimieri, 2013). Bensberg et al. (2019) reveal in order to combat the disruptions caused by digitalisation, organisations need to change their operating procedures and business models, which frequently necessitates external professional assistance. Organisations constantly adapt to changing customer demands, market conditions, and technological advancements. Continuous adaptability to those changes is a crucial factor in achieving long-term success (Bensberg et al., 2019). Therefore, the demand for external IT business consultants has increased due to the increase in digitalisation. Hence, client organisations hire external IT business consultants because of their specialised skills in solving IT-related organisational problems and facilitating adaptability.

Piumelli (2019) note that though there is a rising demand for IT solutions due to a shortage of IT experts (as mentioned in section 2.4), South African organisations are relying heavily on external IT business consultants to fill their demands (Steyn and van Belle, 2015). In most circumstances, it is seen that even if client organisations build up internal resources and competencies to solve particular IT-related issues, it would be more expensive than paying for specific external support in the form of an IT business consultant (Bascomb, 2010). External IT business consulting services encompass the result of researching, identifying, and analysing IT-related problems in a specific organisation and then recommending sustainable measures and providing aid in implementing these recommendations (Vukotić et al., 2017). Vukotić et al. (2017) further elaborate that the primary reasons why South African organisations engage with external consultants are due to the need for:

- Extra expertise due to a shortage of time and internal talent,
- Neutrality to ensure unbiased recommendations, and
- Further competence in the form of deeper knowledge and experience.

2.6 IT BUSINESS CONSULTING COMPETENCIES

According to Biggs (2017), to be an effective business consultant, one must be well-acquainted, possess and further develop the knowledge, skills and abilities (i.e., competencies) that are necessary when engaging with client organisations. This is because competencies are regarded as one of the most valuable intangible assets a business consultant can offer client organisations (Deelmann, 2019). Banai and Tulimieri (2013) point out that there is minimal academic research done on the competencies of an effective IT business consultant. However, Deelmann (2019) states that it is largely understood that IT business consultants generally need to be multi-skilled, that is, having an understanding of business principles, being technically proficient, and having exceptional people skills. This is so because an IT business consultant's abilities, functions, and values strongly influence the quality of a consulting engagement's final result (Cerruti et al., 2019). Each of these competencies is discussed in the following section.

2.6.1 TECHNICAL COMPETENCIES

2.6.1.1 ANALYTICAL SKILLS

IT business consultants must have analytical capabilities to be able to perform both quantitative and qualitative evaluations, assessments, and examinations pertaining to the issues presented to them by client organisations (Biech, 2019). These analytical capabilities can range from simple calculations, such as determining the return on investment (ROI), to more complex statistical methods, such as regression analysis (Banai and Tulimieri, 2013). These analyses can be used to investigate any area of the client organisation so that the IT business consultant can gain a more holistic understanding of the issues at hand, their scale, and their implications, as well as aid in assessing potential solutions (Banai and Tulimieri, 2013; Biech, 2019). When used effectively, these analytical skills enhance the credibility of an IT business consultant's deliverables, advice and recommendations. (Banai and Tulimieri, 2013) further notes that although these skills are initially acquired through tertiary education, it is imperative that IT business consultants keep up to date and harness these types of skills throughout their careers.

2.6.1.2 PROJECT MANAGEMENT

Project management is seen as a way to keep track of which tasks need to be completed and by whom (Mann, 2019). Time is money, especially in consulting engagements, and project management is a way to ensure that resources are being used effectively and that progress is in line with the projections and commitments of the consulting engagement (Biech, 2019; Mann, 2019). Therefore, by being familiar with project management, an IT business consultant can help improve timelines and budgets, maximise resources, ensure consistent deliverables and ultimately enhance productivity and profitability (Mann, 2019).

2.6.1.3 WEB DEVELOPMENT AND DATA MODELLING SKILLS

Some client organisations require IT business consultants to have developed web development and data modelling skills. For web development, this suggests that IT business consultants should be familiar with technologies such as HTML, CSS, JavaScript and PHP (Ternikov, 2022). With data modelling, IT business consultants should be familiar with advanced Microsoft Excel, Structured Query Language (SQL) or C#. This extends to big data programming languages such as Python and Hadoop (Stewart, 2022).

2.6.1.4 PROBLEM SOLVING AND LOGICAL THINKING

Client organisations are looking for IT business consultants who can approach a problem logically and develop a sound solution using the data and information available to them. In cases when there are no existing data, they ought to be able to formulate estimations and logical hypotheses (Biech, 2019; Thomas, 2022).

2.6.2 BUSINESS COMPETENCIES

2.6.2.1 BUSINESS ACUMEN

Freedman (2016) states that business acumen is vital for effective IT business consultants. This is because each organisation has a unique language, market, culture, and set of processes. Additionally, no business model lends itself to the same set of procedures and methods. Thus, one size does not fit all when it comes to organisations. IT business consultants must, therefore, be cognisant of this fact and have adequate business competencies to differentiate their approach with various client organisations (Biech, 2019). This includes having knowledge of goal-specific frameworks and where to apply these frameworks, as discussed in Section 2.3.2.

2.6.2.2 INDUSTRY KNOWLEDGE

Client organisations value IT business consultants who can handle projects because they have a thorough understanding of a particular industry and are fluent in that industry's language (Banai and Tulimieri, 2013; Biech, 2019).

2.6.2.3 STRATEGIC CONCEPTUAL ABILITIES

IT business consultants need to be able to approach problems from a strategic angle. According to Banai and Tulimieri (2013), when assessing an organisation that is experiencing difficulties, an IT business consultant must be able to understand the client in a larger, global context of economic, competitive, cultural, and stakeholder pressure. Having a strategic perspective allows IT business consultants to develop new business strategies and perceive solutions not only from a practical short-term view but also with longer-term solutions in mind (Banai and Tulimieri, 2013; Biech, 2019).

2.6.3 BEHAVIOURAL AND VALUES COMPETENCIES

2.6.3.1 EMOTIONAL INTELLIGENCE

Establishing relationships is a key component of IT business consulting (Freedman, 2016). Therefore, the success of the consulting engagement is heavily concentrated on interactions. The interaction-heavy nature of the IT business consulting process necessitates a high level of emotional intelligence among IT business consultants. Banai and Tulimieri (2013), Boyatzis (2016), Biech (2019) and Mauerer (2019) provide characteristics that contribute to increased emotional intelligence in an IT business consultant:

- *Self-awareness* – is defined as comfort with oneself. When IT business consultants are self-aware, they are honest with themselves about their characteristics, embrace their strengths and weaknesses, and are aware of how to work with the client organisation by effectively using their strengths. As a result, IT business consultants are perceived as 'real' people in the eyes of the client organisation because they become people with whom they can relate. Through this, members of the client organisation acquire trust and a sense of confidence in the knowledge and expertise of the IT business consultant.
- *Self-control* – refers to the IT business consultant's temperament and capacity to maintain composure throughout the duration of the consulting engagement despite resistance, protest, or other vexatious conduct from any members of the client organisation. Maintaining composure under pressure in a demanding or problematic situation not only shows the IT business consultant's strength of character, discipline, and control but also calms individuals around him or her.

- *Self-confidence* – is a term used to describe an individual's belief in their capacity to perform at a given level. An IT business consultant's ability to persuade clients that he or she has the abilities, motivation, and expertise required to address the issue at hand demonstrates their level of confidence. Self-confidence includes the ability to rely on team members as well as understanding that other recommendations provided may be equally as good as or even better than his or her own.

2.6.3.2 COMMUNICATION

Banai and Tulimieri (2013) consider the ability to communicate effectively and efficiently as the quintessential competency for all consultants, regardless of their industry. According to various definitions, communication is conveying, exchanging, and listening to ideas, viewpoints, beliefs, or information through speech, writing, or non-verbal cues (Banai and Tulimieri, 2013). IT business consultants must be able to communicate their ideas together with supporting facts through presentations in a way that is pertinent to and helpful to their clients. IT business consultants must be able to present their thoughts clearly and precisely while keeping their arguments concise but specific. They must also pay attention to their body language and tone during presentations (Thomas, 2022). Constant communication between an IT business consultant and the client organisation ensures that the unique context of the client organisation is fully realised and can be taken into account before and during the creation and implementation of solutions (Leto and Roberts, 1998; Freedman, 2016; Mauerer, 2019).

2.6.3.3 CREATIVITY SKILLS

The complexity of social and organisational problems requires IT business consultants to offer more creative ideas and solutions for these problems. The ability to be creative requires IT business consultants to explore the realm of imagination and brainstorming (Banai and Tulimieri, 2013). Banai and Tulimieri (2013) argue that analytical skills need to be coupled with creativity skills as the most comprehensive resolutions of the client organisation's problems are achieved when both skills are combined and applied to a situation.

2.6.3.4 TRUSTWORTHINESS

Being a trustworthy IT business consultant ensures that there is cooperation and collaboration between the IT business consultant and the client organisation (Leto and Roberts, 1998; Grieger, 2007). One of the key factors contributing to consulting engagement failures is a lack of trust. This is because client organisations must be able to rely on the IT business consultant's skills that are guaranteed to them before any solution implementation occurs (Mauerer, 2019).

Therefore, to be successful, it is vital that the IT business consultant has the ability to establish a positive and long-lasting rapport based on trustworthiness with the staff of the client organisation.

2.6.3.5 INTEGRITY

As an extension of trustworthiness, integrity is the moral requirement that characterises the consultant's underlying motivation and sets the tone for all interactions with the client organisation. In addition to upholding their own code of ethics, IT business consultants have the fortitude to act, oppose, report, or remedy any unethical or unlawful activity that takes place during the consulting engagement (Banai and Tulimieri, 2013).

2.6.3.6 HUMILITY

When IT business consultants are humble, they are aware that every suggestion made by others is worthy of consideration. Though the IT business consultant may be an expert in their field of specialisation, it is vital for effective IT business consultants to resist the temptation to proceed and involve themselves further in the management process and rather be aware of the boundaries and restrictions placed on them. They must also be mindful of their own limitations regarding the knowledge and advice they offer and be open to learning from their errors. Furthermore, humility means respecting every member of the client organisation and treating everyone equally, with the understanding that everyone is working toward the same answer and can contribute significantly to achieving the common objective of solving the client organisation’s problem (Choi et al., 2018).

2.6.3.7 HUMOUR

A sense of humour is a vital but sometimes overlooked quality that helps IT business consultants keep their composure and keep their feet on the ground in challenging circumstances that can arise during consulting engagements. In order to prevent burnout and possibly pave the way for a healthy social life outside of the consulting engagement, a sense of humour also ensures that the IT business consultant does not take themselves too seriously (Banai and Tulimieri, 2013).

2.6.3.8 COMMITMENT

It is crucial for IT business consultants to be dedicated to the client company and have a sincere interest in the client organisation’s employees. An IT business consultant shows a sense of service by thoroughly executing duties, paying ongoing attention to the client's needs, aligning

with the client organisation's goals, and having a never-ending desire to see the client succeed (Banai and Tulimieri, 2013).

2.6.3.9 TEAMWORK

Because most consulting engagements are extensive and complicated, a team is needed to plan, carry out, and evaluate the work being conducted. As a result of this, an effective IT business consultant must be a team player and be able to work well in a team. This calls for the capacity to build and manage networks and relationships within client organisations (Grieger, 2007; Banai and Tulimieri, 2013; Vander Schee et al., 2022).

Having discussed the most relevant IT business consulting competencies in sections 2.6.1 to 2.6.3, the following section will explore how IT business consultants operate in South Africa and discuss the value of possessing these competencies.

2.7 IT BUSINESS CONSULTING IN SOUTH AFRICA

According to Mabaso et al. (2021), the South African consulting business has experienced constant, sizeable, and dynamic expansion over the previous few decades and yet has received little scholarly attention. As previously mentioned in section 2.4, The IT industry in South Africa is severely lacking in IT professionals, which means that for IT solutions, such as BI&A, many South African organisations rely heavily on IT business consulting firms (Mofokeng et al., 2020; Njenga et al., 2020).

Specialist consultancies, internal consultancies, and service providers are the most prevalent types of business consulting in the IT industry in South Africa (Naidoo, 2022). Attracting and retaining talented employees, however, has been found to be a widespread challenge in South African consulting organisations. This poses a challenge as these consulting organisations rely primarily on human capital to support them in navigating technological business challenges (Mofokeng et al., 2020).

As a mitigation strategy, Mabaso et al. (2021) suggest that the training and development of business consultants in the most relevant competencies and frameworks can address this challenge. Training and development are the processes of improving cognition, behaviour, and action as a result of changes in knowledge, skills, and competencies (Mabaso et al., 2021). As investing in employees increases their motivation to remain with an organisation, training and development can boost employee satisfaction and become a deciding factor in whether an employee stays with an organisation or departs from it (Akhtar et al. 2016). This suggests that staff retention in IT business consulting firms may be positively impacted by exposing IT

business consultants to new technologies, such as BI&A, and emerging competency frameworks (i.e., based on the competencies mentioned in Section 2.6.1 to 2.6.3) during training and development programmes.

2.8 SUMMARY

It can be seen through this chapter that business consultants are professional individuals whose job requires them to consult with various organisations and provide advice, expertise, or assistance in a particular field of specialisation. Because (technical, business and values and behavioural) competencies are some of the most valuable intangible assets that business consultants can offer client organisations, business consultants harness competencies to be able to provide expert advice and recommendations. Specifically, for organisations operating in the South African IT industry, business consultants are vital for enabling digitised innovation due to the competency gap present within the IT workforce of the nation.

By understanding the difference between internal and external business consulting, the various business consulting roles, the business consulting categories, the business consulting success factors, the relevant business consulting frameworks, and the competencies needed, external IT business consultants can be the key to increased productivity and competitive advantage within South African organisations. It is crucial, however, that IT business consultants participate in training and development programs geared towards emerging technologies to ensure they are up to date with the newest frameworks and technologies. Through this, IT business consultants can add value to their clients in light of South African consulting firms' challenges in retaining talent.

CHAPTER 3: BUSINESS INTELLIGENCE AND ANALYTICS

OVERVIEW

SECTION	DESCRIPTION
SECTION 3.1: Introduction	A brief summary of the contents of this chapter.
SECTION 3.2: Defining Business Intelligence and Analytics	In order to have a clear understanding of BI&A, this section details the data-driven nature of modern organisations, the evolution of BI&A and the functioning of BI and BA respectively.
SECTION 3.3: Challenges Faced with Business Intelligence and Analytics	This section discusses the difficulties associated with BI&A.
SECTION 3.4: Business Intelligence and Analytics in South Africa	This section discusses BI&A within the South African context.
SECTION 3.5: Business Intelligence and Analytics Competencies	The technical, business and behavioural and values competencies needed to effectively leverage BI&A are discussed in this section.
SECTION 3.6: Business Intelligence and Analytics as a Dynamic Capability	This section discusses the Theory of Dynamic Capabilities as well as why BI&A can be considered a dynamic capability.
SECTION 3.7: Summary	A summary of what was discussed in this chapter.

3.1 INTRODUCTION

This chapter provides an in-depth understanding of business intelligence and analytics (BI&A) by providing definitions, its background and foundation, as well as defining business intelligence (BI) and business analytics (BA), respectively. A background on the concept of BI&A, defining BI&A and stating the BI&A challenges in South African organisations follows. In relation to the objectives of this study (Section 1.3.1), this chapter will highlight BI&A competencies.

3.2 DEFINING BUSINESS INTELLIGENCE AND ANALYTICS

In an emerging and fast-changing business environment, organisations aim to remain profitable and surpass their competitors (Eidizadeh et al., 2016). Organisations need to be data-driven and have access to information and technology that supports a strong data management system in order to monitor their operations and performance as well as make better decisions. Organisations that have the capability to exploit information about their customers, markets, suppliers, and business processes will be able to create a sustained competitive advantage as data-driven organisations are, on average, 5% more productive and 6% more profitable than their competitors (Vidgen et al., 2017; Nam et al., 2019; Almazmomi et al., 2021; Zhao, 2021).

In many data-driven firms, BI&A (a variety of definitions provided in Table 3 below) is one of the most frequently used technologies, as it is crucial for implementing successful corporate strategies (Gurcan and Sevik, 2020). According to Olszak (2015), Kakhki and Palvia (2016) and Nam et al. (2019), BI&A is the most frequently adopted technology to:

- Increase an organisation's performance and competitiveness,
- Reinforce the efficiency of tactical, strategic, and operational planning and
- Establish or strengthen relationships with clients/customers.

This demonstrates why BI&A should be incorporated into an organisation's core business operations because it seeks to identify and transform data flows into meaningful information to improve decision-making at various organisational layers (Kakhki and Palvia, 2016; Božič and Dimovski, 2019). Raghupathi and Ragupathi (2021) state that BI&A encapsulates the use of data, IT, quantitative methods, statistical analysis, mathematical computer-based models and visualisation to assist the decision-makers of an organisation in gaining better insight into stakeholders (such as suppliers and customers, amongst others) and making better fact-based decisions. Because of this, the value of BI&A for an organisation is reflected in the way that

it sheds light on data that could be the foundation for carrying out fundamental changes within the organisation (Olszak, 2015; Božič and Dimovski, 2019).

Table 3: Definitions of BI&A

	DEFINITIONS	REFERENCES
BI&A	"The techniques, technologies, systems, practices, methodologies, and applications that analyse critical business data to help an enterprise better understand its business and market and make *timely business decisions*."	Foshay et al. (2015, p.37)
	"BI&A is a set of tools and techniques which help the transformation of raw data into useful information for *business analysis* purposes."	Kakhki and Palvia (2016, p.1)
	"BI&A was used as a unified term to describe information-intensive concepts and methods for improving *business decision making.*"	Llave (2017, p.195)
	"BI&A is a unified term to describe information-intensive concepts and methods to improve *business decision-making*...and includes the underlying architectures, analytical tools, database management systems, data/text/web mining techniques, business applications, and methodologies."	Poonnawat et al. (2019, p.188)
	"A powerful new management approach, which can deliver information, knowledge, *better decisions*, efficiency and profit to an organisation if done the right way."	Divatia et al. (2021, p.40)

BI&A has its roots in decision support systems, which were first developed in the early 1970s when managers employed computer programs to simulate business decisions (Olszak, 2015). BI&A has evolved into a vital tool for competition within organisations since the 1990s (Côrte-

Real et al., 2014; Eidizadeh et al., 2016). According to Chen et al. (2012), Olszak (2015) and Gottschall (2020), three types of BI&A describe its evolution, which include:

- *BI&A 1.0* – the field of database management is where BI&A first emerged, where it primarily utilised a variety of data collecting, extraction, and analysis methods.
- *BI&A 2.0* – builds on BI&A 1.0 with the development of the internet. Numerous opportunities emerged, which allowed for a better understanding of client needs and the discovery of new business opportunities.
- *BI&A 3.0* – builds on BI&A 1.0 and 2.0 and encompasses the development of mobile and sensor-based data.

Since the last decade, the number of organisations embracing BI&A 3.0 (which serves as the basis for this study's context) has constantly increased as it enables the creation, processing, transmission and storage of data in a way that is linked with competitive growth, value creation and enhanced organisational performance (Al-Sakran, 2015; Cosic et al., 2015; Azmat et al., 2020). Traditionally, organisations have used BI&A 1.0 and structured database management systems (DBMS) to create reports and understand what has happened in the past (Ajah and Nweke, 2019). Chahal et al. (2019) state that organisations now focus on BI&A in order to work efficiently and intelligently, generate value and improve decision-making. Through the use of BI&A, organisations can improve their operations' flexibility and agility by translating this data into valuable information (Johnson et al., 2021).

There are a variety of industries that BI&A has impacted. According to Herodotou (2017) and Božič and Dimovski (2019), modern organisations operating in almost every industry are gathering enormous volumes of data at an unprecedented rate, and this necessitates the development of new technologies that can handle and process all that data (Eggert and Alberts, 2020). Ajah and Nweke (2019) state that these industries include network optimisation, healthcare, travel estimation, human mobility modelling, user behaviour modelling, education development, energy consumption analysis, crowdsourcing and sensing and finance or accounting. The foundation of BI&A is big data, which is produced in large quantities by these industries and necessitates the use of BI&A to make effective and efficient decisions and ultimately provide organisations with an advantage over their competitors (Ajah and Nweke, 2019). The following section gives context to big data as the foundation and background of BI&A.

3.2.1 BIG DATA – THE FOUNDATION AND BACKGROUND OF BUSINESS INTELLIGENCE AND ANALYTICS

Structured data, such as numerical data in tables, dominated the field of data analytics until the early 1990s (Eggert and Alberts, 2020). Following this early phase of data analysis, the term "big data" was created as a result of the development of unstructured data. Rajaraman (2016, p.696) defines big data as "data that is high volume, high velocity, and/or wide variety; requires new technologies and techniques to capture, store, and analyse it; and is used to provide insight and discovery, enhance decision making, and support and optimise processes." In other words, big data refers to datasets that are enormous in size and diverse in nature. Big data is expanding exponentially, and because it is unstructured, traditional database software systems cannot collect, store, manage, and analyse the datasets to produce useful insights that support sound decision-making (Bahri et al., 2019; Qaffas et al., 2022).

The development of ICT has led to 21st-century organisations becoming increasingly digitalised and has made knowledge and information easily accessible from the repositories of big data they generate (Pappas et al., 2018). A significant change in organisational operations and strategies has resulted from the introduction of big data technologies (Gurcan and Sevik, 2020). Over the past few years, big data's use in influencing organisational decision-making has received a lot of attention. As the application of BI and BA extends to include big data, more organisations are concentrating their investments in BI&A in order to gain significant insights that will provide them with a competitive advantage (Mitri and Palocsay, 2015; Mikalef et al., 2018; Janiesch et al., 2022). The main attributes of BI&A (BI and BA) are discussed below in sections 3.2.2 and 3.2.3.

3.2.2 BUSINESS INTELLIGENCE

According to Ghazanfari et al. (2014) and Fombellida et al. (2018), BI is widely acknowledged as it focuses on querying and reporting information from high-quality data based on an organisation's business environment, the organisation itself, customers and competitors, market conditions, and economic issues. Table 4 below provides a variety of definitions for BI found in the literature.

Table 4: Definitions of BI

	DEFINITIONS	REFERENCES
BI	"Business intelligence can be described as a set of techniques and tools for the acquisition and *transformation of raw data*	Bentley (2017, p.1)

	into meaningful and useful information for business analysis purposes."	
	"BI is defined as a combination of people, processes, data, technologies and methodologies used for *fact-based decision making.*"	De Jager and Brown (2016, p.2)
	"The speed in information analysis to take *accurate and intelligent business decisions* in the minimum possible time that includes a collection of functional and analytical programmes."	Eidizadeh et al. (2016, p.252)
	"Business intelligence is the practice of interpreting and visualizing data to make *useful business-oriented decisions."*	Fombellida et al. (2018)
	"Business intelligence as an umbrella concept to create a *comprehensive decision-support environment* for management."	Ghazanfari et al. (2014, p.86,87)
	"BI is a set of methodologies, processes, architectures, and technologies that transform the raw data into *meaningful and useful information which allows users to make informed business decisions* with real-time data."	Llave (2017, p.195)
	"The extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and fact-based management to drive decisions and actions."	(Mitri and Palocsay, 2015, p.31)
	"BI is the ability of an organisation or business to reason, plan, predict, solve problems, think abstractly, comprehend, innovate and learn in ways that increase organisational knowledge, inform decision	(Nerkar, 2016, p.2176)

	processes, enable effective actions, and help to establish and achieve business goals."	
	"BI refers to a diverse set of technologies and applications for gathering, storing, analysing and providing access to data *to identify valuable trends*."	(Njenga et at., 2020, p.114)

From the definitions provided in Table 4 above, it can be summarised that BI is a management concept and tool that aids firms in managing and enhancing business data so they can make informed decisions. By utilising the big data being generated by an organisation, the purpose of BI is to make it possible for these massive amounts of data to be easily interpreted and to provide answers and information about the state of certain organisation sectors (Bentley, 2017). Queries such as what is happening right now in terms of the sales or marketing of a product, as well as the business activities that need to be considered based on past experiences, can be informed by BI (Ajah and Nweke, 2019). Market intelligence, banking, insurance, e-commerce, healthcare, telecommunications and security are examples of high-impact industry applications that can use BI's business-centric processes and methodologies (Mishra et al., 2016; Herodotou, 2017).

Bentley (2017) states that large amounts of structured and occasionally unstructured data (i.e., spreadsheets, dashboards, and ad hoc queries) can be handled by BI tools to assist in discovering and developing new strategic business opportunities. Businesses can gain a competitive edge in the market and long-term stability by seeing new opportunities and putting into practice plans based on the insights discovered through BI (Bentley, 2017). In order to exploit enterprise and e-commerce data, however, organisations have evolved by integrating fundamental technologies such as online analytic processing (OLAP), data mining engines, and reporting tools with data warehouse servers (Ghazanfari et al., 2014; Mitri and Palocsay, 2015; Olszak, 2015; Bentley, 2017; Gottschall, 2020). The following section discusses BA and how BA, along with BI, is utilised by organisations to enhance decision-making.

3.2.3 BUSINESS ANALYTICS

As opposed to BI, BA places greater focus on statistically forecasting the future and outlining the best course of action (Mitri and Palocsay, 2015). Table 5 below provides a variety of definitions for BI found in the literature.

Table 5: Definitions of BA

	DEFINITIONS	REFERENCES
BA	"The skills, technologies, practices for continuous iterative exploration and investigation of past business performance to *gain insight* and drive business planning."	Bentley (2017, p.22)
	"BA summarises all methods, processes, technologies, applications, skills, and organisational structures necessary to analyse past or current data to manage and plan business performance."	Janiesch et al. (2022, p.1)
	"The process of methodological *exploration of organisational data* using statistical and mathematical analysis."	Johnson et al. (2020, p.91)
	"The techniques, technologies, systems, practice, methodologies and applications that analyse critical business data to help an enterprise better its business and market and makes *timely business decisions*."	Nam et al. (2019, p.411)
	"BA is an expert systems subarea that results from the *combination of BI techniques* with optimisation, forecasting, predictive modelling and statistical analysis."	Silva et al. (2021, p.1)
	"BA is concerned with the extensive use of data, statistical and quantitative analysis, explanatory and predictive models, and *fact-based management to drive decisions and actions.*"	Vidgen et al. (2017, p.626)

Previously, the term 'business analytics' was created to describe an organisation's primary analytical skills; however, the term now encapsulates an organisation's analytical ability to interpret vast amounts of heterogeneous data (Eggert and Alberts, 2020). According to Ajah

and Nweke (2019), BA produces new, valuable information that improves business performance from analysed data sourced from business reports, databases, and cloud-based business data.

Raghupathi and Ragupathi (2021) claim that traditionally, organisations used descriptive analytics to analyse gathered historical performance data, classify it and then categorise it using structured query and reporting technologies. With BA emerging and organisations making use of data warehouses, however, diverse data may now be integrated, and valuable tools such as dashboards and repositories can be created. With BA, descriptive analytics has progressed to predictive analytics, which uses what-if models and analyses to predict future events. BA also facilitates prescriptive analytics, which can aid in predicting and proactive decision-making within organisations (Sharda et al., 2013; Raghupathi and Ragupathi, 2021; Ahmad et al., 2022).

According to Whitelock (2018), Ajah and Nweke (2019) and Raghupathi and Ragupathi (2021), there are five types of analytics that makeup BA. These are:

- *Descriptive analytics* – which gives an "as is" description of data without any manipulation or calculations done to the data. Descriptive analytics aligns with the theoretical question of *"What is?"*
- *Diagnostic analytics* – can use descriptive analytics as a stepping stone by reviewing and comprehending what occurred in the past or what is currently occurring in the present and then trying to explain why it happened. Diagnostic analytics aligns with the theoretical question of *"Why is?"*
- *Predictive analytics* – is more advanced than diagnostic analytics, and it forecasts future performance in a variety of ways, such as looking at historical organisational data, discovering patterns or correlations in the data, and extrapolating these trends to generate an accurate future projection. Predictive analytics aligns with the theoretical question of *"what could?"*
- *Prescriptive analytics* – is normative, and it builds on top of both diagnostic and predictive analytics by incorporating business expertise and knowledge in addition to the information explored by the other two analytics. Prescriptive analytics aligns with the theoretical question of *"What should?"*

- *Discovery/Exploratory Analytics* – encompasses all four types of analytics previously mentioned. It is the use of wisdom (or meta-knowledge) acquired from previous analyses in the discovery of new products and services within an organisation.

De Jager and Brown (2016) state that BA allows organisations to gain insight into their current operations, examine what has happened in the past and, through the use of predictive and discovery analytics, try to forecast trends and outcomes that are predicted to happen in the future of the organisation. This means that with BA, organisations make business decisions for operational and strategic issues based on facts as opposed to intuition (De Jager and Brown, 2016; Gina, 2020).

3.2.4 COMPARING BUSINESS INTELLIGENCE AND BUSINESS ANALYTICS

According to Mudzana (2016), Llave (2017) and (Miller, 2019), BA is the analytical component of BI. As pointed out by Mishra et al. (2016), Bentley (2017) and Eggert and Alberts (2020), BA methods (quantitative and statistical tools used for predictive and explanatory modelling) analyse data to provide insights. Then, BI methods (asking questions, reporting and OLAP) are used to see why these insights are the way they are and how they can improve decision-making. Although these concepts possess distinct characteristics, within the context of this study, the terms 'BI&A', 'BI' and 'BA' can be used interchangeably (Bentley, 2017). This can be seen in how the definitions in Tables 3 to 5 above (key phrases in all definitions have been italicised) all possess the same concurrent notion, i.e., data being analysed in such a way to inform organisational decision-making. Within the context of this study, BI&A is, therefore, one technology that looks at both BI and BA and how they work homogeneously to ensure organisations are making better decisions and maintaining a competitive advantage (Côrte-Real et al., 2014; Bentley, 2017). Olszak (2015) notes, however, that the success of BI&A can sometimes be questioned because, like any technology, BI&A does have its challenges. Section 3.3 delves into these challenges.

