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Optimising Business Architecture maturity for enhanced alignment of Business and IT

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Plagiarism Declaration

Declaration

Hereby I, Hendrina Groenewald, declare that Optimising Business Architecture maturity for enhanced alignment of Business and IT is my own original work and that all sources have been accurately reported and acknowledged, and that this document has not previously in its entirety or in part been submitted at any university to obtain an academic qualification.

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Abstract

There are several inputs from industry observers of the continued plight of aligning Business with IT. Alignment today is regarded by numerous as one of the most important aspects for successful businesses. It is noted that in the world of business the organisation's vision does not always successfully translate into executable objectives which are suitably supported by IT. This indicates a lack of Business/IT Alignment, and alignment with business models which results in underutilised potential to improve the value of IT to the organisation if the organisation is agile and adaptive to change. The alignment of an organisation's business strategy and operating models with its business architecture will impact positively on Business/IT Alignment. Such an alignment has a downstream effect on the organisation in respect of its ability to make sound decisions regarding IT expenditure.

However, the result from this study indicates that the prevailing low level of maturity of the business architecture practice, and the lack of effective application of business architecture artefacts during operating model design, are negatively impacting the alignment of Business and IT.

This study investigated the factors that enables the efficient application of business architecture methodology during operating model design and set out to achieve the following objectives:

- To identify literature relevant to business strategy, operating models, enterprise and business architecture, business architecture maturity, Business/IT Alignment, and IT expenditure.
- To identify models and frameworks that may be applied to assess the level of maturity of the practice of business architecture.
- To design an assessment tool to determine the use of business architecture (including during business operating model design) in selected South African sectors.
- To undertake quantitative analysis to determine the factors that enable the efficient application of business architecture methodology during operating model design.
- To integrate the findings into a business architecture practice framework.

Observations from the literature review identified five dimensions related to the research topic, which are observed within the context of their maturity. These dimensions were:

- Business/IT Alignment.
- The nature of process and artefacts used within Enterprise Architecture and Business Architecture in particular.

- The knowledge and skills of practitioners.
- The support of management of the practice and involvement in the development thereof.
- The strategic importance of Business Architecture .

From these dimensions, further analysis and decomposition produced a hierarchical clustering of the related nodes to guide the development of the instrument, i.e., an online research questionnaire.

The population for this study were selected from key South African economic sectors. The economic sectors were delineated to target the Retail & Fast-Moving Consumer Goods (FMCG) sector, Banking & Financial Services sector, and Investments & Insurance sector. These sectors were chosen as they are represented, among others, as key economic sectors by Brands South Africa (2018). Furthermore, the population were then delineated from the Top 100 JSE listed organisations (SA Shares, FTSE100), to include well-known role players in South Africa for each sector).

The online research questionnaire was then distributed to professionals working in the field of enterprise or business architecture, as well as business stakeholders in South African companies. The sectors which were targeted are Retail & Fast-Moving Consumer Goods (FMCG), Banking & Financial Services, and Investments & Insurance. These sectors were chosen as they are represented, among others, as key economic sectors by Brands South Africa. Invitations for participations were done by invitation letter to every company's CIO/IT Executive with a request to circulate the request to participate. In addition, the researcher reached out to professionals in the field of business- and enterprise architecture as well as business executives via LinkedIn. A total of 733 invitations were send out in this way. A total of 109 responses were received, constituting a response rate of 14.87%.

The results yielded a rich analysis of the current situation within these South African economic sectors and showed that business architecture methodology is not optimally used in business modelling, and maturity of the practice is still developing. It confirmed the interrogated dimensions as factors impacting the efficient use of Business Architecture methodology in operating model design, as well as their maturity in the probed sectors.

The researcher developed a framework that can be applied in practice by business architecture professionals to easily understand the maturity of their practice and quickly identify the efficiency factors which they need to improve and focus on.

Keywords: Business/IT Alignment; Business Architecture; Enterprise Architecture; Business Architecture Maturity; Operating Model Design

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Key terms and concepts

Term	Acronym/ Abbreviation	Description
Enterprise Architecture	EA	Enterprise architecture consists of Business Architecture, Data/Information Architecture, Application Architecture and Technical/Infrastructure Architecture. Enterprise Architecture entails specific outputs that provide views for current states, transformation in the organisation as well as future states, by applying principles, methods, and models.
Business Architecture	BA	Business architecture is a domain within Enterprise architecture. It represents comprehensive business views and models to align business strategies and help technology teams establish optimal business solutions. Business architecture provides transparency to ensure common capabilities are leveraged and enables a better understanding of how processes, people, information, and technology are connected. It ensures a thorough impact assessment and informs investments to align with strategic objectives.
Operating Model	None	An operating model is the bridge between strategy and day-to-day operations that guides the team, provides the context, and enables the behaviours that will realize the strategy and vision.

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Chapter 1: Introduction and background to the study

1.1 Introduction to the research topic

There are several inputs from industry observers of the continued plight of Business/IT Alignment (Bender-Samual, 2021; Kidd, 2020; Schiller, 2015; O'Donald, 2017; AppDynamics, n.d). IT providers and IT professional consultants recognises the benefits of Business/IT Alignment, but also indicates that it remains a challenge (Kidd, 2020; Shiklo, 2017; NASCIO, 2005). The concept of aligning IT and business is foundational to the reconciliation of technical worlds and business worlds to close the gaps in their knowledge, skills, and communication to deliver benefits (Kidd, 2020). According to Shiklo (2017) deployment of the best solutions in pace with corporate objectives (also known as Business/IT Alignment) can bring substantial advantages. A closer alignment between enterprise architecture and IT procurement can positively impact the value received from IT expenditure and result in decisions that better serve the overall strategic intent (NASCIO, 2005). The common theme amongst these industry observers is that competitive advantage cannot be achieved by simply 'using' technology, but in using it strategically in alignment with the overall business goals. Another recognised problem in the world of business is that the organisation's vision does not successfully translate into executable objectives (Higgins, 2016; Whittle, 2004; Bernard, 2006), which indicates a lack of Business/IT Alignment, and alignment with business models.

The Business Architecture Institute is of the opinion that organisations stay and flourish because they make a fair profit and sustain a competitive advantage - Business models that improve performance are essential in order to grow and expand the business (Higgins, 2016, Whittle, 2004). Bernard (2006) follows similar logic in stating that large, complex organisations in all sectors are finding it difficult to create encompassing, understandable, and scalable models of their business. Bernard (2006) states that few of the organisations that attempt these models, can do it in a way that integrate strategic, business and technology perspectives across the enterprise.

Lambert (2018), and Versteeg and Bouwman (2006) recognises the benefits of employing enterprise and business architecture and its role in Business/IT Alignment. Enterprise and business architecture used early during planning of projects can reduce time on later stakeholder engagement, reduce the number of agile iterations, ensure alignment which breaks down silos and most importantly deliver solutions that meet the business strategies and objectives of the enterprise. Versteeg and Bouwman (2006) find that business architecture clarifies the relationship between the strategy of an organization in terms of

processes, domains, and functions in the business. The business architecture provides a solid framework to design the organization more effectively than individual strategic statements from which structure, balance and harmony are missing, thus achieving better alignment.

The Business Architecture Guild (2019) states that a strategic plan is likely to be incomplete if it does not identify and define the appropriate business model as well as the operating model to support it. The Guild further suggests that organisations need ways to create strategic ideas and then test them fast. Business architecture, specifically the capability and value stream maps, provide a simplified view of the operating model. This can help to guide analysis as well as present results in a framework that promotes executive understanding and decision-making in terms of IT expenditure that supports the operating model (Fons et al., 2019). This view is concurred by Ulrich (2011), in saying that the capability and value stream maps, provide a simplified view of the operating model, and a way to create strategic ideas which can be tested quickly.

According to Ambrosio (2019, Para. 2), business capabilities, which are integral to business architecture, are the link between strategy and the delivery of the value proposition at a lucrative level to an organisation. It can be seen of as the "resources, processes, and values that ultimately execute on the strategy". The business architecture provides the connection between how the business operates and the strategy, by way of capabilities and capability models for the organisation.

Burns et al (2009) highlights that building the right capabilities to create lasting value, can ensure organisation's survival in volatile times. Burns et al (2009) further suggests that a critical component of value creation is enterprise architecture which aims to align the operations with its business objectives and strategic direction. Within business architecture, the strategy model helps business to innovate through the implementation of business plans. It aims to generate value and diverse benefits that can have a positive impact on the organisation, for example assisting in allocating IT (Maçada et al., 2012).

Hosseini et al (2018) concludes that the IT sector should play a vital role in the visualization and modelling of business strategy and decision making. Lee et al (2008) agrees that executive management can regard IT expenditure as a way to generate maintainable Business/IT Alignment driven business value, and to build foundational capabilities and IT assets that improve performance of the organisation on an ongoing basis. IT architecture has become a strategic asset for the enterprise and the IT function is closely associated with enterprise processes and the organization's information needs. Technology is also driven by

the same dynamics as the enterprise itself. This view is supported by Al-Malaise (2017), stating that business architecture assist in driving the allocation of IT and other resources effectively.

Pessi et al (2010) demonstrates through a study of European companies, that enterprise and business architecture hold a strong alignment between the capabilities of IT architecture and business architecture, impacting the management of IT expenditure. The above authors recognise the importance of business architecture practice extensively. However, the effective application of business architecture is directly aligned to how mature the business architecture practice is in organisations (Whittle, 2004). Pretorius (2015) states that historically it is a challenge to ascertain the status of different business architecture components and without measuring the maturity of the practice, its value will remain unexploited.

Business architecture maturity entails the assessment of an organisations business architecture practice across various categories to gain an understanding of the practice and how it compares to industry standards and best practices (Kuehn, 2017). The maturity of the business architecture practice reflects an organisation's deliberate efforts to demonstrate a formalised capability which is abetted by devoted staff, processes, and technology, with the explicit goal of aligning the strategic goals, operating goals, and processes in the organisation (Lovin, n.d; Kuehn, 2017). There are a few maturity models (or frameworks) that can be useful in measuring the maturity of the business architecture practise, and which will be discussed in this study. The Business Architecture Guild's Business Architecture Maturity Model (BAMM™) for example, is specific to business architecture and can be used when determining the maturity level of a business architecture practice (Lovin, n.d.; Business Architecture Guild, 2015; Kuehn, 2017).

Internationally organisations are aware of the importance and benefits of enterprise architecture and business architecture in achieving Business/IT Alignment - there are a growing number that employ enterprise and business architects. In South Africa most employed architects are technology and application architects (Matthee, Tobin & Van Der Merwe, 2007). This indicates that within the South African context the importance of a mature business architecture practice and its role in achieving Business/IT Alignment might not be realised, which lead to this proposed empirical study.

It is clear from literature that that Business/IT Alignment and alignment of the strategy and business models of organisations with their business architecture can impact their ability to make focused decisions around expenditure in the field of Information Technology.

1.2 Statement of the research problem

There is consensus on the importance of optimal Business/IT Alignment in organisations. In this regard, it is noted that the alignment of an organisation's business strategy and operating models with its business architecture will impact positively on Business/IT Alignment. Such an alignment has a downstream effect on the organisation in respect of its ability to make sound decisions regarding IT expenditure.

However, (i) the prevailing low level of maturity of the business architecture practice, and (ii) the lack of effective application of business architecture artefacts during operating model design, are currently negatively impacting the alignment of Business and IT.

1.3 Primary Research Question

What factors enable the efficient application of business architecture methodology during operating model design?

1.4 Research Objectives

- To identify literature relevant to business strategy, operating models, enterprise and business architecture, business architecture maturity, Business/IT Alignment, and IT expenditure.
- To identify models and frameworks that may be applied to assess the level of maturity of the practice of business architecture.
- To design an assessment tool to determine the use of business architecture (including during business operating model design) in selected South African sectors.
- To undertake quantitative analysis to determine the factors that enable the efficient application of business architecture methodology during operating model design.
- To integrate the findings into a business architecture practice framework.

1.5 Alignment: Primary research question to research sub-questions, method, and research objectives

Table 1: **Research Sub-Questions**

Research question: What factors enable the efficient application of business architecture methodology during operating model design?		
Research Sub-Questions	**Method to answer sub-question**	**Research objective**
1.) What is business architecture? 2.) Of what value is business architecture during the business operating model design to IT expenditure and Business/IT Alignment?	Literature review and analysis	To identify literature relevant to business strategy, operating models, enterprise and business architecture, Business/IT Alignment, and IT expenditure. To understand the nature and intent of business architecture, its value to an organisation, as well as its impact on operating model design, IT expenditure and Business/IT Alignment.
3.) Which Business/IT Alignment frameworks provide insight into the effective application of business architecture artefacts during operating model design?	Literature review and analysis	To identify Business/IT Alignment framework characteristics that supports the effective application of business architecture artefacts during operating model design.
4.) Which business architecture maturity frameworks provide insight into level of maturity of the business architecture practise?	Literature review and analysis	To identify the maturity aspects that could assess the maturity of business architecture as a practice in an organisation and what role it plays in Business/IT Alignment.
5.) Which elements of the frameworks discussed in Point 3 and 4 are applicable to determine effective application of Business Architecture artefacts in the operating model design and the maturity of the practise?	Literature review and analysis	To identify the concepts that informs the development of a research instrument to determine the effective application of Business Architecture Artefacts in operating model design and the maturity of the practise.
6.) What is the current state of business architecture at the targeted South African organisations?	Questionnaire design informed by literature review and analysis.	To design an assessment tool to determine the current state of business architecture and Business/IT Alignment in the targeted South African companies, as well as its impact on investment in technology.
7.) In which way are business architecture artefacts used in IT investment decisions and improvement of Business/IT Alignment?	Collection/ Analysis of data.	To determine if business architecture within the selected research organisations is perceived as important and how it is applied to inform IT investment decisions and achieve better Business/IT Alignment.

Research question: What factors enable the efficient application of business architecture methodology during operating model design?		
Research Sub-Questions	**Method to answer sub-question**	**Research objective**
8.) What findings can be derived on how business Architecture maturity can be improved so that improved Business/IT Alignment can be achieved in the targeted organisations?	Interpretation of research findings.	To propose a simplified and practical Business Architecture Framework that can aid the maturity of the Business Architecture practice so that better Business/IT Alignment can be achieved.
9.) How may the findings be juxtaposed into a business architecture practice framework to ease industry application?	Synthesis of research findings.	To integrate the findings into a proposed business architecture practice framework.

1.6 Structure of the study

The research study is structured to include a literature review of concepts related to the research problem in Chapter 2. Observations from the literature review identified five dimensions related to the research topic, which are observed within the context of their maturity.

The research method is introduced and discussed in Chapter 3. The researcher developed an online questionnaire informed by the literature. The online research questionnaire was then distributed to professionals working in the field of enterprise or business architecture, as well as business stakeholders in South African companies.

Results were analysed and findings are presented in Chapter 4. Chapter 5 concludes by providing a reflection on the research process and the attainment of the research objectives. This chapter also examines the implications of the research findings and provides recommendations for future research. The findings are summarised and presents a business architecture framework to aid the maturity assessment of the factors that enable the efficient application of BA methodology in operating model design.

1.7 Chapter Summary

This chapter summarised the background to the research problem and introduced the subject matter. The statement of the research problem as well as the primary research question were defined and aligned to research sub-questions, method, and research objectives.

Chapter 2: Literature Review

This Chapter will provide a literature review of concepts related to the research problem. These concepts are Business/IT Alignment, the practices of Enterprise and Business Architecture, and the related artefacts. Chapter 2 also discusses the literature pertaining to the strategic value of Business Architecture, strategic alignment models and the concept of maturity as it relates to Enterprise and Business Architecture.

2.1 Overview of Business/IT Alignment

Alignment today is regarded by numerous academics and business owners as one of the most important aspects for successful businesses. In addition, Business/IT Alignment have the potential to improve the value of IT to the organisation if the organisation are agile and adaptive to change (Chen, Kazman & Garg, 2005).

Lee et al (2008) recognises Business-IT alignment as key in management in that it provides a view of the relationship between IT expenditure and business performance and Schmidt et al (2015) sited Business/IT Alignment as one of the factors impacting on the perceived benefits that can be derived from EA.

Charoensuk et al (2014) suggests that Business/IT Alignment is directly impacted by shared understanding and knowledge, sound communications between business stakeholders and IT successes and achievements of IT as well as how cultivated IT practises are. They further acknowledge that the size of an organisation is directly related to Business/IT Alignment. Various authors suggest that Business/IT Alignment is an approach that correlates IT strategy with business strategy. It's goal is to maximise value created by the enterprise, allowing the organisations to adapt (Edmead, 2016; Kidd, 2006; Luftman 2003; Malyzhenkov & Ivanova, 2017; Malan & Bredemeyer, 2005).

Enagi and Ochoche (2013) concurs that failure to align business strategy by applying the principles of enterprise architecture and business modelling, results in failure of IT investment projects. Gregor et al (2007) agrees that when applied in the right way with detailed, care implementation, enterprise architecture can bring business and IS/IT closer together. This closer alignment results in better systems to enable the business.

Business/IT Alignment models or frameworks are published by various authors and are discussed in Section 2.8.

2.2 Introduction into the practise of Enterprise Architecture (EA)

According to Bernard (2006), EA began as a conceptual practise for defining standards and methodologies to implement information technology but has since unfolded to incorporate business aspects as well as strategy, which reflects the whole of a complex enterprise. EA is described as the meta model that relates strategic objectives and activities to technology. Tamm et al (2011) agrees on EA's role in relating strategic objectives and dissolving complexity and defines it as an approach which has been widely used as a planning and governance tool to manage complex changes and to align an organisations resource to its goals.

Ross et al (2006) sees EA to be foundational to strategy execution. EA is the organisation's logic for IT infrastructure and business processes and reflects the requirements of the organisation's operating model and delivery of products and services. The EA provides a longer term and future visualisation of the organisation's systems, business processes and technologies so that individual projects can create and improve the capabilities defined.

These authors agree that EA at its heart assists organisations to understand the complex enterprise with its multiple facets. From a practical standpoint, EA involves planning and specific outputs (i.e., documents and services). Information documents include models that describe the business, structures, data & information, as well as the technologies used in the organisation. These views are created for current states, transformation in the organisation as well as future states (Boh & Yellin, 2006; Tamm et al., 2011; Aier, 2014).

Lankhorst (2009, p. 3) defines EA as "a coherent whole of principles, methods, and models that are used in the design and realisation of an enterprise's organisational structure, business processes, information systems, and infrastructure". NASCIO sees EA as containing the blueprint for integration of information and services at design level (Grant, 2012). Kotusev (2019, p. 112) formulates a definition of EA to be a "collection of special documents (EA artefacts) describing various aspects of an organization from an integrated business and IT perspective intended to bridge the communication gap between business and IT stakeholders, facilitate information systems planning and thereby improve business and IT alignment".

Parker and Brooks (2008) states that the capabilities within an organisation, as they have been identified through a strategically aligned EA, delivers the infrastructure required to execute strategy successfully. It is recognised that the harnessing of technology then improves the alignment between strategy and architecture – which, for most organisation,

is operationally advantageous. EA planning applied across the enterprise (and documented in EA information documents) leads to a common understanding between stakeholders, better and quicker decision making processes, improved technology performance and lower costs (Bernard, 2005; Franke, Cohen & Sigholm, 2018).

According to Niemi and Pekkola (2020) EA provides services that give direction to development initiatives and implementation of technology. These services improve the quality of the EA outputs in that it supports stakeholders to create architecture that is on par with the required standards.

Literature agrees that the field of EA was officially established in 1987, with the development of the Zachman Framework. Since then, various IT organisations, industry practitioners and academics have refined the Zachman Framework to come up with adapted versions or definitions (Baudion et al., 2010). Table 2 below depicts a short overview of the most common EA Frameworks used. Even though these frameworks are all different in how they suggest EA to be implemented, the commonality lies in the fact that they all share concepts and principles that covers a transition from a current architecture to a desired architecture (Urbaczewski & Mrdalj, 2006, Rouhani et al., 2015).

Table 2: Short overview of most used EA Frameworks

Enterprise Architecture Framework	Main characteristics/description
Zachman Framework (Lankhorst, 2009; Urbaczewski & Mrdalj, 2006, Zachman, J. 2006)	• Provides a logical structure that represents the development of enterprise technologies and the applicable roles within the design process. • Easy to understand yet can be complex in nature which hampers the practical application. • Comprehensive and widely used.
The Open Group Architecture Framework (TOGAF) The Open Group, Tharpe, B. 2020, (Urbaczewski & Mrdalj, 2006; Lankhorst, 2009; Soiusa, Rui, Malta, 2016)	• Contains an Architecture Capability Framework, outlining the process, people, skills, and tasks of EA itself (The Open Group). • Provides ways of working for architects through the Architecture Development Method (ADM). • Covers relations amongst Business Architecture, Data Architecture, Application Architecture, and Technology.
Department of Defence Architecture Framework (DoDAF)	• Provides a view on Operational, Technical and System standards.

Enterprise Architecture Framework	Main characteristics/description
(Leist & Zellner, 2006; Urbaczewski & Mrdalj, 2006)	• Consolidates in a contextual view that provides descriptions of the final product and guidance on a standard for consistency.
Federal Enterprise Architecture Framework (FEAF) (Lankhorst, 2009; Soiusa, Rui, Malta, 2016; Urbaczewski & Mrdalj, 2006)	• Published by the US Federal CIO council to provide guidance for the development of large and complex systems. • At its heart, this framework's goal is to promote the sharing of information across government. • Allows flexibility in the use of different methods, tools, and products.
Treasury Enterprise Architecture Framework (TEAF) (Lankhorst, 2009; Soiusa, Rui, Malta, 2016; Urbaczewski & Mrdalj, 2006, Leist & Zellner, 2006)	• Aims to provide an overall view of the US Department of treasury, focusing on the interrelationships to manage IT resources. • Facilitate information sharing and exploit common requirements for IT solutions. • As in the case of DoDAF and TEAF it provides a guide in terms of documenting and modelling the enterprise.

2.3 The impact of Enterprise Architecture (EA) on IT expenditure

The alignment of Information Systems strategy with business strategy as critical to IT management as a moderator between IT expenditure and the performance of a company (Byrd et al., 2006). Lee et al (2008) is of the opinion that the reverse is also true: IT expenditure can create sustainable IT/Business alignment driven business value and create foundational capabilities and IT assets that impacts business performance on an ongoing basis. According to Pessi et al (2010), the impact of EA on IT expenditure is twofold: (1) extrinsic, in the form of improved performance against stakeholder expectations, business efficiency and IT assets, and (2) intrinsic, in the form of architectural know-how that delivers responsible IT expenditure and long-term Business/IT Alignment.

Van den Berg et al (2019) finds that high performing companies logs higher usage of EA artefacts (heat maps, roadmaps, business capability models and landscape models) to prepare for IT expenditure decisions. It is also in these companies where EA provides more strategic insights into IT expenditure decisions, whether the expenditure fit with the business strategy, future IT expenditure as well as expenditure risks.

In conclusion it is clear the correct application of EA can assist companies to make successful decisions around IT expenditure (van den Berg et al., 2019). Boh and Yellin (2006) agrees that EA standards significantly assist organisations to effectively manage IT Infrastructure, replication of IT services and integration across data as well as applications, making for an applicable IT expenditure plan.

2.4 The role of Business Architecture within Enterprise Architecture

EA consists of four domains being Business Architecture (BA), Data/Information Architecture, Application Architecture and Technical/Infrastructure Architecture (Cameron, n.d.). Whereas Cameron refers to domains, Simon et al (2014) refers to layers. Simon et al (2014) states that EA deals with different architectural layers, one of which is BA (being a structured representation of the business consisting of building blocks and their interrelationships).

The BA Institute refers to two major components of EA, being Business Architecture and the Technical Architecture, into which all other architectural components fit. Business Architecture depicts the structure of a business, how they work together considering people, processes, and information (Balmes, n.d). BA provides the business lens within EA as it produces insights into the organisation's operating environment. When the technology and application architecture (within EA) is overlayed with BA, it serves as a framework for analysis, scenario planning and collaboration. This helps to identify potential changes, redundancy and risk from a business perspective and makes BA an important aspect in EA (Kuehn, 2017).