3.3 CHALLENGES FACED WITH BUSINESS INTELLIGENCE AND ANALYTICS

In the midst of BI&A's popularity, as the number of organisations using BI&A is increasing exponentially, so too is the demand for individuals skilled in BI&A. Mitri and Palocsay (2015), Deng et al. (2016), Mikalef et al. (2017), Johnson et al. (2021) and Sharma (2022) suggest there is a BI&A talent shortage and a competency gap between labour market demands and the current workforce supply. As a result, BI&A adoption remains steady at around 30% in the majority of organisations, meaning that these organisations have yet to integrate BI&A beyond

the initial adoption stage (Nam et al., 2019). Johnson et al. (2021) further acknowledge that at the local, national, and global levels, the competency gap and talent shortage are major hindrances to utilising BI&A, both in organisational performance and economic growth. Consequently, Vidgen et al. (2017) highlight that this competency gap attributes to one of the biggest challenges organisations face with BI&A, which is determining how to leverage BI&A effectively to generate business value and to draw timely and precise insights (Chahal et al., 2019).

According to Bentley (2017) and Ajah and Nweke (2019), BI&A implementation challenges may arise if the data used has not been handled properly because it depends on high-quality data. If the data being processed has not been handled properly, Lautenbach et al. (2017) state that the following challenges could occur:

- *A false sense of security* – can arise when an organisation stores huge amounts of data in the hope that it will bring about meaningful insights; however, that data cannot be used to address particular organisational problems.
- *Wasted resources* – in that resources such as time, money, software, and hardware may be wasted due to incorrect analysis of the data. This could occur when the data's degree of cleanliness, the data's source, and the data's quality are not adequately understood from a modelling or analytics perspective.

Olszak (2015), Gina (2020) and Sharma (2022) state that other BI&A implementation challenges include:

- *Lengthy and costly integration process* – an organisation must first invest in the necessary (and applicable) software and hardware because BI&A can go beyond typical software and hardware implementations. This might result in a drawn-out integration process before the organisation can fully adopt and leverage BI&A.
- *Incorrect software choices* – can occur when a company does not properly comprehend the intricate nature and numerous sources of the data they produce. As BI&A software varies based on the complexity of the data, in order to avoid making poor strategic decisions and financial loss, it is crucial to select the most appropriate BI&A software (i.e., opting for NoSQL databases for handling data from diverse sources).
- *Unclear business problem* – not having a clearly defined business problem and not having clear expectations of BI&A can cause problems for organisations trying to leverage the technology.

These difficulties show how important it is for well-trained IT human resources who are competent in BI&A (i.e., IT business consultants, as mentioned in Sections 2.4 and 2.5) to aid in the effective application of BI&A within organisations (Al-Sakran, 2015). The following section provides insight into the use of BI&A in South African organisations and how the aforementioned challenges have impacted the effectiveness of the technology.

3.4 BUSINESS INTELLIGENCE AND ANALYTICS IN SOUTH AFRICA

Organisations in South Africa prioritise BI&A to get a competitive edge over rivals, anticipate future trends, and enhance strategic decision-making (Mangwayana, 2017). However, according to Ajah and Nweke (2019), the majority of success involving the use of BI&A is primarily found in developed nations. Mangwayana (2017) and Ahlijah (2022) state that although there are varying degrees of success, South African organisations are finding it challenging to make strategic decisions and run day-to-day operations because they lack a roadmap or the necessary tools to utilise BI&A (Steyn and Van Belle, 2015). Despite the rise in BI&A awareness in South African organisations, they have seen significant losses and low returns on BI&A investment because of poor management and planning, unmet business requirements and the shortage of those knowledgeable in BI&A who can assist in leveraging it (Mangwayana, 2017). The following section explores the knowledge, skills and expertise (competencies) needed to be well-equipped to work with BI&A so as to handle the challenges associated with it.

3.5 BUSINESS INTELLIGENCE AND ANALYTICS COMPETENCIES

Foshay et al. (2015) and Gina (2020) emphasise that considering the lack of skilled BI&A human resources within organisations, the necessity is rising for professionals with strong technical and business competencies to deliver BI&A solutions. As mentioned in Section 1.1.2, appropriately qualified IT professionals (i.e., IT business consultants) can perform this function if they are equipped with BI&A competencies. Sections 3.5.1 to 3.5.3 detail the technical, business, values and behavioural competencies linked to BI&A that IT professionals can possess in order to work effectively with client businesses looking to exploit BI&A capabilities.

3.5.1 TECHNICAL COMPETENCIES

3.5.1.1 DATABASE MANAGEMENT

According to Mitri and Palocsay (2015) and Gurcan and Sevik (2020), BI&A (particularly on the BI component) places a significant emphasis on technologies related to databases.

Relational databases are one of these technologies, which have been the industry standard for the storage and manipulation of business data. By understanding the management behind relational databases and how they have data structure designs that are ideal for continuously storing and retrieving data as well as logging business transactions in high-volume, high-update environments, IT professionals can guarantee the preservation of data integrity of the data being processed through BI&A technologies. Poonnawat et al. (2019) and Souibgui et al. (2020) suggest that it is also advantageous that IT professionals be knowledgeable in unstructured and semi-structured data management (NoSQL technologies) as these are becoming more popular when it comes to dealing with Big Data, given its various data formats.

3.5.1.2 PROGRAMMING KNOWLEDGE

According to Puang-Ngern (2019), Bonesso et al. (2020) and Johnson et al. (2020), the most prominent programming languages/software (amongst others) utilised for BI&A purposes are SQL, R, Python, Hadoop Ecosystem, Microsoft Excel, Microsoft Power BI and Tableau. IT professionals working within the BI&A field would need to be well-acquainted with one or more of these programming languages/software in order to manipulate data in such a way that reports can be created that can aid in organisational decision-making.

3.5.1.3 DATA WAREHOUSING

Data warehouses store copies of analytical data that aid decision-making (Bentley, 2017). Data warehousing entails extracting data from several data sources (such as relational databases, text files, spreadsheets, and cloud service management) and combining it into a single location (Mitri and Palocsay, 2015; Poonnawat et al., 2019; Gurcan and Sevik, 2020). Data warehouses do not manage high-volume input/output activities as relational databases do, nor are they used to handle a company's daily operations. IT professionals, however, should be aware that they act as a subject-focused archive for data needed for BI&A activities across an entire organisation (Mitri and Palocsay, 2015). It is also important for an IT business consultant to understand that not all data warehouses are used for BI&A, and not all applications for BI&A need a data warehouse (Bentley, 2017).

3.5.1.4 STATISTICAL ANALYSIS

As mentioned in Section 3.3.2, the BA component of BI&A encompasses different types of analytics (descriptive, diagnostic, predictive, prescriptive, discovery/exploratory), which are associated with statistical techniques. As such, in order to understand how these different types of analytics can be applied within the context of BI&A, IT professionals must be

knowledgeable in statistical concepts such as sampling methods, estimations, hypothesis testing, frequency distributions and visualisations (Mitri and Palocsay, 2015; Borgsø and Svensson, 2021). By applying advanced methods such as analysis of variance, chi-square tests and multivariate procedures in regression analysis, IT professionals can construct statistical models of the relationships between variables for both explanatory and predictive purposes (Mitri and Palocsay, 2015; Gurcan and Sevik, 2020).

3.5.1.5 WHAT-IF ANALYSIS

What-if analysis is a data-intensive exploration in order to compare different scenarios and their potential outcomes based on changing conditions (Nguyen et al., 2018). Within the realm of BI&A, what-if analysis is a predictive technique that allows organisations to explore results and potential outcomes of various scenarios by changing the input variables or assumptions within a particular model(s). It is a modelling or simulation approach that helps organisations assess the impact of various strategies, decisions, financial performance, and other key business indicators (Rome et al., 2016). As such, it is beneficial for IT professionals to be well acquainted with this technique as it supports the decision-making aspect of BI&A.

3.5.2 BUSINESS COMPETENCIES

3.5.2.1 BUSINESS ACUMEN

As mentioned in Section 2.6.2.1, when working with BI&A, it is important for IT professionals to interact with the business to identify and understand its needs and deliver solutions that are in line with those needs (De Jager and Brown, 2016). This entails being able to define business goals, understanding the business and competitive environment and thinking strategically in such a way that IT professionals incorporate metrics such as ROI and conveying how the insights they discover will impact the organisation in the future (Bonesso et al., 2020; Borgsø and Svensson, 2021).

3.5.2.2 PROJECT MANAGEMENT

As mentioned in Section 2.6.1.2, according to Johnson et al. (2020) and Gurcan and Sevik (2020), project management is vital when it comes to IT professionals working with BI&A because BI&A projects are long-term and include multiple tasks and stages. Project management areas such as conflict resolution skills, task management, and scheduling are all areas that an IT professional should be familiar with when it comes to deciding whether a BI&A project is worth pursuing and how much effort is worth putting into it.

3.5.3 VALUES AND BEHAVIOURAL COMPETENCIES

3.5.3.1 COMMUNICATION

The goal for IT professionals working in BI&A is to extract information from huge datasets and present it to decision-makers in such a way that it is comprehensible and easy to understand (Johnson et al., 2020). Johnson et al. (2020) suggest that the information be presented in such a manner because a lot of decision-makers within organisations lack the background knowledge necessary to understand intricate mathematical calculations, charts, and tables that may be created amidst analysing large datasets. As mentioned in Section 2.6.3.2, IT professionals should, therefore, communicate clearly by means of concise reporting, jargon-free technical writing, and solid presentation skills to summarise the most important concepts and insights from their analysis (Bonesso et al., 2020).

3.5.3.2 EMOTIONAL INTELLIGENCE

As mentioned in Section 2.6.3.1, emotional intelligence is the ability to recognise, understand, and regulate one's emotions (Bonesso et al., 2020). IT professionals working with BI&A will seldom work on a project alone. Team members working on a project will have varying perspectives when it comes to leveraging technologies and data analysis to understand business challenges and opportunities. It is imperative that IT professionals possess the ability to learn and the self-awareness necessary for exploring the strengths and talents of each team member (Borgsø and Svensson, 2021).

3.5.3.3 RESILIENCE

Bonesso et al. (2020) suggest that IT professionals working with BI&A may face stressful and time-intensive situations when uncovering insights from data sources. It is, therefore, important for IT professionals to have resilience and be able to maintain a sense of hopefulness about the future even when faced with difficulties (De Mauro et al. 2016).

3.6 BUSINESS INTELLIGENCE AND ANALYTICS AS A DYNAMIC CAPABILITY

This study draws upon the Theory of Dynamic Capabilities (TDC); however, TDC cannot be understood fully without first considering its predecessor, the Resource Based Theory (RBT).

3.6.1 RESOURCE BASED THEORY

RBT is one of the most significant theories that explain how organisations gain and maintain competitive advantage due to the resources they control or own (Mikalef et al., 2018). This theory is seen to argue that the long-term effectiveness of any organisation is determined by the organisation's resources. These resources form the foundation for the development of an

organisation's capabilities that will lead to increased organisational performance over time. The rarer and more valuable the resources are, the higher the likelihood of long-term organisational success (Holdford, 2018). RBT is, however, criticised for its inability to understand the development of resources and capabilities to address rapidly changing business environments, which leads to the inability to explain sources of value creation and obtain competitive advantage within organisations (Wójcik, 2015).

3.6.2 THEORY OF DYNAMIC CAPABILITIES

Wójcik (2015) states that the TDC emerged as a result of the RBT's inability to understand the development of resources and capabilities to handle rapidly changing environments. The TDC aims to explain how an organisation retains a competitive edge in changing environments as dynamic capabilities redefine how organisations operate and compete in markets (Pappas et al., 2018).

Choi et al. (2018) define dynamic capabilities as an organisation's capacity to observe and understand its business environment as it changes and to create new tactics to handle emerging opportunities and threats. According to Pappas et al. (2018), instead of being an ad hoc occurrence, dynamic capabilities are an ongoing process of adaptation and change. This means that no IT applications – however complex and cutting-edge – offer a sustained competitive advantage unless organisations invest in the sensing, seizing and reconfiguring of the dynamic capability as well as the human resources responsible for it (Pappas et al., 2018; Torres et al., 2018).

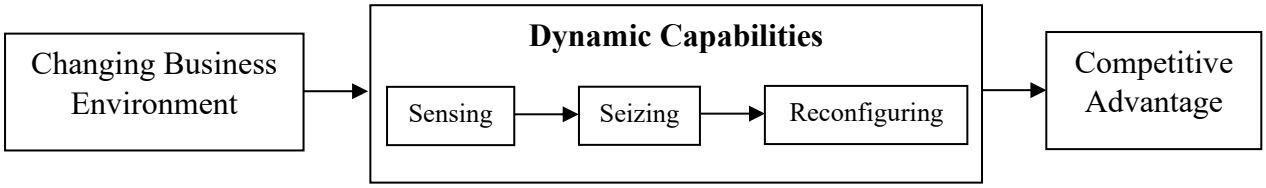


Figure 11: Theoretical Framework of Dynamic Capabilities (Choi et al., 2018)

As illustrated in Figure 11 above, within a rapidly changing business environment, dynamic capabilities sense changes within an organisation's environment and detect new opportunities. They allow for these opportunities to be seized by the organisation, and through them, the organisation can reconfigure in order to meet market and customer demands, which leads to increased competitive advantage (Choi et al., 2018; Moreno et al., 2020; Alsaad et al., 2022).

BI&A can be regarded as a dynamic capability or has dynamic capabilities because it provides organisations with the ability to sense and seize opportunities through developing, reconfiguring, and integrating information resources (i.e., big data) within a dynamic environment (Piirto, 2021; Zhao, 2021; Alsaad et al., 2022). Zhao (2021) adds that the most fundamental effects of BI&A's dynamic capabilities are those that enable managers and decision-makers to generate value and improve business performance. Through monitoring and absorbing data from dynamic environments, BI&A provides insights using data management techniques and human resources to develop new strategic and operational plans, as well as promote action that can increase the quality of decision-making, strategic analysis and plan execution (Pappas et al., 2018; Torres et al., 2018; Chen and Lin, 2021). As mentioned earlier in Section 1.1.2, IT business consultants provide South African organisations with BI&A expertise in order to address the competency gap present within their workforce. Seemingly, by exploring the technical, business, values, and behavioural competencies associated with BI&A from an IT business consultant's perspective, the benefits of BI&A as a dynamic capability can be enhanced if IT business consultants are aware of the competencies they need to have in order to leverage the tool effectively and lead organisations towards increased competitive performance.

3.7 SUMMARY

Through this chapter, it is evident that BI&A is an information-intensive tool that combines both BI and BA concepts and methods, such as analytical tools, database management systems, data/text/web mining techniques and business applications in order to improve business decision-making. BI&A has had an impact on modern organisations in almost every industry that is gathering enormous volumes of big data at an unprecedented rate as BI&A provides ways to handle and process all that data (Llave, 2017; Poonnawat et al., 2019).

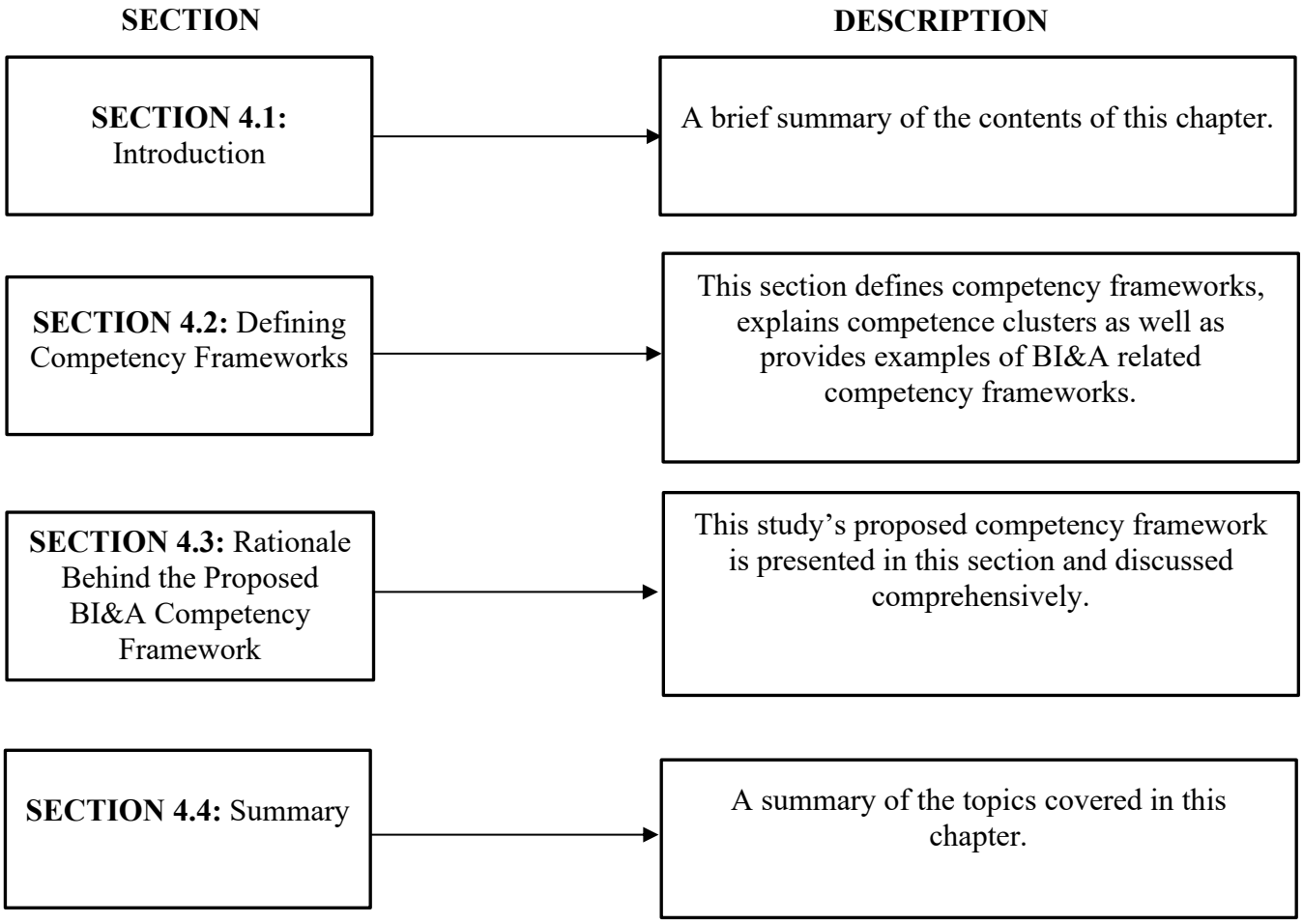
The main difficulty associated with BI&A is a competency gap and a lack of BI&A expertise. This would appear to be a particular challenge in South Africa due to the lack of roadmaps and the necessary tools to utilise BI&A, which contributes to significant losses and low returns on BI&A investment. This stems from poor management and planning, unmet business requirements and the shortage of those knowledgeable in BI&A who can assist in leveraging it (Mangwayana, 2017; Ahlijah, 2022).

In order to utilise BI&A successfully as a dynamic capability and offer a sustained competitive advantage, organisations must be willing to invest in the sensing, seizing and reconfiguring of

BI&A as well as the human resources responsible for it. Subsequently, identifying the technical, business, values and behavioural competencies of BI&A allows organisations to fully utilise it as a dynamic capability and increase competitive advantage.

CHAPTER 4: COMPETENCY FRAMEWORKS

OVERVIEW



4.1 INTRODUCTION

The purpose of this chapter is to discuss competency frameworks and how they can be developed. It provides examples of BI&A competency and competency-related frameworks. Additionally, this chapter proposes a competency framework that is based on the literature reviewed in Chapters 2 and 3. To achieve the secondary research objective of this study (refer to Section 1.3.2), the proposed competency framework highlights the competencies required by IT business consultants when addressing the difficulties related to BI&A in South African organisations.

4.2 DEFINING COMPETENCY FRAMEWORKS

Bonesso et al. (2020), Persaud (2020), and Batt et al. (2021) define a competency framework as a descriptive tool that outlines the competencies (i.e., skills, knowledge, traits, behaviours, talents, work habits and personal characteristics) required to carry out a task within an organisation or industry successfully. Competency frameworks are designed to support organisational change and growth (Redmond, 2013). According to Kansal and Singhal (2018), the idea of competencies and competency frameworks first surfaced in the early 1980s in reaction to organisational change and to serve as a catalyst for increased organisational effectiveness. Early uses of competency frameworks were centred primarily on senior staff performance management and development. It is now realised, however, that an effective competency framework applies to the entire spectrum of human resources within an organisation. As a result, competency frameworks are now frequently regarded as vital to attaining high organisational performance by concentrating on and evaluating each person's capability and potential. (Kansal and Singhal, 2018).

It is important to view competency frameworks within the context of a particular profession, organisation or industry as competencies can be generalised. Subsequently, Persaud (2020) states that competency frameworks are vital for highlighting the requirements of a specific labour market. That way, career mobility is encouraged as individuals are aware of the competencies required to advance in a particular profession (Kansal and Singhal, 2018). Additionally, competency frameworks can be utilised by educational institutions in order to satisfy labour market needs by better matching their curriculum and programs with stipulated competencies (Persaud, 2020). Since competency frameworks have been created for a number of contexts and uses, it is crucial to consider development guidelines in order to eliminate any inconsistencies regarding the framework results (Batt et al., 2021). The following section provides a series of steps that can be used when developing a competency framework.

4.2.1 THE SIX-STEP MODEL FOR DEVELOPING COMPETENCY FRAMEWORKS

Batt et al. (2021) found that despite the large number of competency frameworks, the guidelines on how to develop them were unclear and led to inconsistencies such as differing methodological choices, inconsistently reported outputs, and a lack of framework evaluation. In order to address these shortcomings, Batt et al. (2021) outline the following steps:

- *Step 1: Plan* – this step entails thinking about the competency framework's goal, intended usage, and scope. Identifying the competency framework's most important stakeholders and their roles is also required in this stage.
- *Step 2*: *Identify contexts of practice* – in this step, the contexts in which the competency framework's stakeholders operate are actively identified and defined.
- *Step 3*: *Explore practice* – in this step, the practice or industry in question is examined to discover the elements and qualities that enable competent performance.
- *Step 4*: *Translate and test* – there are two phases to this stage. For the 'translate' phase, using the information gathered in steps 2 and 3, the developer identifies various competencies and presents them in the form of a framework. In the 'test' phase, the developer tests the competency framework through the use of iterative qualitative data analysis methods.
- *Step 5*: *Report* – in this stage, the now-tested competency framework is reported and communicated to the target users of the competency framework.
- *Step 6*: *Evaluate, update and maintain* – in this stage, the competency framework is continually evaluated and updated in order to ensure that it stays relevant and embraces continuous industry changes over time.

Following these steps will ensure that the competency framework proposed by this study is theoretically informed and takes into account the context in which it is implemented (Batt et al., 2021). Furthermore, in support of being theoretically informed, the nature of competencies and how they might be categorised within a framework are covered in the following section.

4.2.2 COMPETENCE CLUSTERS

As competencies vary in nature, the International Council of Management Consulting (CMC) (2018) categorises them into three distinct clusters. These clusters are:

- *Business competence* – relates to the use of factual knowledge in the understanding of a business, such as having sector insight and external awareness of the business climate.

- *Technical competence* – refers to the tools, skills and techniques relative to a specific profession or industry.
- *Values and behavioural competence* – relate to the personal competencies that encompass a blend of morals and overall behaviour.

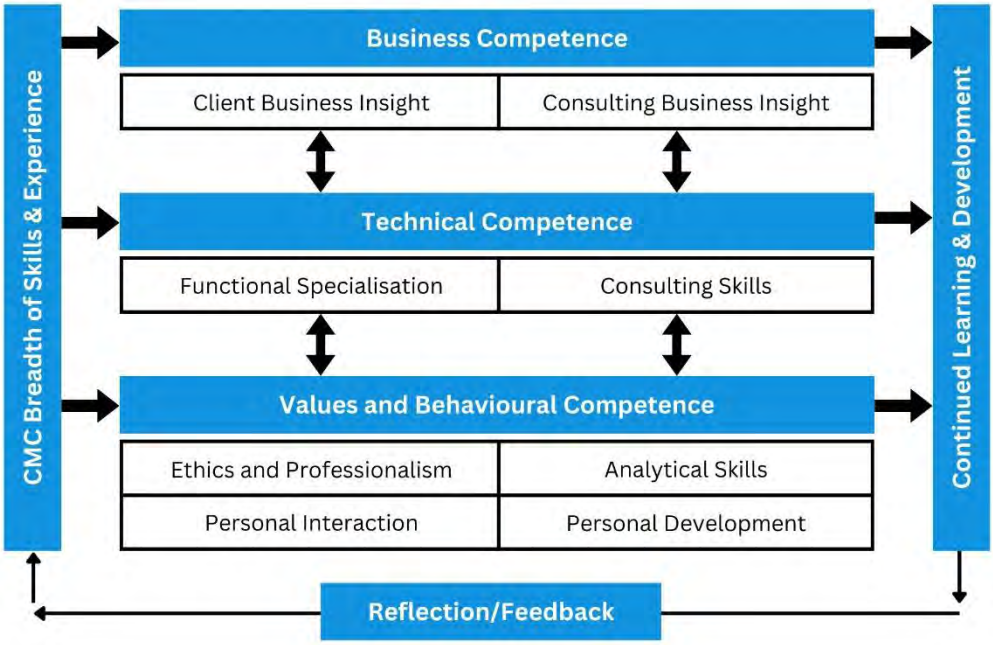


Figure 12: CMC Competency Framework (Adapted from International Council of Management Consulting, 2018)

The CMC Competency Framework (Figure 12 above) was designed to exhibit the relevant competencies that a management consultant should possess in order to independently and successfully fulfil the role. It shows how competence clusters can be used to structure a competency framework cohesively. Using these clusters to categorise competencies is advantageous because they enable a thorough understanding of the multidimensional nature of competencies that are necessary for the context of rapid and continuous technological advancements (Persaud, 2020). It is important, however, to note that there is no one way of structuring competency frameworks as they are subjective and are structured depending on their intended audience (i.e., the framework could come in the form of a taxonomy, a percentage distribution pie chart or a Venn diagram etc.). The following section provides examples of competency frameworks which demonstrate that subjectivity.

4.2.3 COMPETENCY FRAMEWORKS EXAMPLES

As this study investigates the BI&A competencies needed by IT business consultants, the examples provided in this section are of competency frameworks that have been developed in

previous scholarly work which relate to BI&A. It must be indicated that three out of the four examples address BI competencies, as only one competency framework could be found that specifically addresses BI&A competencies (i.e., with both BI and BA working homogeneously).

4.2.3.1 THE BUSINESS INTELLIGENCE COMPETENCY CENTRE (BICC) SKILLS FRAMEWORK

According to Dehghan et al. (2013), the BICC is a cross-functional team with roles, specific tasks, processes and responsibilities for supporting and promoting the successful use of BI throughout an organisation. The BICC is charged with promoting BI use across an organisation, making it accessible to business users at various levels, and offering guidance and assistance for all BI-related issues (Dehghan et al., 2013; Borgsø and Svensson, 2021). Saporito (2013) states that there is a set of skills which ensure that the BICC is effective. Figure 13 below presents these skills.

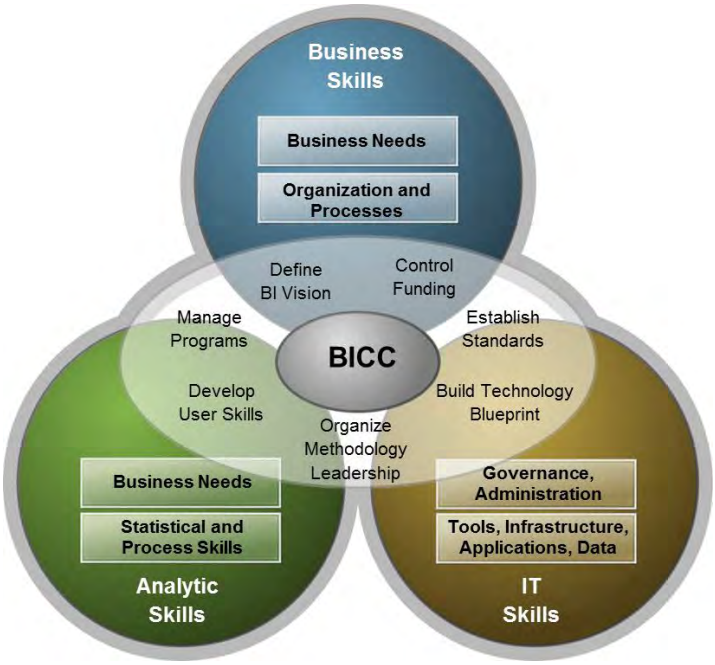


Figure 13: BICC Skills Framework (Saporito, 2013)

Saporito (2013) states that the key skills for the BICC are:

- *Analytic skills* – these are skills needed from an organisational and IT perspective as they encompass identifying, exploring and extracting data, defining business rules, and enabling sophisticated analytical abilities like statistical and text mining.
- *Business skills* – these are skills linked to directing organisational and process change as well as managing funds that are connected to an organisation's business strategy.

- *IT skills* – these are skills which define the BI vision of an organisation and contribute to a technology roadmap, a flexible infrastructure that can handle BI, and the continuous improvement of data quality.

4.2.3.2 THE BI COMPETENCY TAXONOMY

Debortoli et al. (2014) explored the competencies relating to BI and big data as there were only a few contributions on the topics.

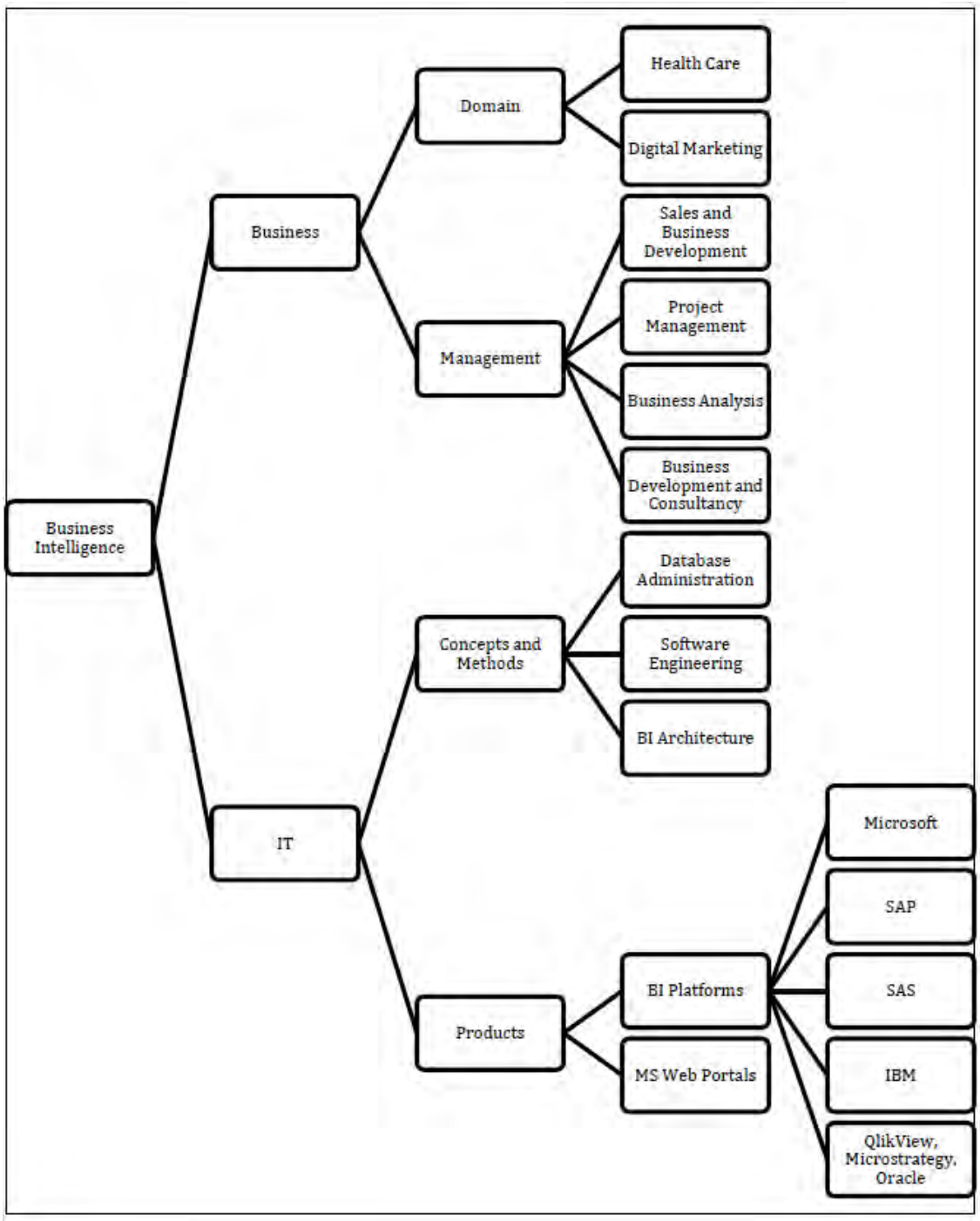


Figure 14: Adapted BI Competency Taxonomy (Debortoli et al., 2014)

Figure 14 above presents the fifteen competency areas found by Debortoli et al. (2014). Debortoli et al. (2014) suggest that IT and business competencies are needed when working with BI; hence, these are the components of the second tier of the competency taxonomy. Debortoli et al. (2014) further expand the taxonomy by including the domain-specific (e.g., healthcare), managerial (e.g., sales and business development), concepts and methods (e.g., database administration), and product (e.g., Microsoft) competency areas that are relevant to BI.

4.2.3.3 THE BI SKILLS FRAMEWORK

Teimouri et al. (2016) conducted a study that investigated the skills that managers within the tourism sector needed to consider when using BI systems to improve managerial decision-making. As part of their study, Teimouri et al. (2016) developed Figure 15 below, which highlights three skills components of BI&A.

Figure 15: BI Skills Framework (Teimouri et al., 2016)

According to Teimouri et al. (2016), the three components are as follows:

- *Organisational skills* – these are skills necessary for the successful implementation of new BI systems within an organisation.
- *Business skills* – these are skills that allow an organisation to monitor changes in the market as well as modify its processes to fit and adapt to those changes.
- *IT skills* – these are skills that ensure that BI functions such as identifying, collecting, receiving, storing, and combining data are operating optimally.

4.2.3.4 THE BI&A COMPETENCY PROFICIENCY GRAPH

A study was conducted by Gurcan and Sevik (2020) in order to analyse the core competencies necessary for BI&A. In the framework (Figure 16 below) developed by Gurcan and Sevik (2020), the components relating to competencies that were focused on were knowledge domains, skills and abilities.

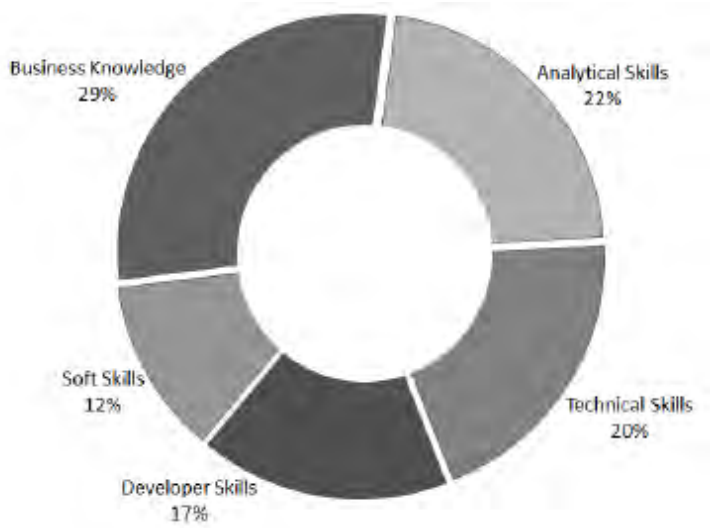


Figure 16: Proficiency Areas for BI&A (Gurcan and Sevik, 2020)

Through Figure 16, Gurcan and Sevik (2020) suggest that:

- *Business Knowledge* – is crucial for assessing and interpreting business problems as well as coming up with practical analytical solutions. Business knowledge includes being familiar with business-specific domains (for example, finance, e-commerce, production, and marketing).
- *Analytical Skills* – include modern analytical approaches such as data analytics, data reporting, data visualisation, analytics performance metrics, and analytical workflows.
- *Technical Skills* – cover a wide range of contemporary technical knowledge and abilities, such as cloud services, database technologies, big data processing tools and open-source processing.
- *Developer Skills* – are focused on the importance of scripting languages for BI&A, in addition to application development, software development trends, cross-platform apps, and object-oriented designs.
- *Soft Skills* – such as communication and administrative skills, are important as employees and stakeholders actively communicate, interact, and collaborate when working with BI&A platforms.

Since Figure 16 is in the form of a percentage distribution, Gurcan and Sevik (2020) intended that the percentages represent the most important competencies to the least important (i.e., since business knowledge has the highest percentage, it is regarded as the most important and soft skills are regarded as the least important).

4.2.3.5 COMPARATIVE ANALYSIS OF THE COMPETENCY FRAMEWORK EXAMPLES

Table 6: Comparative Analysis Table of the Competency Framework Examples

ANALYSIS CRITERIA	THE BICC SKILLS FRAMEWORK	THE BI COMPETENCY TAXONOMY	THE BI SKILLS FRAMEWORK	THE BI&A COMPETENCY PROFICIENCY GRAPH
DESCRIPTION	Example A is a business intelligence competency centre (BICC) framework that supports and promotes the successful use of BI throughout an organisation.	Example B is a taxonomy that explores the competencies relating to BI.	Example C is a skills framework that investigates the BI skills needed by managers working with BI solutions in order to attract foreign tourists.	Example D is a percentage distribution that analyses the core competencies necessary for BI&A.
AUTHOR	Dehghan et al. (2013); Saporito (2013)	Debortoli et al. (2014)	Teimouri et al. (2016)	Gurcan and Sevik (2020)
STRENGTHS	• This framework provides business, analytics and IT skills needed for BI. • This framework makes BI accessible to business users at various levels and offers guidance and assistance for BI-related issues.	• This framework presents fifteen competency areas related to BI. • The framework delves into the concepts and methods, products domain and managerial competency areas that	• The framework categorises the skills based on the following groups: organisational, business and IT.	• This framework is in the form of a percentage distribution which shows the most important BI&A competencies to the least important. • The framework addresses BI&A competencies.

		need to be considered when addressing BI.		
LIMITATIONS	• This framework does not address the values and behavioural skills needed when working with BI. • Although analytics skills are provided, this framework only focuses on BI skills and does not address BA-specific skills. • This framework addresses skills, not competencies. Competencies are believed to be more inclusive since skills are a component of competencies (refer to Section 4.2).	• This framework only focuses on BI competency areas and does not address BA-specific skills. • This framework does not categorise the competency areas as technical or business or values and behavioural competencies. • The data used to construct this framework was done by reviewing online job advertisements related to BI jobs.	• This framework does not address the values and behavioural skills needed when working with BI. • This framework addresses skills, not competencies.	• This framework mentions soft, developer, analytical and technical skills; however, it does not go into detail and explain what these skills are.

Although the four competency framework examples (Section 4.2.2.1 to 4.2.2.4) give insight into the various skills and competencies associated with BI&A, the comparative analysis in Table 6 shows that only one of them specifically addressed the BI&A competencies. Two of the four examples are based on more encompassing competencies, whereas the other two are based on skills, which are a component of competencies. It is also clear that values and behavioural competencies are not included in any of the competency frameworks. As a result, it is important to suggest a BI&A competency framework that incorporates competencies relating to BI and BA working homogenously, as well as the pertinent values and behavioural competencies appropriate for BI&A. The following section discusses the rationale behind this study's proposed competency framework.

4.3 RATIONALE BEHIND THE PROPOSED BI&A COMPETENCY FRAMEWORK

This section fulfils the secondary research objective of this study (Section 1.3.2). It proposes a competency framework (Figure 17) that serves as a model that diagrammatically illustrates the competencies that IT business consultants should consider when addressing BI&A challenges in South African organisations. The proposed competency framework is designed in such a way that it addresses the limitations that have been identified in the comparative analysis of the competency frameworks related to BI&A (Table 6).

Table 7 below tabulates the various competencies related to IT business consultants and BI&A that were discovered in the literature review. These competencies are used to inform the proposed competency framework (Figure 17).

Table 7: Competencies Related to IT Business Consultants and BI&A

COMPETENCE CLUSTER	COMPETENCY	REFERENCES
BUSINESS	Business Acumen	de Jager and Brown (2016); Freedman (2016); Biech (2019); Bonesso et al. (2020); Borgsø and Svensson (2021)
	Industry Knowledge	Banai and Tulimieri (2013); Biech (2019)
	Strategic Conceptual Abilities	
TECHNICAL	Consulting Frameworks	Mandelbaum (2019); Athuraliya (2022),

	Data Modelling Skills	Stewart (2022); Ternikov (2022)
	Data Warehousing	Mitri and Palocsay (2015); Bentley (2017); Poonnawat et al. (2019); Gurcan and Sevik (2020)
	Database Management	Mitri and Palocsay (2015); Poonnawat et al. (2019); Gurcan and Sevik (2020)
	Logical Thinking	Biech (2019); Thomas (2022)
	Problem Solving	
	Project Management	Biech (2019); Mann (2019); Johnson et al. (2020); Gurcan and Sevik (2020)
	Programming Knowledge	Puang-Ngern (2019); Bonesso et al. (2020); Johnson et al. (2020); Stewart (2022); Ternikov (2022)
	Statistical Analysis	Banai and Tulimieri (2013); Mitri and Palocsay (2015); Biech (2019); Gurcan and Sevik (2020); Borgsø and Svensson (2021)
	What-if Analysis	Rome et al. (2016); Nguyen et al. (2018)
VALUES AND BEHAVIOURAL	Commitment	Banai and Tulimieri (2013)
	Communication	Leto and Roberts (1998); Banai and Tulimieri (2013); Freedman (2016); Mauerer (2019); Bonesso et al. (2020); Johnson et al. (2020); Thomas, (2022)

	Creativity Skills	Banai and Tulimieri (2013)
	Emotional Intelligence	Banai and Tulimieri (2013); Freedman (2016); Biech (2019); Boyatzis (2016); Mauerer (2019); Bonesso et al. (2020); Borgsø and Svensson (2021)
	Humility	Choi et al. (2018)
	Humour	Banai and Tulimieri (2013)
	Integrity	Banai and Tulimieri (2013)
	Resilience	De Mauro et al. (2016); Bonesso et al. (2020);
	Teamwork	Grieger (2007); Banai and Tulimieri (2013); Vander Schee et al. (2022)
	Trustworthiness	Leto and Roberts (1998); Grieger (2007); Mauerer (2019)

In order to assist IT business consultants in understanding what competencies they need to effectively address BI&A challenges in South African organisations, Figure 17 below is intended to be interpreted as follows:

- *IT business consulting breadth of competencies* is seen on the left-hand side of the competency framework, and it represents the range of competencies that will be addressed in the framework. Similar to the competency framework designed by the International Council of Management Consulting (2018), it is the starting point from which the competence clusters *(business, technical and values and behavioural)* stem.
- The competence clusters follow with the various competencies (in alphabetical order) identified in this study's literature review (Sections 2.6 and 3.5). While these competencies together make up the BI&A competencies that IT business consultants should consider when dealing with BI&A challenges, it's important to keep in mind that they are not only focused on assisting IT business consultants in becoming effective in

BI&A but also assist IT business consultants in gaining a comprehensive understanding of the competencies they need in fulfilling their consulting role.

- Once an IT business consultant is aware of the BI&A competencies, it is imperative that they adopt the cycle of *increased learning and continuous development*. As was mentioned when discussing the TDC (Section 1.1.3), BI&A is a dynamic capability that necessitates that IT business consultants embrace increased learning and continuous development, specifically within themselves (Samsudin and Ismail, 2019). By doing so, IT business consultants can enhance the competencies they already possess and be better suited to handling the dynamic process of adopting and leveraging BI&A.
- Finally, the more relevant BI&A competencies that IT business consultants are familiar with and the more they embrace increased learning and continuously developing these competencies, the more BI&A *increases as a dynamic capability* and the more an organisation is guided toward *increased competitive advantage* (Pappas et al., 2018; Torres et al., 2018).

4.4 SUMMARY

This chapter defines competency frameworks and delves into the history and usefulness of competency frameworks. Competence clusters conceptualised by the International Council of Management Consulting (2018) are discussed in order to understand how competencies can be categorised.

Examples of competency frameworks found in the literature review relating to BI&A are discussed, and a comparative analysis is done on these frameworks in order to identify their individual strengths and weaknesses.

This chapter then presents this study's proposed competency framework (Figure 17). Figure 17 was produced by combining the various competencies discovered in the literature review that relate to IT business consultants as well as those related to BI&A.

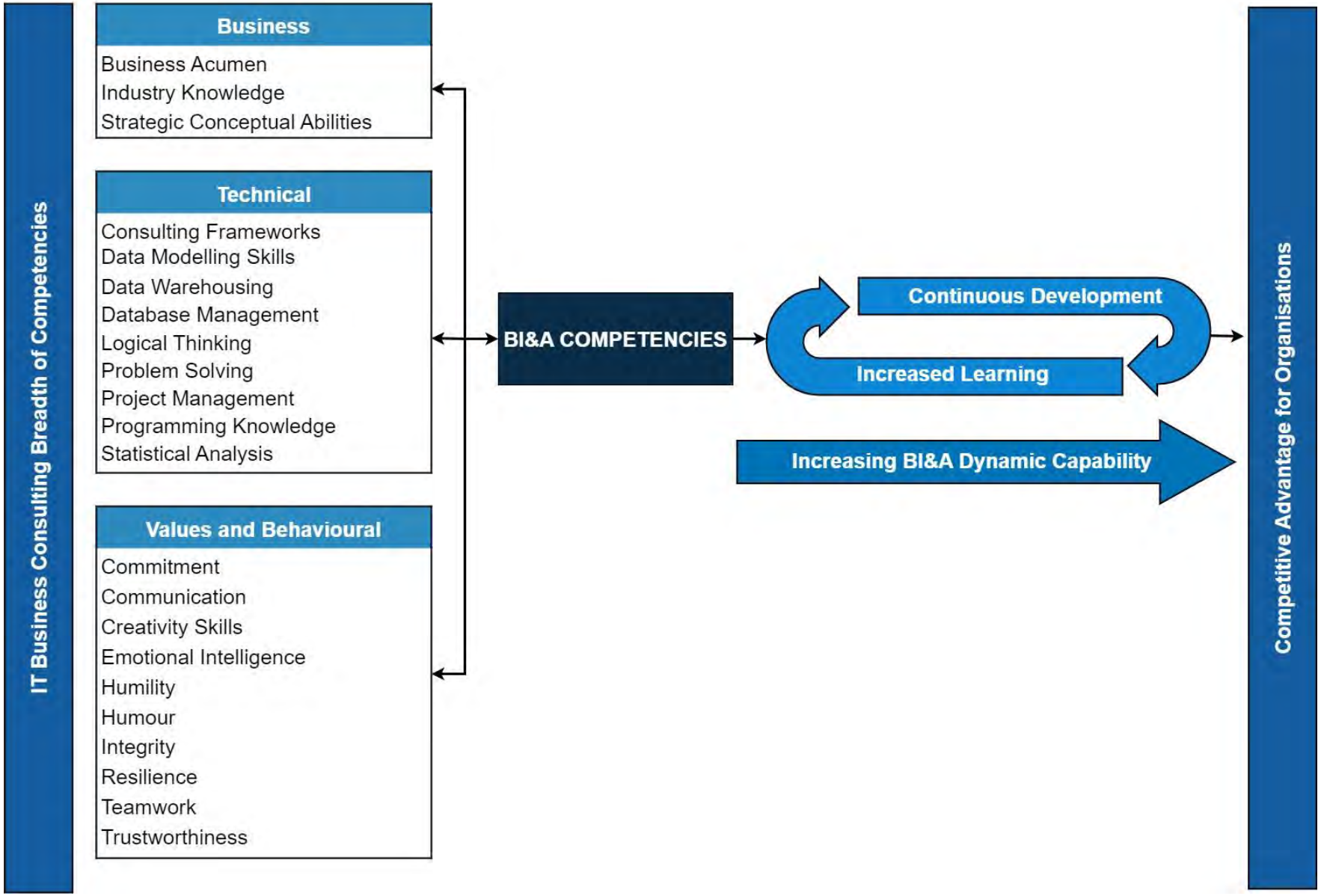


Figure 17: Proposed BI&A Competency Framework

CHAPTER 5: RESEARCH METHODOLOGY

OVERVIEW

SECTION	DESCRIPTION
SECTION 5.1: Introduction	A brief summary of the contents of this chapter.
SECTION 5.2: Research Onion	In this section, the different decisions that were made in order to develop the research methodology are discussed. These decisions pertain to the research paradigm and philosophy, research approach, research strategy, time horizon, data collection and analysis method, and ethical considerations relating to this study.
SECTION 5.3: Summary	A summary of the topics covered in this chapter.

5.1 INTRODUCTION

Research methodology is the approach researchers must take to carry out their research (Sileyew, 2019). It is a means of assisting researchers in formulating and interpreting their research question and/or problem before presenting conclusions based on the information gathered during the course of a study. The aim of this chapter is to discuss the rationale behind the research methodology used in the investigation of the research question: *What are the competencies needed by IT business consultants to address BI&A challenges in South African organisations?*

5.2 RESEARCH ONION

This study's research methodology utilises the Research Onion (Figure 18 below) developed by Saunders et al. (2016).

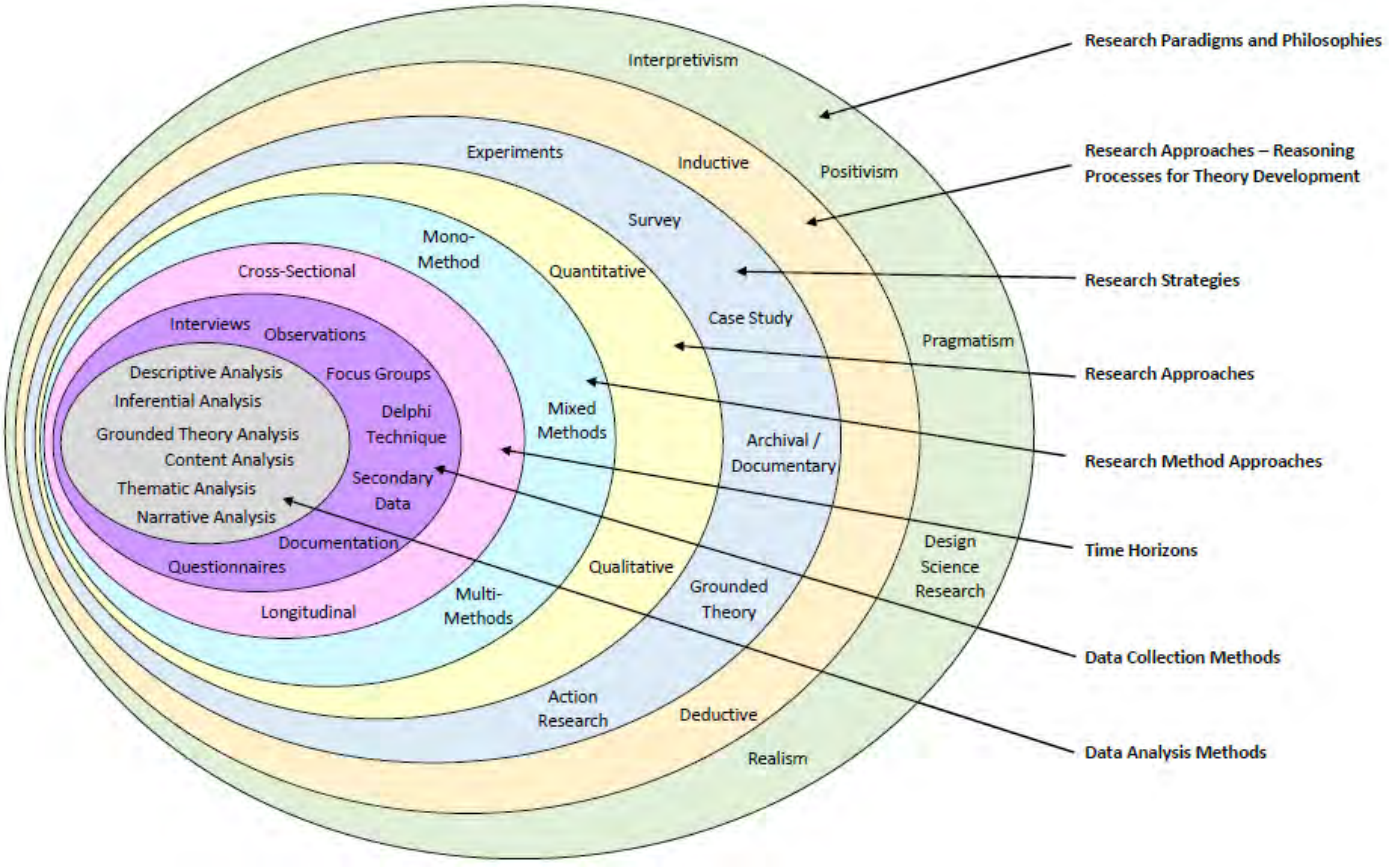


Figure 18: Research Onion (Saunders et al., 2016)

The Research Onion is a tool that enables a researcher to think comprehensively about the numerous decisions they need to make with regard to the type of research they are conducting (Crossley and Jansen, 2021). In the following sections, the Research Onion layers will be addressed (working from the outside of the onion inwards) in relation to this study.

5.2.1 RESEARCH PARADIGMS AND PHILOSOPHIES

Research philosophies serve as the cornerstone of any research study as they comprise of a set of assumptions and beliefs about the nature of reality and the development of knowledge that a study attempts to investigate (Bryman and Bell, 2016). According to May (2011), a research philosophy supports how a research study will be conducted since it is determined by the type of knowledge being investigated in a study, the objectives of a study as well as the most efficient method for achieving the objectives (Goddard and Melville, 2004).

According to Saunders et al. (2016), one should take into account the variations in the assumptions that each research philosophy makes in order to distinguish between them. These assumptions have an impact on how a researcher views their research question, the research methodologies they plan to employ, and how they interpret their results. These assumptions are:

- *Ontology* – relates to and defines the nature of reality (Saunders et al., 2016). As it is dependent on how a researcher views reality, ontological assumptions have an impact on how researchers evaluate and analyse their study. In other words, ontology is concerned with the multiple ways that different researchers may understand the same study area since each researcher has a different perspective on how reality in that study area is perceived (Goddard and Melville, 2004; Saunders et al., 2016).
- *Epistemology* – relates to assumptions about what knowledge is legitimate, true, and acceptable, as well as how a researcher can communicate that knowledge to others (Saunders et al., 2016). Epistemologies are what dictate what a researcher deems to be acceptable knowledge to include in their research (May, 2011). Textual, numerical, or visual data, pure facts, or even fictional narratives can all be considered types of knowledge. Depending on the context in which they are used, they can all be regarded as legitimate (or illegitimate). Naturally, various researchers will have different epistemologies since the contexts in which they conduct their research investigations will affect how each of them views the value of information (Crossley and Jansen, 2021).

Saunders et al. (2016) break down the three main research philosophies that are based on different ontological and epistemological assumptions:

- *Positivism* – is a philosophical approach often adopted by natural scientists that calls for interaction with visible social reality in order to draw conclusions and generalisations. Crossley and Jansen (2021) state that from a positivist stance,

a researcher merely observes, which means that research is carried out objectively and is free from the influence of personal opinions or beliefs. From an epistemological point of view, a positivist researcher concentrates on identifying observable and quantifiable facts that add to what the researcher would regard as reliable and significant data (Flick, 2015).

- *Interpretivism* – attempts to create new, more complex interpretations of social situations and realities (Flick, 2015). As a critique of positivism, interpretivism emphasises the distinction between human and physical phenomena and their capacity to create meaning (Saunders et al., 2016). The interpretivist philosophy, in contrast to positivism, mandates that the researcher take an active role in the study as it is essential that the researcher have a thorough understanding of the participants as well as their behaviours, interpretations and thoughts (Crossley and Jansen, 2021).
- *Pragmatism* – adheres to the idea that concepts are only meaningful when they facilitate action (Saunders et al., 2016). Pragmatists recognise that there are many alternative ways to view the world and carry out meaningful research. They also understand, however, that there may be multiple realities and that no single point of view can ever present the complete picture (Elkjaer and Simpson, 2011). This alludes to the fact that knowledge is not fixed when it comes to pragmatism and that subjective researcher engagement is important, especially when drawing conclusions from participant interactions and decisions (Crossley and Jansen, 2021).

From an ontological perspective, this study is based on relativism, which contends that truth and knowledge are relative, differ from person to person and that reality is thus subjective. It implies that based on their particular experiences and social interactions, individuals may have different understandings and interpretations of reality (Bradshaw et al., 2017). Consistent with relativism, subjectivism is the epistemological assumption this study takes. Subjectivism acknowledges that an individual's perception of reality is completely reliant on their subjective nature (Roudsari, 2019).

Furthermore, this study takes on the interpretivist philosophical approach as the goal of this study is to get a comprehensive understanding of the competencies needed by IT business consultants when addressing BI&A and adopt further a competency framework that encompasses these competencies. The interpretivist philosophical paradigm is best suited for this study because interpretivist studies aim to have a holistic understanding of a topic so as to make inferences from the data gathered (Saunders et al., 2016).

5.2.2 RESEARCH APPROACHES – REASONING PROCESSES FOR THEORY DEVELOPMENT

A research study can be either inductive, deductive, or abductive when it comes to the reasoning processes used in research methodology (Saunders et al., 2016). Firstly, according to Crossley and Jansen (2021), inductive reasoning involves formulating theories when a gap exists between a researcher's logical argument and the premises and conclusion the researcher observes. On the other hand, with the deductive reasoning approach, a researcher begins with a theory or hypothesis and works to either support or refute it throughout the course of the research process (Flick, 2015). Silverman (2013) states that deductive reasoning is typically linked to positivist philosophy, whereas inductive reasoning is more geared towards the interpretivist philosophy. Lastly, abductive reasoning, as opposed to going from theory to data (like deductive reasoning) or data to theory (like inductive reasoning), swings back and forth, incorporating both deductive and inductive reasoning processes (Saunders et al., 2016).

The reasoning approach considered most suitable for this study is abduction. This is because the study initially takes an inductive approach where previous scholarly literature is analysed to construct the proposed BI&A competency framework. Subsequently, a deductive approach is taken as data is collected and analysed based on the proposed BI&A framework.

5.2.3 RESEARCH STRATEGY

A research strategy is "a plan of how a researcher will go about answering her or his research question" (Saunders et al., 2016, p.177). It acts as a methodological link between the researcher's philosophy of choice and the method they select for gathering and analysing the data required to carry out their research. There are numerous research strategies, such as case studies, experiments and grounded theory (Saunders et al., 2016). The research strategy utilised in this study is qualitative description (QD). According to Bradshaw et al. (2017), studies using QD aim to acquire knowledge and understanding of a phenomenon, a process, or the perspectives and worldviews of the participants pertaining to a particular subject (or phenomenon). QD is a suitable research strategy when data for the study comes directly from persons who are experiencing the subject phenomenon under investigation (Roudsari, 2019).