2.5 Defining Business Architecture

Khuen (2022) states the organisations, irrespective of size, industry or sector need to be able to do change well, yet a lot of organisations find it difficult to put great ideas into actionable objectives and execute on their strategy. Building the right capabilities and creating a business architecture enables organisations to understand their current world, the future and how to get there. Business Architecture, leveraged for strategic decisions and execution is a game changer in an ever-changing environment.

The SOA Consortium defines BA to be "the formal representation and active management of business design" and then expands this definition in saying that BA is a formal practise that collects information and tools for business owners to asses and implement business design and change (Baudion et al, 2010. p. 1). Ulrich et al (2015, p. 2) defines BA as a

"blueprint of the enterprise that provides a common understanding of the organisation" and includes business capabilities, information, the organisation, and its functions, as well as how value is delivered to stakeholders. I.e., value streams. It is a tool used to align strategy with tactics.

Ganesan et al (2009) states that the BA of an organisation shows how elements such as capabilities, business processes, business functions, resources (and roles), events as well as assets are integrated and work together to achieve the goals of the enterprise/organisation. BA consists of models, methods, metrics, and tools to support enterprises in the planning and execution of business activities. The architecture supports the enterprise in managing or integrating their data, produce their business models, and come up with a scalable system architecture (Al-Malaise AL-Ghamdi, 2017).

The BA Guild's BIZBOK®, the Business Architecture Body of Knowledge, (Business Architecture Guild, 2021, p. 2) defines BA as follows:

"Business architecture represents holistic, multidimensional business views of: capabilities, end-to-end value delivery, information, and organizational structure; and the relationships among these business views and strategies, products, policies, initiatives, and stakeholders"

The relationship between Capabilities, Value Mapping and Value streams are the main vehicle for organising a business's thinking about how capabilities may be arranged, improved, or added to create the best stakeholder value (Business Architecture Guild, A Guide to the Business Architecture Body of Knowledge®, v 10, BIZBOK® Guide). The Business Architecture Guild published a BA Framework (Figure 1) that provides the foundation for all different types of practitioners and stakeholders to leverage BA. It depicts the BA knowledge base as well as the blueprint views extracted from this knowledge base, whilst the business scenario views turns the knowledge into insights required to improve strategy execution (Bata et al., 2020).

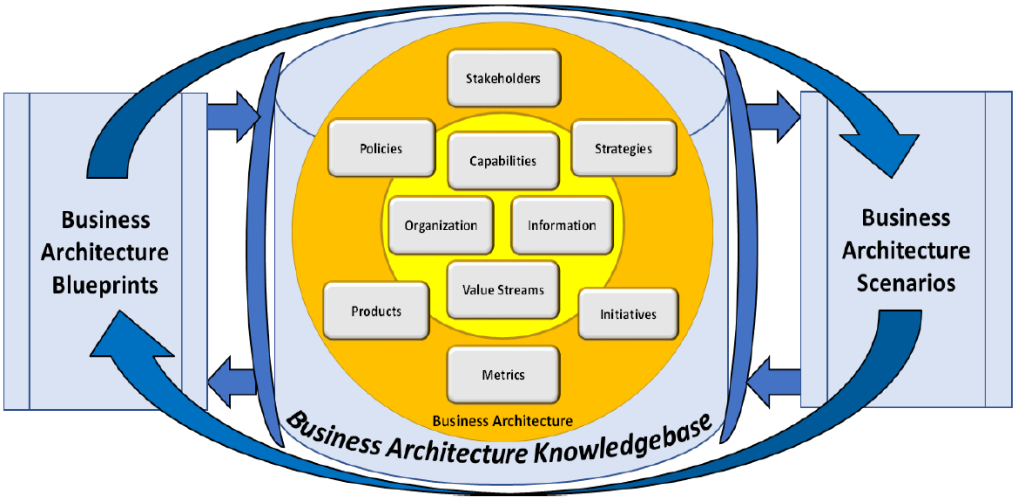

Figure 1: Business Architecture Framework and Knowledge Base
(Business Architecture Body of Knowledge®, v 10 (BIZBOK® Guide)

It is also important to note that this framework highlights the iterative nature of BA. The BA is revisited continuously as business identifies environmental and other trends that require new business responses, priorities, or operating procedures. Similarly, as business adapts, the information and architectures must be adapted, leading to new priorities for technology and infrastructure developments (Buchanan & Mark Soley, 2002). The BIZBOK® Guide refers to this concept as cross-mapping.

2.6 Business Architecture Artefacts

BA artefacts are mostly defined by industry experts, professional bodies and IT Organisations and aims to develop an integrated view of the enterprise. Table 3 below provides a summary of the main BA artefacts agreed by the BIZBOK® Guide, Object Management Group (OMG), The BA Institute, Business Architecture Guild (Bata et al., 2020) and The Open Group.

Table 3: Commonly used BA Artefacts

BA Artefact	Short Description
Business Strategy Map	Documents the strategic and tactical and objectives that will move the organisation forward. Examples of strategy maps are Balanced Scorecards.
Business Capability Maps and heat map dashboards	Describes the primary business services and functions of an enterprise and the area of the organisation that execute the business functions. Views are provided with 3 different lenses: (1) customer-facing functions, (2) supplier-related functions, (3) business execution or management functions. Capability modelling and maturity mapping of

BA Artefact	Short Description
	capabilities are useful to increase the strategic impact of investment decisions (Keller, 2009).
Value Chain and Value Stream Maps	Defines end-to-end view of activities that produce value to stakeholders (external and internal). Value streams provide a view of the business "in motion" and supports synergy between business processes and the business architecture.
Organisational Charts or Actor Catalogue	Provides a view of the relationship amongst roles within business units and their capabilities (also referred to as Stakeholder Maps)
Business Knowledge or Information Maps	Establish shared or common understanding of business elements such as Customer, Product, Supplier etc. and in doing so define the data shared across the enterprise and the relationships between the data.
Initiative Maps and Business Roadmaps	Represents strategy execution, i.e. People, Process, Data and Technology choices to achieve objectives.

2.7 The strategic value of Business Architecture in achieving Business/IT Alignment

De Vries and Janse van Rensburg (2008) states that in today's business world, organisations are diverse, which requires the right level of knowledge and skills to ensure silos are broken down, and to create the synergies needed to achieve alignment. De Vries and Van Rensburg goes on to state that EA can create the harmony between systems and processes and plays a major role in achieving alignment amongst strategic business units.

Documented BA provides an opportunity for a paradigm shift within organisation to work towards enterprise collaboration. This is part of BA's value proposition of strategy translation, business transformation, change impact assessment and ultimately project portfolio management (Kuehn, 2017). The BIZBOK® outlines the alignment of business strategy into actionable plans in Figure 2 below.

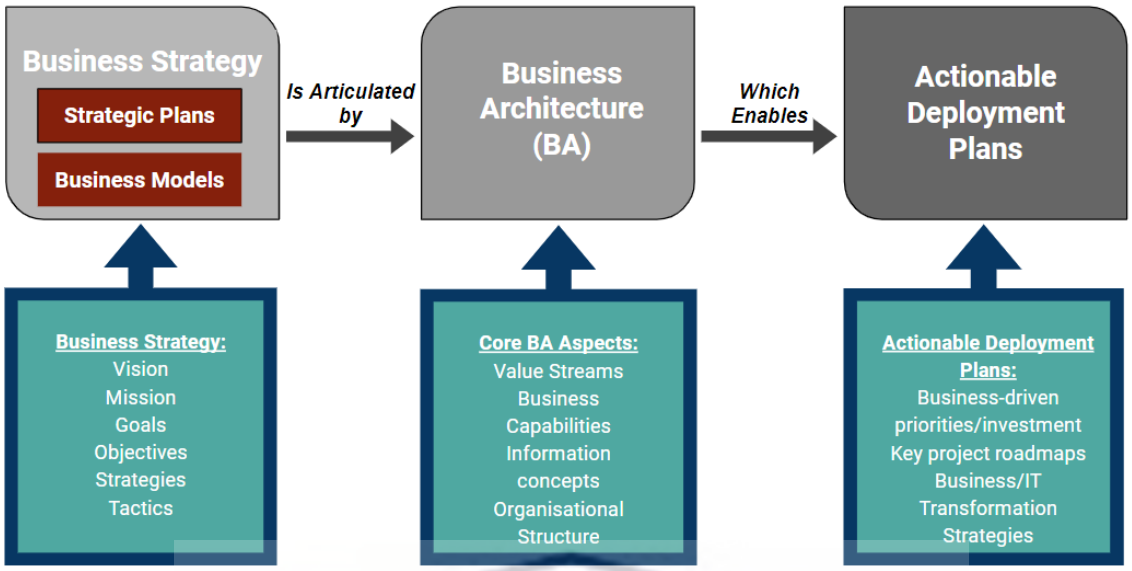

Figure 2: Aligning strategy and action plans

(Business Architecture Guild, A Guide to the Business Architecture Body of Knowledge®, v 10_BIZBOK® Guide, 2021. Part 3, Page 259).

The business strategy is articulated in BA aspects which enable action plans and prioritisation thereof. In this way BA provides value as a communication tool and framework for analysis to deliver transformation, deal with complexity and align stakeholders to make decisions and utilise technology effectively (Business Architecture Guild, A Guide to the Business Architecture Body of Knowledge®, v 10_BIZBOK® Guide, 2021).

Business capabilities link the business model with the enterprise architecture, which includes the organisational structure, processes, and resources that puts the business model into action. It is a combination of resources, processes, values, technology solutions, and other assets that are used to implement the strategy, i.e., the Business Architecture (Ambrosio, 2019).

Keller (2009) states that capability heat maps combine the use of performance measures with a way to assess the strategic value of capabilities. In this context, capabilities are defined as the ability to perform a particular skillset, which is a function, process, or service. By using colour, the gaps in capability which need to be addressed in an enterprise are highlighted (Keller, 2009). Although capability heat maps are not directly used in alignment of the strategy, the IT infrastructure, and process views of business architecture, it delivers an comparable representation that can easily be understood by business stakeholders (Roelens, Steenacker & Poels, 2019).

Fons et al (2019) establishes a link between strategy, operating and business models using business architecture as depicted in Figure 3 below. The purpose of the operating model is

to define the structure and behaviour of the business, whilst the business model defines the value proposition.

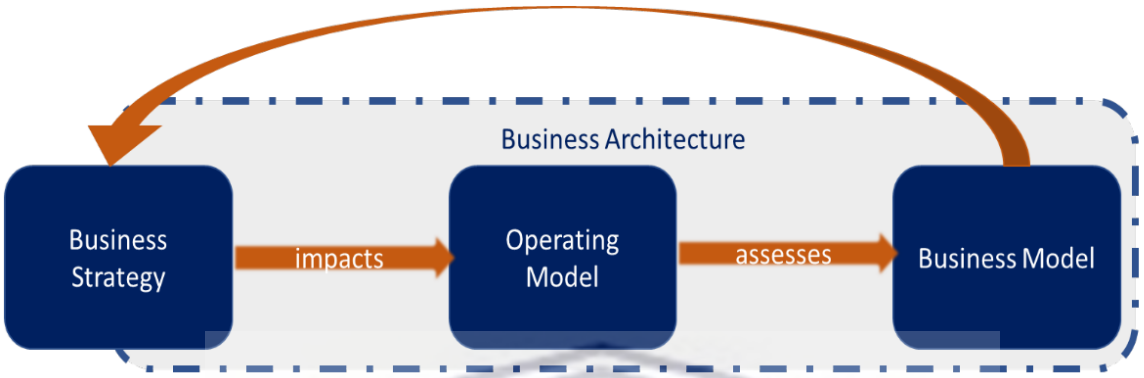

Figure 3: From Strategy to Business Model
(Business Architecture Guild, A Guide to the Business Architecture Body of Knowledge®, v 10_BIZBOK® Guide, 2021. Part 3, Page 259).

It is clear from the literature that BA can be seen as a vehicle of business value, delivered via an operating model, based on the business strategy.

2.8 Business and IT strategic alignment models or frameworks

Various Business/IT Alignment models in literature highlights the link that exists between strategy, enterprise (EA)/business architecture (BA) and business models, such as:

- the three-level architecture of the business IT alignment method (BITAM), which is a flow that explains twelve steps for detection, management, and correction of misalignment (Chen et al., 2005. p. 8),
- the BA and strategy linkage model which clarifies the relationship between strategy and the way it is organised (Versteeg & Bouwman, 2006. pp. 91-102), and
- the Cross-Domain Business IT strategic Alignment model, which augmented the existing alignment models with the constructs of TOGAF to present a more rounded technique to create strategic alignment models between business and IT (Bhattacharya, 2018. pp 655-662).

However, understanding the clear link between EA and strategy elements does not provide a view of the benefits (and value) closer alignment can achieve if it is applied in the correct way. Other authors elute to more practical value derivation. Amarilli (2014) analyses Business/IT Alignment from an operational and target perspective, whilst considering the role

of flexibility in Information Systems design. Amarilli's proposed framework adds value as an instrument that guides IT choices. Reich and Benbasat (2000) establishes that shared domain knowledge, collaborative planning and communication between IT and business is key to achieving better Business/IT Alignment. These Business/IT alignment models or framework share commonalities with the Business-and Enterprise architecture maturity frameworks discussed in Section 2.10 below.

2.9 Business- and Enterprise Architecture Maturity

The aim of maturity models is to provide a simple, yet effective way to measure process quality (Wendler, 2012). The Oxford Dictionary defines maturity as the state of quality or being mature or fully developed or "the current state of knowledge" (Oxford Learners Dictionary Online, 2021). One can thus refer to maturity as a definition of the level of capability.

Maturity as an evaluation measure for capabilities of an enterprise in specific disciplines has grown in popularity since the Software Engineering Institute at Carnegie Mellon University came up with the Capability Maturity Model (CMM) (Paulk et al., 1993) and the use of maturity models in the field of Information Systems have also grown in importance (Becker, Knackstedt & Pöppelbuß, 2009; Becker, Poeppelbuss & Simons, 2010).

Whilst the CMM evaluates the Software Development Process, it has been extended in use to evaluate IT Infrastructure Management, EA/BA Management and Knowledge Management (De Bruin & Rosemann, 2005).

2.10 Business- and Enterprise Architecture Maturity Frameworks

The CMM as proposed by Paulk et al. (1993) suggests 5 levels of maturity, with a focus on the maturity of process capability, as depicted in Figure 4.

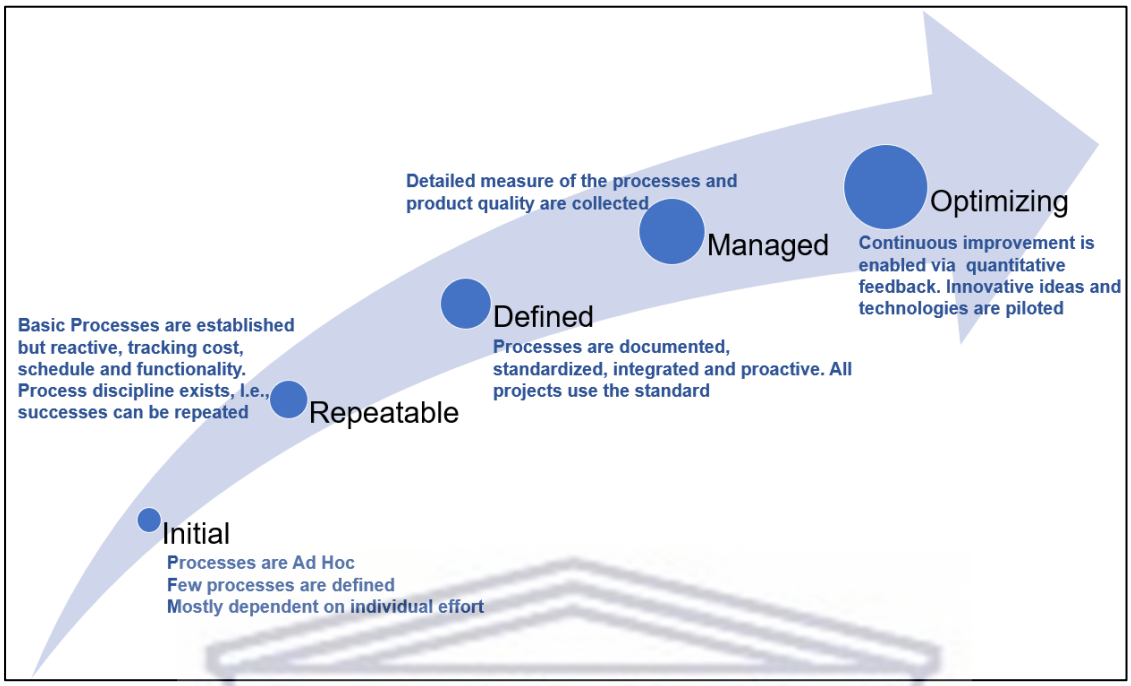

Figure 4: Capability Maturity Model (CMM) levels

(Paulk et al., 1993)

The BA Guild adapted the CMM to evaluate the maturity of the Business Architecture practise in defining the 5 levels of maturity as Initial, Managed, Defined, Strategically Executed and Fully Integrated as outlined in Table 4 below.

Table 4: BA Guild's Business Architecture Maturity Model

Initial (1)	Managed (2)	Defined (3)	Strategically Executed (4)	Fully Integrated (5)
No business architecture discipline exists within the organization.	Some BA mapping with supporting standards and practices are being applied within the enterprise.	Core BA domains have been defined, mapped, and captured within the business architecture knowledgebase using foundational blueprints including capability map, value streams, information map organization map.	BA is leveraged to drive business transformation, innovation, performance improvement, strategic initiatives, and portfolio opportunities.	Business strategy is clearly articulated and realized through BA and supported through EA and technology strategy.
Initial (1)	**Managed (2)**	**Defined (3)**	**Strategically Executed (4)**	**Fully Integrated (5)**

	Architecture governance processes and roles are defined but may not be fully or consistently deployed.	The foundational architecture standards, practices, and governance have been defined and established for the organization.	Enterprise level governance exists.	Capability and value stream performance is a key driver in project / program selection within the organization's portfolio management processes.
	BA team has a defined mandate & clearly articulated goals.	Formal BA roles and responsibilities exist.	A business architect's career path is defined and supported by a training curriculum.	Executive, business, and IT leaders recognize business architects as strategic partners.
	BA roles are loosely formalized with responsibilities.	BA is identified, appropriately skilled, and staffed based on the needs of the business.	BA knowledge is advanced in terms of understanding & leveraging business architecture, with fundamental competency by a majority.	Major IT investments with business implications are driven through business strategy as articulated via BA.
	There is a core group of business architects with informal structures but no organizational synergies.	A BA function has been established, with clearly articulated goals and the appropriate executive sponsorship.	Formal processes are in place for engaging business architects in business strategy, planning, and solution development.	BA knowledge is excellent, with solid competency by a majority, and business architecture's value, concepts, and use are ubiquitously distributed across multiple business units.
		BA is actively being aligned with related disciplines.	The BA function is fully operationalized and operating effectively.	BA is seen as a core capability of the organization.
			Transformational initiatives leverage business / IT architecture alignment concepts.	BS is fully integrated with related functions, disciplines, and processes.
				Feedback and improvement processes exist that allow for continuous business alignment to achieve innovation and agility.

BA Guild's Business Architecture Maturity Model clearly establishes the link between a mature BA practise and business strategy, IT expenditure (or IT Investment) and Business/IT Alignment. The BA Guild (2021) goes further in that it evaluates specific categories (with its accompanying criteria) within the BA practise (Business Architecture

Guild, A Guide to the Business Architecture Body of Knowledge®, v 10 (BIZBOK® Guide), 2021. Part 3):

- Governance – the BA practise is governed by a governance board across the body of change and investment portfolios for the enterprise.
- Strategy Linkage – How business outcomes are realized and adds value through and supported by BA, and strategy mapping is aligned to initiatives executed in the enterprise.
- Management Involvement – Senior managers are involved, provide direction into the improvement of BA
- Architecture Process – A BA process with a set of artefacts is in place and accepted.
- BA Artefacts – Capability maps, Organisation maps, Information maps, Value stream maps etc. exists and provide a shared vocabulary with the business stakeholders.
- BA tools – Standard integrated tools are used for modelling, enabling full views and viewpoints to be extracted.
- Business processes – BA serves as part of a management framework for organising and improving business processes.
- Alignment – BA is aligned to business requirements and business performance, case management.

(BIZBOK® Guide), 2021. Part 3)

Matthee et al (2007) found that in the South African context, the perception of maturity of an enterprise architecture implementation was also aligned to some of the maturity factors sighted by the BIZBOK Guide. Business and IT alignment (including case management by a program office), management involvement, strategic governance, and linkage as well as the communication of EA results were amongst the findings.

Robertson et al (2018) conducted a study to identify the role Enterprise Architecture plays in Business/IT Alignment by considering its maturity. This study finds that although organisations may invest in an EA programme, success vary since the aspect of soft skills of architects are not considered.

Robertson et al (2018) developed a four-stage maturity framework to determine the maturity of enterprise architecture (and thus business architecture by extension). In this framework, Stage 4 ensures effective Business/IT Alignment. The framework considers the state of EA in the organisation, the skills of architects working in the organisation and then extrapolates the achieved benefits for each stage (Robertson, Peko & Sundaram, 2018). Building from existing literature, four soft skills are identified as critical mediators in achieving the benefits, namely networking, interpersonal skills, stakeholder management and leadership. Although

this model is published as a Business/IT Alignment model, the aspect of EA takes centre stage as depicted in Figure 5 below.

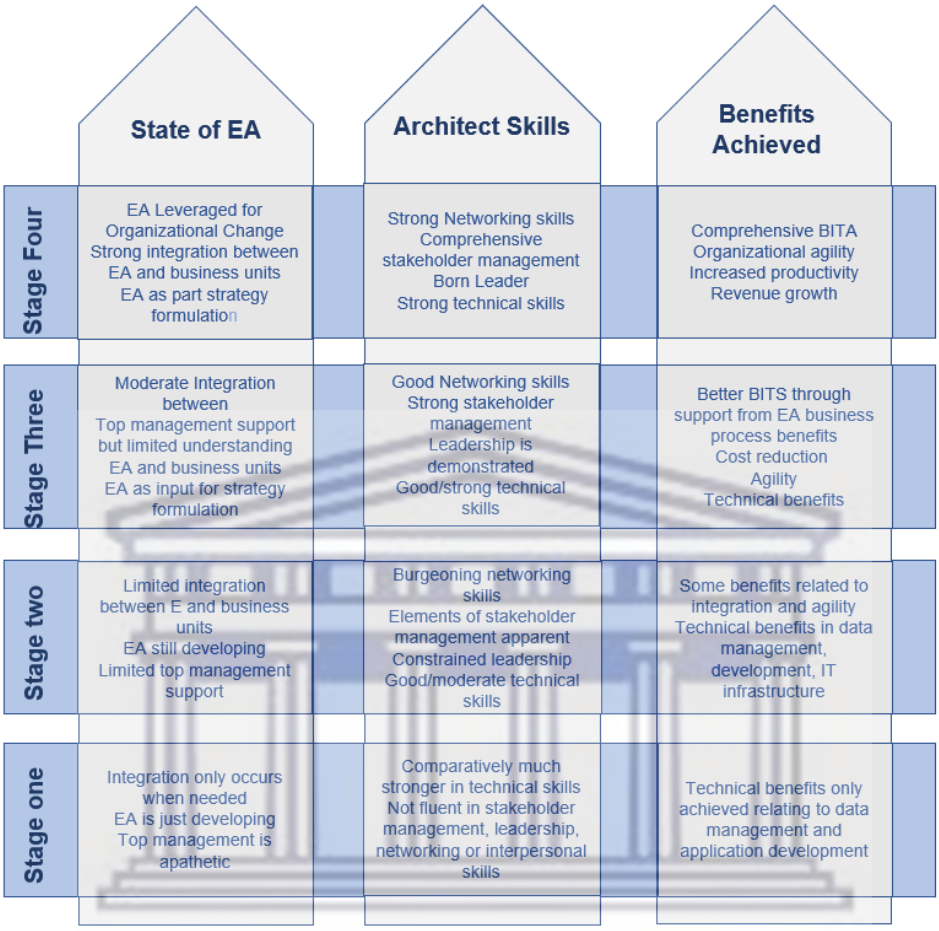

Figure 5: Robertson's 4 stage EA maturity framework (Robertson, Peko & Sundaram, 2018)

Whyte and Pretorius (2012) provided an initial version of a Business Architecture Assessment Model (BAAM), with the aim to provide a framework for organisations to determine status quo of their business architecture maturity. This model shares common aspects with the BIZBOK Guide as well, in that alignment (strategic and requirements), process maturity, Governance, and the organisational perception (involvement) are included.

The BAAM, as depicted in Figure 6 and includes sharing of knowledge, benefits, and quality management, which is in turn factors considered as part of Luftman's Strategic Alignment model coined in 1999. (Luftman & Brier, 1999)

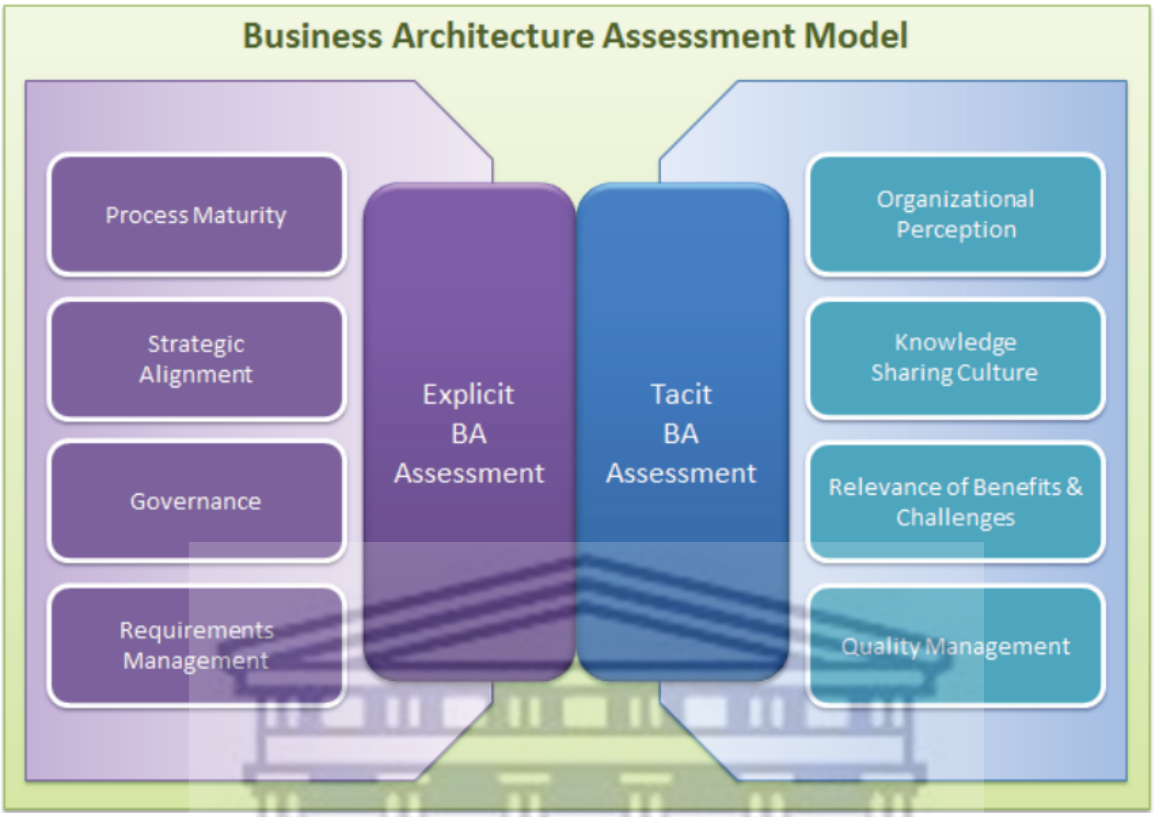

Figure 6: Components of the Business Architecture Assessment Model – BAAM (White & Pretorius)

Luftman's Strategic Alignment assessment model (1999) evaluates maturity of Business/IT Alignment by way of five levels, considering a set of six criteria. Luftman finds that achieving Business/IT Alignment remains a challenge and that no single activity will enable and sustain alignment as there are many variables to take into account (Luftman & Brier, 1999).

Luftman's six alignment maturity criteria as depicted in Figure 7 do however share similar aspects than the EA Maturity Framework of Robertson et al (2018) and in addition considers the aspect of Governance.

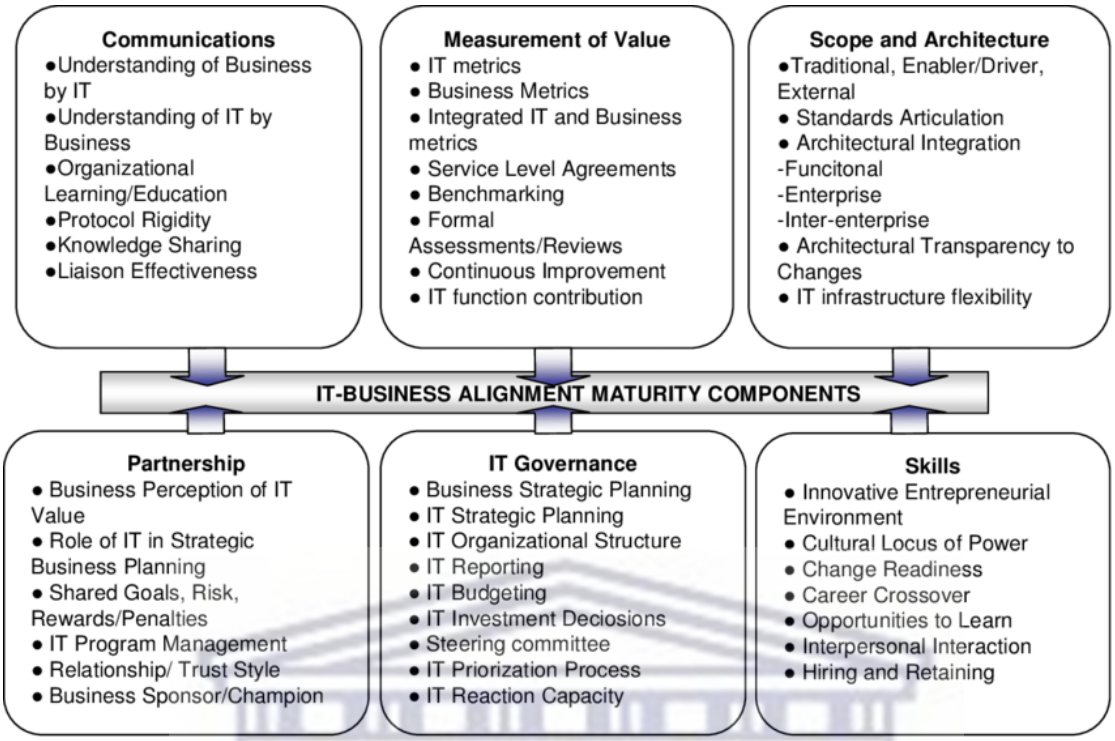

Figure 7: Luftman's six alignment maturity criteria (Luftman & Brier, 1999)

In theory these maturity frameworks incorporates aspects such as collaboration, communication and shared knowledge highlighted by Reich & Benbasat (2000).

2.11 Chapter Summary

Chapter 2 presented a thorough literature review of the topics relevant to the study. An overview of Business/IT Alignment was provided, and its importance highlighted. The concepts of EA and BA, as well as their strategic importance as found in the literature were presented. The researcher also provided an overview of models and frameworks applicable to the study.

Chapter 3: Research Design and Methodology

The research design can be seen as a structure or blueprint of how the researcher plans to conduct the research, with the focus on producing an end result (Babbie, 2001, p. 262).

Research methodology refers to specific techniques that are implemented in the process of doing research and defines the tools that are used to gather data in a specific research study (Babbie, 2001). This chapter outlines the chosen research design and methods applied in the study.

3.1 Research Design

This study followed the quantitative research paradigm, which has as its goal the establishment of general laws of behaviour and experiences within different contexts. Quantitative research gathers data in numerical format which can be categorised, a ranking can be applied, and then the data can be presented in graphs and tables (McLeod, 2017).

Surveys can be used for exploratory purposes and is the best method available to collect original data where the unit of analysis is individuals (Babbie, 2001, pp. 262-264). According to Kelley et al (2003), the term *survey* in general refers to "the selection of a relatively large sample of participants from a specific, chosen population" (Kelley et al., 2003. p. 261).

Table 5 outlines the characteristics of survey design in relation to this study based on the survey design characteristics of Mouton (Mouton, 2001. pp. 152-153).

Table 5: Survey design characteristics (Mouton, 2001)

Characteristic	Application in the context of this study
Design classification	Empirical, collecting primary data from IT professionals and Business owners working in the field of enterprise and/or business architecture, at South African companies
Research question	Exploratory
Typical Application	Organisational surveys
Mode of reasoning	Inductive
Selection of cases	Both probability and non-probability sampling techniques can be applied – In this case non-probability sampling (purposive).
Mode of observation	Structured online questionnaire
Analysis	Thematic and Descriptive Analysis, Tabulation, Comparison, and the use of statistical graphs for visualisation
Strengths	Potential to extend to larger population

Characteristic	Application in the context of this study
Limitations	Insider perspective can lead to surface level analysis, very context specific.
Sources of error	Non-responsiveness, sampling error. The questionnaire will be socialised, and responses will be monitored to overcome this possible source of error.

3.2 Unit of analysis

Unit of analysis are the things that are examined to construct summary descriptions and explain differences. In social research the unit of analysis can be individuals, groups, organisations and institutions. (Babbie, 2001. pp. 85-86).

The unit of analysis for this study were organisations, specifically organisations selected from the following sectors:

- Retail and fast-moving consumer goods (FMCG),
- Banking and Financial Services
- Investments and Insurance.

Within these companies, the respondents in the study were business unit managers/owners who have been exposed to business and enterprise architecture principles as well as IT professionals working in the field of enterprise and/or business architecture.

3.3 Research Instrument

The researcher developed the research instrument by focusing on the conceptually relevant aspects of the research topic, being (i) the level of maturity of the business architecture, and (ii) practical application of business architecture artefacts during operating model design.

Observations from the literature review identified five dimensions related to the research topic, which are observed within the context of their maturity.

These dimensions were:

- Business/IT Alignment.
- The nature of process and artefacts used withing Enterprise Architecture and Business Architecture in particular.
- The knowledge and skills of practitioners.
- The support of management of the practice and involvement in the development thereof.
- The strategic importance of Business Architecture.

From these dimensions, further analysis and decomposition produced a hierarchical clustering of the related nodes to guide the development of the instrument. By formulating questions around the specific dimensions to be interrogated, the researcher attached a maturity level to the specific aspects for each dimension (as illustrated in Figure 8) and thereby determined the maturity level of the BA practices in the target organisations.

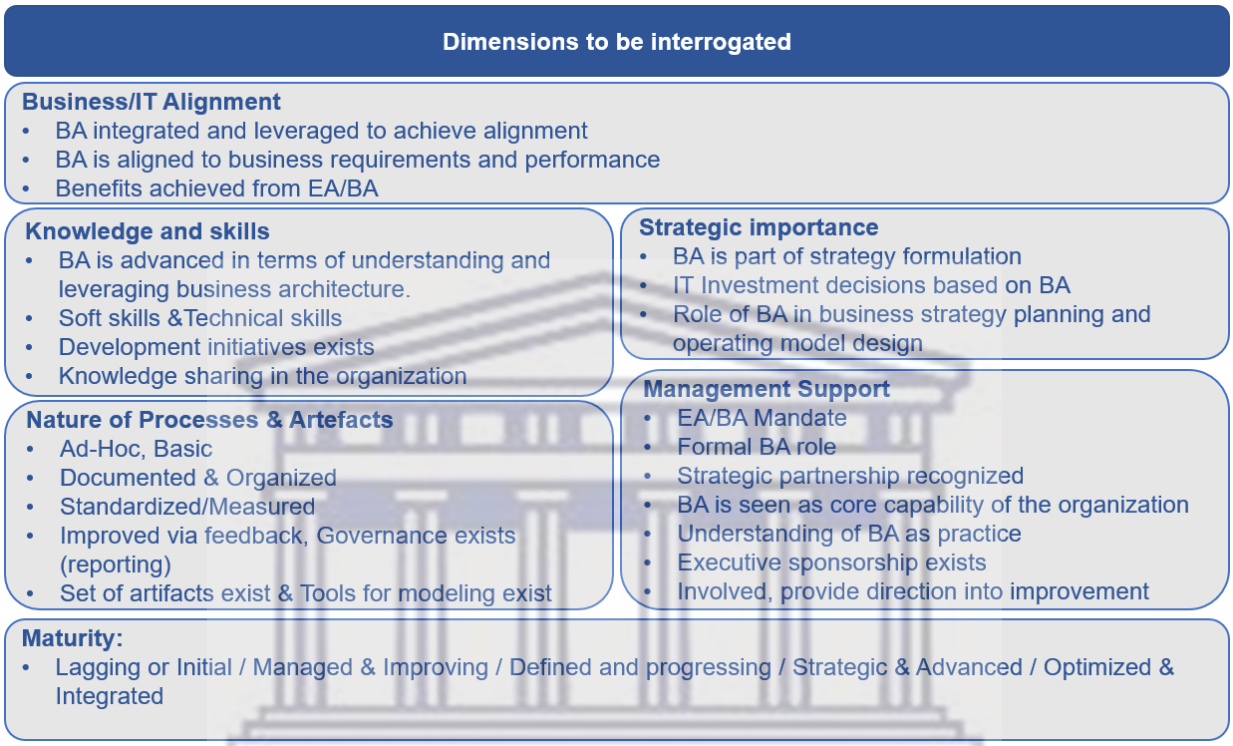

Figure 8: Conceptual research context based on relevance and literature review

The researcher incorporated the related nodes to define an objective for the line of questioning, which were then used to formulate the questions in the instrument, as depicted in Table 6: Application of the conceptual model in instrument design. Each objective is linked to the corresponding question in the instrument.

By analysing of the data (as explained in Section 3.7 below), the researcher established the relationships between key aspects (including maturity) per sector, determining what factors enable the efficient application of business architecture methodology during operating model design.

Table 6: Application of the conceptual model in instrument design

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question
Business/IT Alignment		

• BA Integrated and leveraged to achieve alignment.
• BA aligned to business requirements and performance.
• Benefits achieved from EA/BA
	To determine:
	A. The level of alignment between business and IT on specific aspects (such as requirements and performance, size, successes),
	B. If sharing of information between IT and Business exists and to what extend are parties involved in operations (tactically and strategically),
	C. The role of value reporting and BA methodologies in Business/IT Alignment and benefit achievement
		• To what extend do you agree with the following statements:
		  • A shared understanding of business is essential for business/IT alignment **[A]**
		  • Communication between business and IT is very important **[A, B]**
		  • An IT department that has a good track record of successes and achievements will have better alignment with the business it supports **[A]**
		  • Big organisations have much more difficulty to achieve business/IT alignment **[A]**
		  • Business/IT alignment provides a view of the relationship between IT investments and business performance **[A, B]**
		• How would you describe Business / IT Alignment in your organization? **[A]**
		• Enterprises Architects and business architects know what the strategic objectives of the company are (Yes/No). **[A, B, C]**
		• Which benefits do you believe will be achieved through improved business architectures? (Select one or more option if relevant) **[C]**

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question
		• Will provide a coherent view of the as-is and makes understanding the gaps easier. • Will offer a shared view of the organisation and thus improve communication. • Will assist with prioritisation of future projects. • Will assist in delivering strategic change requirements. • Will increase alignment between Business and IT • Will highlight inefficiencies and duplication of functions. • Will be a knowledge asset in the organization. • Critical input into business transformation is provided by BA. • Which of the following benefits do you think have your organization achieved through the practical use and application of business architecture methodology (Capability mapping, Value Stream mapping, Strategy maps, maturity heat maps)? **[C]** • Product lead time reduction • Cost saving were achieved by maturing the right capabilities. • Flexibility and Agility which allowed better strategic decisions. • Redundancy reduction (decommissioning of obsolete IT) • Investment in relevant and future proof IT) • To what extent do you agree or disagree with the following statements:

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question
		• There is a strong culture of sharing information between IT and business stakeholders **[A]** • Business architects are involved in discussions about business models or operating models **[B]** • Business and IT in my company have a shared perspective of which business capabilities exist in the organization **[A, B]** • The IT department in my organization have mechanisms in place to report on IT value, project progress and benefits to the business stakeholders **[C]** • IT is only there to make sure that our systems are up and running **[B]** • Executive, business, and IT leaders recognize business architects as strategic partners. **[B]** • Feedback and improvement processes exist that allow for continuous business alignment to achieve innovation and agility **[A]** • In what way are the senior managers of your business unit involved in the establishment and on-going development of enterprise architecture in your organisation? **[B, F]** • Indicate whether you think the business owners and the IT Department in your organisation are aligned on the provided statements.

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question
		• The company strategy and objectives **[A, B]** • The business model/s of our company **[B]** • What the future entails in terms of technology, trends, and innovation relevant to the industry **[B]** • Systems which need to be supported by IT **[B]** • Projects and project requirements **[B]** • Which technologies best supports business capabilities **[B]** • The business capabilities that need to be improved upon to be competitive **[B]** • How the business operates (knowledge and understanding) **[B]**
Management Support		
• Mandate given to BA team, Formal BA Role • Strategic partnership is recognised. • BA seen as core capability of the organisation. • Understanding of the BA as practice • Executive sponsorship	**To determine:** D. Participant roles (as demographic reference), E. If the BA role is understood and whether there is a dedicated team or role within the organisation, F. How BA as a practice is supported and grown in the organisation,	• What is your role within the company? **[D]** • Familiarity with the concepts of EA/BA. **[E]** • Does the company have dedicated EA role? **[E]** • Does the company have dedicated BA role? **[E]** • To what extend do you agree or disagree with statements: • The management (both in IT and business) within my company have an excellent understanding of what Enterprise- and Business Architecture is. **[E]**

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question
• Management involved and provided direction into improvement	G. The extent to which the BA practice is seen as a core capability in the organisation, with clearly articulated goals.	• Enterprise Architecture is well understood and supported by management and business stakeholders **[E]** • Business Architecture is well understood and supported by management and business stakeholders **[E]** • In what way are the senior managers of your business unit involved in the establishment and on-going development of enterprise architecture in your organisation? **[F]** • To what extent are you in agreement with the following statements: • Business architecture is seen as a core capability of my organization. **[G]** • Technology and Application architecture is seen as a core capability of my organisation **[G]** • To which extent do you agree with the following statements: • In my organisation, the Enterprise and Business architecture team has a defined mandate and clearly articulated goals**. [G]**
Nature of Processes and Artefacts		
• Processes standardised, measured, and improved. • Processes are documented. • Governance and reporting • Set of artefacts exist.	**To determine:** H. Which artifices exist in the organisation and how are they used (purpose) I. If there are processes and standards in place for improvement & governance	• Does your company have documents, models or other artefacts produced by the business architect? **[H]** • Select from a list the artefacts you are familiar with **[H]** • Select from a list the architecture documents and models you are familiar with **[H]**

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question

• Modelling Tools are used	J. If the targeted audience use specific EA frameworks and tooling in the organisation	• Which EA Framework/s is used in your company? **[J]**
		• Indicate if Business Architecture artefacts are applied and used in your company for the purposes listed. **[H]**
		  • Formulate a business capability roadmap for the organisation.
		  • Drive innovation and business change
		  • Determine if the implemented business model matured specific business capabilities.
		  • Guide investment in Information Technology
		  • Prioritise IT projects and the implementation of new technologies.
		  • We do not have Business Architecture artefacts.
		• Which statement best describes the Business Architecture practices in your organisation?
		  • No business architecture practice exists within the organization **[H]**
		  • Some business architecture mapping with supporting standards and practices are being applied within the enterprise. **[H]**
		  • Core business architecture domains have been defined, mapped, and captured within the business architecture knowledgebase using foundational blueprints including

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question
		capability map, value streams, information map, and organization map. **[H]** • Business architecture is mapped and leveraged to drive business transformation, innovation, performance improvement, strategic initiatives, and portfolio opportunities. **[H]** • Business Architecture is integrated in strategic processes. Our business strategy is clearly articulated and realized through Business Architecture and supported through enterprise architecture and technology strategy [H] • Which statement describes the governance of the Business Architecture practices in your organisation? • We do not have a Business Architecture Practice **[H, I]** • Architecture governance processes and roles are defined but not be fully or consistently deployed. **[I]** • The foundational architecture standards, practices, and governance have been defined and established for the organization. **[I]** • Enterprise level governance exists, i.e., there is standards in place for Business Architecture processes and artefacts that is consistently applied for all work done for the enterprise. **[I]**

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question

		• Which mechanisms are applied in your organisation to measure the quality, efficiency, and level of maturity of your Business Architecture Practice? **[I]**
		  • We apply the maturity model from the Business Architecture Guild
		  • We measure maturity informally by surveying IT and Business Stakeholders
		  • We do not measure the maturity of our Business Architecture practices.
		  • We formally measure the quality and efficiency of our Business Architecture Practice, but do not use a maturity framework.
		• Which modelling tools do you use in your organisation to create EA and BA artefacts? **[J]**
		• Which statement describes the Business Architecture processes and ways of working in your organisation best?
		  • Processes are Ad Hoc, only some are defined and the effort to establish the practices relies on only one or a few individuals **[I]**
		  • Processes are established yet reactive, but we are tracking efficiency. Processes are followed and successes can be repeated**. [I]**

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question
		• Processes are documented, standardized, integrated and proactive. We do not measure process efficiency**[I]** • Processes are documented, standardized, and are measured. Data is collected to determine the quality of the practice and the outputs it produces. **[I]** • Processes are documented, standardized, integrated, and continuously improved based on data and feedback. The practice can respond to innovative ideas and pilot new technologies. **[I]**
Strategic Importance		
• BA part of strategy formulation • IT expenditure based on BA. • BA plays a role in strategy planning and operating model design	**To determine:** K. At which point in either the software development lifecycle or strategy design is the BA artefacts used L. What value is attached to the BA artefacts within the organisation? M. To what extent BA influences the IT expenditure in the organisation	• Does your company have documents, models or other artefacts produced by the enterprise or business architect? **[L]** • Indicate when Business Architecture artefacts are applied and used in your company [**K]** • When the business raises a request for a new piece of technology • When there is a change in the business model (i.e., the services/products offered, distribution of services/products, new business ventures are included, or new capabilities are needed) • When new market trends spark innovation in the organisation • When the organisation's strategy evolves or changes

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question
		• When the strategy and objectives have already been set • During Operating Model design • Before new strategic objectives are identified and formulated • Iteratively throughout the lifecycle of IT project • Evaluate each of the following statements and pick an option which best describes the situation in your organisation (Defined, Basic, In place to some extent, Lagging) • Business Architecture artefacts are valuable and used during the design of business or operating models **[L]** • Business architecture processes redefined, documented, and followed. [L] • Enterprise and business architecture are used in most of the business units to make decisions on which projects to pursue to deliver on strategic objectives [L] • Business architectures are highly integrated and aligned with the business goals [L] • Business architectures are used in most of the business units to make decisions on which projects to pursue to deliver on strategic objectives [L] • Business architects are leveraged for organizational change [L] • Business architects are used to formulate strategy [L]

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question
		• Business architects are used to inform business models and operating models on which business capabilities need to improve to achieve competitive advantage [L] • In what way do you think has introducing BA influenced your organization's investment on IT? Select from list **[M]** • BA provides strategic input into the investments made into IT resources (people, process, technology, and data) • BA have not impact on what business procures in terms of technology. • BA is a nice to have, but in the end, business makes their own decisions • BA has no influence whatsoever on IT investment/expenditure • We do not have a BA Practice that influences IT investment decisions • The BA are always consulted when it comes to making decisions on the procurement of technology • To what extent do business architecture models and documents support common strategic focus areas or objectives in your company [L]

Dimension (which could impact efficient application of BA during Operating Model Design)	Objective	Question
Knowledge and Skills		

• BA is advanced in terms of understanding and leveraging business architecture.
• Soft skills
• Technical skills
• Development initiatives exists
• Knowledge sharing in the organization.
	To determine:
	N. The individual skills rating for specific soft skills as identified in the literature
	O. The individual technical skills rating for specific technical skills as identified in the literature.
	P. If development, training, and career path for Business Architects in the organisation exists.
		• Rate your skill level in terms of the following soft skills **[N]**
		  • Collaboration
		  • Stakeholder engagement
		  • Leadership
		  • Networking
		  • Communication
		  • Interpersonal Skills
		• Rate your skill level in terms of the following technical skills **[O]**
		  • Solutions modelling,
		  • Business modelling,
		  • Architecture views design,
		  • Applications and role design,
		  • Systems integration
		  • IT Industry Standards
		  • Building Block design
		  • Architecture framework (Togaf or other)
		  • Data and Information Modelling
		• In my organisation a business architect's career path is defined and supported by a training curriculum **[P]**

The research instrument, i.e., an online questionnaire, distributed electronically, was developed utilising Google Forms as tool, considering the conceptual relevant dimensions to be interrogated as represented in Figure 8. The research instrument is attached hereto as Annexure A.