Kim et al. (2017) and Roudsari (2019) state the QD approach focuses on close interaction with research participants and recognises that there are numerous ways of perceiving reality and the best way to obtain an understanding of a subject is through a subjective view that is supported and corroborated by references to participant verbatim quotes.

This research strategy is considered most suitable for this study as QD research is appropriate for "who," "what," and "where" investigations regarding human motivations, behaviours, and opinions (Roudsari, 2019). This study intends to discover what the competencies needed by IT business consultants are in addressing BI&A challenges. Additionally, it relies heavily on the opinions of the research participants pertaining to the competency framework proposed by the study.

5.2.4 RESEARCH APPROACHES

A research approach is a strategy that incorporates all of the procedures required to carry out a research project, from general assumptions to specific techniques for data collecting, analysis, and interpretation (Chetty, 2016). It is important for a researcher to be mindful when deciding which research approach to adopt as the sort of data collection techniques to be utilised and how the data will be analysed will depend on the research strategy chosen. According to Bhandari (2021), the quantitative research approach is when a researcher gathers and analyses numerical data as the foundation for addressing the research problem. According to Saunders et al. (2016), when conducting quantitative research, a researcher is likely to adopt the positivist philosophy and deductive reasoning process and examine the relationship between specific variables that will be quantified numerically.

The qualitative research approach, on the other hand, is when a researcher gathers and analyses non-numeric data as the foundation for addressing the research problem (Bhandari, 2021). According to Kilani and Kobziev (2016, p. 3), when conducting qualitative research, the researcher concentrates on "life situations such as experiences, values, and behaviours of other people." Saunders et al. (2016) elaborate that with qualitative research, a researcher is likely to adopt the interpretivist philosophy and inductive reasoning process in order to either develop their own theories or build upon richer theoretical stances that have already been established by other researchers.

This study adopts the qualitative research approach. This is due to the fact that this study prioritises, gathers and analyses non-numeric data to address the research problem and objectives. Additionally, the study will gather data utilising the mono-method approach. This involves only using one research approach and gathering one form of data, i.e. either numeric or non-numeric data, rather than both simultaneously (Saunders et al., 2016).

5.2.5 TIME HORIZONS

According to Bryman and Bell (2016), time horizons relate to the duration of time necessary to conduct a research study. Goddard and Melville (2004) state that there are two types of time horizons: cross-sectional and longitudinal.

- *Cross-sectional* – applies when the research is a snapshot time collection as data is collected and analysed at a specific moment in time.
- *Longitudinal* – applies when examining change over time is an important aspect of the research, i.e., the collection of data occurs over a considerable period of time (possibly years, depending on the nature of the research).

This study utilises the cross-sectional time horizon since it does not examine how BI&A competencies have changed over time but rather the IT consulting organisations' BI&A competencies needed to meet the current BI&A challenges faced by South African organisations.

5.2.6 DATA COLLECTION METHOD

Data collection is the methodical process of collecting data in order to analyse it and recommend solutions or make conclusions from the data to address a study's research problem (Ainsworth, 2021). There are numerous data collection methods, such as observations, questionnaires, documents, focus groups and interviews (Saunders et al., 2016). It is crucial to note that within QD research, a variety of data collection and analysis methods can be utilised so long as they are consistent with the research question, the purpose of the research and add to the rigor of the study (Bradshaw et al., 2017; Roudsari, 2019). As such, in-depth semi-structured interviews (refer to Appendix A for the interview schedule) and questionnaires (refer to Appendix B for the questionnaire) were this study's chosen data collection methods.

5.2.6.1 INTERVIEWS

In-depth semi-structured interviews are frequently the main data collection method in QD research (Roudsari, 2019). Semi-structured interviews often have open-ended questions that allow for flexibility but adhere to a predetermined structure that provides a sense of order (George, 2022).

Interviews were conducted virtually using Google Meet, a software collaboration tool that facilitates recordable audio calls. The research participants for this study are pre-qualified

external and internal IT business consultants with an awareness of the use of BI&A from South African business consulting SMEs who consult within the IT business domain. The required sample size is ten participants, as QD research typically focuses on close interaction with research participants (Roudsari, 2019). Dworkin (2012) argues that since qualitative research strategies typically focus on gaining an extensive and rich understanding of a topic (especially with interviews as the data collection method), smaller sample sizes ranging from five to fifty participants are most suitable. Additionally, as the notion of data saturation (i.e., where no new information is identified from the collected data) has come to be regarded as a benchmark for choosing the appropriate sample size for qualitative designs, the point of saturation in qualitative studies can be achieved in nine interviews (Vasileiou et al., 2018). Therefore, considering the nature of the interviews (i.e., in-depth semi-structured questions based on a proposed competency framework), it is believed that a point of data saturation can be reached within the proposed sample size.

It must be noted that in order to avoid observer bias, the role of the researcher in this study tended to be that of a neutral observer. According to Bhandari (2023), observer bias is when a researcher's assumptions, viewpoints, or biases affect how they perceive the data being gathered. Walsham (2006) suggests that there is a spectrum that represents the degree of a researcher's involvement in a qualitative study. On the one end of the spectrum is a full action-based researcher, who is thought to be strongly aligned with an organisation's goals or the subjects being interviewed. On the opposite end of the spectrum is a neutral researcher, who separates him/herself from the subjects being interviewed but still has a general understanding of the industry. It is advantageous for this study that the researcher assumes the role of the neutral observer because it allows for some reflexivity during the dialogue and interpretation, enhancing the value of the information gathered (Holmes, 2020). Additionally, interview participants are more likely to see the researcher as someone who wants to make a meaningful contribution to the industry (Walsham, 2006).

5.2.6.2 QUESTIONNAIRES

A questionnaire consists of a set of standardised questions based on the research topic, which aims to obtain meaningful insights from the answers of the research participants (Saunders et al., 2016). This data collection method is useful for this study in order to find out how the participants rate each competency on a scale of 1 (extremely irrelevant) to 5 (extremely relevant) in order to rank the competencies based on their relevance. This, in turn, and upon

analysis, will influence the order in which the competencies are displayed in the finalised version of this study's competency framework.

5.2.7 DATA ANALYSIS METHOD

Data analysis methods are methods that were adopted to ensure the most suitable way of analysing data in order to reap the most value out of it (Calzon, 2021). In QD research, a typical method for data analysis is content analysis, which is frequently complemented by descriptive analysis (Kim et al., 2017). As such, this study utilises these two data analysis methods.

5.2.7.1 CONTENT ANALYSIS

According to Vaismoradi et al. (2013) and Erlingsson and Brysiewicz (2017), content analysis is a method for systematically categorising and coding large volumes of textual data in order to reveal patterns and trends in the use of words and word frequency so as to provide a succinct summary of the most significant findings within the data. It is a suitable data analysis method when addressing research questions that require a relatively low level of interpretation of the data (Erlingsson and Brysiewicz, 2017).

Three steps proposed by Elo and Kyngäs (2008: 110) were utilised during the content analysis process in order to identify the most relevant IT business consulting and BI&A competencies needed when addressing BI&A issues from the data collected during the interview process. Elo and Kyngäs (2008: 110) state that the process is as follows:

- *Preparation* – entails immersing deeply into the collected data and getting a sense of the data as a whole, as well as determining whether to analyse the manifest or latent content. Manifest and latent content are considered to both deal with interpretation, although the depth and amount of abstraction of each interpretation varies (Vaismoradi et al., 2013).
- *Organising* – includes a basic description of the research topic using the generated categories, as well as open coding, category generation, code grouping under higher-level category titles, and so forth.
- *Reporting* – involves outlining and reporting the analysis process as well as the results of the analysis process using models, conceptual systems, conceptual maps or categories.

This study follows the four guidelines provided by Erlingsson and Brysiewicz (2017), which expand on the three steps above. These guidelines include familiarising oneself with the

collected data, dividing it into meaning units, utilising the meaning units to formulate codes, and developing categories and/or themes from the codes. The computer-assisted qualitative data analysis software (CAQDAS), NVivo, is the software that is used to facilitate this data analysis process.

5.2.7.2 DESCRIPTIVE ANALYSIS

According to Kim et al. (2017), content analysis is often supplemented by descriptive analysis (or statistics) in QD studies. As such, this research study utilised descriptive analysis as a secondary data analysis method. Descriptive analysis entails calculating a number of statistical measures to identify and describe a dataset's main features (Loeb et al., 2017). These statistical measures of central tendency (such as mean, median, and mode) reveal information about the average value of the data. Measures of dispersion, such as the range, variance, and standard deviation, are also utilised to understand the spread or variability of the data. Summary statistics, such as minimum and maximum values, quartiles, and percentiles, also offer a succinct summary of the data, provide insights into the properties of their dataset and facilitate comparisons as well as drawing conclusions about the data (Villegas, 2023).

In this study, research participants were presented with a questionnaire (as described in section 5.2.6.2 and shown in Appendix B). With the aid of Google Forms and Microsoft Excel, statistical calculations (specifically, mean, standard deviation and mode) were performed on the results of the questionnaires in order to evaluate which competencies have the highest average so as to inform the order in which the competencies are displayed in the finalised version of this study's competency framework.

5.2.8 ETHICAL CONSIDERATION

For this study, it is imperative that the ethics, privacy and confidentiality of participants be upheld. Prior to engaging with participants, this study adhered to the rigorous protocols for ethical approval set forth by the Rhodes University Human Research Ethics Committee. Adults over the age of 18 who were members of the general public participated in the study, and each interviewee was asked to sign a consent form before the interviews commenced. Participants were asked to consent to have the interview sessions recorded via Microsoft Teams. At any point during the interview process, each participant had the choice to end or reschedule the session. All collected data (i.e., audio and video recording, transcripts) was kept in a secure location that was only accessible to the researcher. The personally identifiable information that was obtained during the data collection process was substituted, and the names of the interview

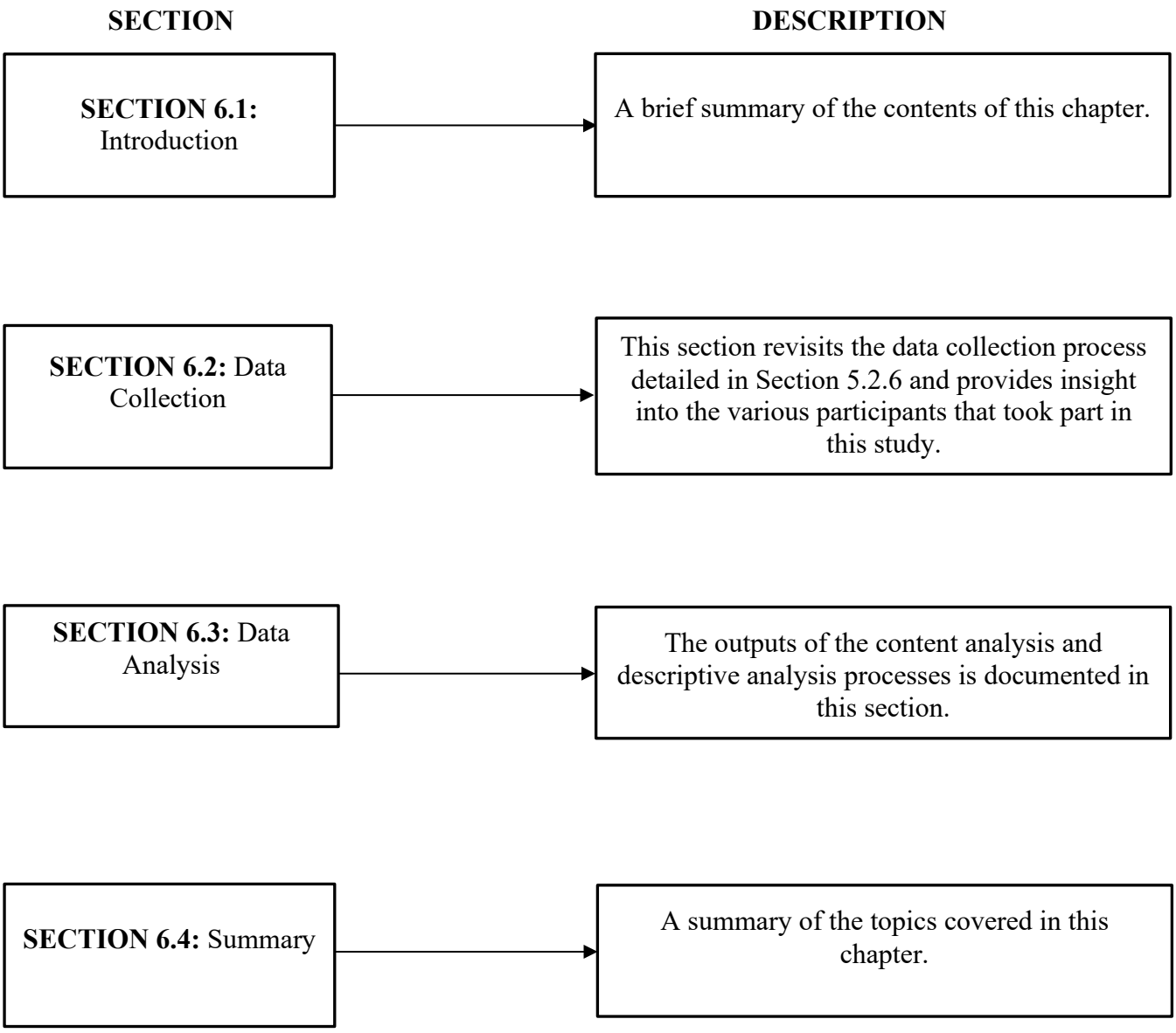
subjects were changed to "interviewee n" (for instance, "Peter Pan" became "Participant 1"). The Rhodes University ethical authorisation code is 2023-7063-7567 (refer to Appendix C).

5.3 SUMMARY

To summarise this research methodology chapter, this research project has made extensive use of the Research Onion developed by Saunders et al. (2016) as a guide in the research methodology process. This study utilises the interpretivist philosophy, together with the abductive reasoning process and the qualitative description research strategy, in order to investigate the competencies needed by IT business consultants when addressing BI&A challenges faced by South African organisations. The time horizon for this study is cross-sectional, and the data for the study will be collected through questionnaires and semi-structured interviews with consultants from South African business consulting SMEs who consult within the IT business domain and have experience in BI&A. The collected data is analysed using content analysis facilitated by NVivo as well as descriptive analysis using Microsoft Excel. Ethical clearance protocols were followed to uphold the anonymity and confidentiality of participants' responses.

CHAPTER 6: DATA COLLECTION AND ANALYSIS

OVERVIEW



6.1 INTRODUCTION

The purpose of this chapter is to discuss the data collected for this study as well as how the data was analysed to address the main research question: *"What are the competencies needed by IT business consultants to address BI&A challenges in South African organisations?"*

6.2 DATA COLLECTION

The data for this study was collected from ten IT business consultants from organisations that operate within the South African IT business industry. Table 8 below provides a summary of each participant's profile by specifying their role within their organisation and their years of experience.

Table 8: Participant Profiles

PARTICIPANTS	ROLE	EXPERIENCE (YEARS)
Participant 1	Lead Consultant	4.5
Participant 2	Senior BI Consultant	15
Participant 3	Senior Consultant	7
Participant 4	Associate Manager	18
Participant 5	BI Manager	18
Participant 6	Manager	8
Participant 7	Chief Executive Officer	25
Participant 8	Senior Manager	12
Participant 9	Associate Director in Data Analytics	16
Participant 10	Senior Manager	15

In accordance with the research methodology and following the interview schedule shown in Appendix A, semi-structured interviews with open-ended questions were conducted with the participants over a two-month period between July and September 2023. The interviews were transcribed, and the transcripts were imported to NVivo for analysis. Notes made during the data collection and analysis stages were also captured in NVivo as annotations. The average time used for the interviews was forty-one minutes, the shortest interview being twenty-four minutes and the longest interview being an hour and one minute. Questionnaires (Appendix B) were also issued to the participants to see how they would rank the individual competencies in terms of their relevance to BI&A. All ten participants completed the questionnaire, and their responses were imported into Microsoft Excel for analysis.

It must be noted that Participant 5 is an internal IT business consultant in an organisation that utilises BI&A solutions. It is also important to consider that Participant 7 is an IT business consultant who belongs to a company that does not work with BI&A directly; however, is a software testing service provider to organisations that utilise BI&A. This participant interacts with BI&A solutions frequently enough to be knowledgeable in the area and hence offer valuable insights to this study. It was decided to consider both participants in the study as they both provided unique perspectives, which added to the reliability and validity of this study. The following section delves into the findings uncovered through the analysis processes in NVivo and Microsoft Excel.

6.3 DATA ANALYSIS

6.3.1 CONTENT ANALYSIS

As mentioned in section 5.2.7.1, a content analysis was followed at a latent level to systematically structure and condense the substantial amount of transcribed interview data that was collected in order to obtain an organised and concise summary of this study's main findings (Erlingsson and Brysiewicz, 2017). This systematic process, as guided by Erlingsson and Brysiewicz (2017), entailed keeping the research questions clearly in focus. It is, therefore, relevant to revisit this study's primary research objective in this chapter:

- *Primary Research Objective* – to investigate the relevant competencies IT business consultants need to address BI&A challenges in South African organisations.

With the primary research objective in mind, the transcribed interviews were read and re-read to become familiar with the data and to gain a sense of the data as a whole. At this point, the transcribed interviews were uploaded to NVivo, and codes were formulated within the software. Higher-level categories were then created, and the codes were grouped within these categories.

A total of 16 codes, six categories and 169 references were formulated. Table 9 below illustrates how the different codes were categorised and the number of references associated with each code.

Table 9: Categories and Codes Formulated in NVivo

CATEGORIES	CODES	REFERENCES
BI&A Challenges	Emerging challenges	21
	Internal consultant perspective	4
	Previously identified challenges	9

Business Competencies	Emerging business competencies	1
	Previously identified business competencies	5
Technical Competencies	Emerging technical competencies	20
	Previously identified technical competencies	8
Values and Behavioural Competencies	Emerging values and behavioural competencies	5
	Opinions on humour	6
	Previously identified values and behavioural competencies	6
Opinions on the BI&A Competency Framework	Positive opinion	15
	Negative opinion	0
	Cycle of continuous development and increased learning	8
	Structural suggestions	8
	Theory of dynamic capabilities	28
Skills shortage	Confirms	17
	Negates	4

Using the comparison diagram function in NVivo, comparison diagrams (Figures 19 to 24) were generated for each category where it was applicable. These diagrams were essential to visualise participant contribution towards each category. The following sections detail the rationale behind each category and how it contributes towards fulfilling this study's primary research objective.

6.3.1.1 BI&A CHALLENGES

As this study intends to investigate the relevant competencies needed to address BI&A challenges in South African organisations, it was necessary to interrogate whether the BI&A challenges detailed in Section 3.3 are an accurate depiction of the challenges South African organisations are facing with BI&A.

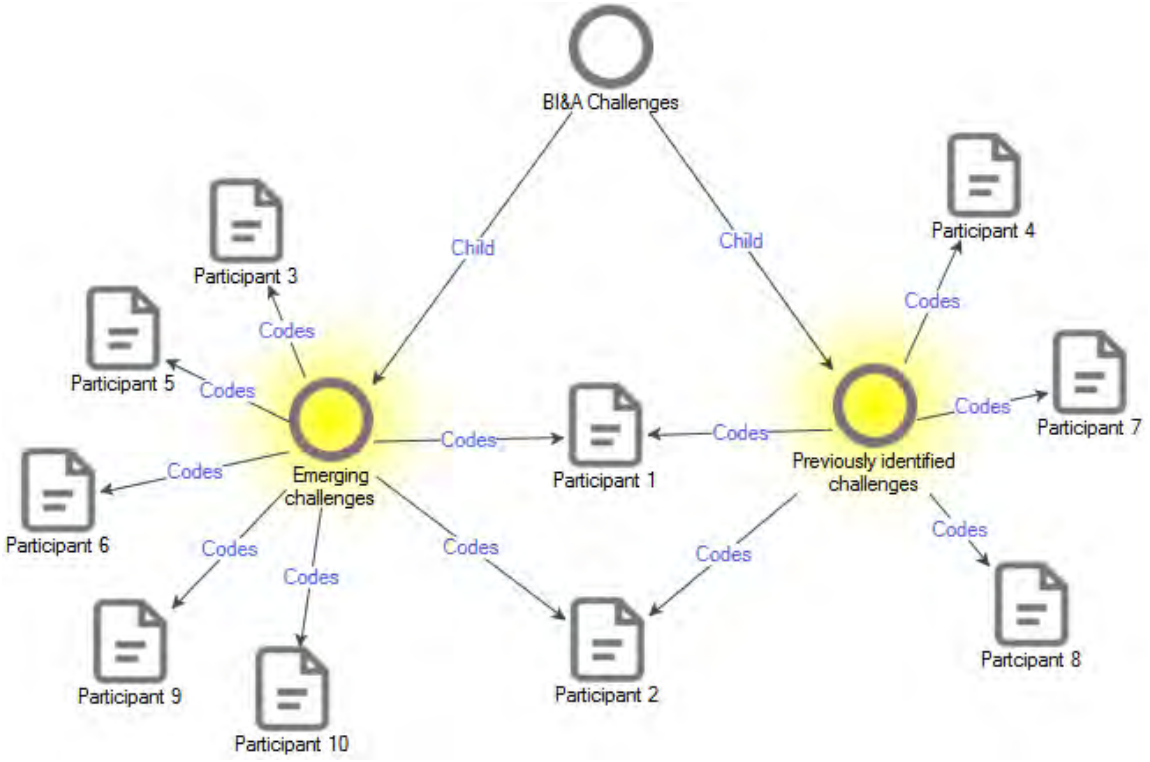


Figure 19: NVivo Comparative Diagram of BI&A Challenges as per Interview Data

Figure 19 above illustrates that when asked about BI&A challenges, Participants 1, 2, 4 and 7 mentioned at least one of the challenges in Section 3.3. All participants, except Participants 4, 7 and 8, mentioned at least one BI&A challenge that was previously unidentified. Here are direct quotes from each participant detailing these challenges:

"They had people with the skills and competency to be able to do it [an automated reporting system], but they were just swamped with, you know, 'business as usual' processes and didn't have the capacity to do it themselves." – *Participant 1*

"So customers, in my experience, are still very unaware or uneducated in the data space. So, that presents practical challenges from an understanding perspective, a communication perspective, and an adoption perspective. The skills from a customer perspective, there's certain skills that an organisation needs internally to make a BI&A project successful, which aren't always present. I'm talking about data governance, data stewardship, policy definition… organisations don't prioritise and make time available for the teams actually working on the project and generally don't afford them enough time to be able to participate in the process effectively, which means that generally a lot of the work is done under tight timelines, quite a bit of pressure with kind of minimal input from the client. And that's, you know, that presents its own challenges." – *Participant 2*

"Let's start with the first part where they really, you know, still working with legacy systems, and they can't really extract valuable data from these systems. So, they're in a position where they're transitioning from legacy systems into modern systems…then there are some clients who are well ahead of the curve, technology enthusiasts, tech-savvy clients. They are already deriving a lot of valuable insights from their data. And they are looking to advance to the next level, incorporating machine learning and data science, and harnessing the power of AI in their businesses." – *Participant 3*

"…it's around the ability for someone to present something for the audience to understand. So, for example, you can have someone with business and human knowledge and conceptual abilities, and you can have that person who's able to bring the data together, do the analytics, and come up with the result. But what is also really important is being able to interpret that information and present it in such a way that makes it easy for someone to understand what you're saying. That's definitely a gap in our space." – *Participant 5*

"…there are business analysts, technical analysts, project managers, and coders. It's pretty easy to see that there's a lack of someone who can bring all these people together and have them working cohesively. That's probably the single biggest challenge that exists, being able to bridge those different communication gaps." – *Participant 6*

"…most of the African client base we service usually have legacy systems in their IT landscape, which are not always ideal…You know, if the people are from a while back, they won't necessarily be autonomous in accepting the change that comes with what's required in terms of handling information systems and databases…Change management is one of the most significant challenges behind the technology; the people are just not adjusting fast enough to ensure that the quality is good enough to have a good business intelligence solution deployed within the environment." – *Participant 9*

"We have people receiving data feeds without understanding what those fields mean and trying to force-feed that into a usable format. We essentially have a major issue with clients not comprehending the data they receive, both in terms of its source and what they should do with it for their reporting requirements. They don't understand it, and they struggle to see its value." – *Participant 10*

6.3.1.2 BI&A COMPETENCY GAP

It was imperative to interrogate whether the BI&A competency gap mentioned in this study's problem statement (Section 1.2) was an accurate claim pertaining to the South African IT industry. When asked whether there is a BI&A competency gap in IT business consultants well-versed in BI&A, all of the participants, except Participant 5, agreed with the claim. However, Participant 1 both agrees and disagrees with the notion of a competency gap. This is illustrated in Figure 20 below.

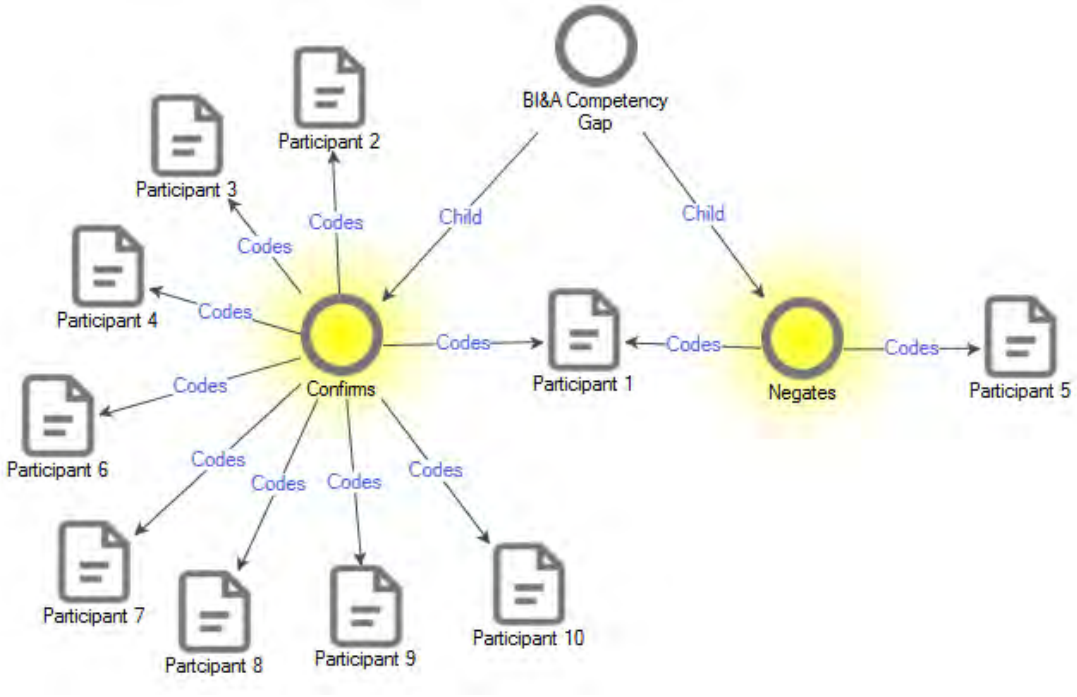


Figure 20: NVivo Comparative Diagram of Agreement and Disagreement with BI&A Competency Gap as per Interview Data

Here are direct quotes from each participant who agreed with the notion of a BI&A competency gap:

"…but when it comes to like when we are trying to hire, for example, it is often quite difficult to find the skill sets experience and sort of quality that we're looking for..." – *Participant 1*

"Yes, I think that is definitely a valid statement, simply because if I look at the amount of job adverts, I mean if you just have to google BI developer, BI lead or senior BI developer, there's a plethora of jobs and over the last two to three years, those job posts have only increased, they've not decreased… even the salary levels are not what they used to be, they're certainly a lot better than three, four, five years ago and so, it just tells me there's a demand out there in the market that exists for those skills…I've also led data teams and hired technical

individuals, and I've experienced situations where, from a technical perspective and even from a CV perspective, an individual looks good. But when they arrive in the business and start doing the work, you know, the opposite is true…" – *Participant 2*

"Okay, so from my perspective, I think... I think, if I look at our business and our clients that we work with, they may not have a speciality, or they may not have been specifically exposed to it. But I think the competition tension exists. – *Participant 3*

"Definitely specifically, a business intelligence consultant, yes...there's a general problem of few people that make it to university and study things like Computer Science, Information Systems, and all the other related fields. And then, of the few that really make it out of university, there's a big demand for them. Hence, there's always that imbalance between the need for them and the availability of them, basically. So, the size of the day, there is a shortage. So that will not only be for BI guys but also for IT in general." – *Participant 4*

"The missing skill set is a breadth of competencies, not depth. There are plenty of specialists, but not enough generalists who can bridge the different components…" – *Participant 6*

"There's definitely a shortage, but I could go one step further than that. I mean, it's really just if you look at business consultants…that's a key role, and so you're going to be wearing two hats, you can't be too business-focused, and you can't be too IT-focused. You have to have an appreciation for both sides." – *Participant 7*

"There's a competency gap, specifically within our industry, the tech industry." – *Participant 8*

"Yeah, yeah, yeah, absolutely, there is a shortage of skills, right? The second layer to that is where the shortage really lies, right? It's the implementation of that strategy…Now, to say, 'Okay, we understand technology, we understand landscapes, we know what the optimal model looks like or the best-case scenario of BI&A solution would look like, or the environment would look like.' But now, when it comes to finding people who are going to actually put it in place and clean up and fix the problems, the levels of available skills or available personnel drop significantly." – *Participant 9*

Here are direct quotes from each participant who either did not agree with or was uncertain about the notion of a BI&A competency gap:

"I wouldn't assume that there's a shortage…my knee-jerk reaction was kind of like no." – *Participant 1*

"I definitely feel that in the past. It was, it was, I mean, you could recognise it more and more, but now I'm seeing, you know, a lot more students coming out of universities and technikons that have gone through data analytics training." – *Participant 5*

6.3.1.3 BUSINESS COMPETENCIES

As one of the three competence clusters, it was essential to investigate which business competencies align with those found in the literature, detailed in Sections 2.6 and 3.5. Figure 21 below shows that no participants mentioned any business competencies that were not already included in the proposed BI&A competency framework. Participants 4, 6, 8 and 9 mentioned at least one competency that was included in the proposed competency framework.