3.4 Data sources, Sampling strategies and techniques

For this study non-probability sampling was applied, specifically homogenous purposive sampling, based on the availability and expert knowledge if the individuals who could answer the research question. It was found to be an appropriate sampling technique in this field. In purposive sampling, the sample is selected based on what the researcher believes to be "typical" or "most representative" of the population and the views of the selected population, with similar characteristics, are deeply explored (Wu & Thompson, 2020. p. 6). In simple terms the researcher decided what needed to be known and set out to find individuals with similar characteristics and who would be able to provide the knowledge based on their experience (Bernard, 2002. pp. 189-193). There is no definite way of calculating the overall size of the population. Therefore, each unit in the target population does not have an equal chance of being included. So, the sample was formed using other considerations, such as particular characteristic (in this case the role, expert knowledge, sector).

The specific respondents were IT professionals that work in the field of business architecture or enterprise architecture, as well as business owners/business unit managers within the targeted South African economic sectors. A subset of participants was therefore targeted to estimate the characteristics of the whole population (Singh & Masuku, 2011).

The population for this study were selected from key South African economic sectors. The economic sectors were delineated to target the Retail & Fast-Moving Consumer Goods (FMCG) sector, Banking & Financial Services sector, and Investments & Insurance sector. These sectors were chosen as they are represented, among others, as key economic sectors by Brands South Africa (2018). The Finance and banking sector, Insurance sector, and the Fashion and Beauty sector are also seen as part of the fastest growing industries in South Africa (Mueni, 2021).

Furthermore, the population were then delineated from the Top 100 JSE listed organisations (SA Shares, FTSE100), to include well-known role players in South Africa for each sector (Research and Markets, 2021; Business Link, 2019; SA Shares, 2021; Arena Events, 2019). The population was then demarcated to business executives and individuals working in the

field of business and enterprise architecture, who were then invited to participate in the research study.

Invitations for participations were done by invitation letter to every company's CIO/IT Executive with a request to circulate the invitation to participate. In addition, the researcher reached out to professionals in the field of business- and enterprise architecture as well as business executives via LinkedIn. The researcher made use of the search functions within LinkedIn to identify CIO's/IT Executives, business executives, and professionals within the field of enterprise architecture. The search results were then refined to filter the selected sectors and companies on the Top 100 JSE list. LinkedIn is the world's largest professional online network and can be used to connect and strengthen professional relationships (LinkedIn Corporation, 2022). A total of 733 invitations were send out in this way and 109 responses were received, constituting a response rate of 14.87%.

3.5 Data collection techniques

Questionnaires are mostly used in quantitative studies that consider schools of thought, experiences, how people behave as well as how often specific opinions occur (Rowley, 2014. pp. 309-328). These considerations apply to the research topic, questions, and sub questions for this study.

The research questionnaire was delivered and completed by the target audience in an online format. A valuable benefit of online questionnaires provide access to virtual communities and a way to gain access to individuals sharing specific interests, schools of thought, values and beliefs on a topic, issue or problem (Wright, 2005). In the context of this study, an online questionnaire was a relevant and effective technique to collect the required data.

The questionnaire consisted of both open and closed questions. Closed questions produce higher response rates since they are quick to answer. They are also easier to code, analyse and visualise. Open questions are handy to collect more in-depth responses, allowing respondents to respond in their own words and convey their own views (Rowley, 2014).

3.6 Quality Assurance of research instrument

The research instrument was deployed to 3 individuals in the field of enterprise and business architecture. These individuals were briefed on the research objectives and asked to complete the questionnaire, and whilst doing so note contradictions, grammatical considerations, or any questions that they found difficult to understand. Once they have

completed the questionnaire, their constructive feedback to improve and iron out any sources of ambiguity or disparate interpretation was incorporated into the final instrument design.

3.7 Data analysis

The research instrument consisted mainly of closed questions with a few open-ended questions which were thematically analysed. As Rowley (2014) suggests, prior to moving forward with data analysis from closed questions, the data were checked for completion, and insufficiently completed data were discarded. The data from closed questions were analysed, categorised, and visualised in Power BI as analysis tool. Power BI is a business analytics service, aiming to interactively analyse and visualise data by way of a user interface, allowing creation of graphs, reports, and dashboards (Microsoft n.d.). Numerical values were attached to responses where appropriate. Tabulation and the use of statistical graphs for visualisation were employed. Charts and graphs were selectively used to make comparisons between different data types, show trends and relationships or add emphasis.

Descriptive analysis as analysis technique was applied since it aids in describing, demonstrating, or helpfully summarising data points that (i) develop patterns, (ii) allows for the comparison of data points and, (iii) surface relationships in the data set. The researcher employed simple statistics representing core trends (such as means) to explain the data.

Descriptive analysis and tabulation of data were done by using:

(i) Univariate analysis (looking at a single variable), and attaching different attributes to it,
(ii) Bivariate analysis (looking at subgroups compared, formulating different views), and
(iii) Multivariate analysis (looking at simultaneous relationships to fully understand the relations between two or more variables) (Babbie, 2001).

Table 7 below provides examples of each type of descriptive analyse done and the variables considered.

Table 7: Descriptive Analysis (Examples of variables considered)

Analysis	Short Description (Babbie 2001)	A few EXAMPLES from the deployed Research Instrument (Questionnaire)
Univariate analysis	Considering a single variable	• Number of business owner respondents • Number of IT respondents • Demographics of respondents: age, gender, role • Existence of reporting mechanisms for IT value • Perception of achievement of alignment through BA • Familiarity with EA/BA.

Analysis	Short Description (Babbie 2001)	A few EXAMPLES from the deployed Research Instrument (Questionnaire)
Bivariate analysis	Considering subgroups, comparison, and formulating different views	• Comparison of skill levels (Technical and soft skills) per sector. • Comparison of role and field of study or respondents. • The respondents with BA roles in relation to the size of the organisation in the sector • Existence of BA role and artefacts within the organisation per sector • The use of artefacts per sector (what and how) • Governance standards per sector • Perceived benefits per sector • Description of Business/IT Alignment per sector • The nature of sharing culture in the organisation in relation to the existence of mechanisms to improve Business/IT Alignment. • Role of shared understanding of business concepts in relation to the perception of the importance of communication between business and IT.
Multivariate analysis	Considering simultaneous relationships to fully understand the relations between two or more variable/s	• Comparison of the sectors in terms of familiarity with the BA role and the EA role, as well as understanding of the concepts within each sector, considering perception on shared perspectives • Comparison of the BA artefacts used, what they are used for in relation to perceived support of strategic objectives by these artefacts (per sector) • Comparison of aspects on which the business and IT are aligned, per sector in relation to the existence of a BA practice in the organisation. • Comparison of the maturity factors of the BA practice in relation to the use of BA methodologies / artefacts in strategy formulation and/or operating model design

Thematic analysis (TA) was applied to open ended questionnaire responses. Only 3 open ended questions were asked in the questionnaire (being Q19, Q30 and Q31). TA is a method of "identifying, analysing, and reporting patterns (themes) within data" and is applied frequently as it can address a broad spectrum of research questions and topics (Castleberry& Nolen, 2018. p. 808).

TA applied to open ended responses from questionnaires can probe the context deeply, allowing flexibility and interpretation in the analysis (Castleberry &,Nolen, 2018). The steps of analysis that were applied based on the analysis process stated by Castleberry and Nolen (2018) are outlined in Figure 9.

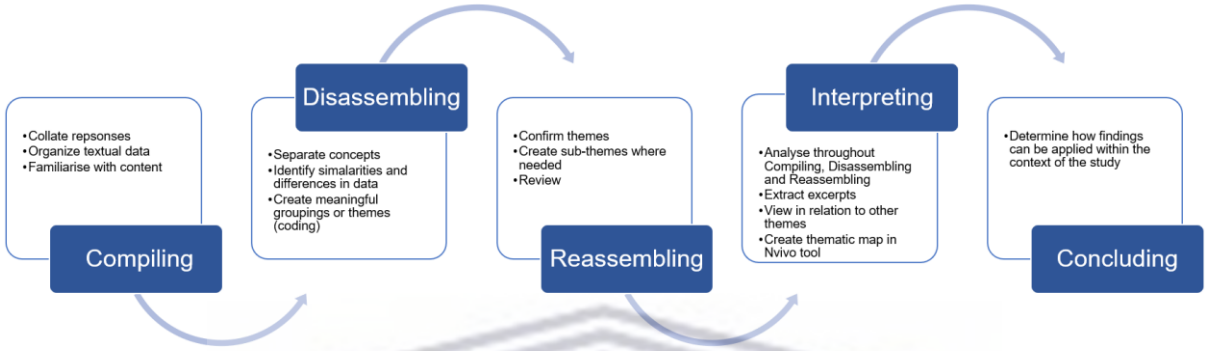

Figure 9: Thematic Analysis process

(Castleberry and Nolan, 2018)

3.8 Location of study

The study was conducted on primary data collected from individuals as stated in Sections 3.4 and 3.5. The companies in question are South African companies from the Retail & FMCG, Banking & Financial Services, and Investments & Insurance sectors.

3.9 Ethical considerations

The researcher has the responsibility to provide peace of mind to participants about their freedom to choose to be involved in the study, protect their identity throughout the research process as well as promoting clear and honest research reporting to readers (Munhall, 1988. pp. 32).

In this study ethical issues were identified and mitigated as described in Table 8 below.

Table 8: Ethical Issue Mitigation

Ethical issue	Mitigation
Voluntary Participation	Participants were invited to participate in the study and were informed that: • Participation is completely and entirely voluntary. • Participants may choose not to take part at all, and if they do decide to participate, they may stop at any time.
Informed Consent	Participants were informed of the purposes, benefits, and risks behind the study before they opted to participate.

Ethical issue	Mitigation
	Participants were asked to respond to specific consent questions (Question 2 of the Instrument). Any responses with a negative answer were appropriately discarded and results were not reported in Chapter 4.
Anonymity	Personally identifiable data is not collected in this study. Care was taken to ensure voluntary participation, as well as anonymity of both participants and the information related to the companies they work for.
Results Communication	Results are accurately presented in Chapter 4. Plagiarism declaration is signed and checked via prescribed tool

Ethical clearance for the study was obtained as per the university governance procedures and is attached hereto as Annexure B.

3.10 Chapter Summary

The chapter outlined the chosen research design and methods applied in the study. The research design and unit of analysis were explained as well as the development of the research instrument. Data sources, sampling and collection techniques were discussed. The researcher also outlined the data analysis that was undertaken, the results of which are presented in Chapter 4 below.

Chapter 4: Research Findings

This chapter provides a view of the current state within the target sectors, and the research findings as analysed. Findings are presented within the context of Table 6: Application of the conceptual model in instrument design, Chapter 3). Each section highlights findings which are then summarised in a Section Conclusion.

The aim of the analysis is to confirm that the interrogated dimensions (as set out in Figure 8: Conceptual research context based on relevance and literature review) with the aim to confirm each dimension as a factor enabling the efficient application of business architecture methodology during operating model design.

4.1 Introduction

The literature review as presented in Chapter 2, introduced literature and theoretical frameworks that guided the research study and research sub questions 1-5 as outlined in Table 1: Research Sub-Questions.

In this chapter, the researcher presents the concepts and insights that emerged from the data and provides an interpretation of the findings in relation to the theoretical work. The chapter responds to the research sub-questions 7-9 (as outlined in Table 1: Research Sub-Questions).

The chapter sets the scene by providing an overview of the demographics of the respondents in the study with the aim to utilise the demographic data in support of further findings. The researcher continues to introduce the reader to the high-level findings, followed by the in-depth exploration of the findings, and discussion thereof to confirm the dimensions within the research context as factors that enable the efficient application of business architecture methodology during operating model design.

4.2 Demographics of the respondents

This section will provide insight into the sector and role participation in the research effort by presenting the demographic data collected from respondents. The demographic data serves as variables in the follow-on sections to compare the results.

4.2.1 *Sector and Role Participation*

Demographic data were extracted from 109 responses to the electronic based survey.

Figure 10: Sector Participation in the research study. The data showed balanced sector participation with 44% from the Retail & FMCG sector, 34% from the Banking & Financial Services sector and the least participants from the Insurance and Investment sector (22%).

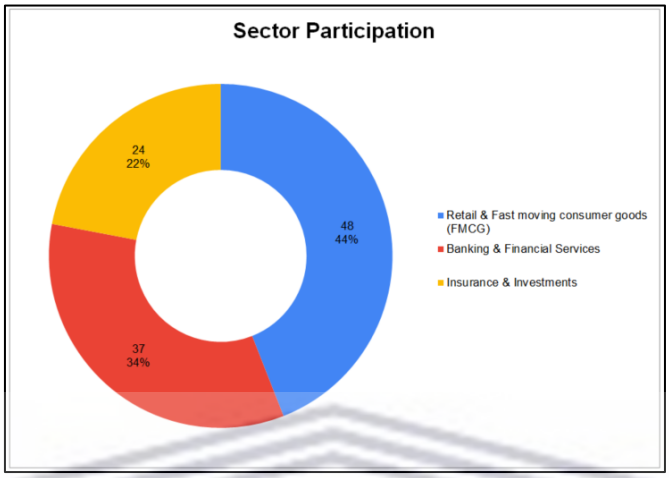

Figure 10: Sector Participation in the research study

4.2.2 *Area of work, age, and roles of respondents*

Figure 11 below reflects that 73% of respondents indicated that their area of work as Information Technology, with the balance of 27% working in different Business Areas within their organisations.

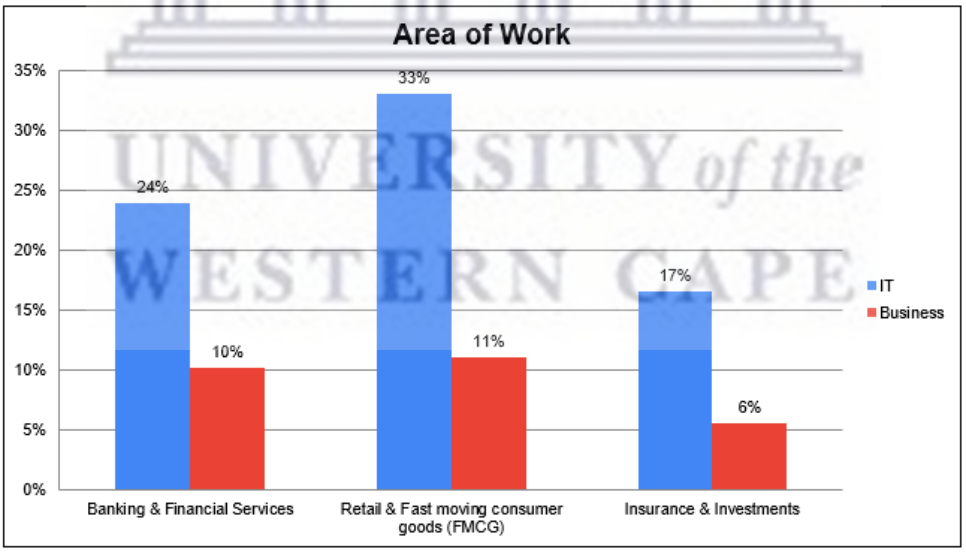

Figure 11: Respondent's area of work

Figure **12** below reflects a role-based analysis (Business Architects) in relation to the area of work. The data is presented as a percentage of the total number of respondents who indicated their roles to be Business Architects (i.e., 21).

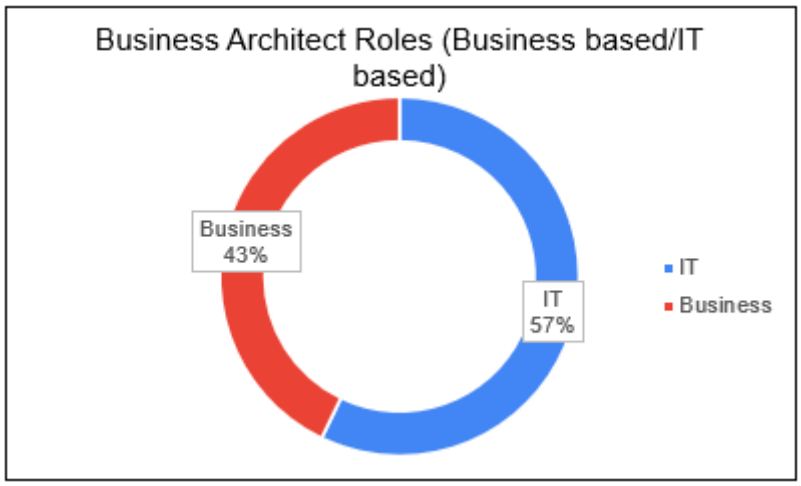

Figure 12: Business Architects areas of work (Business / IT)

It indicates that Business Architects are working in both the Business environments and in IT teams, with 57% based in IT Departments and 43% in Business Departments.

Figure 13 below presents the data on the Business Architect roles by sector, again as a percentage of the total number of Business Architects (i.e., 21).

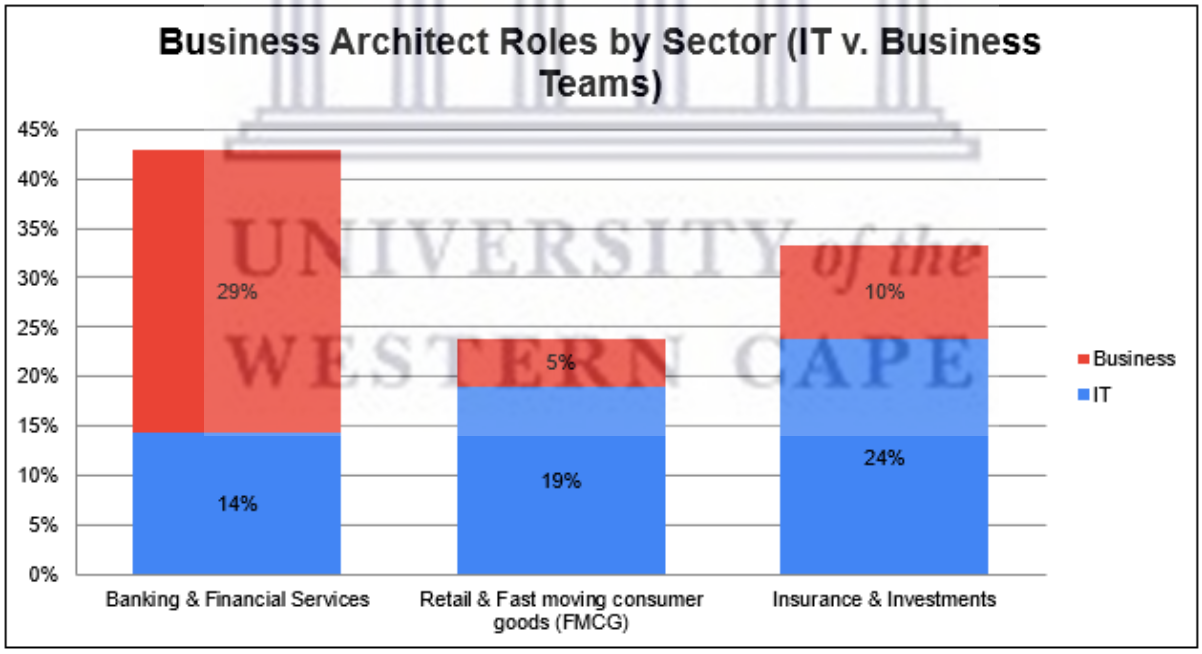

Figure 13: Role Based analysis: BA roles by Sector

This indicates that 29% of Business Architects work in business environments in the Banking & Financial Services sector, 5% in the Retail & FMCG sector and 10% in the Investment & Insurance sector.

Figure 14 focuses on the age distribution of respondents.

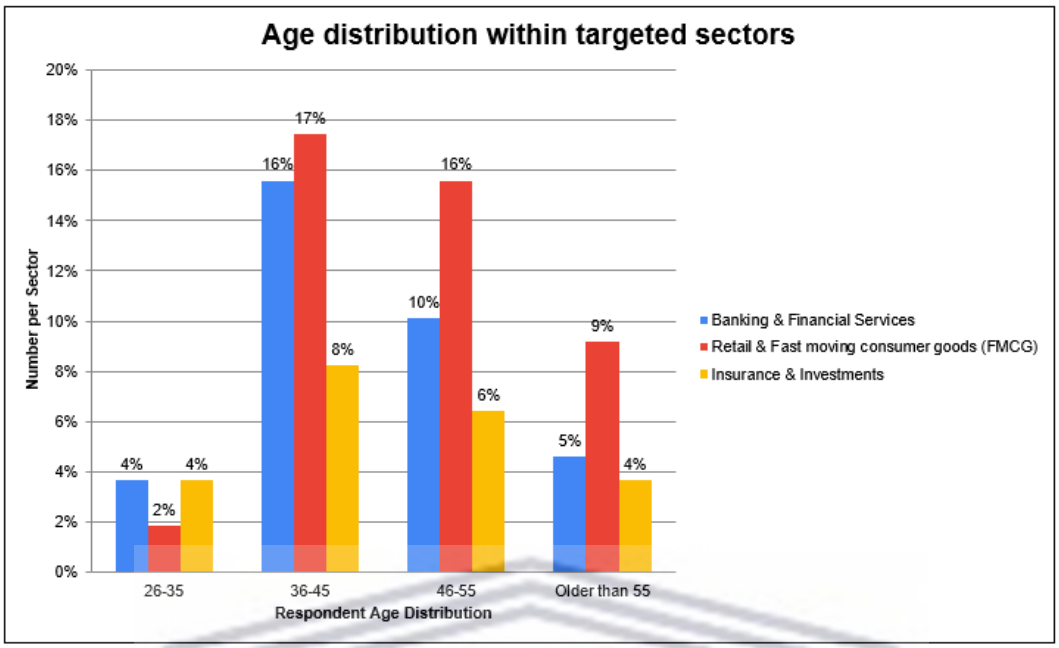

Figure 14: Age distribution of respondents by sector

The age distribution across the three sectors, indicate that 41% of respondents falls in the age bracket of 36-45 years, and 90% older than 36 years. Within this age bracket the dominant work sector is Retail and FMCG. This indicates a mature workforce.

The demographic information on the respondents indicates a mature workforce across the sectors, with representation from the business- and enterprise architect profession as well as business stakeholders.

4.3 Business/IT Alignment

The importance of alignment of Business and IT was established in the literature review (Section 2.1 Overview of Business/IT Alignment Overview of Business/IT Alignment). This section presents the findings related to the state of Business/IT Alignment in the chosen economic sectors (as set out in Table 6: Application of the conceptual model in instrument design, Chapter 3).

In this section findings in respect of the following are presented:

- The level of alignment between business and IT on communication, business operations, strategy, business/IT relationship, performance, delivery, organisation size, and IT successes.
- If sharing of information between IT and Business exists, the relationship and to what extend are parties involved in operations (tactically and strategically).

- The role of value reporting and BA methodologies in Business/IT Alignment and benefit achievement.

4.3.1 *Level of alignment between IT and Business*

Table 9 presents the analysis of responses to the open-ended question "*Describe Business/IT Alignment in their organisations*" in your organisation. In these results 5 respondents opted not to describe Business/IT Alignment in their organisations and therefore results are based on a total of 104 responses. The responses were categorised in themes, coded and then the responses related to the themes were analysed.

Table 9: Business Alignment Themes - Responses on the level of alignment

Business/IT Alignment Theme	Percentage of occurrences in responses
Business and IT are aligned to some extent but need to improve - Silos, communication challenges exist	29%
Business and IT are strategically aligned from strategy formulation to implementation	25%
Business and IT work together to deliver solutions and projects	19%
Executive level formulates and align the strategy, the rest has an operational focus	5%
No or very little alignment between Business and IT exists	22%

Most of the responses (29%) felt that Business and IT were aligned to some extent but that there is definite room for improvement. The main reason for the misalignment highlighted by the respondents were disjointed operations (silos) or gaps in communication. At the same time, 25% of the responses indicate that alignment is followed through from strategy to implementation, indicating a healthy Business/IT Alignment in these organisations. There also seems to be a delivery or project focus (keeping the lights on) in some organisations as 19% of respondents indicated that Business and IT work together to deliver solutions and projects.

The responses to the question further show that although architects might be invited to the discussion table, the expectation from the business are that IT will deliver solutions, support the technology they use and execute project deliverables. A small percentage of the responses (5%) suggest that strategy formulation is something that happens on executive level and that everyone else is focused on the operation, indicating that strategic alignment is not a big focus, however, this may also mean that other layers (non-executives) of the business may be involved in strategy formulation.

There were a high percentage of occurrences of responses related to the existence of silos as well as communication challenges and respondents felt that Business/IT alignment on these aspects were low. Very little alignment exists between Business and IT, and some focus is on delivering solutions and project. Figure 15 represents results when respondents were asked to indicate which aspects or elements, they perceive IT and business to be aligned on.

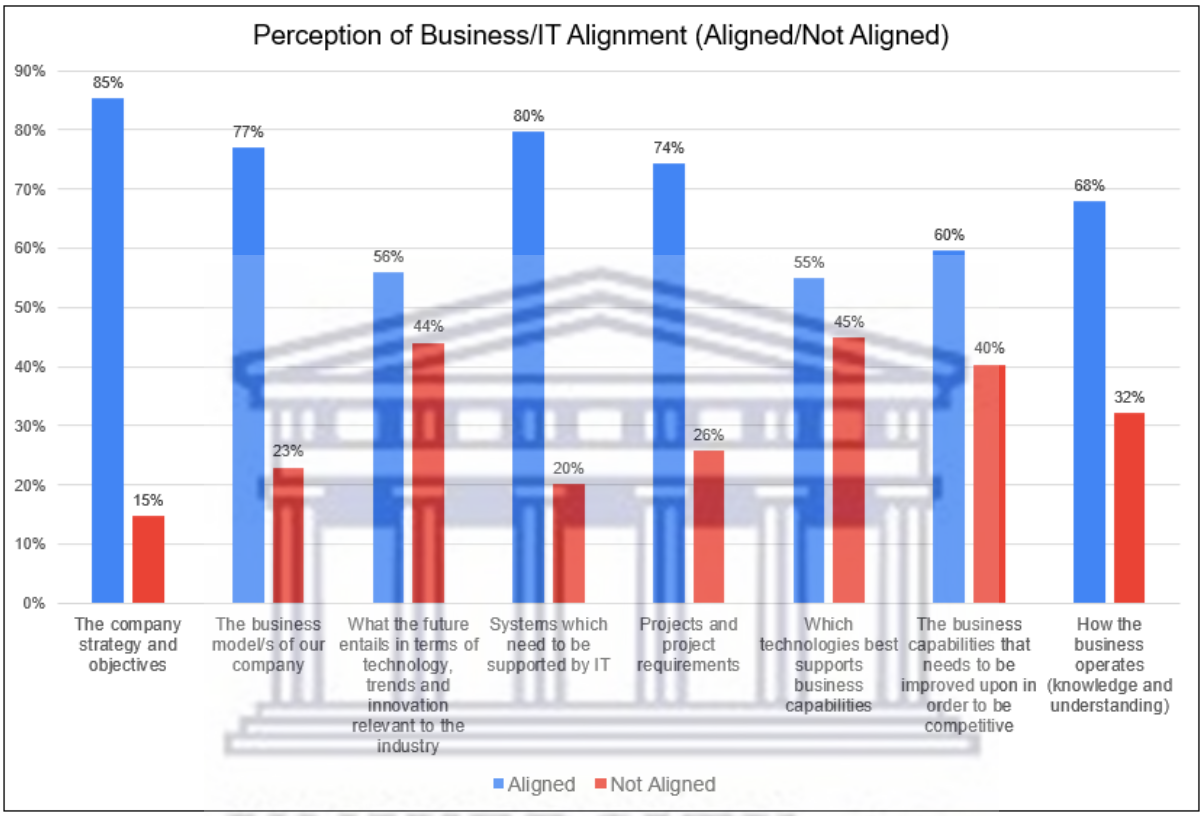

Figure 15: Perception of Business/IT Alignment

The results revealed that the closest alignment exists on the company strategy and objectives (85%), i.e., both business stakeholders and IT knows what the company strategy is, and the objectives are. Considering this result within the context of the results in Table 9, specifically that of Business and IT being strategically aligned from strategy formulation to implementation, it might indicate that although both parties know what the strategies are, the involvement in formulating them and implementation fall short.

Furthermore, as indicated in Figure 15, this is followed by the more tactical area of systems which need to be supported by IT (80%), and then the business models of the organisation (77%) and project requirements (74%), which is also tactical in nature.

The responses also revealed Business and IT are the least aligned on which technologies support the business capabilities best (55%), what the future entails in terms of technology, trends & innovation (56%) and the business capabilities that needs to be improved upon to be

competitive. However, on how the business operates (knowledge and understanding), 68% respondents perceived business and IT to be aligned, which means that some sharing on tactical business operations does happen. The Strategic and Tactical involvement of BA in business operations are discussed further in Section 4.3.2 below.

Finding: ***The results indicate that being in the know about business strategies and objectives does not necessarily contribute to better alignment on business capabilities, future innovation, and competitive positioning. There also seems to be closer alignment between business and IT on operational and tactical aspects.***

4.3.2 *The Strategic and Tactical Involvement of BA in business operations*

The findings presented in Figure 15Figure 15: Perception of Business/IT Alignment, can be categorised and labelled as either strategic or tactical in nature as outlined in Table 10 below.

Table 10: Categorisation of Alignment elements presented in Figure 15

Strategic	Tactical
The company strategy and objectives	Systems which need to be supported by IT
The business model/s of our company	Which technologies best supports business capabilities
What the future entails in terms of technology, trends, and innovation relevant to the industry	Projects and project requirements
The business capabilities that need to be improved upon to be competitive	How the business operates (knowledge and understanding)

By assigning either a Strategic or Tactical label to the responses, this categorisation was used to assess the level of alignment by sector.

Figure 16 below, presents the responses on the strategic elements of Business and IT alignment by sector. The data is presented as a percentage of the respondents working in a specific sector who indicated that they agree that alignment exists on the elements in the presented list. For example, 43 respondents out of 48 working in the Retail & FMCG sector indicated that in their organisation there is alignment on the company strategy and objectives, which calculates to 86%.

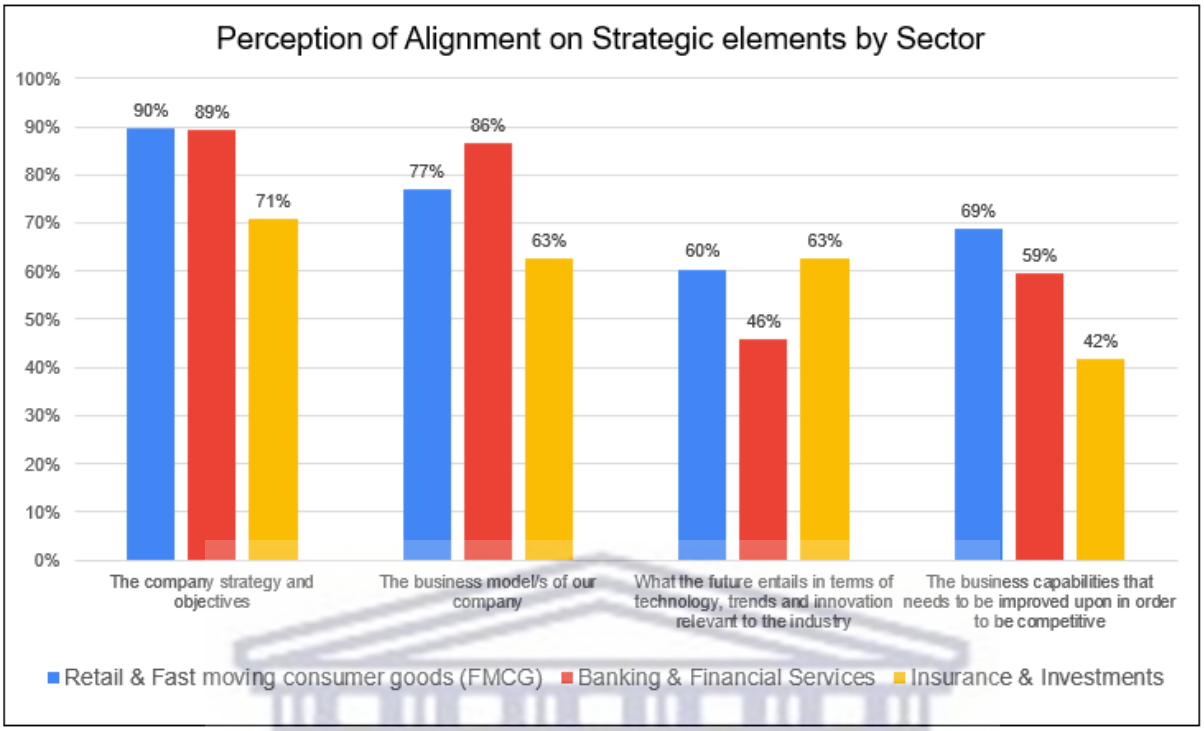

Figure 16: Perception of Business/IT Alignment on Strategic elements by Sector

The Insurance & Investment sector consistently indicated lower levels of alignment, except for future technologies, trends, and innovation relevant to their industry (46%). The Retail & FMCG sector were more confident on alignment in all the aspects, followed by the Banking & Financial Services sector. This indicates that on a strategic level the Retail & FMCG sector were best aligned, followed by the Banking & Financial sector and lastly the Insurance & Investment sector. The involvement of BA in the business operations are therefore highest in the Retail & FMCG sector, followed by Banking & Financial sector and lowest in the Insurance & Investment sector.

Figure 17 below, presents the responses on the tactical elements of Business/IT Alignment by sector. The data is presented as a percentage of the respondents working in a specific sector who indicated that they agree that alignment exists on the elements in the presented list. For example, 29 respondents out of 48 working in the Retail & FMCG sector indicated that in their organisation there is alignment on the company strategy and objectives (60%).

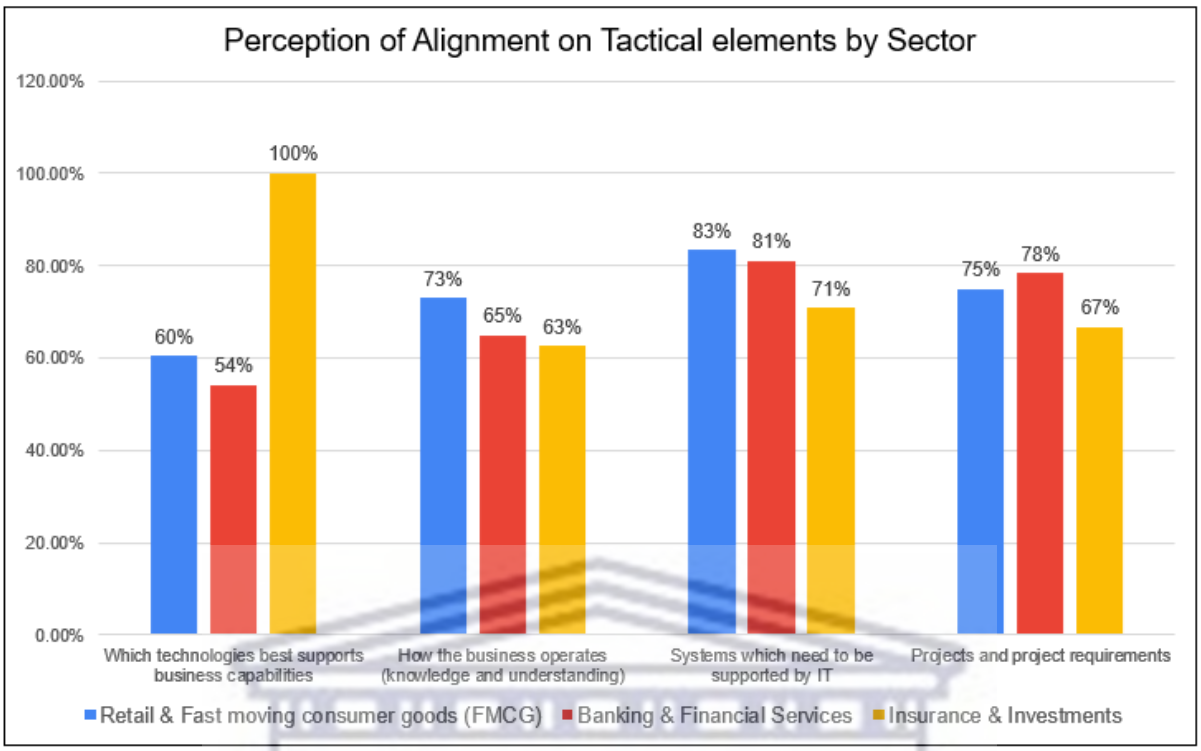

Figure 17: Perception of Alignment on Tactical elements by Sector

The Insurance & Investment sector were 100% confident that business and IT are aligned with which technologies best supports business capabilities, compared to the other sectors.

This result is somewhat surprising considering that only 42% of respondents from the Insurance & Investment sector indicated that Business and IT were aligned on the capabilities that needs to be improved upon to be competitive (Figure 16).

Finding: ***There is an indication that IT offers the implementation of technologies and agreement to their functional fit, but not necessarily that it will position the organisation for capability improvement. This leads to the perception that there is closer Business/IT Alignment on implementing the right technologies to maintain, rather than mature business capabilities.***

Figure 18 below presents the average percentage of responses on Business/IT Alignment for both Strategic and Tactical aspects by sector.

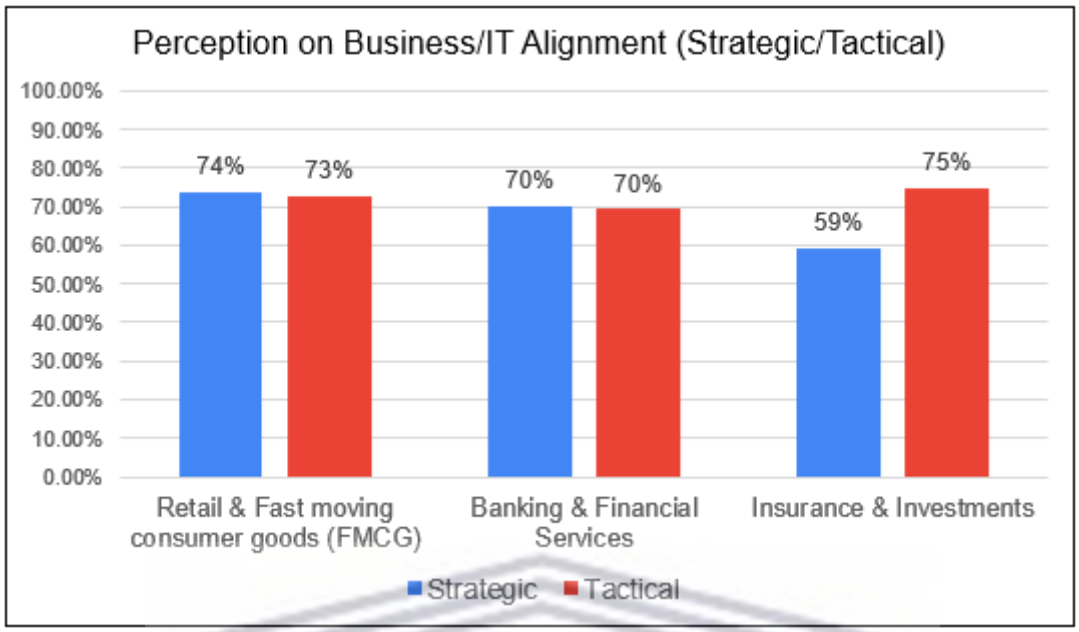

Figure 18: Perception of Business/IT Alignment on both Strategic and Tactical elements

The data shows that the Retail & FMCG and Banking & Investments confidence levels are similar on strategic aspects and tactical elements.

This indicates a balanced approach to Business/IT Alignment in these sectors. The Insurance & Investment sector is much more confident in alignment on tactical elements (59% vs. 75%), indicating that the strategic involvement of BA in this sector is the low, confirming the results in Figure 16.

Finding: ***Although the perception of Business/IT Alignment are similar in most cases in strategic and tactical aspects, there is an indication that the involvement of BA in operations and implementation of technologies are more pertinent than in the strategic development of business capabilities and business models.***

4.3.3 *The role of relationships between Business and IT in alignment*

Figure 19 below presents the view of respondents on whether the level of alignment provides a view on the relationship between Business and IT.

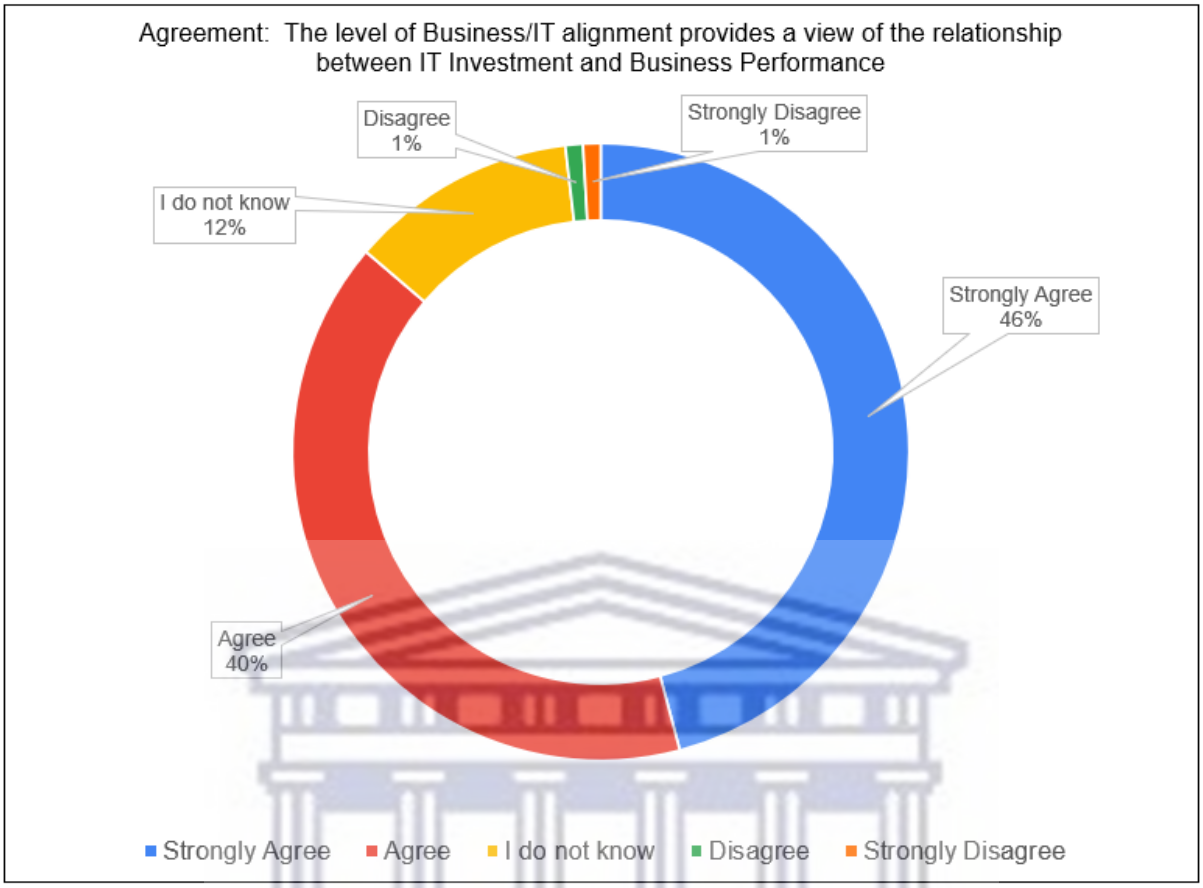

Figure 19: Agreement: The level of alignment provides a view of the relationship between IT Investment and Business Performance

Respondents mostly agreed or strongly agreed with the statement that Business/IT Alignment provides a view of the relationship between IT Investments and Business Performance (86%).

Finding: ***The results indicate that respondents perceive Business/IT alignment to be an indicator of the relationship between expenditure on IT and the performance of the business.***

Figure 20 shows the size of organisations in relation to Business/IT Alignment.

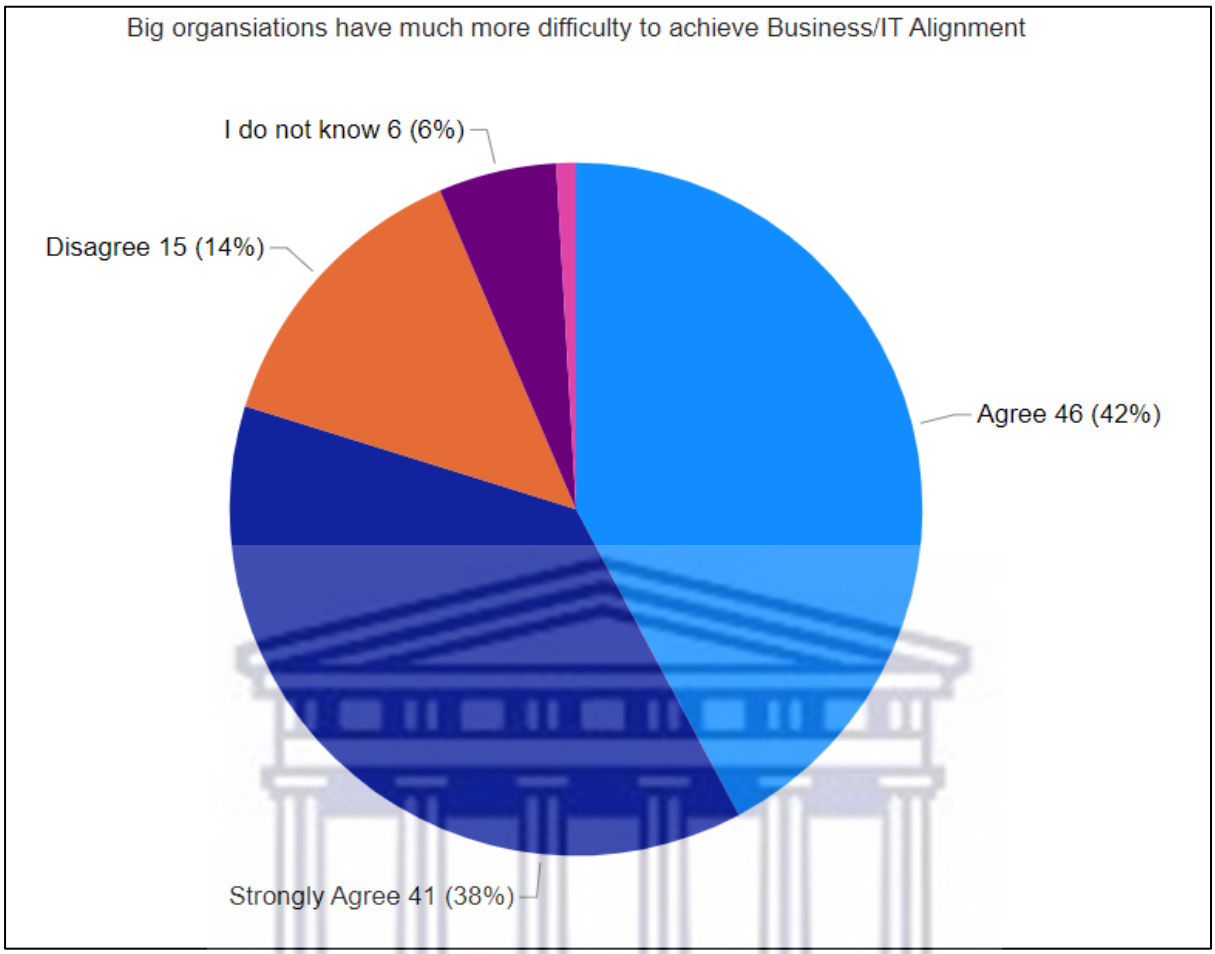

Figure 20: Size of the organisation in relation to Business/IT Alignment

Respondents recognised that the size of the organisation is directly related to Business/IT Alignment, since 80% of respondents agreed or strongly agreed that big organisations have much more difficulty in achieving alignment. 14% of respondents felt that the size of the organisation does not negatively impact alignment, whiles 6% were unsure. This confirms the views in Section 2.1 Overview of Business/IT Alignment).