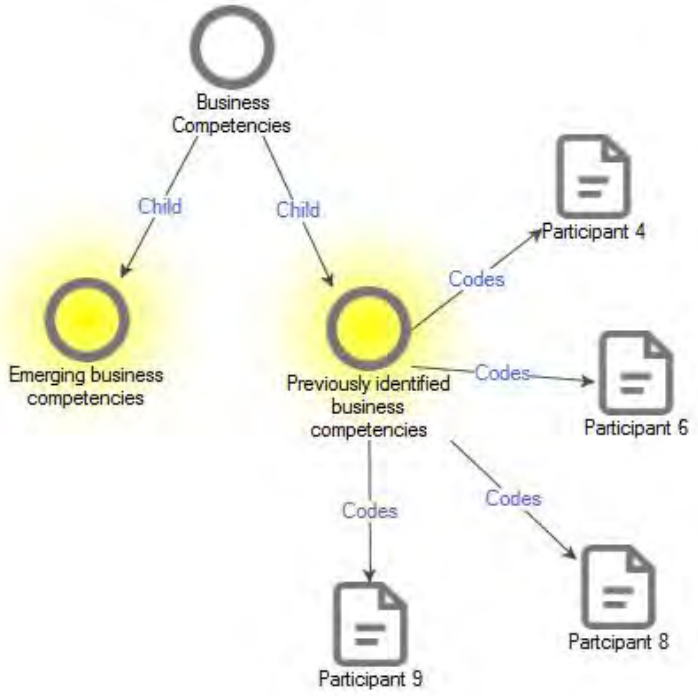


Figure 21: NVivo Comparative Diagram of Business Competencies as per Interview Data

6.3.1.4 TECHNICAL COMPETENCIES

Similar to the section above, as one of the three competence clusters, it was essential to investigate which technical competencies align with those found in the literature, detailed in Sections 2.6 and 3.5. Figure 22 below shows that Participants 6 and 10 mentioned technical competencies which were previously identified. Participant 2 mentioned technical competencies that were included in this study's proposed competency framework, as well as

those that were not. Participants 1, 5 and 7, however, did not mention any technical competencies previously mentioned but touched on those that were not included. Here are direct quotes from Participants 1, 2, 5, 7 and 9 detailing these technical competencies:

"…particularly with implementing Power BI. Power BI is the tool that is sort of most common across our clients' bases…" – *Participant 1*

"We are proposing and implementing various services inside the Azure tenant to support analytics processes…we have very good visualisation skills in the Power BI space. So, the ability to visualise data and presented to consumers in a way that makes sense to them and kind of is intuitive and easy for them to use and understand and work with…" – *Participant 2*

"…we acknowledge the importance of having an integrating data stewardship competency within the business." – *Participant 5*

"I think on the technical side, you got to start looking at AI. You know, BI is gonna morph into AI. It's gonna be one in the same thing. So, AI has got to be part of this discussion, you know, because copious amounts of structured data are required by both. Some sort of beginning starting point is the difference being that AI will develop its own roadmap on how to get better at predicting and then you'll obviously start bringing prediction of analysis into the game…" – *Participant 7*

"…You've got like Tableau and Power BI…" – *Participant 9*

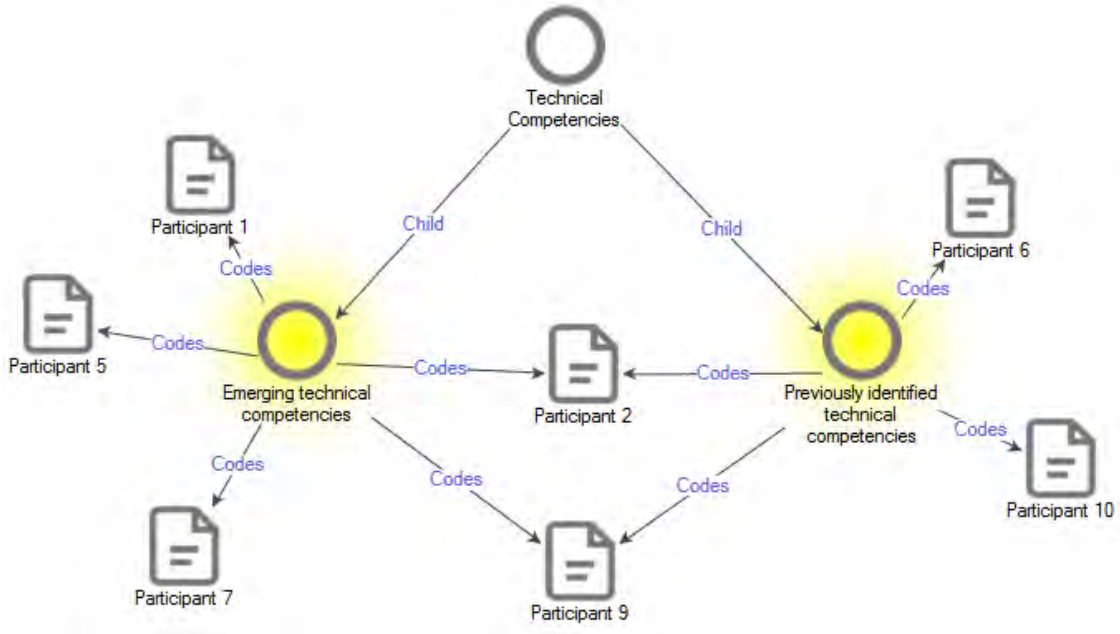


Figure 22: NVivo Comparative Diagram of Technical Competencies as per Interview Data

6.3.1.5 VALUES AND BEHAVIOURAL COMPETENCIES

Similar to the last two sections, as one of the three competence clusters, it was essential to investigate which values and behavioural competencies align with those found in the literature, detailed in Sections 2.6 and 3.5. Figure 23 below shows that Participants 1, 2, 5, 8 and 9 mentioned values and behavioural competencies which were previously identified in the literature, while Participants 2, 3 and 5 mentioned values and behavioural competencies that were not included in this study's proposed competency framework. Participants 4, 6 and 7, however, did not mention any values and behavioural competencies. Here are direct quotes from Participants 2, 3 and 5 detailing the emerging values and behavioural competencies:

"So, I think leadership is key…it's kind of a soft skill that you need inside your team to be able to kind of keep things on track…" – *Participant 2*

"I think maybe one thing you are missing is understanding human behaviour…I mean, it's about understanding people and what they're doing that results in what data you see. So you might pick up trends, you might pick up patterns, and you might think you're onto something, but actually, it's just the way people behave, and therefore, your data looks the way it does…Sometimes, you need to take out those biases, or sometimes you need to just be aware of it. So, when you're making recommendations, understand what recommendations mean in terms of people's biases toward acting in a specific way…I think it's behavioural analysis." – *Participant 3*

"…having people who are curious…so it's about having curiosity to also think, 'Well, what if?'…it is one of the key values and behaviours that analysts should have." – *Participant 5*

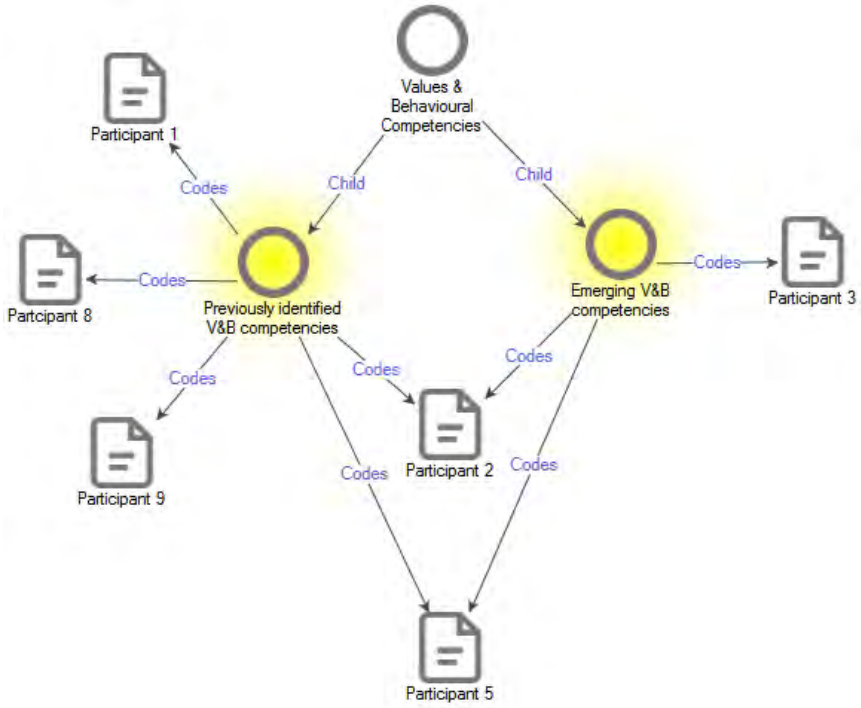


Figure 23: NVivo Comparative Diagram of Values and Behavioural Competencies as per Interview Data

It was seen as relevant to include the opinion of Participants 1, 2 and 3 pertaining to humour:

"From a values and behavioural perspective, the one that I had a little bit of a laugh at, well, not laugh, I was a bit surprised to see on the list was the humour, but it's something that I really value and tend to try lean into quite a lot." – *Participant 1*

"Absolutely humour. You know, I literally had one customer we won over while we were doing the work for them because one of the guys in my team was just a complete hooligan. Like the whole time, he was just cracking jokes every time we had a stand-up, and it actually builds like quite a strong connection between us as a team and the customer. So, it's interesting that you included humour. I'm surprised to see it there because I think most people would exclude that, but it can be quite a strategic benefit." – *Participant 2*

"Things like humour, probably. I don't think it's incorrect, but maybe it's not relevant. Like, just being a good human being, I think, is probably the right way to approach it. It is to be more trusting. That sounds kind of like humour. I don't know. Like, maybe that's not really what we need, but it's a nice-to-have…Because, like, if I'm not a funny person, does that mean that I don't have the full set of competencies to execute my job? That's why I think humour, maybe not so much…I think "humour" maybe a bit of a stretch." – *Participant 3*

6.3.1.6 OPINIONS ON THE BI&A COMPETENCY FRAMEWORK

With regard to the actual opinions of the proposed BI&A competency framework, Figure 24 shows there were no negative opinions from the participants when asked about their views on the proposed BI&A competency framework. Participants 6 and 8 had neither a positive nor negative opinion. Here are direct quotes from the participants, except Participants 6 and 8, detailing their opinions when asked about the proposed BI&A competency framework:

…there's nothing there that I disagree with…" – *Participant 1*

"Yeah, I don't see any room to add anything to that. I think it's pretty comprehensive." – *Participant 2*

"I think you've got it very nicely, business, technical, and then values." – *Participant 3*

"The framework does speak to almost everything… I think they are all relevant." – *Participant 4*

"…the thing that you're saying here is that there's... There's many competencies that you could, as a BI and analytics professional, possess to evolve or mature your capability, and these are all the different things that you could, you could, and that you should know at least." – *Participant 5*

"At face value, yeah sure, it is relevant." – *Participant 7*

"I wouldn't say I want to change anything here, to be honest with you. You've got it. I think you've got it accurate, so an accurate reflection." – *Participant 9*

"I've been looking through the list on your left-hand side, trying to figure out if something there does not fit, and I can't see anything that does not fit…Nothing jumps out to say it's incorrect. I'm trying to see if there's anything I could add, but it's quite a comprehensive list that you have. For me, it's the perfect set of attributes for a competent BI&A analyst." – *Participant 10*

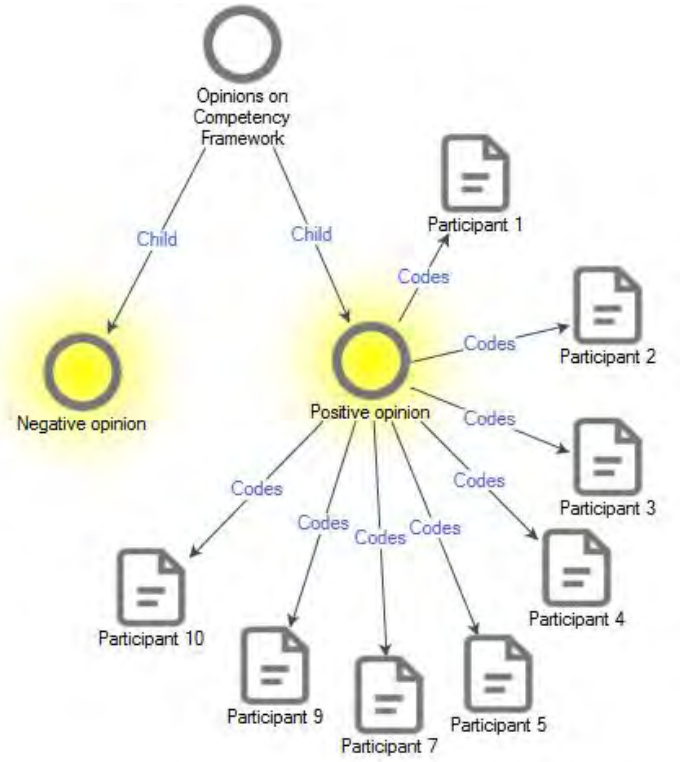


Figure 24: NVivo Comparative Diagram of Proposed Competency Framework Opinions as per Interview Data

Participants 1, 2, 4, 6, 8 and 9 provided some structural suggestions on how to improve on the proposed BI&A competency framework:

"I think for clarity, I would kind of have that 'BI&A competencies' kind of like above your three blocks and have them sort of encapsulated. To show that it is part of the competencies because, at the moment, it's the only thing that I found confusing about at first glance, or even if you made your arrows really big and kind of put the BI&A competencies on top of your three blocks within like inside of a cyclic thing…" – *Participant 1*

"Maybe you could say that integrity and trustworthiness are the same thing." – *Participant 2*

"So maybe to put it another way, maybe the model has to kind of speak to at what stage of your career as a consultant you're in. Right? Because when you start, for instance, as a junior consultant, the technical abilities make more sense, right? Because you're required to build systems or code if you're a developer, or you're required to do a lot of modelling if you're a business analyst. But when you move to more middle-level positions, that's maybe when the values and behaviour become important. And when you move to senior positions, you probably have the technical abilities down pat, so the business competencies kick in. So my advice is

your model looks good, but it has to be linked maybe to what stage in your career you're at." – *Participant 4*

"So, the primary technical competencies, from what I'm seeing here, currently, are very heavily focused on data. I mean, you've got programming knowledge as a single component. But I would say that it's worth looking into just how deep that is because you've got three separate components for data and one for programming. And there's a lot of programming languages and systems involved in this kind of thing, as of today…So then, in that case, I would look at your technical side, and I'd split it up. I would almost put them under subcategories; your data modelling, your data warehousing, and your database management are actually in the realm of data engineering. Your logical thinking, your problem-solving, your statistical analysis, and your what-if analysis, if you think about them, they are all analytical skill sets. And then a subcategory for programming languages." – *Participant 6*

"So, in my view, with integrity, that comes with trustworthiness…and commitment and resilience are, in my view, are quite similar." – *Participant 8*

"…the cycle of increased learning and continuous development it happens outside of the competencies. The competencies also grow with your exposure and experience." – *Participant 9*

Participants 1, 2, 5, 9 and 10 also affirmed the inclusion of the cycle of increased learning and continuous development:

"…if you stop learning, I mean, I think this is one of the things that they say and action process. It's if you stop learning when you leave varsity, it's like you're, gonna be behind already, you know, like this so much, you're learning. It's basically varsity, just equips you to keep learning." – *Participant 1*

"So, the point is, yes, I would say it belongs in the framework regardless because you can't be stuck in a particular set of technology or approach for the rest of your life." – *Participant 2*

"Things are changing all the time. So if you want to be seen as a professional and an analyst, you have to keep up with the trends and the changes." – *Participant 5*

"…the more you learn, the more you're gonna refine each and every phase of the information value chain." – *Participant 9*

"Continuous development and increased learning are absolutely essential for us. We cannot afford to fall behind in such a dynamic field. We have to continuously learn." – *Participant 10*

6.3.1.7 THEORY OF DYNAMIC CAPABILITIES

The following quotes from Participants 1, 2, 3, 4, 5, 9 and 10 confirm the TDC as it underpins this study as well as this study's applicability within the South African context as it is constantly changing:

"The business wants to be able to ultimately be competitive…Having a competitive environment is crucial, but if you're not looking at your data and you're not understanding how you're doing relative to others, or what your points of difference are or what user trends are, then how are you supposed to be able to sort of come up with any strategic plan, or vision, you know? We are in a fast-paced, ever-changing industry. I mean, IS itself is always changing." – *Participant 1*

"And it's a constantly evolving landscape…I would say there are elements of the industry that are dynamic. In general terms, I would say we are between non-dynamic and dynamic. So, I would say there's this kind of a middle layer where I think a lot of us work within, but the truly dynamic talk teams that I've seen or heard of are kind of generally sitting in top-end organisations." – *Participant 2*

"I think it is dynamic. And I can explain to you why. Evolution was consistently changing, right? I would say it's a dynamic environment. Because if data was static, then I would say the environment is not really evolving and changing. But I think because data is evolving and changing, the environment itself will also be evolving and changing. The industry is always evolving. Our industry is always changing." – *Participant 3*

"Yes, yes. I agree with that fully. Look, based on my experience so far, the IT industry itself is always changing, right? And there are always new technologies that come into play. And if, as with anything in business, if you're not ready when a new trend comes in, or new opportunities come in, you're pretty much late in the game, right? We kind of miss out a bit. So with BI and A, you will, of course, be in a better position to be agile for one and to be kind of ready. Just be prepared for a new set of changes in the market. A good example is BI, many companies are grappling to see how they can take advantage of it. And the ones that are ready for it are probably going to be the winners in the end." – *Participant 4*

"Yes, and okay. So, is it dynamic? I think it is dynamic, but it also depends on your maturity as an organisation…And that, to me, is what I would consider dynamic. It's about having the ability to influence or change something, you know, and the speed at which you can do that is the extent to which you can be dynamic. So, in the context of an organisation, most of what we report on is daily and weekly. Absolutely. If you don't, you are going to get left behind because things change so quickly in this technology." – *Participant 5*

"…they have to be dynamic; otherwise, the whole world leaves them behind, and it just can't work." – *Participant 9*

The South African IT industry, okay, from my personal experience within the company, I would say yes. Externally, outside of the company, I'm considering various IT sections I've encountered. Yes, I'll say it is dynamic…So, we're not slowing down. Technology itself is advancing rapidly, and things are changing extremely quickly. I interact with multiple IT departments and personnel across clients, and everyone is always talking about the next thing they want. It's honestly almost every month that I'm learning that some client is using something new in IT, and it's something that I need to get my head around." – *Participant 10*

6.3.2 DESCRIPTIVE ANALYSIS

As mentioned in Section 5.2.7.2, descriptive analysis in this study intended to address the secondary research objective:

- *Secondary Research Objective* – to create a competency framework of the relevant competencies needed by IT business consultants to address BI&A challenges in South African organisations.

Participants were required to fill out a questionnaire using Google Forms, whereby ratings were made for each competency on a scale of 1 (extremely irrelevant) to 5 (extremely relevant). The data captured from the questionnaires was imported into Microsoft Excel. The table below provides the mean, standard deviation and mode of each competency per competence cluster.

Table 10: Averages and Standard Deviations of BI&A Competencies

COMPETENCE CLUSTER	COMPETENCY	AVERAGE	STANDARD DEVIATION	MODE
BUSINESS	Business Acumen	4.9	0.8	5
	Industry Knowledge	4.1	0.7	4
	Strategic Conceptual Abilities	4.1	0.7	4

TECHNICAL	Consulting Frameworks	3.2	1.0	4
	Data Modelling Skills	4.6	0.5	5
	Data Warehousing	3.8	0.8	4
	Database Management	3.3	0.9	3
	Logical Thinking	4.9	0.3	5
	Problem Solving	4.8	0.4	5
	Project Management	3.4	0.7	4
	Programming Knowledge	3.7	1.1	4
	Statistical Analysis	4.3	0.9	5
	What-if Analysis	3.8	0.8	3
VALUES AND BEHAVIOURAL	Commitment	4.2	0.6	4
	Communication	4.6	0.5	5
	Creativity Skills	4.1	1.1	5
	Emotional Intelligence	3.9	0.7	4
	Humility	3.7	0.7	4
	Humour	3.1	0.9	4
	Integrity	4.8	0.4	5
	Resilience	4.3	0.7	4
	Teamwork	4.4	0.7	5
	Trustworthiness	4.6	0.5	5

The mean represents the average rating of each competency, the mode shows the most frequently appearing rating amongst the ten participants, and the standard deviation shows the spread or dispersion of the ratings. The standard deviations that are less than one signify that the dispersion of those ratings was very close to their average rating, while the standard deviations that were greater than one signify that the ratings were more spread out from their average rating (Andrade, 2020).

The following graphs (Figures 25 to 27) order the competencies from the highest average to the lowest average per competency in each competence cluster. This will inform the order in which the competencies are displaced in the revised BI&A competency framework (Figure 28).

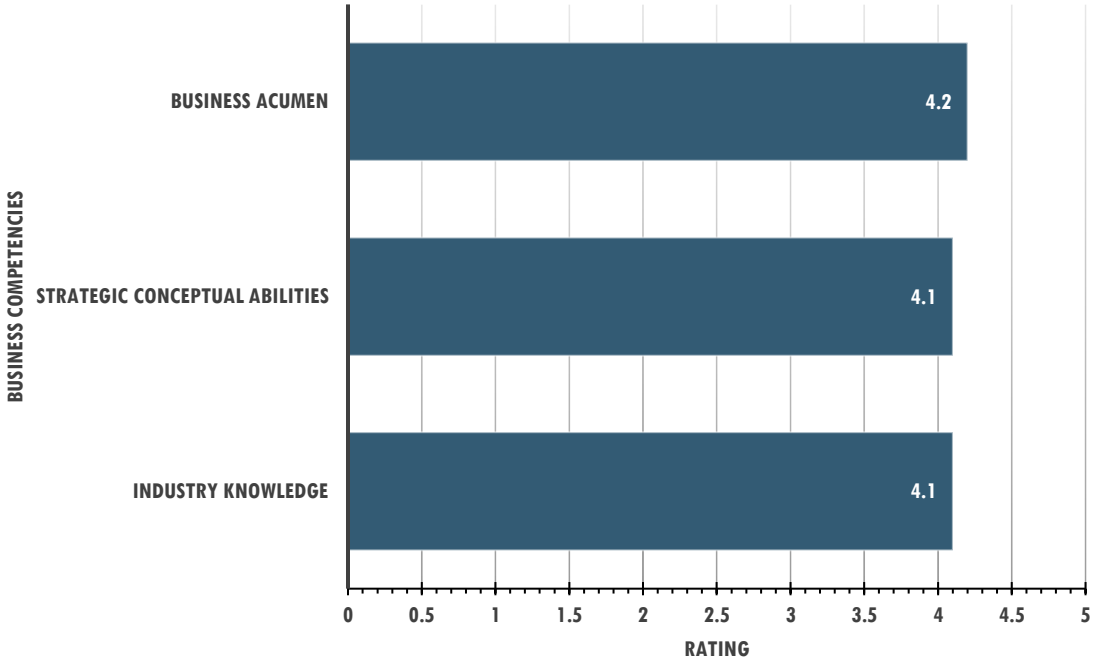


Figure 25: Bar Graph Showing Business Competencies and their Average Ratings

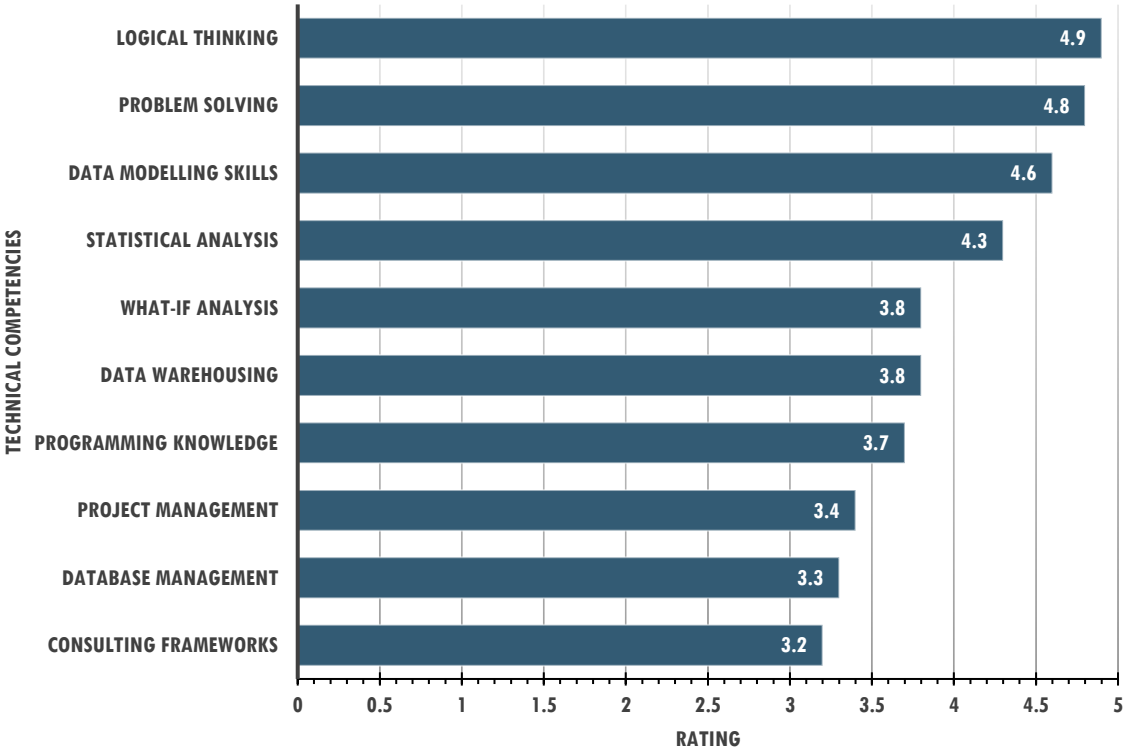


Figure 26: Bar Graph Showing Technical Competencies and their Average Ratings

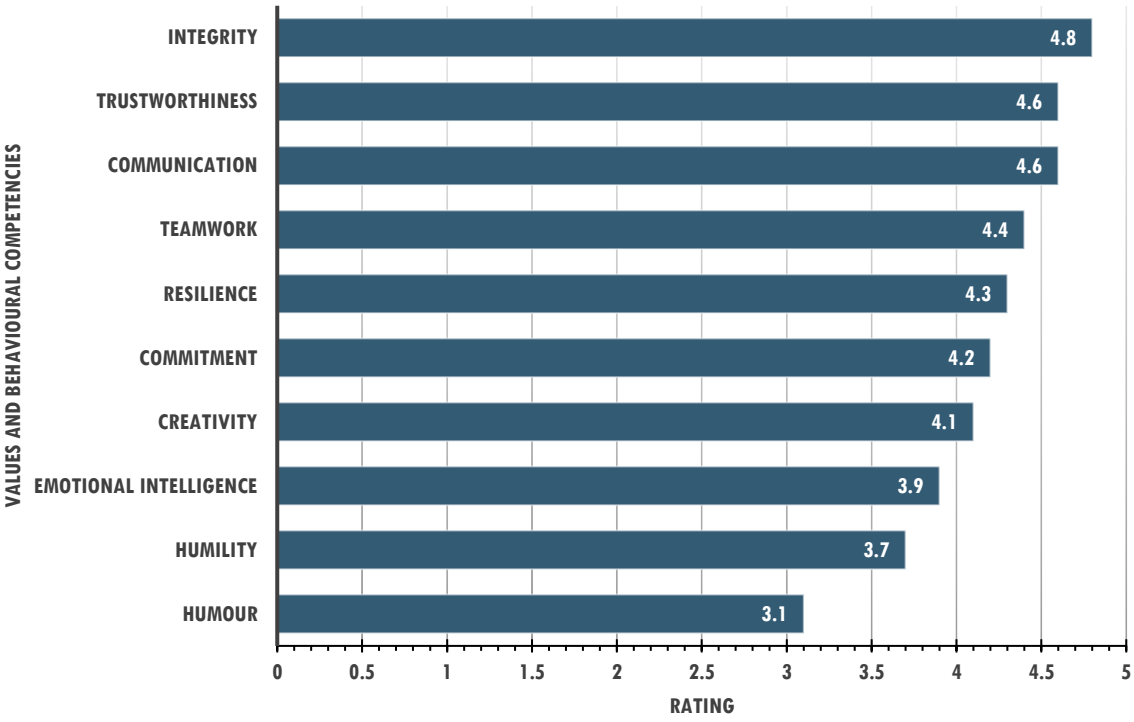


Figure 27: Bar Graph Showing Values and Behavioural Competencies and their Average Ratings

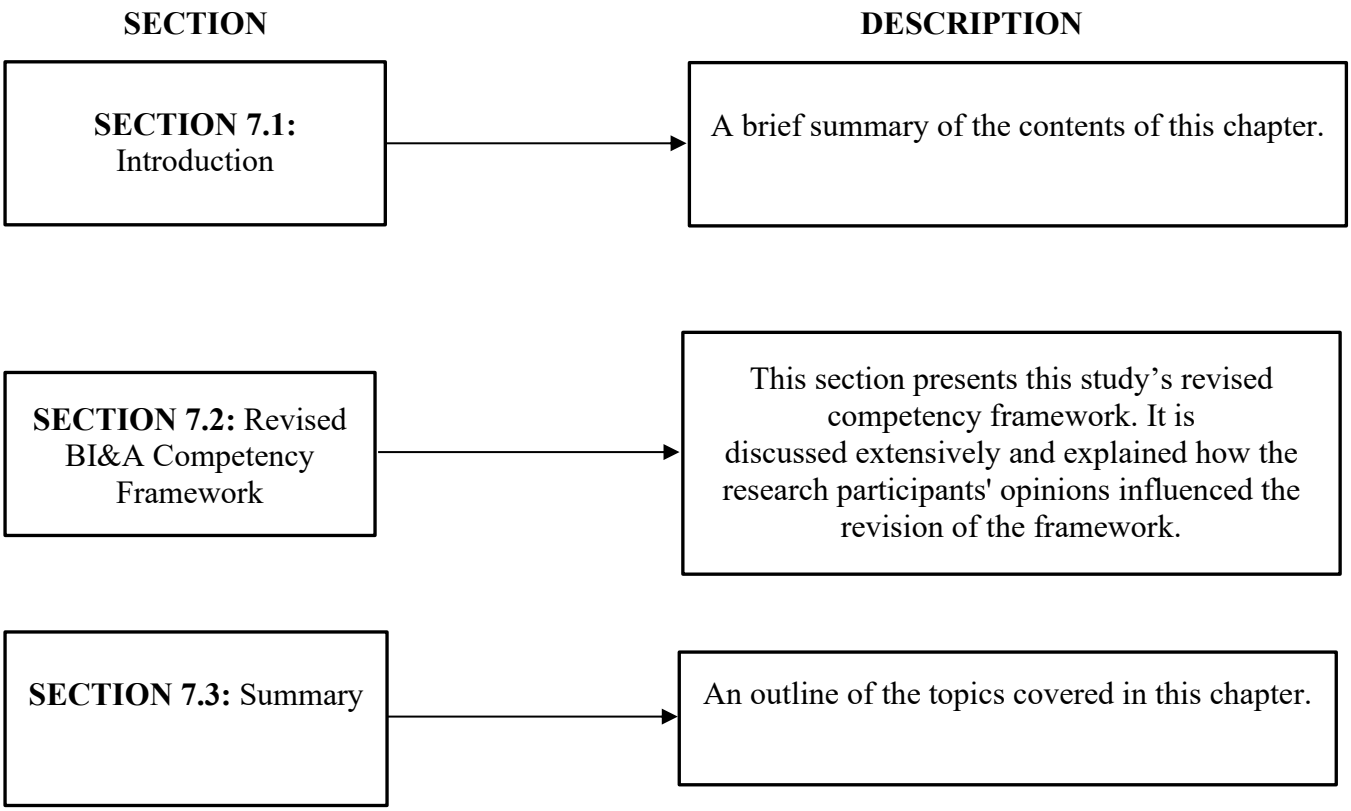
6.4 SUMMARY

This chapter delved into the data analysis processes undertaken in order to address this study's research objective and questions. Semi-structured interviews were conducted to elicit feedback from the research participants about the proposed BI&A competency framework (Figure 17). Content analysis facilitated by NVivo was conducted to categorise and code the interview data in order to reveal patterns and trends.