Finding: ***There is an indication that the size of an organisation is related to Business/IT Alignment and bigger organisations have more difficulty in achieving Business/IT Alignment.***

Figure 21: Agreement on whether feedback and improvement processes exist for Business/IT Alignment presents the results on whether respondents believed feedback and improvement processes exist that allow for continuous alignment and achievement of innovation and agility.

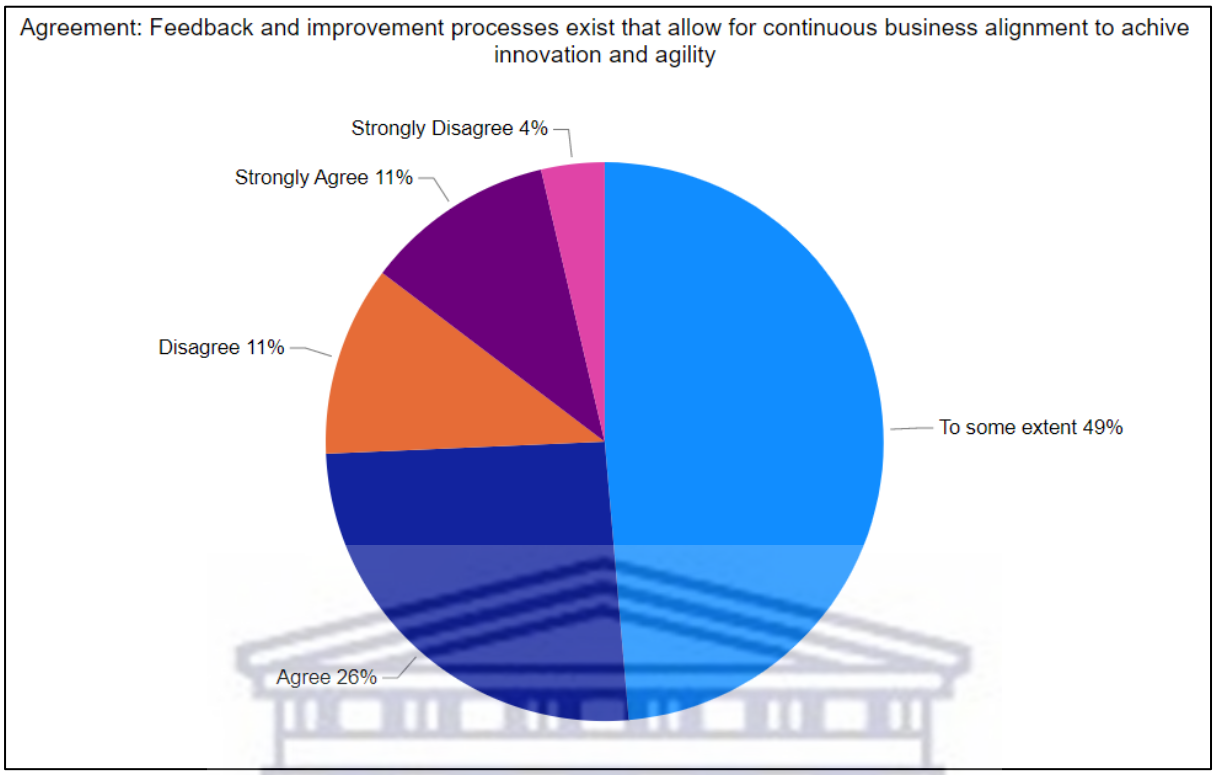

Figure 21: Agreement on whether feedback and improvement processes exist for Business/IT Alignment

37% of respondents agreed or strongly agreed with the statement, 49% indicated that such feedback and processes exist to some extent, whilst 15% disagreed or strongly disagreed that they exist.

There is therefore a strong indication that feedback and discussions on how to improve alignment, innovation and agility needs more focus in these organisations.

Figure 22: Culture of Sharing vs. Improvement processes in place for better Business/IT Alignment

presents the results on a question about the respondents' agreement whether improvement processes exist (as per Figure 21: Agreement on whether feedback and improvement processes exist for Business/IT Alignment, in relation to a question whether a strong culture of sharing information between IT and business stakeholders exist.

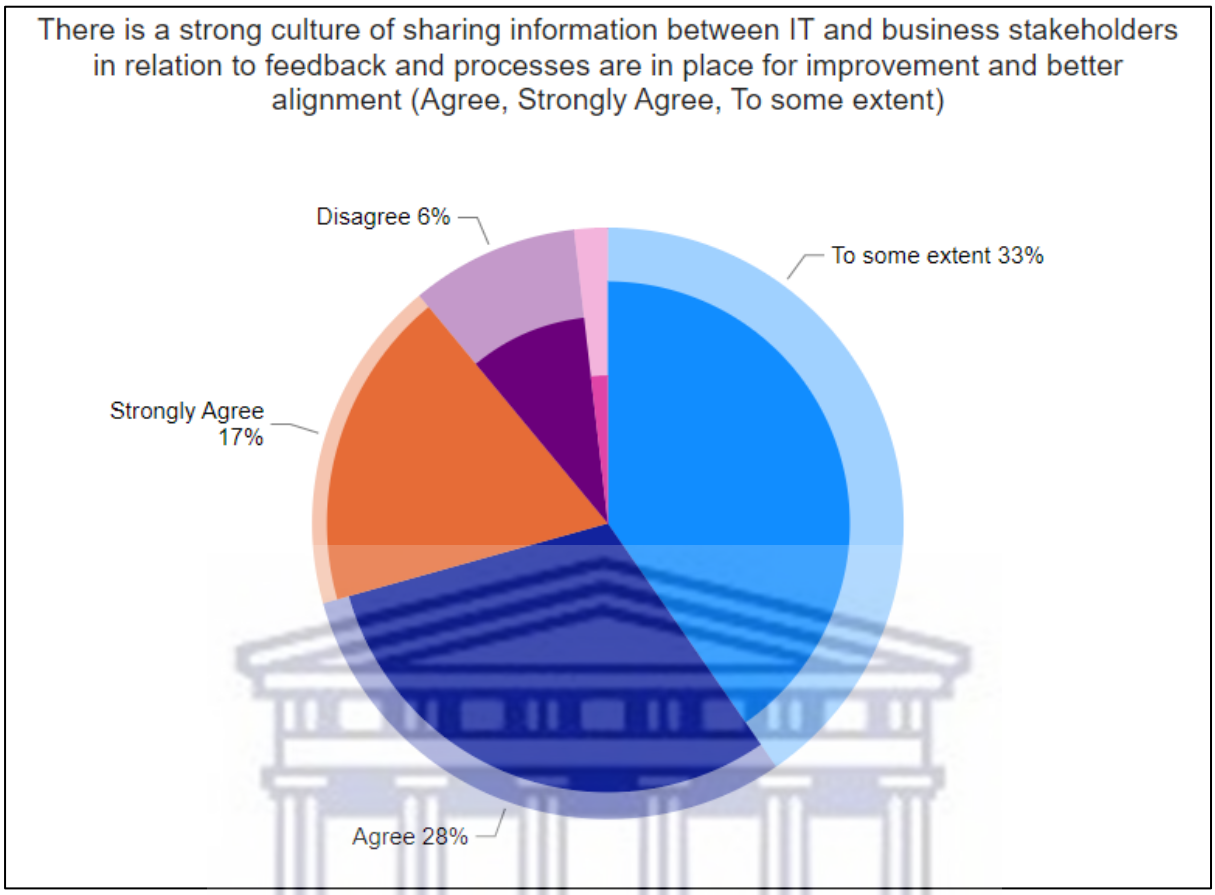

Figure 22: Culture of Sharing vs. Improvement processes in place for better Business/IT Alignment

Finding: ***There results show that where a strong culture of sharing of information exist, feedback and process for better alignment are in place.***

Figure 23 presents agreement around a shared understanding of the business and communication's contribution to Business/IT Alignment.

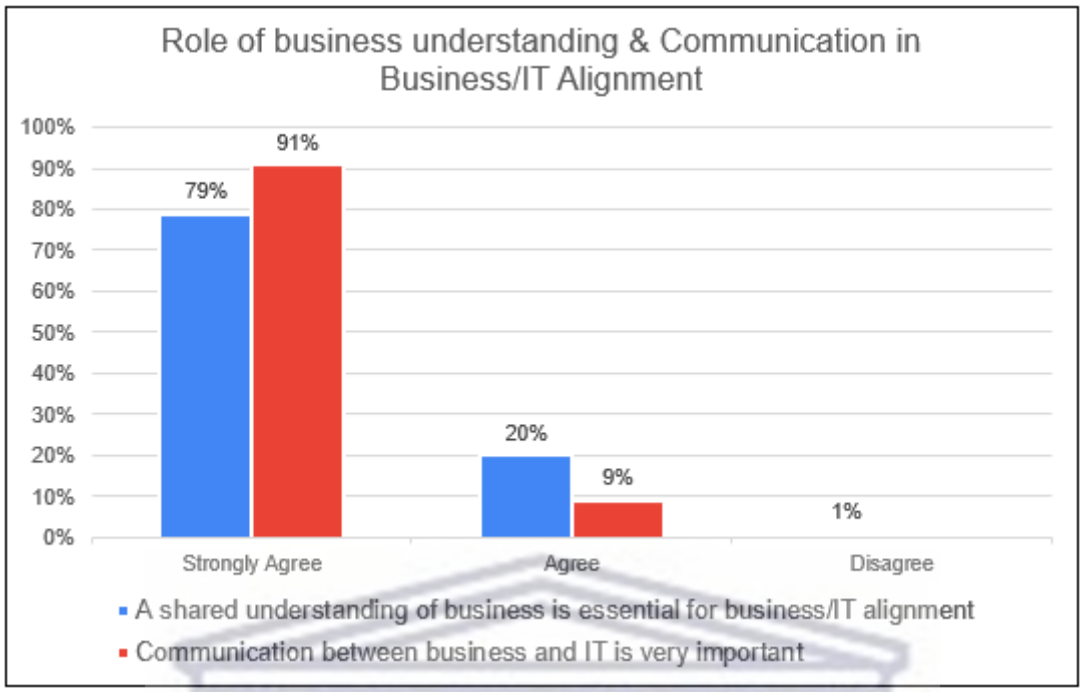

Figure 23: Role of business understanding & communication in Business/IT Alignment

Respondents indicated that they either strongly agree or agree that a shared understanding of the business as well as communication between business and IT are essential and important to ensure Business/IT Alignment. Only one respondent indicated that they disagree that a shared understanding of the business is important, whilst 99% either strongly agreed or agreed. Similarly, 100% respondents reflected strong agreement/agreement in their responses around the importance of communication between Business and IT.

Finding: ***A shared understanding of the business and communication between Business and IT are perceived to be key to the relationship and achieving better alignment. Based on the results depicted in Table 9 above, these two areas are neglected despite their glaring importance.***

When asked if the architects in their organisations know what the strategic objectives are (Figure 24: Awareness of Strategic Objectives

Finding: ***Despite the lagging alignment between IT and business, respondents believed communication about strategic objectives is shared.***

When asked if the architects in their organisations know what the strategic objectives are (Figure 24), 82% of respondents agreed or strongly agreed that this was indeed the case. 11% did not agree or strongly disagreed with this statement, whilst 6% were unsure.

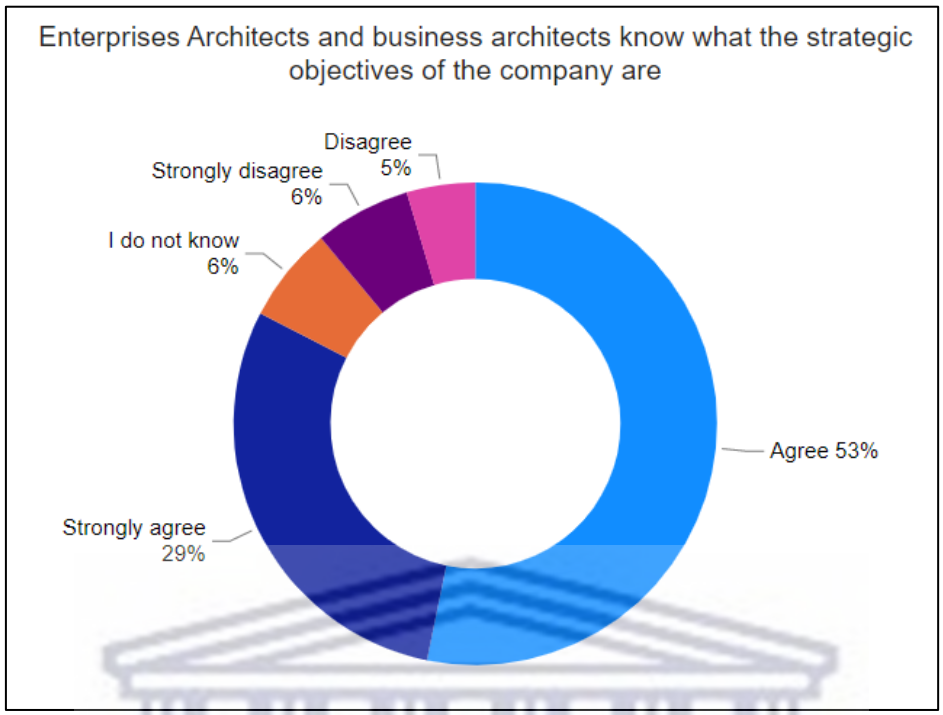

Figure 24: Awareness of Strategic Objectives

Finding: ***Despite the lagging alignment between IT and business, respondents believed communication about strategic objectives is shared.***

4.3.4 *The role of reporting and Business Architecture in achieving Business/IT Alignment*

It has been found that a shared understanding of the business and communication between Business and IT are key to the relationship and achieving better alignment (Section 4.3.3). This section will present the findings on the role of reporting on BA outputs and BA methodologies in achieving Business/IT Alignment through reporting mechanisms.

Figure 25 presents the results on the existence of such reporting mechanisms.

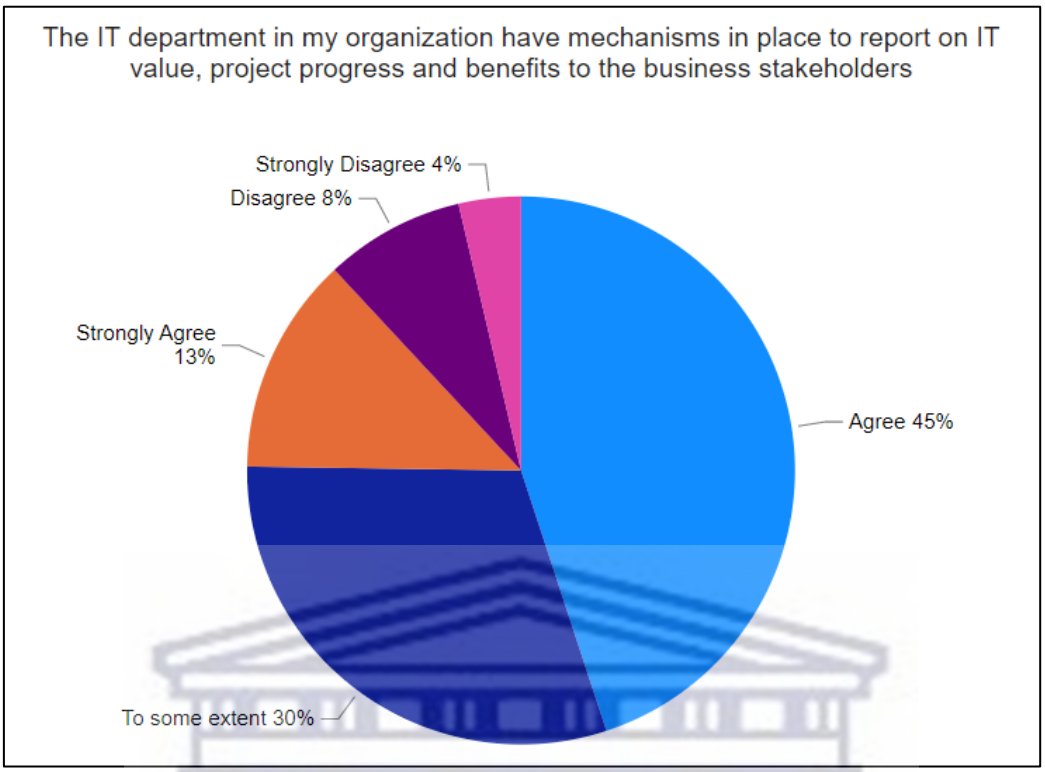

Figure 25: Existence of reporting mechanisms for IT value, project progress and benefits achieved

Respondents were mostly in agreement that the reporting structures exist in their organisation to report on IT Value, project progress and benefits (58%). 30% of respondents indicated that this is the case to some extent and a low 12% disagreed or strongly disagreed with this statement.

Finding: ***Information on IT activities is provided to the business by way of reports reflecting IT Value, project delivery status and project benefits achieved.***

Figure 26 below presents the results on whether the track record of an IT department have an impact on Business/IT Alignment.

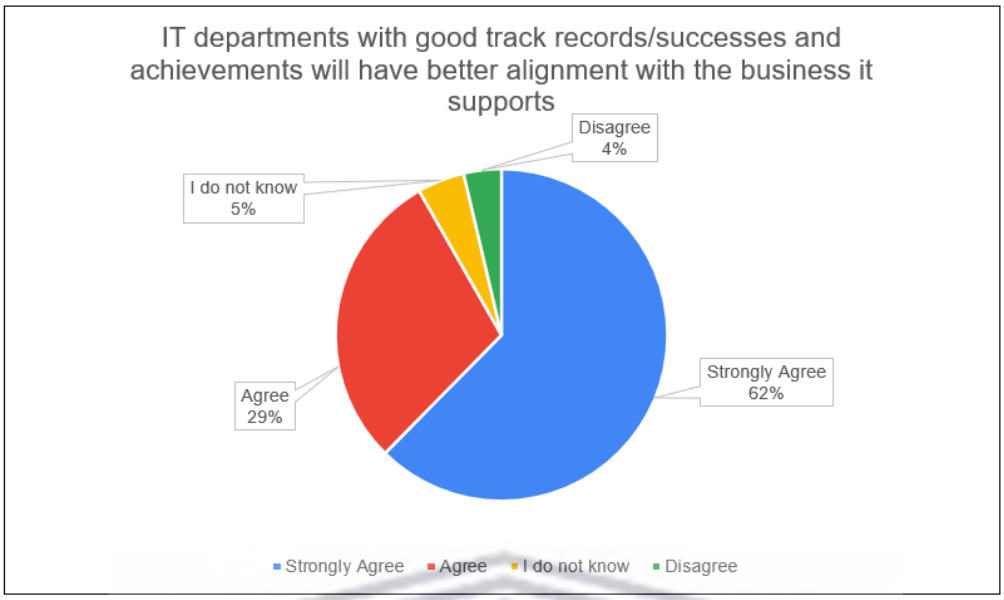

Figure 26: Perception of alignment based on a good track record

91% of respondents were mostly in agreement with the fact that IT Departments that have a good track record in terms of achievement and successes, will have a better alignment with the business they. Only 4% disagreed whilst 5% were unsure.

Finding: ***Delivering successfully is perceived to be a catalyst for a better relationship with the business stakeholders and closer alignment.***

Figure 27 presents the results on the perception of achievement of Business/IT Alignment through the application of BA methodologies.

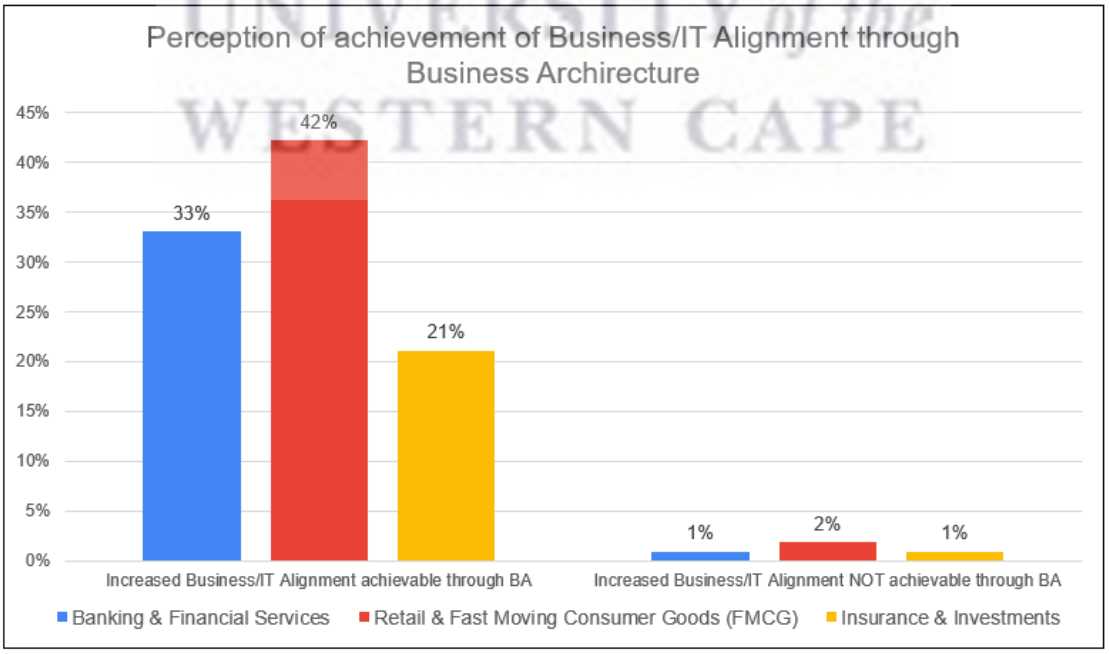

Figure 27: Achievement of Business/IT Alignment through Business Architecture

96% of respondents believes that increased Business/IT Alignment are achievable through implementing Business Architecture, of which the highest percentage was reported in the Retail and MFCG sector with 42%, followed by the Banking & Financial Services sector with 33% and lastly the Insurance & Investment sector with 21%. Percentages with a negative response were negligible.