Questionnaires were also provided to the participants with the intent to rank the various competencies within the proposed BI&A competency framework. Descriptive analysis facilitated by Microsoft Excel was conducted, and the competencies were ranked within their competence clusters.

CHAPTER 7: DISCUSSION

OVERVIEW



7.1 INTRODUCTION

Despite the number of South African organisations embracing BI&A, these organisations face challenges leveraging BI&A, and the constant rise in demand for BI&A-skilled employees has led to a BI&A competency gap (Azmat et al., 2020; Johnson et al., 2021). This brings about a hindrance in the way that BI&A can be used as a dynamic capability and improve the competitive advantage of these organisations (Zhao, 2021). As BI&A talent is scarce and BI&A internal staff training is both time-consuming and expensive, these talent management challenges mentioned by Lautenbach et al. (2017) suggest that IT business consultants well-versed in BI&A can be regarded as a solution to curb the BI&A competency gap (Vukotić et al., 2017; Mofokeng et al., 2020; Njenga et al., 2020). It was, therefore, necessary to develop and test a competency framework that highlighted the most relevant competencies needed by IT business consultants to address the BI&A-related challenges. This chapter aims to consolidate the analysed data from the previous chapter and provide a revised BI&A competency framework in order to fulfil this study's research objectives (refer to Section 1.3).

7.2 REVISED BI&A COMPETENCY FRAMEWORK

Figure 28 below is the revised BI&A competency framework that was adapted from Figure 17 in Section 4.3. Semi-structured interviews and questionnaires were conducted during this study to elicit feedback from South African IT professionals on the framework. Figure 28 illustrates the business, technical and values and behavioural competencies needed to leverage BI&A. As documented in Section 6.3.1.6, eight out of the ten research participants had positive opinions pertaining to the proposed competency framework in that there was no competency mentioned that they disagreed with. They thought that the framework was relevant, comprehensive and provided an accurate reflection of BI&A competencies. Seven out of the participants also affirmed the use of the TDC as they agreed that they operate within a dynamic environment.

Nonetheless, it was essential to evaluate and implement the structural suggestions that six of the ten participants brought up. Therefore, the structural suggestions that were applied to the revised BI&A competency framework are detailed in the sections to follow. It must be noted that all competencies that were not previously included in the proposed BI&A competency framework are bolded and italicised in the revised framework.

Figure 28: Revised BI&A Competency Framework

7.2.1 LEVEL OF BI&A MATURITY AND EXPERIENCE

A navy blue upward-facing arrow on the inner left-hand side of the competency framework was added to illustrate that some BI&A competencies are more likely to be utilised depending on one's experience and maturity with BI&A, as mentioned by Participants 4 and 5. When an IT business consultant's maturity and experience with BI&A is low (i.e., entry-level positions), then they should typically focus on building their technical competence in BI&A. IT business consultants in middle-level positions are then most likely to develop their values and behavioural competencies, while maintaining and improving their foundational technical competencies. Similarly, IT business consultants who are in senior-level positions, who have a high level of BI&A maturity and experience, are then most likely to focus more on the business

competencies while having the technical and values and behavioural competencies as their foundation of BI&A competence. It is important to note that all these competencies are relevant to an IT business consultant regardless of their level of experience.

7.2.2 ENCAPSULATION OF BI&A COMPETENCIES

To the right of the Level of BI&A Maturity and Experience arrow, the three competence clusters (i.e., business, technical and values and behavioural) have now been encapsulated within the BI&A competencies block, as suggested by Participant 1. To address the fragmented outlook of the competence clusters within the framework, this structural change was considered as it provides a cohesive perspective that the competence clusters, and their competencies therein, are all part of BI&A competencies.

7.2.3 VALUES AND BEHAVIOURAL COMPETENCIES

Within the values and behavioural competence cluster, the suggestions made by Participants 2 and 8 were taken into consideration and trustworthiness was removed as it falls under integrity, which remained. Furthermore, suggestions from Participants 2, 3 and 5 were considered and the following competencies were added to the framework.

7.2.3.1 BEHAVIOURAL ANALYSIS

Behavioural analysis entails that, at times, insights from data should be perceived as being caused by the behavioural patterns of individuals generating the data. Kašparová (2023) affirms that user behaviour does affect the trends that emerge within a data set. As a result and as alluded to by Participant 3, it's crucial for an IT business consultant working in the BI&A sector to be aware of the behavioural context surrounding the data they work with. This is crucial to take into account since it may simplify the decision-making process and have an impact on the types of decisions that can be made using the data. A simple example of this would be if a data set of monthly sales from an online florist shop revealed that sales of red roses increased around the middle of February; it would be apparent that this increase was a result of customers celebrating Valentine's Day. With that, quick insights can be obtained by taking user behaviour into account.

7.2.3.2 CURIOSITY

Curiosity is the impulse to learn and experience new things, as well as explore new possibilities. When curiosity is piqued, decisions are more carefully and logically considered, making it more likely to produce more creative solutions (Gino, 2018). As suggested by Participant 5, This is a beneficial competency for IT business consultants in the BI&A space as it promotes

better decision-making, in that one is inclined to ask questions and come up with alternatives, as opposed to making broad judgments and assumptions of the data they interact with.

7.2.3.3 LEADERSHIP

Leadership as a competency was suggested by Participant 2, and it is defined as the ability of an individual or a group of people to influence and guide followers or members of an organisation towards achieving common goals (Silva, 2016). This competency alludes to the ability to confidently guide and support clients and colleagues toward adopting technology-driven decisions and motivating the evolution of company cultures to embrace technological changes that may need to take place for BI&A to thrive within an organisation (Wee et al., 2022). This is crucial, especially within the South African context, where Participants 3, 6 and 9 revealed that legacy systems appear to be a significant barrier to organisations' ability to effectively leverage BI&A. Therefore, through effective leadership, IT business consultants can encourage a shift away from legacy systems and more towards systems that can cater to BI&A technologies.

7.2.3.4 SOCIAL INTELLIGENCE

Social intelligence refers to the ability to recognise and evaluate one's own behaviour and the behaviour of those around them to navigate social settings, form relationships successfully, get along well with others and win their cooperation (Sadiku et al., 2019). It was evident from the differing views on humour shared by Participants 1, 2 and 3 that humour sometimes played a significant role in building relationships with clients. However, Participant 3 indicated that one does not necessarily have to be humorous to foster a good relationship with clients. Subsequently, it was decided to substitute humour with social intelligence in the revised BI&A competency framework. This is because social intelligence entails an individual having self-awareness as well as the art of reading others to understand the dynamics of social interaction (Lievens and Chan, 2017; Lathesh and Avadhani, 2018). Thus, it is thought that social intelligence was undoubtedly at work in the two scenarios that Participants 1 and 2 presented, and humour was used to facilitate relationship-building with clients. Nonetheless, it is crucial for an IT business consultant to possess sufficient social intelligence to recognise social situations involving clients that might not call for humour.

7.2.4 TECHNICAL COMPETENCIES

Within the technical competence cluster, Participant 6 suggested organising the technical competencies into three categories – 'Analytical Skills', 'Data Engineering', and

‘Programming Knowledge’. This recommendation was taken into consideration in an effort to provide structure and clarity within the cluster. The three main categories are displayed in bold, and the corresponding competencies are indented under each category.

As a subcategory under ‘Data Engineering’, ‘Data Processing Languages’ was chosen to replace ‘Programming Knowledge’ in order to further foster cohesion within the competency cluster. The ‘Supplementary Skills’ category was also added to group the competencies that did not fall under the previously mentioned categories. As mentioned by Participants 1, 2, 5, 7 and 9, the following competencies were added to the revised BI&A competency framework.

7.2.4.1 DATA GOVERNANCE

Data governance is defined as a highly structured and monitored data management approach that specifies the guidelines for handling an organisation's data assets (Ghosh, 2017). This involves focusing on a number of layers, including the operational framework, the data architecture, and the standardisation of terminology across an organisation's business units to ensure uniformity. As alluded to by Participant 2, when working with BI&A, IT business consultants should consider this competency since data governance guarantees the repeatability, consistency, and reliability of data, which enhances data quality and usage by providing a consistent view of information throughout an organisation (Ghosh, 2017).

7.2.4.2 DATA INTERPRETATION

Having been mentioned by Participants 5 and 10 as a BI&A challenge, the interpretation of data helps IT business consultants structure and consolidate the information in order to derive insights to address business problems. Effective data interpretation is essential since data is likely to come from multiple sources, and depending on the kind of data being analysed, the nature and purpose of interpretation will differ from business to business. This highlights how crucial it is for IT business consultants to have a solid understanding of data interpretation (Calzon, 2023).

7.2.4.3 DATA STEWARDSHIP

As mentioned by Participants 2 and 5, data stewardship is a BI&A competency that requires organisations to take care of the personal information of others, to go above and beyond their obligations of responsibility when it comes to protecting and using data, and to answer for any misuse of that data. According to Abrams et al. (2019), effective data stewardship will require organisations to understand and evaluate how they process data and how it can benefit or adversely impact people who are connected to the data. This competency requires IT business

consultants to be lawful collectors of data and effective custodians of data who take into account the interests of all stakeholders (the parties impacted by the data processing) and use the data to reap the greatest benefits from it while minimising risks.

7.2.4.4 DATA VISUALISATION TOOLS

According to Participants 1, 2 and 9, Microsoft Power BI and Tableau are popular visualisation tools to consider within the BI&A technical competencies. Data visualisation tools have been developed to support the increasingly complex workflow of data management and facilitate data exploration by allowing users to test relationships within their data and become familiar with the structure of datasets to discover trends or patterns. Tableau is a data visualisation software that is widely utilised to connect diverse data sets to one another and perform query operations without the need to write code. Its user-friendly drag-and-drop interface lets users create data visualisations with greater ease and efficiency (Jena, 2019).

Power BI is an intuitive and user-friendly data editor that allows users to transform and modify data. It streamlines the visualisation of data and facilitates the procedures required to connect different data stores together (Becker, 2019). According to Carlisle (2018), the functionality of both Power BI and Tableau is anticipated to grow as they improve data literacy and the capacity to design more intelligent workflows that address business problems – making it a relevant competency to consider for the leveraging of BI&A.

7.2.4.5 DATA PROCESSING LANGUAGES

According to Narang (2023), R, Python, and SQL are among the most widely used data processing languages. One of the most popular declarative languages currently used to interact with databases is SQL. It allows users to write queries to get data from datasets. R is a popular statistical programming language for handling data in various ways, including statistical analysis and data visualisation. When working with BI&A, Python has gained popularity due to its easy readability, plain syntax, and code portability (Fotache, 2016). As a result, these different languages would help IT business consultants by making data processing for BI&A more efficient.

7.2.4.6 ARTIFICIAL INTELLIGENCE

Bharadiya (2023) defines Artificial Intelligence (AI) as technology that can simulate human behaviour and intellect by employing a number of algorithms to create programs that can accomplish similar tasks to humans. Machine learning (ML) is a subfield of AI which

comprises a group of techniques that automate complex decision-making and problem-solving processes and teach machines how to solve issues by exposing them to historical data.

According to Edge et al. (2018), a large portion of the data that is relevant to modern organisations is unstructured data (i.e., documents, social media platforms, and the internet) as opposed to structured data, which is considerably easier to manipulate. Use cases such as social media analytics present challenges since the source data is unstructured, and the appropriate visual representations are unsupported by mainstream BI&A tools. To address this issue, strategies for integrating AI in back-end pipelines to infer navigable data structures from streams of unstructured text, media, and metadata have been developed. Emerging generative AI tools, such as ChatGPT linked to data analytics tools such as Noteable, are also being utilised to provide easier access to BI&A techniques without the need for in-depth AI skills. As alluded to by Participant 7, an IT business consultant would, therefore, benefit from being accustomed to AI tools and having a good understanding of the function AI plays in BI&A in order to offer essential capabilities for the structuring of unstructured data.

7.2.5 CYCLE OF CONTINUOUS DEVELOPMENT AND INCREASED LEARNING

After considering the feedback from Participants 1 and 10, the decision was made to encapsulate all of the framework's elements in the cycle. This is to emphasise that developing BI&A competencies and using BI&A as a dynamic capability to gain competitive advantage can only be successful in the long run if continuous development and increased learning are taking place. The cycle was above the 'Increasing BI&A Dynamic Capability' arrow prior to the structural change, which did not adequately convey the cycle's significance for each and every framework component.

7.2.6 COMPETENCY RANKINGS

The rankings derived from the descriptive analysis, as shown in Section 6.3.2, were considered when it came to the order of the various competencies in the revised BI&A competency framework. It must be noted that the newly added competencies (in bold and italics) were placed after the previously identified competencies and are in alphabetical order, as these competencies were not part of the descriptive analysis.

7.3 SUMMARY

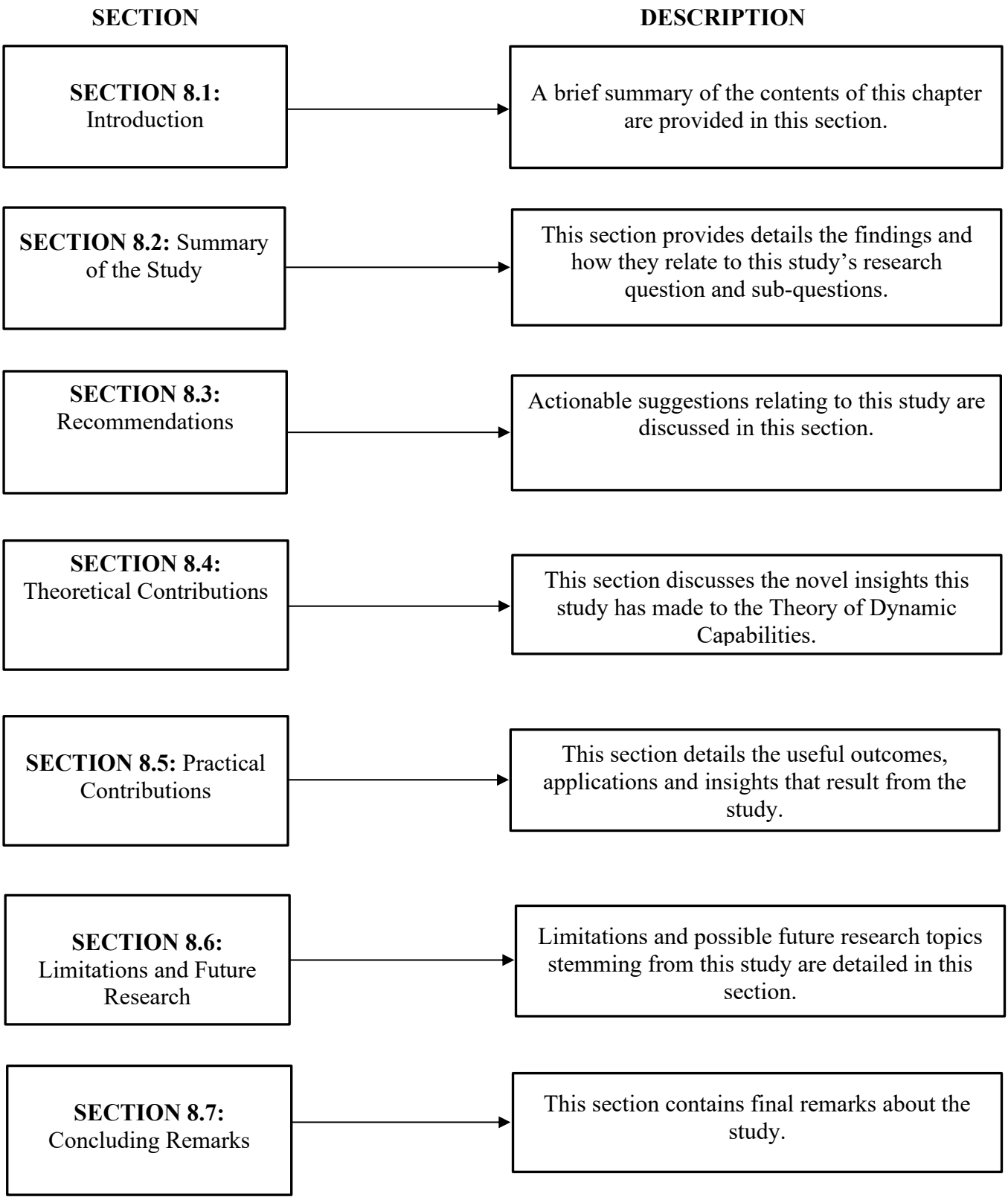
This chapter presents and discusses this study's revised BI&A competency framework (Figure 28). Figure 28 was produced by updating the proposed competency framework developed in Chapter 4. The revised framework took into consideration the opinions and structural

suggestions provided by the research participants, which were elicited through the data collection process detailed in Section 5.2.6. This chapter details the various components of the proposed competency framework that were adapted to improve its relevance and accuracy in the competencies needed for BI&A from a South African perspective.

The revised BI&A competency framework addresses this study's research objectives by encompassing the business, technical and values and behavioural competencies needed by IT business consultants to address BI&A challenges in South African organisations.

CHAPTER 8: CONCLUSIONS

OVERVIEW



8.1 INTRODUCTION

This chapter concludes this research study by summarising the study as a whole and discussing the highlights and key findings from the research questions outlined in Section 1.4 of Chapter 1. The recommendations, theoretical and practical implications, limitations and suggestions for future research are included in this chapter as well.

8.2 SUMMARY OF THE STUDY

This study sought to investigate the competencies needed by IT business consultants to address BI&A challenges in South African organisations. This study was underpinned by the TDC, as BI&A is considered a dynamic capability that, when used effectively, leads to increased competitive advantage (Zhao, 2021).

By delving into multiple literature sources, this study discussed IT business consulting, the role of IT business consultants within the South African IT business industry, IT business consulting competencies, as well as BI&A, its significance and increased popularity and its competencies. It was discovered that attracting and retaining talented employees has been a widespread challenge in South African consulting organisations, which further perpetuates the BI&A competency gap that is prevalent within the South African workforce (Mofokeng et al., 2020).

By combining the competencies detailed for IT business consultants and BI&A, a proposed competency framework (Figure 17) was produced. This framework had four main elements, which are:

- IT business consulting breadth of competencies,
- BI&A competencies within their respective competence clusters,
- The cycle of continuous development and increased learning and,
- The arrow of increasing BI&A dynamic capability, which leads to competitive advantage for organisations.

Being a qualitative and interpretive study, which used QD as the research strategy, semi-structured interviews and questionnaires were conducted to elicit feedback on the relevance and accuracy of Figure 17, as well as to rank the competencies within the framework in terms of their relevance to BI&A. The opinions and structural suggestions provided by the participants prompted the following adaptations to Figure 17 to produce the revised BI&A competency framework (Figure 28):

- An arrow representing the level of BI&A maturity and experience was added.

- The competence clusters (business, technical and values and behavioural) and their respective competencies were encapsulated to create a unified block of BI&A competencies.
- The cycle of continuous development and increased learning encapsulated all the other elements of the framework.
- Behavioural analysis, curiosity and leadership were added to the values and behavioural competence cluster. Trustworthiness was removed as it falls under integrity. Humour was also substituted with social intelligence within this competence cluster.
- Analytical Skills, Data Engineering and Additional Skills were added as categories within the technical competence cluster. The competencies added to this competence cluster were data governance, data interpretation, data stewardship, data visualisation tools (Microsoft Power BI and Tableau), data processing languages (Python, R and SQL) and AI.
- Using data analysed from the questionnaires, the competencies were ranked according to their relevance. The additional competencies were placed at the bottom of the list in each competence cluster and indicated in italics.

Table 11 below lists the business, technical and values and behavioural competencies which were included in the revised BI&A competency framework. Thus, addressing this study's primary research question (refer to Section 1.4).

Table 11: BI&A Competencies

COMPETENCE CLUSTER	COMPETENCY
BUSINESS	Business Acumen
	Industry Knowledge
	Strategic Conceptual Abilities
TECHNICAL	Analytical Skills • Logical Thinking • Problem Solving • Statistical Analysis • What-if Analysis
	Data Engineering • Data Modelling Skills • Data Warehousing

	• Database Management
	• Data Governance
	• Data Interpretation
	• Data Stewardship
	• Data Visualisation Tools
	  ○ Microsoft Power BI
	  ○ Tableau
	• Data Processing Languages
	  ○ Python
	  ○ R
	  ○ SQL

	Additional Skills • Project Management • Consulting Skills • Artificial Intelligence
VALUES AND BEHAVIOURAL	Integrity
	Communication
	Teamwork
	Resilience
	Commitment
	Creativity
	Emotional Intelligence
	Humility
	Behavioural Analysis
	Curiosity
	Leadership
	Social Intelligence

8.3 RECOMMENDATIONS

Considering that it is IT business consultants that organisations turn to for acquiring BI&A expertise that is not necessarily available in-house, it is important for IT business consultancies to have retention strategies in place to avoid further perpetuating the BI&A competency gap in the South African labour force. Such retention strategies can include embarking on more

training and development initiatives within BI&A (Mabaso et al., 2021). By producing a BI&A competency framework, this study would be of benefit to IT business consultancies so that they can benchmark the BI&A competencies of their employees and identify skills gaps and training opportunities to address the BI&A challenges. It must also be noted that the revised BI&A competency framework is not only exclusive to IT business consultancies, but it is also beneficial to South African organisations as it provides BI&A competencies they can consider to improve their BI&A capability.

8.4 THEORETICAL CONTRIBUTIONS

This qualitative study is underpinned by the TDC and demonstrates how the theory is used to explain how BI&A (when accompanied with the appropriate competencies) can serve as a dynamic capability that IT business consultants can foster to increase competitive advantage within South African organisations in a dynamic environment. This study, therefore, contributes to the growing body of knowledge on the TDC, IT business consulting and BI&A in the following ways:

- This study applies the TDC to the IT business consulting domain within a South African context. This expands the applicability of the theory beyond its conventional applications in strategic management and innovation (Samsudin and Ismail, 2019).
- This study contributes to the theoretical understanding of how competencies are integral to the development of BI&A as a dynamic capability.
- This study addresses the paucity of BI&A competency-related studies within a South African context.
- The study adds to the conceptualisation of how micro-level competencies of individual IT business consultants contribute to the macro-level dynamic capability (BI&A) of an organisation as the TDC is often applied at an organisational level (Teece, Pisano, and Shuen, 1997).

8.5 PRACTICAL CONTRIBUTIONS

Since the last decade, the number of organisations embracing BI&A has constantly been rising as it is linked with competitive advantage and growth, value creation and increased organisational performance (Al-Sakran, 2015; Cosic et al., 2015; Azmat et al., 2020). However, organisations are grappling with challenges associated with leveraging BI&A effectively (Chahal et al., 2019). As such, in terms of this study's practical implications, by identifying the business, technical and values and behavioural competencies required to leverage BI&A

effectively, IT business consultants and organisations at large can enhance their expertise in BI&A, resulting in the effective use of BI&A and ultimately, increased competitive advantage. Additionally, in order to support their BI&A capability, IT business consulting firms and organisations can also use the revised BI&A competency framework as a guide when hiring new personnel. This will help to close the existing BI&A competency gap by selecting candidates who possess the necessary competencies to utilise BI&A effectively. Lastly, South African universities and learning platforms could consider incorporating the revised competency framework into their curricula and certification programs for aspiring and existing IT business consultants and BI&A professionals. This will allow the upcoming generation of IT business consultants to adequately prepare to address the BI&A challenges organisations face.

8.6 LIMITATIONS AND FUTURE RESEARCH

This study presented some limitations regarding scope, time and cost. Firstly, it had limited funding and a set time frame, which limited the scope of the study as it had to be completed within two years. With that in mind, future research into this study would include having an additional data collection step whereby expert reviews are conducted to elicit feedback on the revised BI&A competency framework and thus produce a finalised version of the framework.

Secondly, considering the distinction between internal and external IT business consultants, having more internal IT business consultants as part of the research participants (as opposed to one) would have offered a broader range of perspectives. Future research in that regard could focus on investigating whether the perspectives of internal and external IT business consultants vary depending on how they function within an organisation (refer to Section 2.2.2 for more insight into internal vs external business consultants).

Thirdly, future research into this study could entail testing or evaluating the revised BI&A competency framework in order to assess its effectiveness and applicability in real-world scenarios. This could include conducting competency-based interviews structured around the competencies identified in the framework and can be used to evaluate IT business consultant's practical knowledge and experience in addressing BI&A challenges. This would also assist in identifying where the competency gaps lie and which specific competencies can be developed, integrated, and reconfigured to address BI&A challenges in organisations.

Fourthly, future research in this area could be conducted by theorising a more explicit approach to dynamic capabilities as stipulated by Steininger et al. (2022).

Lastly, with reference to the BI&A challenge of legacy systems that two research participants raised, it would be worthwhile investigating what change management processes could be considered to embrace BI&A within the South African context.

8.7 CONCLUDING REMARKS

The effective use of BI&A within South African organisations is being hindered by numerous challenges, of which the majority of these challenges stem from the BI&A competency gap prevalent within organisations. It is evident that IT business consultants are the key to bridging the competency gap by providing BI&A expertise to organisations that seek to improve their data-driven decision-making and competitive advantage.

This study provides recommendations and a BI&A competency framework (Figure 28) that highlights the relevant business, technical and values and behavioural competencies that IT business consulting firms and organisations at large should consider to address BI&A challenges in South African organisations.i

REFERENCES

Abrams, M., Abrams, J., Cullen, P. and Goldstein, L., 2019. Artificial Intelligence, Ethics, and Enhanced Data Stewardship. *IEEE Security and Privacy*, 17(2), pp.17–30. https://doi.org/10.1109/MSEC.2018.2888778.

Ahlijah, Y., 2022. Business Intelligence and Performance of the Standard Bank of South Africa Limited. *Asian Journal of Advances in Research*, 12(2), pp.49–63.

Ahmad, M.O., Ahmad, I., Rana, N.P. and Khan, I.S., 2022. An Empirical Investigation on Business Analytics in Software and Systems Development Projects. *Information Systems Frontiers*, pp.1–11. https://doi.org/10.1007/s10796-022-10253-w.

Ainsworth, Q., 2021. *Data Collection Methods*. [online] Jotform. Available at: <https://www.jotform.com/data-collection-methods/#:~:text=Here%20are%20the%20top%20six,Focus%20groups> [Accessed 12 April 2023].

Ajah, I.A. and Nweke, H.F., 2019. Big Data and Business Analytics: Trends, Platforms, Success Factors and Applications. *Big Data and Cognitive Computing*, 3(2), pp.1–30. https://doi.org/10.3390/bdcc3020032.

Akhtar, A., Nawaz, M.K., Mahmood, Z. and Shahid, M.S., 2016. Impact of High Performance Work Practices on Employees' Performance in Pakistan: Examining the Mediating Role of Employee Engagement. *Pakistan Journal of Commerce and Social Sciences*, 10(3), pp.708–724.

Almazmomi, N., Ilmudeen, A. and Qaffas, A.A., 2021. The Impact of Business Analytics Capability on Data-driven Culture and Exploration: Achieving a Competitive Advantage. *Benchmarking*, 29(4), pp.1264–1283. https://doi.org/10.1108/BIJ-01-2021-0021.

Alsaad, A., Selem, K.M., Alam, M.M. and Melhim, L.K.B., 2022. Linking Business Intelligence with the Performance of New Service Products: Insight from a Dynamic Capabilities Perspective. *Journal of Innovation and Knowledge*, 7(4), pp.1–11. https://doi.org/10.1016/j.jik.2022.100262.

Al-Sakran, H.O., 2015. Information and Knowledge Management Development of Business Analytics Curricula to Close Skills Gap for Job Demand in Big Data. *IISTE*, 5(3), pp.36–46.

Andrade, C., 2020. Understanding the Difference Between Standard Deviation and Standard Error of the Mean, and Knowing When to Use Which. *Indian Journal of Psychological Medicine*, 42(4), pp.409–410. https://doi.org/10.1177/0253717620933419.

Appelbaum, S.H. and Steed, A.J., 2005. The Critical Success Factors in the Client-consulting Relationship. *Journal of Management Development*, 24(1), pp.68–93. https://doi.org/10.1108/02621710510572362.

Athuraliya, A., 2023. *The Top 7 Tried and Tested Strategy Frameworks for Businesses*. [online] Creately. Available at: <https://creately.com/blog/strategy-and-planning/top-strategy-frameworks-for-businesses/> [Accessed 11 August 2022].

Ayoubi, E. and Aljawarneh, S., 2018. Challenges and Opportunities of Adopting Business Intelligence in SMEs: Collaborative Model. In: *ACM International Conference Proceeding Series*. Association for Computing Machinery. pp.1–5. https://doi.org/10.1145/3279996.3280038.

Avakian, S., Clark, T. and Roberts, J., 2010. Examining the relationship between trust and culture in the consultant-client relationship. In: *Organizational Trust: A Cultural Perspective*. Cambridge University Press. pp.129–155. https://doi.org/10.1017/CBO9780511763106.006.

Azmat, F., Ahmed, B., Colombo, W. and Harrison, R., 2020. Closing the Skills Gap in the Era of Industrial Digitalisation. In: *IEEE Conference on Industrial Cyber-physical Systems*. Institute of Electrical and Electronics Engineers Inc. pp.365–370. https://doi.org/10.1109/ICPS48405.2020.9274788.

Bahri, S., Zoghlami, N., Abed, M. and Tavares, J.M.R.S., 2019. BIG DATA for Healthcare: A Survey. *IEEE Access*, 7, pp.7397–7408. https://doi.org/10.1109/ACCESS.2018.2889180.

Baishya, B., 2015. Mc Kinsey 7s Framework in Corporate Planning and Policy. *International Journal of Interdisciplinary Research in Science Society and Culture*, 1(1), pp.165–168.

Banai, M. and Tulimieri, P., 2013. Knowledge, skills and personality of the effective business consultant. *Journal of Management Development*, 32(8), pp.886–900. https://doi.org/10.1108/JMD-05-2011-0061.

Bascomb, C., 2010. The Outside Consultant: More Than an Expert Why Do It? In: *Bull's-Eye! The Ultimate How-To Marketing & Sales Guide for CPA*, 1st ed. John Wiley & Sons, Inc. pp.155–161.

Batt, A., Williams, B., Rich, J. and Tavares, W., 2021. A Six-Step Model for Developing Competency Frameworks in the Healthcare Professions. *Frontiers in Medicine*, 8, pp.1–9. https://doi.org/10.3389/fmed.2021.789828.

Becker, L.T. and Gould, E.M., 2019. Microsoft Power BI: Extending Excel to Manipulate, Analyse, and Visualise Diverse Data. *Serials Review*, 45(3), pp.184–188. https://doi.org/10.1080/00987913.2019.1644891.

Bell, K., 2021. *South Africa - Information Technology*. [online] International Trade Administration. Available at: <https://www.trade.gov/knowledge-product/south-africa-information-technology> [Accessed 11 April 2023].

Bensberg, F., Buscher, G. and Czarnecki, C., 2019. Digital Transformation and IT Topics in the Consulting Industry: A Labor Market Perspective. In: *Advances in Consulting Research: Recent Findings and Practical Cases*. Springer Nature Switzerland AG. pp.341–357. https://doi.org/https://doi.org/10.1007/978-3-319-95999-3.

Bentley, D., 2017. *Business Intelligence and Analytics*. New York: Library Press.

Bhandari, P., 2021. *An Introduction to Quantitative Research*. [online] Scribbr. Available at: <https://www.scribbr.com/methodology/quantitative-research/> [Accessed 12 April 2023].

Bhandari, P., 2023. *Observer Bias | Definition, Examples, Prevention*. [online] Scribbr. Available at: <https://www.scribbr.com/research-bias/observer-bias/> [Accessed 6 April 2023].

Bharadiya, J. and Bharadiya, J.P., 2023. Machine Learning and AI in Business Intelligence: Trends and Opportunities. *International Journal of Computer (IJC) International Journal of Computer*, [online] 48(1), pp.123–134. Available at: <https://www.researchgate.net/publication/371902170>.

Bharadiya, J.P., 2023. A Comparative Study of Business Intelligence and Artificial Intelligence with Big Data Analytics. *American Journal of Artificial Intelligence*, 7(1), pp.24–30. https://doi.org/10.11648/j.ajai.20230701.14.

Biech, E., 2019. *The New Consultant's Quick Start Guide*. New Jersey: John Wiley & Sons, Inc.

Biggs, D.M., 2017. I Want a Job as a Consultant: Skills and Behaviours Needed to Work as a Consultant Occupational Psychologist. *OP Matters*, 34, pp.20–22.

Block, P., 2011. *Flawless Consulting: A Guide to Getting Your Expertise Used* . 3rd ed. San Francisco: Pfeiffer.

Bode, M., Deneva, M. and Van Sinderen, M.J., 2021. Requirements for Digital IT Consulting Services and their Provision through Digital Consulting Platforms - Results from a focus group study. In: *IEEE 23rd Conference on Business Informatics*. Institute of Electrical and Electronics Engineers Inc. pp.111–120. https://doi.org/10.1109/CBI52690.2021.00022.

Bonesso, S., Bruni, E. and Gerli, F., 2020. *Behavioral Competencies of Digital Professionals Understanding the Role of Emotional Intelligence*. Cham: Palgrave Macmillan. https://doi.org/https://doi.org/10.1007/978-3-030-33578-6.

Borgsø, J.A. and Svensson, M., 2021. *Business Intelligence: Competencies and Cross-Functional Integration-A Case Study at ASSA ABLOY*. Uppsala University.

Boyatzis, R.E., 2016. Commentary on Ackley (2016): Updates on the ESCI as the behavioral level of emotional intelligence. *Consulting Psychology Journal: Practice and Research*, 68(4), pp.287–293. https://doi.org/10.1037/cpb0000074.

Božič, K. and Dimovski, V., 2019. Business Intelligence and Analytics for Value Creation: The Role of Absorptive Capacity. *International Journal of Information Management*, 46, pp.93–103. https://doi.org/10.1016/j.ijinfomgt.2018.11.020.

Bradshaw, C., Atkinson, S. and Doody, O., 2017. Employing a Qualitative Description Approach in Health Care Research. *Global Qualitative Nursing Research*, 4, pp.1–8. https://doi.org/10.1177/2333393617742282.

Bruhn, M., Karlan, D. and Schoar, A., 2018. The Impact of Consulting Services on Small and Medium Enterprises: Evidence from a Randomized Trial in Mexico. *Journal of Political Economy*, 126(2), pp.635–687.

Bruijl, G.H.Th., 2018. *The Relevance of Porter's Five Forces in Today's Innovative and Changing Business Environment*. Nelson.

Bryman, A. and Bell, E., 2015. *Business Research Methods.* Glasgow: Bell and Bain Ltd.

Calzon, B., 2021. *Your Modern Business Guide to Data Analysis Methods and Techniques*. [online] Datapine. Available at: <https://www.datapine.com/blog/data-analysis-methods-and-techniques/> [Accessed 12 April 2023].

Calzon, B., 2023. *A Guide to the Methods, Benefits & Problems of the Interpretation of Data*. [online] Datapine. Available at: <https://www.datapine.com/blog/data-interpretation-methods-benefits-problems/> [Accessed 17 October 2023].

Carlisle, S., 2018. Software: Tableau and Microsoft Power BI. *Technology Architecture and Design*, 2(2), pp.256–259. https://doi.org/10.1080/24751448.2018.1497381.

Cerruti, C., Tavoletti, E. and Grieco, C., 2019. Management Consulting: A Review of Fifty Years of Scholarly Research. *Management Research Review*, 42(8), pp.902–925. https://doi.org/10.1108/MRR-03-2018-0100.

Chahal, H., Jyoti, J. and Wirtz, J., 2019. Business Analytics: Concept and Applications. In: *Understanding the Role of Business Analytics*. Singapore: Springer Singapore. pp.1–8. https://doi.org/10.1007/978-981-13-1334-9_1.

Chen, H., Chiang, R.H.L., Storey, V.C., Lindner, C.H. and Robinson, J.M., 2012. Business Intelligence and Analytics: From Big Data to Big Impact Quarterly-Business Intelligence and Analytics: From Big Data to Big Impact. *MIS Quarterly*, 36(4), pp.1165–1188.

Chen, Y. and Lin, Z., 2021. Business Intelligence Capabilities and Firm Performance: A Study in China. *International Journal of Information Management*, 57, pp.1–15. https://doi.org/10.1016/j.ijinfomgt.2020.102232.

Chetty, P., 2016. *Importance of Research Approach in a Research*. [online] Projectguru. Available at: <https://www.projectguru.in/selecting-research-approach-business-studies/> [Accessed 12 April 2023].

Chia, A., 2019. Distilling the Essence of the McKinsey Way: The Problem-Solving Cycle. *Management Teaching Review*, 4(4), pp.355–370. https://doi.org/10.1177/2379298118779325.

Chmielewska, M., Stokwiszewski, J., Markowska, J. and Hermanowski, T., 2022. Evaluating Organisational Performance of Public Hospitals using the McKinsey 7-S Framework. *BMC Health Services Research*, 22(1), pp.1–12. https://doi.org/10.1186/s12913-021-07402-3.

Choi, S., Insu, C., Seung, H.H., Kwak, Y.H. and Chih, Y.-Y., 2018. Dynamic Capabilities of Project-Based Organisation in Global Operations. *American Society of Civil Engineers*, 34(5), pp.1–12. https://doi.org/10.1061/(ASCE)ME.1943.

Cope, M., 2003. *The Seven Cs of Consulting*. 2nd ed. Edinburgh: Prentice Hall, Financial Times.

Côrte-Real, N., Ruivo, P. and Oliveira, T., 2014. The Diffusion Stages of Business Intelligence & Analytics (BI&A): A Systematic Mapping Study. *Procedia Technology*, 16, pp.172–179. https://doi.org/10.1016/j.protcy.2014.10.080.

Cosic, R., Shanks, G. and Maynard, S., 2015. A Business Analytics Capability Framework. *Australasian Journal of Information Systems Cosic*, 19, pp.5–19.

Crossley, J. and Jansen, D., 2021. *Saunders' Research Onion: Explained Simply (+ Examples)*. [online] Gradcoach. Available at: <https://gradcoach.com/saunders-research-onion/> [Accessed 12 April 2023].

Davison, M.L., 2009. *Challenges - Managing External and Internal Consultants*. [online] Project Management Institute. Available at: <https://www.pmi.org/learning/library/challenges-managing-external-internal-consultants-6670> [Accessed 12 April 2023].

Debortoli, S., Müller, O. and Vom Brocke, J., 2014. Comparing Business Intelligence and Big Data Skills: A Text Mining Study Using Job Advertisements. *Business and Information Systems Engineering*, 6(5), pp.289–300. https://doi.org/10.1007/s12599-014-0344-2.

Deelmann, T., 2019. Consulting: Characterisation of Concepts and Connections. In: *Advances in Consulting Research: Recent Findings and Practical Cases*. Springer Nature Switzerland AG. pp.31–52. https://doi.org/https://doi.org/10.1007/978-3-319-95999-3.

Dehghan, A., Mehrabi, A. and Fotouhi, N., 2013. The Necessity of Sstablishing Business Intelligence Competency Centers for Achievement of BI Projects. In: *2013 5th*

Conference on Information and Knowledge Technology. pp.242–247. https://doi.org/10.1109/IKT.2013.6620072.

De Jager, T. and Brown, I., 2016. A Descriptive Categorised Typology of Requisite Skills for Business Intelligence Professionals. In: *ACM International Conference Proceeding Series*. Association for Computing Machinery. pp.1–10. https://doi.org/10.1145/2987491.2987521.

Deng, X., Li, Y. and Galliers, R.D., 2016. Business Analytics Education: A Latent Semantic Analysis of Skills, Knowledge and Abilities Required for Business versus Non-Business Graduates. In: *Thirty Seventh International Conference on Information Systems*. pp.1–14.

Divatia, A.S., Tikoria, J. and Lakdawala, S., 2021. Emerging Trends and Impact of Business Intelligence & Analytics in Organisations: Case Studies from India. *Business Information Review*, 38(1), pp.40–52. https://doi.org/10.1177/0266382120969265.

Dworkin, S.L., 2012. Sample Size Policy for Qualitative Studies Using In-depth Interviews. *Archives of Sexual Behavior*, 41(6), pp.1319–1320. https://doi.org/10.1007/s10508-012-0016-6.

Edge, D., Larson, J. and White, C., 2018. Bringing AI to BI: Enabling Visual Analytics of Unstructured Data in a Modern Business Intelligence Platform. In: *Conference on Human Factors in Computing Systems - Proceedings*. Montreal: Association for Computing Machinery. pp.1–9. https://doi.org/10.1145/3170427.3174367.

Eggert, M. and Alberts, J., 2020. Frontiers of Business Intelligence and Analytics 3.0: A Taxonomy-based Literature Review and Research Agenda. *Business Research*, 13(2), pp.685–739. https://doi.org/10.1007/s40685-020-00108-y.

Eidizadeh, R., Salehzadeh, R. and Esfahani, A.C., 2017. Analysing the Role of Business Intelligence, Knowledge Sharing and Organisational Innovation on Gaining Competitive Advantage. *Journal of Workplace Learning*, 29(4), pp.250–267. https://doi.org/10.1108/JWL-07-2016-0070.

Elkjaer, B. and Simpson, B., 2011. Pragmatism: A Lived and Living Philosophy. What can it Offer to Contemporary Organisation Theory? In: *Philosophy and Organisation Theory (Research in the Sociology of Organisations)*. Bingley: Emerald Group Publishing Limited. pp.55–84.

Elo, S. and Kyngäs, H., 2008. The Qualitative Content Analysis Process. *Journal of Advanced Nursing*, 62(1), pp.107–115. https://doi.org/10.1111/j.1365-2648.2007.04569.x.

Erlingsson, C. and Brysiewicz, P., 2017. A Hands-on Guide to Doing Content Analysis. *African Journal of Emergency Medicine*, 7(3), pp.93–99. https://doi.org/10.1016/j.afjem.2017.08.001.

Flick, U., 2015. *Introducing Research Methodology: A Beginner's Guide to Doing a research Project*. London: Sage.

Fombellida, J., Martín-Rubio, I., Torres-Alegre, S. and Andina, D., 2018. Tackling Business Intelligence with Bioinspired Deep Learning. *Neural Computing and Applications*, 32(17), pp.13195–13202. https://doi.org/10.1007/s00521-018-3377-5.

Foshay, N., Yeoh, W., Boo, Y.-L., Ong, K.-L. and Mattie, D., 2015. Framework for Analysing Effectiveness A Comprehensive Diagnostic Framework for Evaluating Business Intelligence and Analytics Effectiveness. *Australasian Journal of Information Systems*, 19, pp.37–54.

Fotache, M., 2016. Data Processing Languages for Business Intelligence. SQL vs. R. *Informatica Economica*, 20(1), pp.48–61. https://doi.org/10.12948/issn14531305/20.1.2016.05.

Freedman, R., 2016. *The Agile Consultant*. *The Agile Consultant*. Apress. https://doi.org/10.1007/978-1-4302-6053-0.

George, T., 2022. *Types of Interviews in Research | Guide & Examples*. [online] Scribbr. Available at: <https://www.scribbr.com/methodology/interviews-research/> [Accessed 1 March 2023].

Ghazanfari, M., Rouhani, S. and Jafari, M., 2014. A Fuzzy TOPSIS Model to Evaluate the Business Intelligence Competencies of Port Community Systems. *Polish Maritime Research*, 21(2), pp.86–96. https://doi.org/10.2478/pomr-2014-0023.

Ghosh, P., 2017. *Why Data Governance is Important for Business Intelligence Success*. [online] Domo. Available at: <https://www.domo.com/learn/article/why-data-governance-is-critical-for-bi-success#:~:text=It%20helps%20to%20ensure%20that,most%20of%20their%20data%20assets.> [Accessed 17 October 2023].

Gina, B.P., 2020. *Factors That Drive the Selection of Business Intelligence Tools in South African Financial Services Providers*. Masters. University of Cape Town.

Gino, F., 2018. The Business Case for Curiosity. *Harvard Business Review*, [online] pp.1–18. Available at: <https://hbr.org/2018/09/the-business-case-for-curiosity> [Accessed 17 October 2023].

Goddard, W. and Melville, S., 2004. *Research Methodology: An Introduction*. 2nd ed. Oxford: Blackwell Publishing.

Gottschall, E., 2020. *Business Intelligence: Critical Success Factors Analysis of Moderating Factors*. Universiteit Gent.

Grieger, R., 2007. One Rebters Model for Business Consulting. *Journal of Rational - Emotive and Cognitive - Behavior Therapy*, 25(2), pp.107–120. https://doi.org/10.1007/s10942-006-0036-z.

Gurcan, F. and Sevik, S., 2020. Business Intelligence and Analytics: An Understanding of the Industry Needs for Domain-Specific Competencies. In: *1st International Informatics and Software Engineering Conference: Innovative Technologies for Digital Transformation, IISEC 2019*. Institute of Electrical and Electronics Engineers Inc. https://doi.org/10.1109/UBMYK48245.2019.8965457.

Halstein, J., 2021. *Skilled Labour Emigration in South Africa Exploring the long-term Implications*. Helsinki.

Herodotou, H., 2017. Business Intelligence and Analytics: Big Systems for Big Data. In: *Analytics, Innovation, and Excellence-Driven Enterprise Sustainability*. Palgrave Macmillan US. pp.7–49. https://doi.org/10.1057/978-1-137-37879-8_2.

Hislop, D., 2002. The Client Role in Consultancy Relations During the Appropriation of Technological Innovations. *Research Policy*, 31(5), pp.657–671. https://doi.org/10.1016/S0048-7333(01)00135-4.

Holdford, D.A., 2018. Resource-based Theory of Competitive Advantage – A Framework for Pharmacy Practice Innovation Research. *Pharmacy Practice*, 16(3), pp.1–11. https://doi.org/10.18549/PharmPract.2018.03.1351.

Holmes, A.G.D., 2020. Researcher Positionality - A Consideration of Its Influence and Place in Qualitative Research - A New Researcher Guide. *Shanlax International Journal of Education*, 8(4), pp.1–10. https://doi.org/10.34293/education.v8i4.3232.

International Council of Management Consulting, 2018. *Competency Framework for Certified Management Consultants*. Toronto.

Janiesch, C., Dinter, B., Mikalef, P. and Tona, O., 2022. Business Analytics and Big Data Research in Information Systems. *Journal of Business Analytics*, 5(1), pp.1–7. https://doi.org/10.1080/2573234X.2022.2069426.

Jena, B., 2019. An Approach for Forecast Prediction in Data Analytics Field by Tableau Software. *International Journal of Information Engineering and Electronic Business*, 11(1), pp.19–26. https://doi.org/10.5815/ijieeb.2019.01.03.

Johnson, M., Jain, R., Brennan-Tonetta, P., Swartz, E., Silver, D., Paolini, J., Mamonov, S. and Hill, C., 2021. Impact of Big Data and Artificial Intelligence on Industry: Developing a Workforce Roadmap for a Data Driven Economy. *Global Journal of Flexible Systems Management*, 22(3), pp.197–217. https://doi.org/10.1007/s40171-021-00272-y.

Johnson, M.E., Albizri, A. and Jain, R., 2020. Exploratory Analysis to Identify Concepts, Skills, Knowledge, and Tools to Educate Business Analytics Practitioners. *Decision Sciences Journal of Innovative Education*, 18(1), pp.90–118. https://doi.org/10.1111/dsji.12195.

Kader, M.A. and Hossain, H., 2020. AN Analysis on BCG Growth Share Matrix. *Business and Accounting Research (IJEBAR) Peer Reviewed-International Journal*, [online] pp.1–8. Available at: <https://jurnal.stie-aas.ac.id/index.php/IJEBAR>.

Kakhki, M.D. and Palvia, P., 2016. Effect of Business Intelligence and Analytics on Business Performance. In: *Twenty-second Americas Conference on Information Systems*. pp.1–10.

Kalaimani, J., 2015. *SAP Project Management Pitfalls*. California: Apress.

Kansal, J. and Singhal, S., 2018. Development of a Competency Model for Enhancing the Organisational Effectiveness in a Knowledge-based Organisation. *International Journal of Indian Culture and Business Management*, 16(3), pp.287–301. https://doi.org/10.1504/ijicbm.2018.090909.

Kašparová, P., 2023. Intention to Use Business Intelligence Tools in Decision Making Processes: Applying a UTAUT 2 Model. *Central European Journal of Operations Research*, 31(3), pp.991–1008. https://doi.org/10.1007/s10100-022-00827-z.

Kilani, M. Al and Kobziev, V., 2016. An Overview of Research Methodology in Information System (IS). *Open Access Library Journal*, 3(11), pp.1–9. https://doi.org/10.4236/oalib.1103126.

Kim, H., Sefcik, J.S. and Bradway, C., 2017. Characteristics of Qualitative Descriptive Studies: A Systematic Review. *Research in Nursing and Health*, 40(1), pp.23–42. https://doi.org/10.1002/nur.21768.

Krüger, N. and Teuteberg, F., 2016. IT Consultants as Change Agents in Digital Transformation Initiatives. In: *Multikonferenz Wirtschaftsinformatik*. Technische Universität Ilmenau. pp.1019–1030.

Laffitte, H., 2023. Internal vs External Consultants: The Definitive Guide (2023). *Consulting Quest*, [online] Available at: https://consultingquest.com/insights/internal-vs-external-consultants/ [Accessed 25 April 2024].

Larsson, A., Andersson, N., Markowski, P., Nilsson, M. and Mayor, I., 2019. Consulting in the digital era? The role of tomorrow's management consultants. In: *The Digital Transformation of Labor: Automation, the Gig Economy and Welfare*. Taylor and Francis. pp.254–279. https://doi.org/10.4324/9780429317866-15.

Lathesh, R.K. and Avadhani, V.D., 2018. A Study on Social Intelligence and its Impact on Employee Performance of Insurance Sectors in Mysuru City. *International Journal of Mechanical Engineering and Technology (IJMET*, [online] 9(1), pp.530–537. Available at: https://iaeme.com/MasterAdmin/Journal_uploads/IJMET/VOLUME_9_ISSUE_1/IJMET_09_01_057.pdf.

Lautenbach, P., Johnston, K. and Adeniran-Ogundipe, T., 2017. Factors Influencing Business Intelligence and Analytics Usage Extent in South African Organisations. *South African Journal of Business Management*, 48(3), pp.23–33.

Leto, A.B. and Roberts, D.D., 1998. Building an IS Consulting Business. *Information Systems Management*, 15(3), pp.73–77. https://doi.org/10.1201/1078/43185.15.3.19980601/31139.12.

Lievens, F. and Chan, D., 2017. Practical Intelligence, Emotional Intelligence, and Social Intelligence. In: *Handbook of Employee Selection*. [online] New York: Routledge. pp.342–364. Available at: <https://ink.library.smu.edu.sg/soss_research>.

Llave, M.R., 2017. Business Intelligence and Analytics in Small and Medium-sized Enterprises: A Systematic Literature Review. In: *Procedia Computer Science*. Elsevier B.V. pp.194–205. https://doi.org/10.1016/j.procs.2017.11.027.

Loeb, S., Dynarski, S., Mcfarland, D., Morris, P., Reardon, S. and Reber, S., 2017. *Descriptive Analysis in Education: A Guide for Researchers*. [online] Available at: <http://ies.ed.gov/ncee/.>.

Mabaso, C.M., Maja, M.T., Kavir, M., Lekwape, L., Makhasane, S.S. and Khumalo, M.T., 2021. Talent Retention Strategies: An Exploratory Study within the Consulting Industry in Gauteng Province, South Africa. *Acta Commercii - Independent Research Journal in the Management Sciences*, 21(1). https://doi.org/10.4102/ac.v21i1.885.

Mandelbaum, A., 2019. *The Basic Principles of Ethical Communication*. [online] Paradox Marketing. Available at: <https://paradoxmarketing.io/capabilities/knowledge-management/insights/ethical-communication-the-basic-principles/> [Accessed 11 April 2023].

Mangwayana, T.B., 2017. *Technical Capabilities of Business Intelligence Systems in South African Medium to Large Organisations*. Masters. University of the Western Cape.

Mann, P., 2019. *The Importance of Project Management*. [online] Expert360. Available at: <https://expert360.com/articles/importance-project-management#:~:text=Project%20management%20strategies%20have%20grown,an%20important%20tool%20within%20organisations.> [Accessed 7 February 2023].

Matt, D.T., Pedrini, G., Bonfanti, A. and Orzes, G., 2022. Industrial Digitalisation. A Systematic Literature Review and Research Agenda. *European Management Journal*, pp.1–32. https://doi.org/10.1016/j.emj.2022.01.001.

Mauerer, C., 2019. The Development of Interpersonal Trust Between the Consultant and Client in the Course of the Consulting Process. In: *Advances in Consulting Research: Recent Findings and Practical Cases*. Springer Nature Switzerland AG. pp.273–298. https://doi.org/https://doi.org/10.1007/978-3-319-95999-3.

De Mauro, A., Greco, M. and Grimaldi, M., 2016. A Formal Definition of Big Data Based on its Essential Features. *Library Review*, 65(3), pp.122–135. https://doi.org/10.1108/LR-06-2015-0061.

May, T., 2011. *Social Research: Issues, Methods and Research*. New York: McGraw-Hill Education.

Mihailović, B., Radosavljević, K. and Popović, V., 2021. Business Consulting as a Factor of Knowledge Improvement in Human Resources Management. *Knowledge - International Journal*, 47(1), pp.31–36. https://doi.org/10.35120/kij4701031m.

Mikalef, P., Pappas, I.O., Krogstie, J. and Giannakos, M., 2018. Big Data Analytics Capabilities: A Systematic Literature Review and Research Agenda. *Information Systems and e-Business Management*, 16(3), pp.547–578. https://doi.org/10.1007/s10257-017-0362-y.

Miller, G.J., 2019. The Influence of Big Data Competencies, Team Structures, and Data Scientists on Project Success. In: *Technology & Engineering Management Society Conference*. pp.1–8.

Mishra, B.K., Hazra, D., Tarannum, K. and Kumar, M., 2017. Business Intelligence Using Data Mining Techniques and Business Analytics. In: *5th International Conference on System Modelling and Advancement in Research Trends, SMART 2016*. Institute of Electrical and Electronics Engineers Inc. pp.84–89. https://doi.org/10.1109/SYSMART.2016.7894496.

Mitri, M. and Palocsay, S., 2015. Toward a Model Undergraduate Curriculum for the Emerging Business Intelligence and Analytics Discipline. *Communications of the Association for Information Systems*, 37(1), pp.651–669. https://doi.org/10.17705/1cais.03731.

Mofokeng, M.J., Nzama, L.L. and Mamaile, L.J., 2020. Risks Caused by Disrupted Forces in Gauteng Information Technology Consulting Firms. In: *The 5th Annual International Conference on Public Administration and Development Alternatives*. [online] pp.221–230. Available at: <https://www.researchgate.net/publication/362508442>.

Mohajan, H.K., 2017. Munich Personal RePEc Archive An Analysis on BCG Growth Sharing Matrix An Analysis on BCG Growth Sharing Matrix. *Noble International Journal of Business and Management Research*, 2(1), pp.1–6.

Moreno, V., Cavazotte, F. and de Souza Carvalho, W., 2020. Business Intelligence and Analytics as a Driver of Dynamic and Operational Capabilities in Times of Intense Macroeconomic Turbulence. *Journal of High Technology Management Research*, 31(2). https://doi.org/10.1016/j.hitech.2020.100389.

Mudzana, T., 2016. *Business Intelligence Information Systems Success: A South African Study*. PhD. University of Kwazulu-Natal.

Mukerjee, H.S., Acharya, S., Stl, V. and Ghosh, V., 2022. Business-techno [IT] Consultants: A Critical Assessment of the Digital Future Talent and Learning Needs. *Human Resource Development International*, pp.1–10. https://doi.org/10.1080/13678868.2022.2050132.

Naidoo, T., 2022. *IT Business Consulting: A South African Perspective*.

Nam, D., Lee, J. and Lee, H., 2019. Business Analytics Adoption Process: An Innovation Diffusion Perspective. *International Journal of Information Management*, 49, pp.411–423. https://doi.org/10.1016/j.ijinfomgt.2019.07.017.

Narang, M., 2023. *Top 11 Programming Languages for Data Science*. [online] Knowledge Hut. Available at: <https://www.knowledgehut.com/blog/data-science/programming-languages-for-data-science> [Accessed 17 October 2023].