Finding: ***Business Architecture is perceived as a valuable method to achieve better Business/IT Alignment in all the sectors.***

4.3.5 *The achievement of benefits through Business Architecture*

Respondent were asked *"Which benefits do you believe can be achieved through improved Business Architecture"* and presented with a list of benefits to choose from. The results are presented in Figure 28 below.

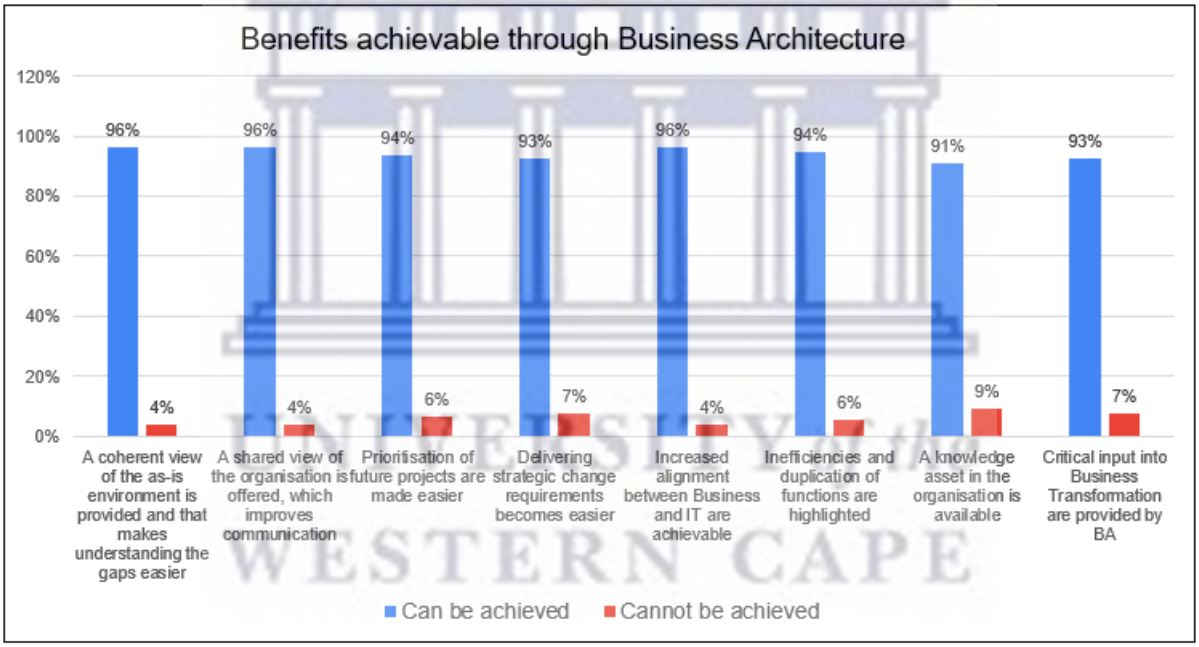

Figure 28: Perception of benefits achievable through BA

Overall, more than 90% of the respondents believed that the provided list of benefits was achievable by applying BA methodologies. Three of the benefits listed were indicated as achievable by 96% of the respondents. The results indicate that the audience believes in the value of BA in supporting business strategies.

Respondents were then asked, "*Which of the following benefits do you think have your organization achieved through the practical use and application of business architecture"* and were again presented with a list. Figure 29 presents the results.

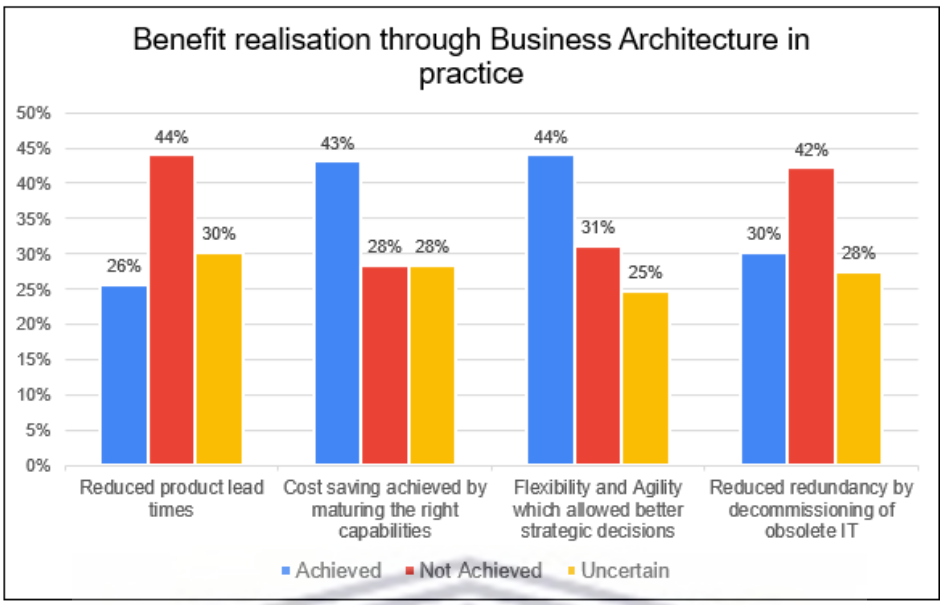

Figure 29: Benefit realisation through Business Architecture

There were higher levels of comfort (43%) around the achievement of cost savings by maturing the right capabilities and flexibility/agility that allowed better strategic decision making (44%). Reducing product lead times and benefit through the decommissioning of obsolete IT are benefits that either were not realised, or the respondents were uncertain if it was. Overall, there were between 24% and 30% uncertainty about the achievement of benefits.

Figure 30 summarises the perception of benefits achieved by sector.

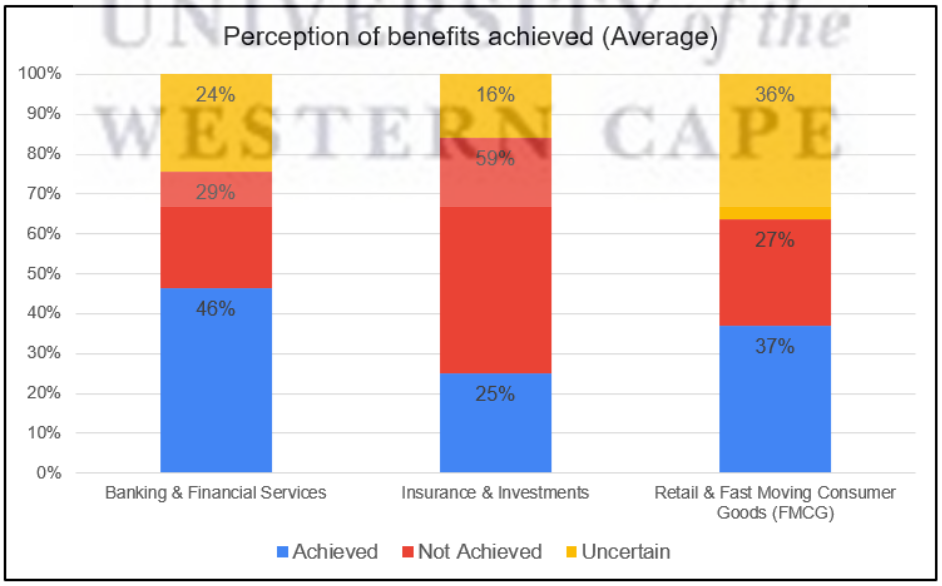

Figure 30: Average: Benefits Achieved

The data shows that the Banking & Financial Services sector are most comfortable on the achievement of the benefits (46%), whilst 59% of respondents in the Insurance & Investments sector indicated that they do not think the described benefits were achieved in their organisations. The Retail & Fast-Moving Consumer Goods (FMCG) sector almost similar percentages for achieved vs. uncertainty around the perception of benefit realisation.

The demographic data (Section 4.2.1: **Sector and Role Participation**) shows that there are 9 respondents working as Business Architects in the Banking & Financial Services sector, with 6 situated in the business environment, vs 5 in Retail & FMCG and 7 in the Insurance & Investments sectors, of which the majority (4 & 5) are situated in the IT department (Figure 13: Role Based analysis: BA roles by Sector).

Finding: ***The perception of and confidence in the achievement of benefits is higher where the business Architect form part of a business team and not IT.***

4.3.6 *Section Conclusion*

Business/IT Alignment is confirmed as a factor that enables the efficient application of business architecture methodology in that:

- BA should be integrated and leveraged to achieve alignment.
- BA should be aligned to the business requirements and performance.
- BA can result business benefits.

The conclusions drawn in this section are summarised below:

Despite the lagging alignment between IT and business, communication about strategic objectives seems to be shared. Business/IT Alignment exists to some extent but that there is definite room for improvement. The main reason for the misalignment highlighted by the respondents were disjointed operations (silos) or gaps in communication. Although Business Architects might be invited to the discussion table, the expectation from the business is that IT will deliver solutions, support the technology they use and execute project deliverables.

A shared understanding of the business and communication between Business and IT are perceived to be key to the relationship and achieving better alignment. It also seems that where a strong culture of sharing of information exist, feedback and improvement process for better alignment are in place. Information on IT activities is provided to the business by way of reports, which plays a role in keeping business stakeholders informed and aligned on IT projects, value, and benefits. The respondents also perceived Business/IT alignment to

be an indicator of the relationship between expenditure on IT and the performance of the business.

Business/IT alignment across the target sectors need to improve as far as communication as well as strategy formulation and implementation is concerned. There is an indication that being in the know about business strategies and objectives does not necessarily contribute to better alignment on business capabilities, future innovation, and competitive positioning. The respondents believed that delivering successfully is a catalyst for a better relationship with the business stakeholders and closer alignment. On a strategic level the Retail & FMCG sector were best aligned, followed by the Banking & Financial sector and lastly the Insurance & Investment sector. Alignment seems to be more of a challenge in bigger organisations, however, where a strong culture of sharing of information exists feedback and processes for better alignment are in place.

In terms of tactical involvement, IT is perceived to offer the implementation of technologies and agreement that the technologies might have the correct functional fit but not necessarily that it will position the organisation for capability improvement. This indicates that there is close alignment on implementing the right technologies to maintain business capabilities.

Although the perception of Business/IT Alignment are similar in most cases on strategic and tactical aspects, there is an indication that the involvement of BA in operations and implementation of technologies are more pertinent than in the strategic development of business capabilities and business models.

The results confirm that there is a relationship between Business/IT Alignment and the application of Business Architecture methodologies, in that where Business Architecture is involved better alignment exists. The findings also indicated that Business Architecture is valuable as a method to achieve better Business/IT Alignment in all the sectors.
Although the benefits that could be achieved through Business Architecture is overwhelmingly recognised, the realisation thereof is not that clear. There were higher levels, (although not conclusive) of comfort around the achievement of cost savings by maturing the right capabilities and flexibility/agility that allowed better strategic decision making. Confidence in the achievement of benefits is higher where the business Architect form part of a business team and not IT.

4.4 Management Support of and involvement in the Business Architecture practice

This section presents the findings related to the support from management of the architecture practices as stipulated in Table 6: Application of the conceptual model in instrument design, Chapter 3). It deals with the mandate given to BA teams, the existence of formal BA Roles within the organisations, recognition of the BA as a core capability, and understanding of the practice. It will also present the findings on the involvement of management in providing direction into improvement of the practice and the executive sponsorship thereof.

The objective of this section is to present finding on the following:

- The understanding of the BA role and whether there is a dedicated team or role within the organisation.
- How BA as a practice is supported and grown in the organisation.
- The extent to which the BA practice is seen as a core capability in the organisation, with clearly articulated goals.

4.4.1 *The influence of management's Understanding on level of support*

Figure 31 below presents the results on the respondents' understanding and their own familiarity with the concepts of EA/BA.

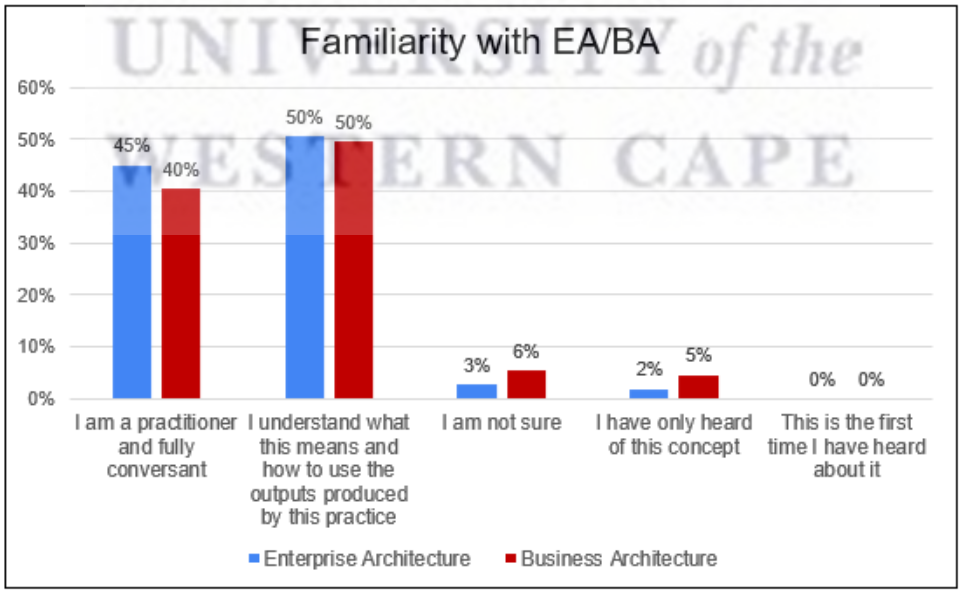

Figure 31: Familiarity with Enterprise and Business Architecture

45% of respondents considered themselves a conversant practitioner of EA, and 40% indicated likewise in BA. The balance of respondents, i.e., 50% (EA) and 50% (BA)

understood what EA/BA was and how to use the outputs produced by the practices of EA/BA. A small number of respondents were uncertain or heard of EA/BA and none was totally unfamiliar with the concepts.

Figure 32 below presents respondents' understanding of EA/BA and the support thereof from Management.

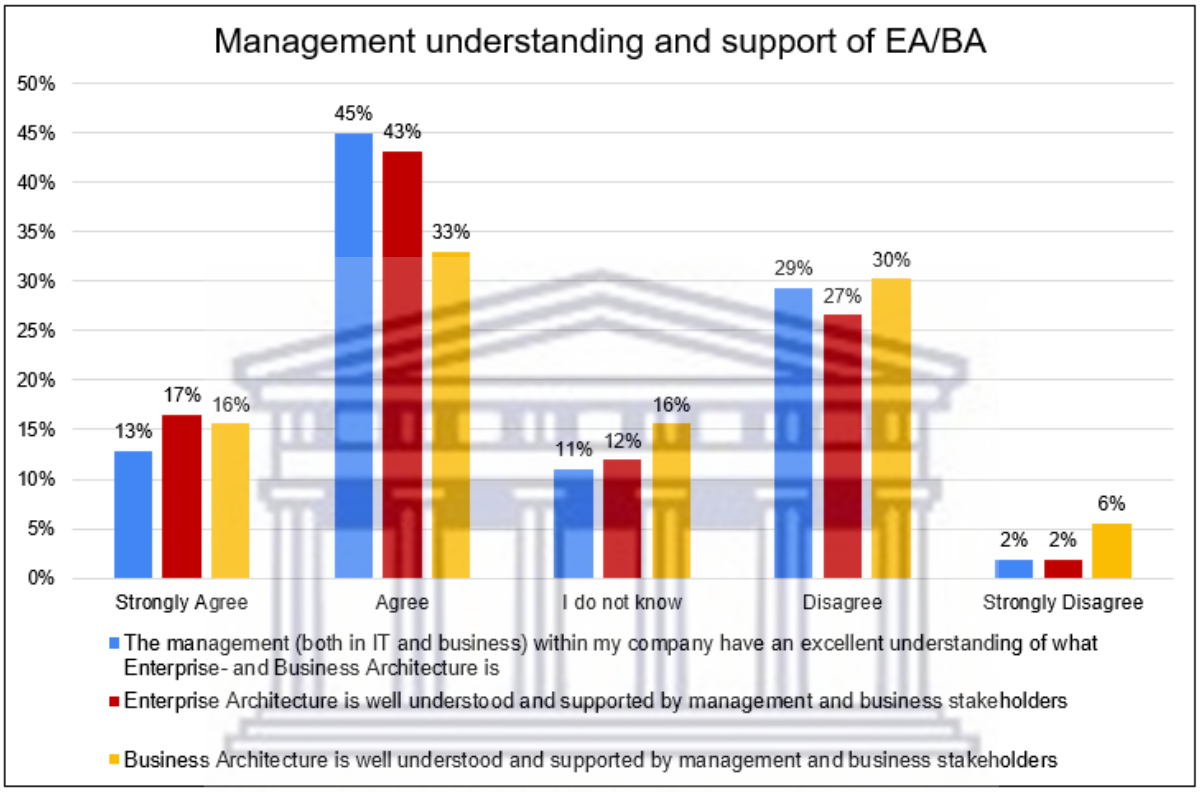

Figure 32: Management understanding and support of EA/BA

58% of respondents either strongly agreed or agreed that the management in their organisations had an excellent understanding of what EA/BA entails. A small percentage of respondents (11%) did not know if this was the case, and 21% disagreed or strongly disagreed that their management teams understood the concepts. A larger percentage of respondents felt that EA was understood and supported by their management (60%) than was the case with BA (49%). Similarly, 36% of respondents disagreed or strongly disagreed that management understood and supported BA, compared to 28% in the case of EA.

Figure 33 present the results on dedicated BA/EA teams within the organisation.

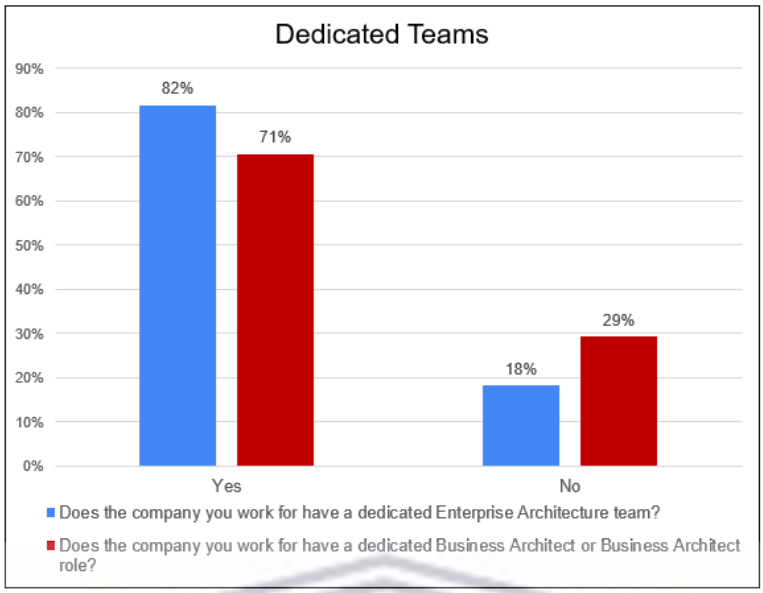

Figure 33: Existence of dedicated EA/BA roles & teams

Higher management support and good understanding of the EA function by leaders is also evident in the fact that 71% of respondents indicated that there are dedicated BA teams in their organisation and 82% that there are dedicated EA team/s in their organisation.

Figure 34 presents the dedicated BA roles/teams by sector.

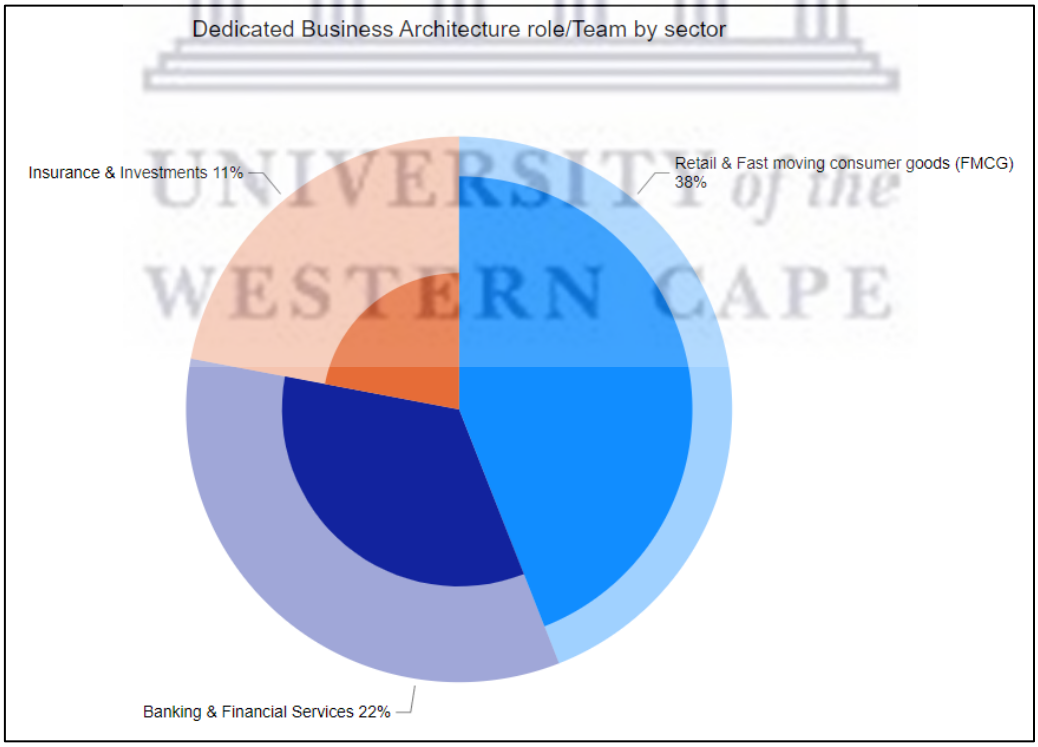

Figure 34: Dedicated Business Architecture roles/teams by sector

The Retail & FMCG sector had the highest occurrence of dedicated BAs (38%), followed by the Banking & Financial Services sector (22%) and lastly the Insurance & Investment sector with 11%. The Retail & FMCG sector is therefore more mature in this aspect than the other two sectors.

The existence of dedicated BA roles and teams are noted as a maturity factor for the BA practice in Table 4: BA Guild's Business Architecture Maturity Model, as being on Level 3 Maturity (Defined) or where BA roles are loosely formalized with responsibilities as Level 2 Maturity (Managed). Based on the BA Guild's Maturity Model all three the probed sectors could be considered on either a maturity level of 2 or 3.

Finding: ***There seems to be a sound understanding of EA/BA and how it is used however BA as a practice is not as well understood as EA, which leads to the practice being less recognised and supported by management. This as well as the existence of dedicated BA roles or teams exist, impact the maturity of the BA practice.***

4.4.2 *The impact of a mandate for and support of direct management of the Business Architecture practice on its success*

Respondents were asked *"In what way are the senior managers of your business unit involved in the establishment and on-going development of Business Architecture in your organisation?"*. Varied responses were received. Table 11 presents the response occurrences of themes or categories as a percentage of the total number of responses received.

Table 11: Response occurrences - Senior Management involvement in practice development

Theme	Occurrence % in responses
Structured and regular engagement between Senior Management and the BA practice exists	10%
Senior Management only gets involved with the BA practice when asked for feedback	5%
Senior Management supports the existence of a dedicated BA Team/Role	5%
Senior Management provides guidance and/or leadership to the BA practice	4%
The organisation is on a journey and the practice is now only in early development	6%
Senior Management's involvement is limited to funding the team resources	3%
BA team is included in Strategy discussions	6%

Theme	Occurrence % in responses
Senior Management is Involved and support the practice	9%
No or little involvement from Senior Management exist in the BA practice	31%
Silos exist - BA, EA and Business need closer alignment	4%
Involvement limited to Oversight & Approval of outputs (Delivery focused)	8%
Not sure about the extent of Senior Management's involvement in the establishment and on-going development of the BA practice	10%

The statement that no or little involvement from Senior Management exist in the BA Practice itself, were cited 31 against 9% responses indicating the Senior Management is involved and supports the practice. This resonates with the finding that understanding and support for Business Architecture needs attention (Figure 32).