Nerkar, A.D., 2016. Business Analytics (BA): Core of Business Intelligence (BI). *International Journal of Advanced Engineering, Management and Science (IJAEMS)*, 2(12).

Nguyen, Q.V.H., Zheng, K., Weidlich, M., Zheng, B., Yin, H., Nguyen, T.T. and Stantic, B., 2018. What-If Analysis with Conflicting Goals: Recommending Data Ranges for Exploration. In: *Proceedings - IEEE 34th International Conference on Data Engineering, ICDE 2018*. Institute of Electrical and Electronics Engineers Inc. pp.89–100. https://doi.org/10.1109/ICDE.2018.00018.

Nissen, V., 2019. *Advances in Consulting Research: Recent Findings and Practical Cases*. *Advances in Consulting Research*. Cham: Springer Nature Switzerland AG. https://doi.org/https://doi.org/10.1007/978-3-319-95999-3.

Nissen, V., Füßl, A., Werth, D., Gugler, K. and Neu, C., 2019. On the Current State of Digital Transformation in the German Market for Business Consulting. In: *Advances in Consulting Research, Contributions to Management Science*. Springer. pp.317–339. https://doi.org/10.1007/978-3-319-95999-3_15.

Nissen, V., Seifert, H. and Ackert, M.-N., 2018. A Process Model for the Virtualisation of Consulting Services. In: *Digital Transformation of the Consulting Industry*. Cham: Springer International Publishing AG. pp.207–242.

Njenga, K., Scholtz, B., Van Belle, J.P.W. and Serenko, A., 2020. Top IT Issues for Employers of South African Graduates. In: *ICT Education, SACLA*. Springer Nature Switzerland. pp.108–123. https://doi.org/10.1142/9789811208645_0031.

Olszak, C.M., 2015. Business Intelligence and Analytics in Organisations. In: *Advances in ICT for Business, Industry and Public Sector, Studies in Computational Intelligence*. Springer International Publishing Switzerland. pp.89–109. https://doi.org/10.1007/978-3-319-11328-9_6.

Pappas, I.O., Mikalef, P., Giannakos, M.N., Krogstie, J. and Lekakos, G., 2018. Big Data and Business Analytics Ecosystems: Paving the Way Towards Digital Transformation and

Sustainable Societies. *Information Systems and e-Business Management*, 16(3), pp.479–491. https://doi.org/10.1007/s10257-018-0377-z.

Persaud, A., 2020. Key Competencies for Big Data Analytics Professions: A Multimethod Study. *Information Technology and People*, 34(1), pp.178–203. https://doi.org/10.1108/ITP-06-2019-0290.

Piirto, S., 2021. *Building a Business Intelligence Capability for Small and Medium Sized Enterprises*. Masters. University of Jyväskylä.

Piumelli, F., 2019. Consulting in the Age of Digital Transformation. In: *Advances in Consulting Research: Recent Findings and Practical Cases*. Springer Nature Switzerland AG. pp.359–370. https://doi.org/https://doi.org/10.1007/978-3-319-95999-3.

Poonnawat, W., Pacharawongsakda, E. and Henchareonlert, N., 2019. Jobs Analysis for Business Intelligence Skills Requirements in the ASEAN Region: A Text Mining Study. *Advances in Intelligent Systems and Computing*, pp.187–195. https://doi.org/10.1007/978-3-319-94703-7_17.

Porter, M.E., 1985. *Competitive Advantage: Creating and Sustaining Superior Performance*. New York: Free Press.

Puang-Ngern, B., Bilgin, A.A. and Kyng, T.J., 2019. Comparison of Graduates' and Academics' Perceptions of the Skills Required for Big Data Analysis. In: *Web Services*. IGI Global. pp.1166–1188. https://doi.org/10.4018/978-1-5225-7501-6.ch061.

Qaffas, A.A., Ilmudeen, A., Almazmomi, N.K. and Alharbi, I.M., 2022. The Impact of Big Data Analytics Talent Capability on Business Intelligence Infrastructure to Achieve Firm Performance. *Foresight*. https://doi.org/10.1108/FS-01-2021-0002.

Raghupathi, W. and Raghupathi, V., 2021. Contemporary Business Analytics: An Overview. *Data*, 6(8), pp.1–11. https://doi.org/10.3390/data6080086.

Rajaraman, V., 2016. Big Data Analytics. *Resonance*, pp.695–716.

Redmond, E., 2013. Competency Models at Work: The Value of Perceived Relevance and Fair Rewards for Employee Outcomes. *Human Resource Management*, 52(5), pp.771–792. https://doi.org/10.1002/hrm.21560.

Rikhardsson, P. and Yigitbasioglu, O., 2018. Business intelligence & Analytics in Management Accounting Research: Status and Future Focus. *International Journal of Accounting Information Systems*, 29, pp.37–58. https://doi.org/10.1016/j.accinf.2018.03.001.

Rome, E., Doll, T., Rilling, S., Sojeva, B., Voß, N. and Xie Jingquan, 2016. State of the Art: Critical Review of Literature on What-If Analysis and Federated Modelling and Simulation. In: *Managing the Complexity of Critical Infrastructures: A Modelling and*

Simulation Approach. [online] Rome: Springer International Publishing. pp.233–278. Available at: <http://www.springer.com/series/13304>.

Roudsari, R.L., 2019. Qualitative Description: A Less Sophisticated Approach for Junior Qualitative Researchers. *Journal of Midwifery and Reproductive Health*, 7(4), pp.1856–1857. https://doi.org/10.22038/jmrh.2019.13927.

Sadiku, M.N.O., Alam, S. and Musa, S.M., 2019. Social Intelligence: A Primer. *International Journal of Research - Granthalayah*, 7(9), pp.213–217. https://doi.org/10.29121/granthaalayah.v7.i9.2019.603.

Samsudin, Z. binti and Ismail, M.D., 2019. The Concept of Theory of Dynamic Capabilities in Changing Environment. *International Journal of Academic Research in Business and Social Sciences*, 9(6), pp.1072–1078. https://doi.org/10.6007/ijarbss/v9-i6/6068.

Saporito, P., 2013. *Business Intelligence Competency Center, the Glue that Hold Business and Technology Together*. [online] SAP. Available at: <https://blogs.sap.com/2013/07/12/business-intelligence-competency-center-the-glue-that-hold-business-and-technology-together/> [Accessed 17 April 2022].

Saunders, M., Lewis, P. and Thornhill, A., 2016. *Research Methods for Business Students*. 7th ed. Essex: Pearson Education Limited.

Vander Schee, B.A., Andrews, D. and Stovall, T., 2022. Senior Business Consultant Project: Giving Advice while Gaining Other Awareness and Career Competency. *Journal of Education for Business*, pp.1–7. https://doi.org/10.1080/08832323.2022.2046535.

Sharda, R., Asamoah, D.A. and Ponna, N., 2013. Business Analytics: Research and Teaching Perspectives. In: *International Conference on Information Technology Interfaces, ITI*. pp.19–27. https://doi.org/10.2498/iti.2013.0589.

Sharma, R., 2022. *Top 6 Major Challenges of Big Data & Simple Solutions To Solve Them*. [online] Available at: <https://www.upgrad.com/blog/major-challenges-of-big-data/>.

Sileyew, K.J., 2019. *Research Design and Methodology*. [online] Available at: <https://www.intechopen.com/books/cyberspace/research-design-and-methodology> [Accessed 12 April 2023].

Silva, A., 2016. What is Leadership? *Journal of Business Studies Quarterly*, 8(1), pp.1–6.

Silva, A.J., Cortez, P., Pereira, C. and Pilastri, A., 2021. Business analytics in Industry 4.0: A systematic review. *Expert Systems*, 38(7), pp.1–26. https://doi.org/10.1111/exsy.12741.

Silverman, D., 2013. *Doing Qualitative Research: A Practical Handbook*. London: Sage.

Souibgui, M., Atigui, F., Yahia, S. Ben and Si-Said Cherfi, S., 2020. Business Intelligence and Analytics: On-demand ETL over Document Stores. In: *Business Information Processing*. Springer Nature Switzerland AG. pp.556–561. https://doi.org/10.1007/978-3-030-50316-1_38.

Steininger, D. M., Mikalef, P., Pateli, A., & Ortiz-De-guinea, A. (2022). Dynamic Capabilities in Information Systems Research: A Critical Review, Synthesis of Current Knowledge, and Recommendations for Future Research. *Journal of the Association for Information Systems*, *23*(2), 447–490. https://doi.org/10.17705/1jais.00736

Stewart, R., 2022. *Skills & Training: Key Consultancy Skills*. [online] Inside Careers. Available at: <https://www.insidecareers.co.uk/career-advice/key-consultancy-skills/> [Accessed 27 June 2022].

Steyn, J. and Van Belle Jean-Paul, 2015. Beyond Development. Time for a New ICT4D Paradigm. In: *Proceedings of the 9th IDIA Conference*. IDIA2015. pp.451–462.

Taşkın, N., Verville, J. and Yu, M., 2022. An Empirical Study on Strategic Alignment of Enterprise Systems. *Acta Infologica*, 6(1), pp.1–18. https://doi.org/10.26650/acin.1079619.

Tavoletti, E., Kazemargi, N., Cerruti, C., Grieco, C. and Appolloni, A., 2021. Business model innovation and digital transformation in global management consulting firms. *European Journal of Innovation Management*, 25(6), pp.612–636. https://doi.org/10.1108/EJIM-11-2020-0443.

Teece, D.J., Pisano, G. and Shuen, A., 1997. Dynamic Capabilities and Strategic Management. *Strategic Management Journal*, 18(7), pp.509–533.

Teimori, M., 2019. *A Set of Skills that Make the Successful Consultant: A Qualitative Study*. Masters. Dalarna University.

Teimouri, H., Khoury, S., Hoojaghan, F.A. and Jenab, K., 2016. The Effect of Managers' Business Intelligence on Attracting Foreign Tourists Case Study. *International Journal of Organisational and Collective Intelligence*, 6(2), pp.1–11. https://doi.org/10.4018/IJOCI.2016040101.

Ternikov, A., 2022. Soft and Hard Skills Identification: Insights from IT Job Advertisements in the CIS Region. *PeerJ Computer Science*, 8, pp.1–24. https://doi.org/10.7717/PEERJ-CS.946.

Thomas, R., 2022. *7 Consulting Skills and Competencies Needed to Succeed in 2022*. [online] Meverick. Available at: <https://www.predictiveindex.com/blog/consulting-skills-competencies/> [Accessed 15 October 2022].

Torres, R., Sidorova, A. and Jones, M.C., 2018. Enabling Firm Performance Through Business Intelligence and Analytics: A Dynamic Capabilities Perspective. *Information and Management*, 55(7), pp.822–839. https://doi.org/10.1016/j.im.2018.03.010.

Turner, A.N., 1982. Consulting is More Than Giving Advice. *Harvard Business Review*, pp.120–129.

Vaismoradi, M., Turunen, H. and Bondas, T., 2013. Content Analysis and Thematic Analysis: Implications for Conducting a Qualitative Descriptive Study. *Nursing and Health Sciences*, 15(3), pp.398–405. https://doi.org/10.1111/nhs.12048.

Vasileiou, K., Barnett, J., Thorpe, S. and Young, T., 2018. Characterising and Justifying Sample Size Sufficiency in Interview-based Studies: Systematic Analysis of Qualitative Health Research over a 15-year Period. *BMC Medical Research Methodology*, 18(148), pp.1–18. https://doi.org/10.1186/s12874-018-0594-7.

Vider, G.N., 2020. *The Rise of Virtual Consulting*. [online] Apadua. Available at: <https://apadua.com/the-rise-of-virtual-consulting/1/8>.

Vidgen, R., Shaw, S. and Grant, D.B., 2017. Management Challenges in Creating Value from Business Analytics. *European Journal of Operational Research*, 261(2), pp.626–639. https://doi.org/10.1016/j.ejor.2017.02.023.

Villegas, F., 2023. *Descriptive Analysis: What It Is + Best Research Tips*. [online] Available at: <https://www.questionpro.com/blog/descriptive-analysis/> [Accessed 6 June 2023].

Vukotić, S., Anicic, J. and Vukotic, R., 2017. The Importance of Consulting in Contemporary Business Management. *Journal of Process Management - New Technologies, International*, 5(3), pp.69–78. https://doi.org/10.5937/jouproman5-14307.

Walsham, G., 2006. Doing Interpretive Research. *European Journal of Information Systems*, 15(3), pp.320–330. https://doi.org/10.1057/palgrave.ejis.3000589.

Wee, M., Scheepers, H. and Tian, X., 2023. The Role of Leadership Skills in the Adoption of Business Intelligence and Analytics by SMEs. *Information Technology and People*, 36(4), pp.1439–1458. https://doi.org/10.1108/ITP-09-2021-0669.

Werth, D. and Greff, T., 2018. Scalability in Consulting: Insights into the Scaling Capabilities of Business Models by Digital Technologies in Consulting Industry. In: *Digital Transformation of the Consulting Industry*. Springer International Publishing AG. pp.117–135. https://doi.org/10.1007/978-3-319-70491-3_5.

Whitelock, V., 2018. Business Analytics and Firm Performance: Role of Structured Financial Statement Data. *Journal of Business Analytics*, 1(2), pp.81–92. https://doi.org/10.1080/2573234X.2018.1557020.

Wójcik, P., 2015. Exploring Links Between Dynamic Capabilities Perspective and Resource-Based View: A Literature Overview. *International Journal of Management and Economics*, 45(1), pp.83–107. https://doi.org/10.1515/ijme-2015-0017.

Zhao, Y., 2021. Transformation of Business Analytics from Business Intelligence. In: *E3S Web of Conferences*. EDP Sciences. https://doi.org/10.1051/e3sconf/202125303013.

APPENDIX A – INTERVIEW QUESTIONS

This appendix is a compilation of the interview questions that research participants were asked, which emanated from the proposed competency framework developed during this study.

1. Demographics:
    a) Age group: 18-30, 31-39, 40-49, 50-59, 60+
    b) Nationality
    c) Gender
    d) Race
    e) Education: High school, College/Technical Diploma, University undergraduate degree, University postgraduate degree, Doctoral, Other.

2. Background:
    a) What is your position/title within your organisation?
    b) Would you refer to yourself as an IT business consultant?
    c) How many years of experience do you have?
    d) Does your organisation operate within the South African IT business industry?
    e) What is your general understanding of the term "Business Intelligence and Analytics" (BI&A)?

3. Consider the following definition:
BI&A is the techniques, technologies, systems, practices, methodologies, and applications that analyse critical business data to help an enterprise better understand its business and market and make timely business decisions (Foshay et al., 2015, p.37).

    a) Based on this definition, are you or your organisation assisting your clients with adopting and/or leveraging BI&A solutions?
        i. If so, how would you describe the BI&A challenges faced by your clients?
        ii. How would you describe the BI&A competencies within your organisation?
        iii. Do you believe that there is a shortage of IT business consultants in South Africa who are well-versed in the competencies needed to tackle the challenges you mentioned?

4. Consider the following statement:
BI&A can be regarded as a dynamic capability because it provides organisations with the ability to sense and seize opportunities through developing, reconfiguring, and integrating information resources (i.e., big data) within a dynamic environment (Alsaad et al., 2022).

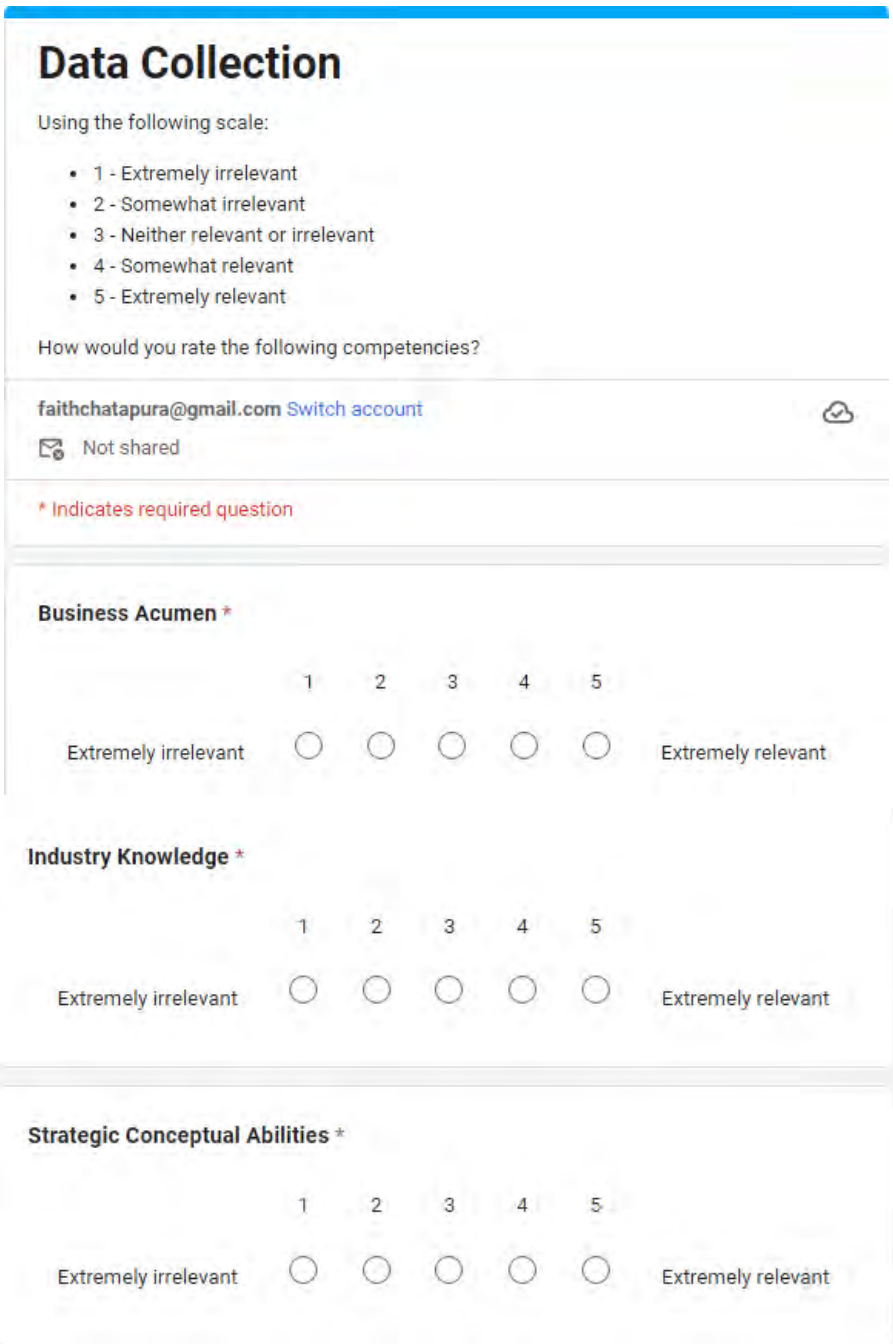
a) Would you say that the South African IT business industry is a dynamic environment?
b) Do you agree that BI&A is a dynamic capability? Please explain your answer.

5. My research study proposes a competency framework that IT business consultants can use to better understand the competencies they need to address the challenges associated with BI&A. Consider the proposed competency framework (Figure 17).

a) Do you think the proposed competency framework accurately represents the competencies an IT business consultant needs when assisting clients with BI&A challenges?
b) Are there any competencies included in the proposed competency framework that you believe are incorrect/irrelevant?
c) Are there any competencies you believe should be added to the proposed competency framework?
d) Do you think the cycle of increased learning and continuous development is valid in the framework? Please explain your answer.
e) Do you agree with the notion that the more an IT business consultant revolves around the cycle of increased learning and continuous development, the more BI&A will increase as a dynamic capability?

APPENDIX B – QUESTIONNAIRE

This appendix contains the questionnaire that was used to collect information on how the competencies in the competency framework suggested by this study might be ranked according to their relevance.



Data Collection

Using the following scale:

- 1 - Extremely irrelevant
- 2 - Somewhat irrelevant
- 3 - Neither relevant or irrelevant
- 4 - Somewhat relevant
- 5 - Extremely relevant

How would you rate the following competencies?

faithchatapura@gmail.com Switch account

Not shared

* Indicates required question

Business Acumen *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Industry Knowledge *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Strategic Conceptual Abilities *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

TECHNICAL COMPETENCIES

Consulting Frameworks *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Data Modelling Skills *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Data Warehousing *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Database Management *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Logical Thinking *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Problem Solving *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Project Management *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Programming Knowledge *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Statistical Analysis *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

VALUES AND BEHAVIOURAL COMPETENCIES

Commitment *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Communication *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Creativity *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Emotional Intelligence *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Humility *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Humour *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Integrity *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Resilience *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

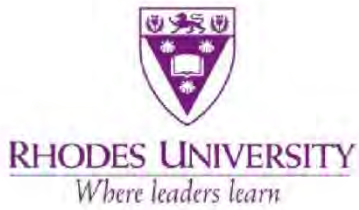
Teamwork *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

Trustworthiness *

	1	2	3	4	5	
Extremely irrelevant	○	○	○	○	○	Extremely relevant

APPENDIX C – ETHICAL CLEARANCE APPROVAL



Rhodes University Human Research Ethics Committee
PO Box 94, Makhanda, 6140, South Africa
t: +27 (0) 46 603 7727
f: +27 (0) 46 603 8822
e: ethics-committee@ru.ac.za

https://www.ru.ac.za/researchgateway/ethics/

20 June 2023

Ruvimbo Chatapura

Email: g18c1203@campus.ru.ac.za faithchatapura@gmail.com

Review Reference: 2023-7063-7567

Dear Miss Ruvimbo Chatapura

Title: IT Business Consulting: Competencies to Address Business Intelligence and Analytics Challenges in South African Organisations

Researcher: Ruvimbo Chatapura

Supervisor(s): Mr Chris Upfold,

This letter confirms that the above research proposal has been reviewed and **APPROVED** by the Rhodes University Human Research Ethics Committee (RU-HREC). Your Approval number is: 2023-7063-7567

Approval has been granted for 1 year. An annual progress report will be required in order to renew approval for an additional period. You will receive an email notifying you when the annual report is due.

Please ensure that the ethical standards committee is notified should any substantive change(s) be made, for whatever reason, during the research process. This includes changes in investigators. Please also ensure that a brief report is submitted to the ethics committee on the completion of the research. The purpose of this report is to indicate whether the research was conducted successfully, if any aspects could not be completed, or if any problems arose that the ethical standards committee should be aware of. If a thesis or dissertation arising from this research is submitted to the library's electronic theses and dissertations (ETD) repository, please notify the committee of the date of submission and/or any reference or cataloguing number allocated.

Sincerely,

Janet Hayward

Dr Janet Hayward

Chair: Rhodes University Human Research Ethics Committee, RU-HREC

cc: Ethics Coordinator

APPENDIX D – GATEKEEPER INVITATION LETTER

RHODES UNIVERSITY
Where leaders learn

Department of Information Systems
Hamilton building, Prince Alfred Street, Makhanda, 6139, South Africa
PO Box 94, Makhanda, 6140, South Africa
t: +27 (0) 46 603 8244 f: +27 (0) 46 603 7608
e: informationsystems@ru.ac.za
www.ru.ac.za

[Date]

Dear [Name],

RE: Permission to Conduct Research

My name is Ruvimbo Chatapura and I am a Masters (MCom) student under the supervision of Mr Chris Upfold in the Information Systems department at Rhodes University. The research I am conducting is titled: "IT Business Consulting: Competencies to Address Business Intelligence and Analytics (BI&A) Challenges in South African Organisations."

As part of the data collection process for this study, I would like to conduct virtual semi-structured interviews with some of the consultants in your organisation who are knowledgeable in BI&A. So, I would kindly like to ask for permission, in the form of a gatekeeper permission letter, to engage with your consultants in this regard.

Please note that all answers and results from the research will be kept strictly confidential and the results will be reported in a research paper available to all participants on completion. Upon approval, I will send a consent form to all the prospective participants to assure their animosity, as well as that they can withdraw their participation for the research study at any time.

If you require any further information, please do not hesitate to contact me or my supervisor. Thank you for your time. I would highly appreciate a favourable response.

Yours sincerely,

Ruvimbo Chatapura
Research Student
g18c1203@campus.ru.ac.za
060 397 7187

Chris Upfold
Supervisor
c.upfold@ru.ac.za
046 603 8244

APPENDIX E – RESEARCH PARTICIPATION INVITATION LETTER

RHODES UNIVERSITY
Where leaders learn

Department of Information Systems
Hamilton building, Prince Alfred Street, Makhanda, 6139, South Africa
PO Box 94, Makhanda, 6140, South Africa
t: +27 (0) 46 603 8244 f: +27 (0) 46 603 7608
e: informationsystems@ru.ac.za
www.ru.ac.za

[Date]

Dear [Name],

RE: Invitation to Participate in Research Study

You are invited to participate in my Masters research study in Information Systems at Rhodes University. The research I am doing as part of my Masters is titled: "IT Business Consulting: Competencies to Address Business Intelligence and Analytics Challenges in South African Organisations."

I was kindly referred to you by [Gatekeeper Name] as a prospective participant for my research study. I would highly appreciate your participation in the data collection process of this study.

Please note that the data collection process will include an interview (roughly 45 minutes to an hour) and a short questionnaire afterwards. Everything will be completely anonymous, and you do not need to do any preparation for the interview or questionnaire. At the start of the session, you will be provided with all the necessary information to assist you in understanding the study and to explain what would be expected of you (the participant).

You are under no obligation to accept this invitation to participate in the research study through receipt of this letter; participation is completely voluntary. To confirm that you understand and agree to the conditions to participate, you will need to sign the attached consent form. Therein, you will receive further information with guidelines, risks, benefits, and your rights as a study participant. Please be aware that you can withdraw from the study at any point without any penalty.

I would like to conduct the data collection sessions during the week of the 10th of July. Please could you let me know if you are willing to participate and what time during this week would be most convenient for you to schedule the session.

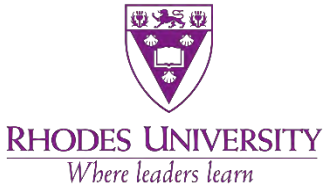
Thank you so much for your time and your involvement in making my research a success. I look forward to hearing from you soon.

Yours sincerely,

Ruvimbo Chatapura
Research Student
g18c1203@campus.ru.ac.za
060 397 7187

Chris Upfold
Supervisor
c.upfold@ru.ac.za
046 603 8244

APPENDIX F – INFORMED CONSENT FORM



PARTICIPANT INFORMED CONSENT DECLARATION

(To be signed by research participant/s)

Title: IT Business Consulting: Competencies to Address Business Intelligence and Analytics (BI&A) Challenges in South African Organisations

Ruvimbo Chatapura, from the Department of Information Systems, Rhodes University, has requested my permission to participate in the above-mentioned research project.

The nature and the purpose of the research project and of this informed consent declaration have been explained to me in a language that I understand.

I am aware that:

1. The purpose of the research project is to investigate the competencies needed by external IT business consultants to address BI&A challenges in South African organisations.

2. Rhodes University has given ethical clearance to this research project ***(Ethics Approval Number: 2023-7063-7567),*** and I have seen/may request to see the clearance certificate by contacting the Ethics Coordinator (ethics-committee@ru.ac.za).

3. By participating in this research project, I will be contributing towards creating a competency framework that can be used by:
    - Consulting organisations to guide them in putting together viable portfolios of BI&A professionals,
    - Current and aspiring IT business consultants to evaluate and develop their individual competencies, and
    - Academic institutions for curriculum development purposes.

4. I will participate in the project by answering a series of semi-structured interview questions.

5. My participation is entirely voluntary and should I at any stage wish to withdraw from participating further, I may do so without any negative consequences.

6. I will not be compensated for participating in the research, but my out-of-pocket expenses will be reimbursed.

7. The following risks are associated with my participation: N/A.

8. The Researcher intends to publish the research results in the form of thesis/conference proceeding/article. However, confidentiality and anonymity of records will be maintained, and my name and identity will not be revealed to anyone who has not been involved in the conducting of the research, ***unless I indicate to the contrary/recognize that as a public figure, my identity will inevitably be/become known, in which case I agree to accept the loss of anonymity.***

9. In terms of the Protection of Personal Information Act (No. 4 of 2013) it remains my right to request the Researcher to provide me with a detailed explanation of exactly how confidentiality and anonymity of the data I provide will be achieved. I may also request to know exactly how my personal information will be stored securely, for how long it will be stored.

10. If any data collected from me for this research project is to be used by the Researcher for any further study, I am to be informed in writing and my written consent requested again. I need not give consent for the new research if it is incompatible with the initial purpose of the present study (POPIA, s15(3)). Equally, I can simply reject the request. In such cases, a formal request needs to be made to me by the researcher via the Ethics Coordinator (ethics-committee@ru.ac.za).

11. In terms of the POPI Act, I possess the right to receive feedback about this research. This will take the form of a thesis unless ***I elect not to receive this feedback.***

12. Any further questions that I might have regarding the nature of the research and/or my participation in it will be answered by Ruvimbo Chatapura (g18c1203@campus.ru.ac.za).

13. By signing this informed consent declaration, I am not waiving any legal claims, rights, or remedies. A copy of this informed consent declaration will be given to me, and the original will be kept on record by the Researcher.

14. I ***agree*** to the Researcher's use of voice recording of my comments and opinions during interviews, the purpose of which is to ensure the accurate recording of my views/responses. Furthermore, I have the right to request a copy of the interview transcriptions to confirm that my opinions are accurately recorded.

I, ……., have read the above information / confirm that the above information has been explained to me in a language that I understand, and I am aware of this document's contents. I have asked all questions that I wished to ask, and these have been answered to my satisfaction. I fully understand what is expected of me during the research.

I have not been pressurised in any way, and I voluntarily agree to participate in the above-mentioned project.

……. ……. …….

Participant's Signature **Witness** **Date**