10% of responses were aligned to the theme of uncertainty about the extent to which Senior Management is involved and support the ongoing development of the practice. Furthermore 8.26% of responses indicated that involvement is limited to Oversight & Approval of outputs and therefore focus is on delivery. As far as engagement goes, structured and regular engagement were indicated 10%. In 5% of the total occurrences, it was indicated that Senior Management only gets involved when asked for feedback. Based on the low percentages of occurrences in responses related to the support and development of the BA practice itself, the involvement in BA practice development is low in general.

Figure 35 presents the result to the question on the existence of a defined mandate and clearly articulated goals for the BA/BA Team in the organisation.

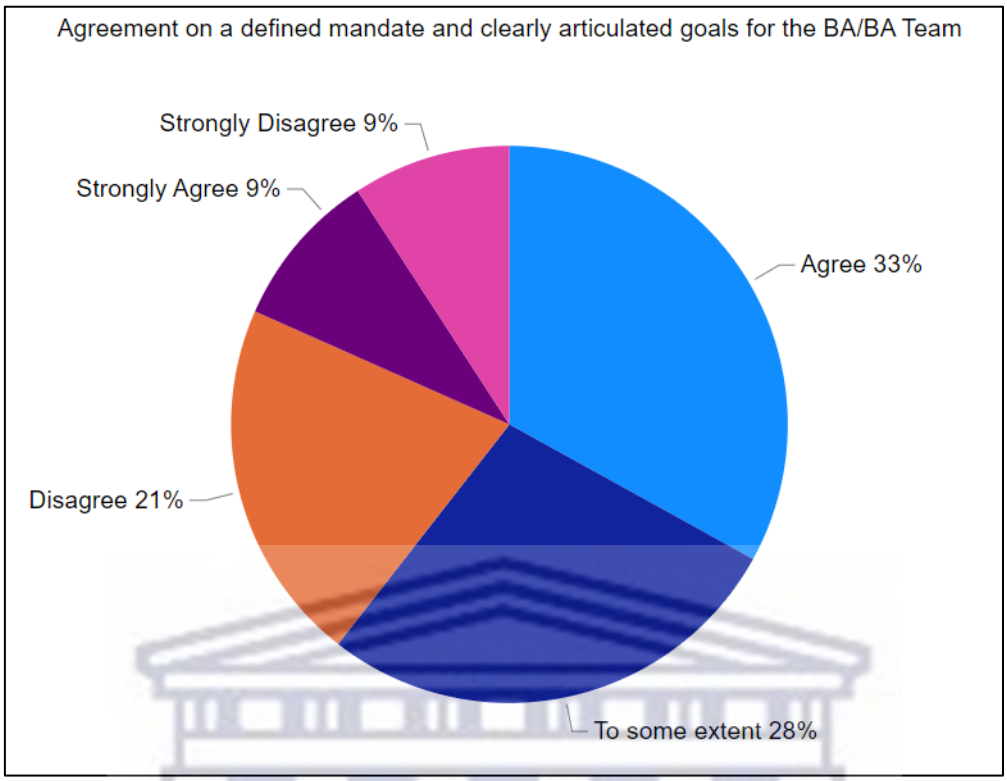

Figure 35: Agreement on defined mandate and clearly articulated goals for the BA/BA Team

42% of respondents either agreed or strongly agreed that a mandate and goals exist, 28% indicated that they exist to some extent, and 30% either disagreed or strongly disagreed.

Finding: ***A defined mandate and clearly articulated goals either exist or exist to some extent. This finding provides a slightly more positive lens on the support and involvement of direct leadership in the practice, than what transpired in Table 11 above.***

The existence of a clearly defined mandate is noted as a maturity factor for the BA practice in Table 4: BA Guild's Business Architecture Maturity Model, in that it considers:

- whether there is a core group of business architects with informal structures but no organizational synergies (Managed) as well as
- if the BA function has been established, with clearly articulated goals and the appropriate executive sponsorship.

Based on the BA Guild's maturity Model it is evident that maturity varies from being in initial development to being managed and in some cases being defined.

Finding: ***Support and involvement of direct leadership in the practice, a defined mandate and clearly articulated goals can have an impact on the maturity of the BA practice.***

4.4.3 *Section Conclusion*

Management Support of the BA function is confirmed as a factor that enables the efficient application of business architecture methodology in that:

- A clearly articulated mandate and formal BA roles should exist.
- The strategic partnership between business and BA should be recognised.
- BA should be seen as a core capability in the organisation and well understood.
- Executive sponsorship of the BA role should exist.
- BAs should be involved in and provide direction into improvement of the practice.

The conclusions drawn in this section are summarised below:

Most of the respondents had a sound understanding of EA/BA and how it is used, however, it seems that BA as a practice is not as well understood as EA, which leads to the practice being less recognised and supported by management.

A larger percentage of respondents felt that EA was understood and supported by their management than was the case with BA. Higher management support and good understanding of the EA function by leaders is evident in the fact that the existence of EA teams or more prominent than BA teams. The Retail & FMCG sector had the highest occurrence of dedicated BA roles, followed by the Banking & Financial Services sector and lastly the Insurance & Investment sector. The results indicate that the support and development of the BA practice itself, and the involvement of management in BA practice development seems to be low in general.

A defined mandate and clearly articulated goals either exist or exist to some extent. This finding provides a slightly more positive lens on the support and involvement of direct leadership in the practice.

Based on the BA Guild's maturity Model it seems that maturity varies from being in initial development to being managed and in some cases being defined (Level 1-3). A conclusion can be made that support and involvement of direct leadership in the practice, a defined mandate and clearly articulated goals can have an impact on the maturity of the BA practice, and therefore the efficient application of BA methodologies.

4.5 Business Architecture Processes and Artefacts

This section presents the findings related to the nature of processes and artefacts produced and used by architecture practices as stipulated in Table 6: Application of the conceptual model in instrument design) and deals with the existence of processes, standards and measures to improve them, how the BA practices are governed as well as the existence of artefacts and the tools to produce them. This section will also explore the maturity of BA practices within the targeted sectors by transposing the results into the BA Guild's maturity Model.

The objective is to present findings on:

- the state of BA practices in the targeted sectors
- BA artefacts and their value
- if there are processes and standards in place for improvement & governance
- if the targeted audience use specific EA frameworks and tooling in the organisation

4.5.1 *Exploring the current state of business mapping in the Business Architecture Practice*

By applying the maturity model of the BA Guild (as described in Table 4) and considering business mapping being done in the practice, respondents were asked *"Which statement best describes the Business Architecture practices in your organisation?".* Respondents were presented with a list to choose a statement from. Figure 36 presents the respondents' perception of the BA practices in their organisations.

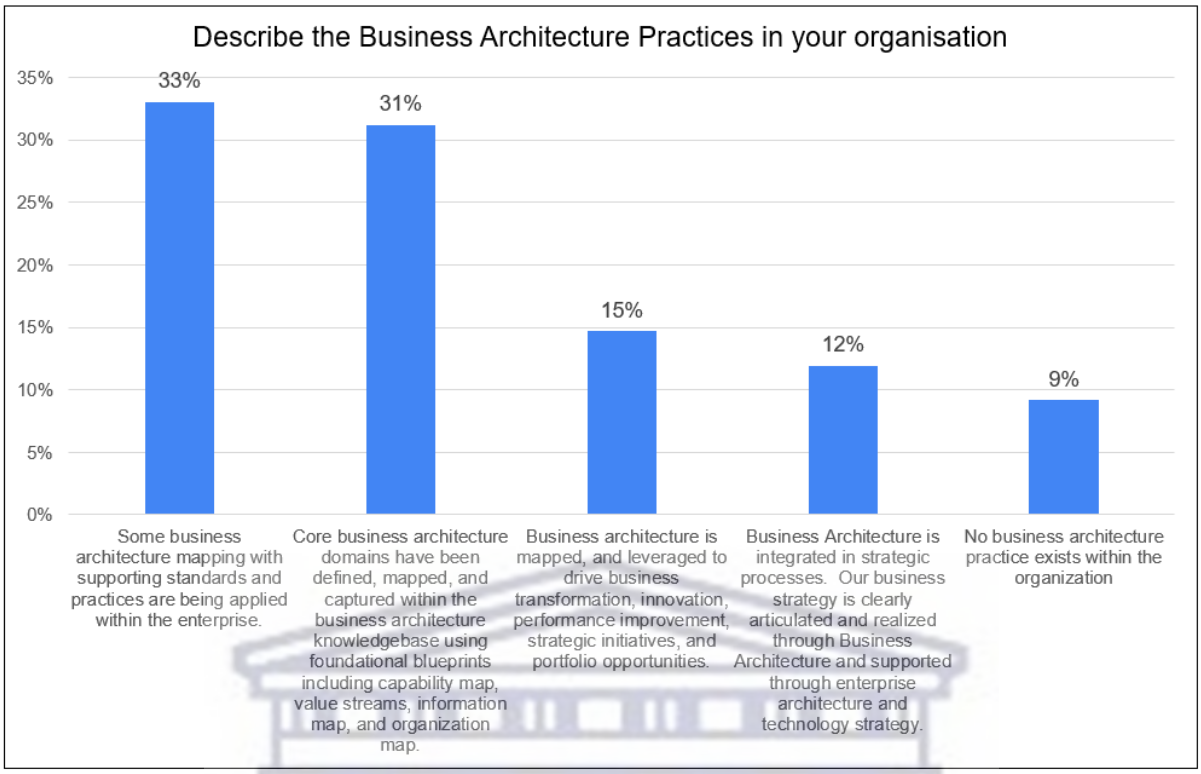

Figure 36: Perception on the state of BA practices

The majority of respondent (64%), indicated that their practice either have some business architecture mapping with supporting standards and practices are being applied within the enterprise or at least the Core Business Architecture domains have been defined, mapped, and captured within the business architecture knowledgebase. This was done by using foundational blueprints (including capability maps, value streams, information maps, and organization maps). Only 9% of respondents indicated that no practice exists formally in their organisation.

Figure 37 transposes this data into the maturity indicators of the BA Guild maturity model (Table 4).

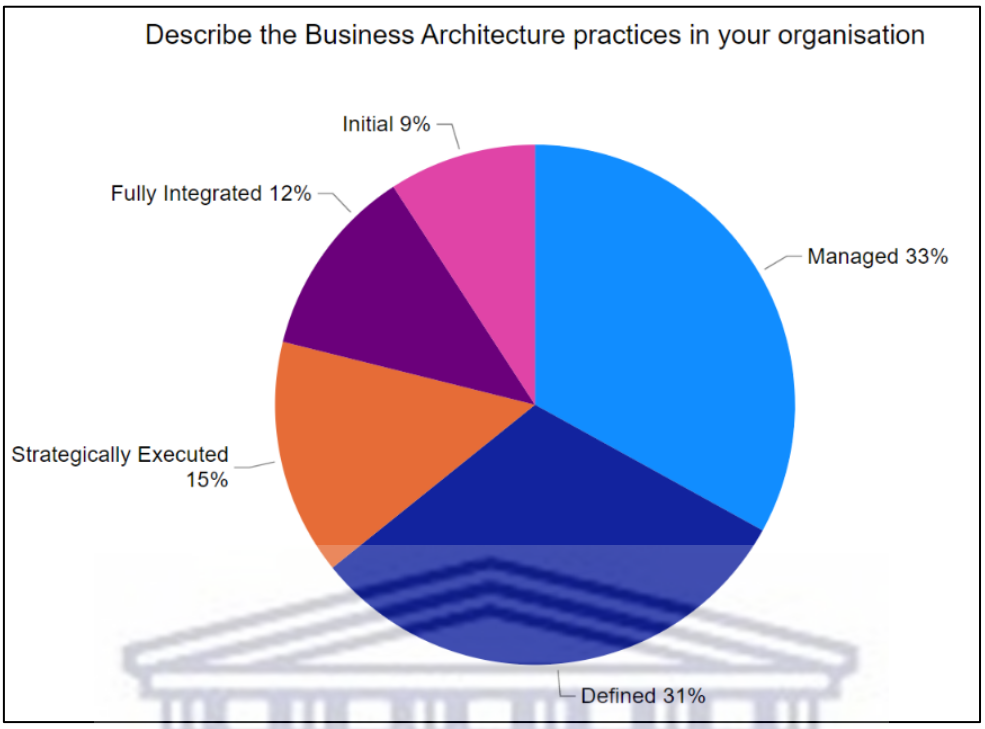

Figure 37: BA Practice Maturity (based on business mapping)

The results show that 12% respondents saw their business mapping as fully integrated (maturity level 5) in strategic processes. These respondents felt that their business strategy is clearly articulated and realised through business architecture and supported through enterprise architecture and a technology strategy.

15% considered their BA Practice to be positioned to strategically execute its mandate (maturity level 4), i.e., business architectures are mapped and leveraged to drive business transformation, innovation, performance improvement, strategic initiatives, and portfolio opportunities. 31% of respondents indicated that core BA domains have been defined, mapped, and captured within the business architecture knowledgebase using foundational blueprints, positioning maturity of their practice at level 3 (Defined).

The highest percentage of respondents (33%) indicated that some BA mapping with supporting standards and practices are being applied within the enterprise (level 2 maturity, Managed). 9% of respondents indicated a Level 1 maturity, i.e., Initial (BA practice and business mapping either does not exist or just starting to get attention).

Figure 38: BA Practice Maturity by Sector (Business Mapping) below summarises the data represented in Figure 37 by sector.

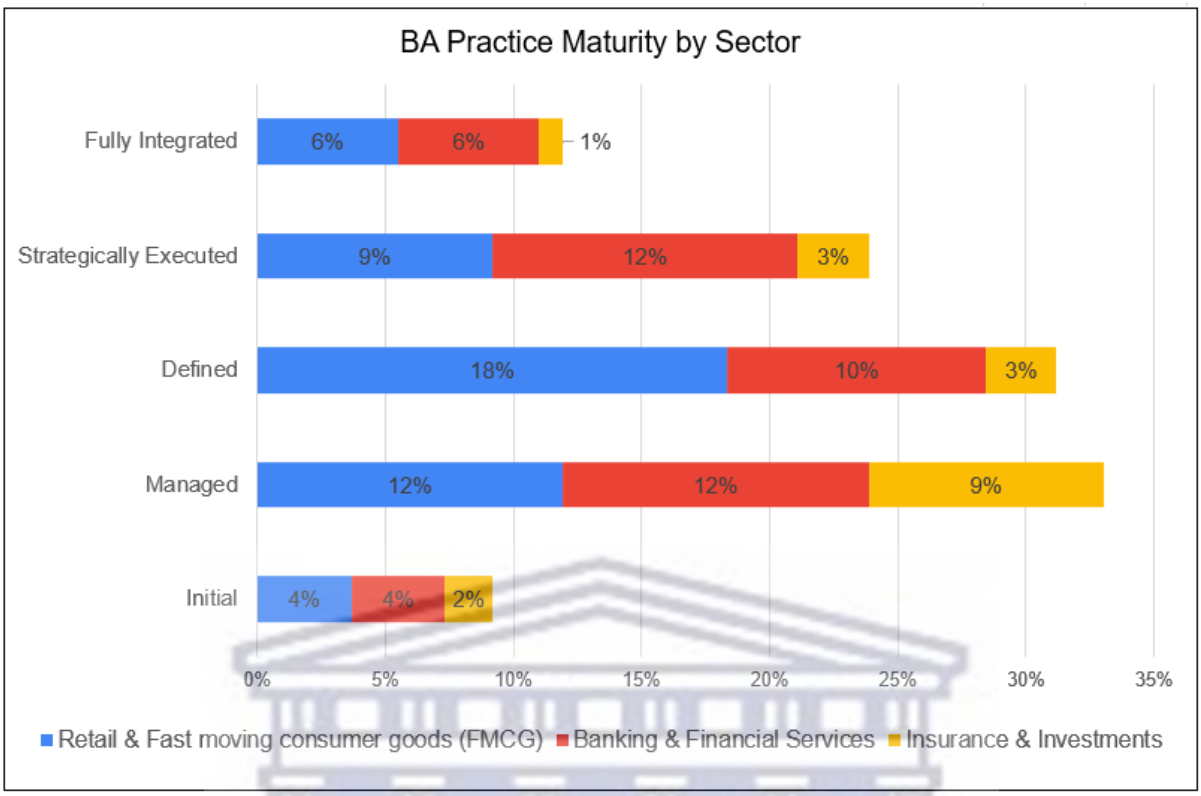

Figure 38: BA Practice Maturity by Sector (Business Mapping)

Respondents in the Retail & FMCG sector rated business mapping by their BA practices to be mostly managed and defined (12%/18%), with also a small percentage (9%/6%) considering it to be Strategically Executed or even Fully Integrated. Percentages in the Banking & Financial Services sectors are lower, with the Insurance & Investments sector indicating the lowest levels of maturity.

Finding: ***Most BA practices either have some business architecture mapping with supporting standards and practices or at least the Core Business Architecture domains have been defined, mapped, and captured within the business architecture knowledgebase. This indicates business mapping to be defined and managed.***

4.5.2 *The current state of Process Standards & Measurements*

Respondents were asked which mechanisms are applied in their organisations to measure the quality, efficiency, and level of maturity of the BA practice.

Figure 39 presents the results. 29 respondents indicated that they do not have a formal, established BA practice yet. These responses were excluded for the purpose of determining how quality, processes and maturity are measured (i.e., results reflect responses from 80 participants as a percentage by sector).

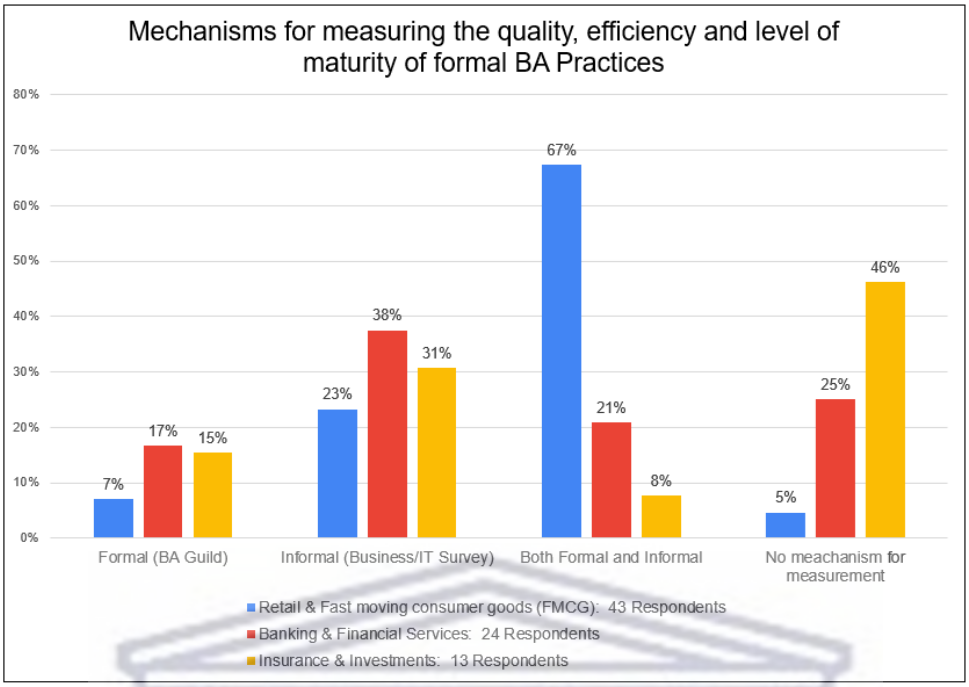

Figure 39: The existence of mechanism for measurement of BA Practice quality, efficiency, and maturity

In the Retail & FMCG sector 7% respondents indicated measurement are done formally by applying the BA Guild maturity Framework, and 23% respondents indicated that measurement is done informally by way of surveying business and IT stakeholders.

67% respondents indicated that they use both formal and informal measurements in their organisations. Only 5% respondents indicated that even though a formal BA Practice exists in their organisations, it is not measured.

The Banking & Financial Services sector reported higher percentages for formal (17%) and informal (38%) measuring mechanisms used, and 21% used both formal and informal mechanisms. There is however a higher percentage (25%) who do not measure at all. The Insurance & Investments sector is in worst shape as far as measuring quality, efficiency, and maturity of their BA Practices. 15% indicated formal measurement, 31% informal, and only 8% used a combination of the two. A high 46% of respondents in this sector indicated that no mechanisms are in place to measure their BA Practices.

Finding: ***Where both formal and informal mechanisms exist to measure quality, efficiency and maturity, the business mapping maturity of the BA practice is higher than where this is not the case. It also seems that a combination of formal and informal measurement would yield a more comprehensive result and point out where improvements are needed to mature the practice.***

Respondents were asked to evaluate whether their business architecture ***processes*** against a statement related to the maturity thereof. Figure 40 presents the results.

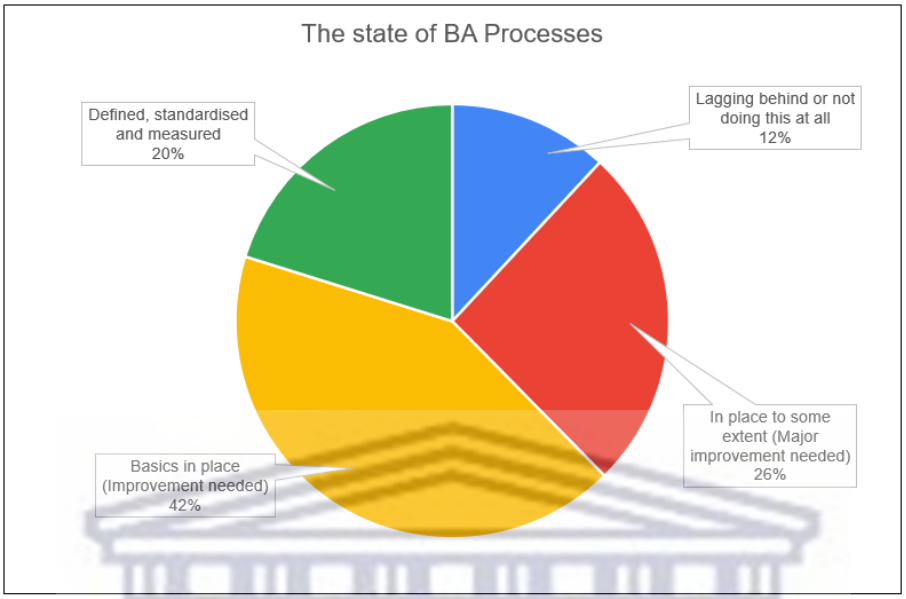

Figure 40: State of BA Processes

None of the respondents considered their processes to be fully strategically integrated and optimised. 20% of respondents saw their processes to be defined, standardised, and measured, indicating strategic maturity does exist, and the nature of the maturity level to be considered as leading (As per Figure 8). 42% of respondents felt that the basic processes, documenting and measuring thereof were in place, showing that there is realisation that some improvement is needed and that the practice is progressing in maturity. 26% evaluated their processes to be in place and manged whilst 12% indicated that processes are either not existing or the practice is in initial stages. Overall, 70% of respondents did not see their processes as advanced and strategically managed. BA processes in the targeted sectors are on Level 3 maturity or less.

Considering another view on process maturity based on Paulk et al's (1993) Capability Maturity Model (Figure 4), a more detailed view of the process maturity comes to light. This model indicates initial maturity as processes being ad hoc, poorly defined, and mostly based on individual efforts vs. Optimising maturity level as continuously improving, measuring and being able to respond to innovation.

The respondents indicating their processes to be defined were 25% versus 20% in the above Figure 40. Initial and repeatable maturity loosely aligns to the basics being in place. In this result half of the respondent (50% versus 42% in Figure 40) indicated that basics were in place, tracking happens, and successes can be repeated. However, they were also of the

opinion that their processes were reactive in nature. Using the CMM as basis there were also respondents (10%) who believed that their processes were on Level 5 maturity (optimising) and able to respond to innovative ideas.

Overall, 75% of respondents did not consider their processes to be measured in detail (and therefore well documented) or positioned to improve by using the results of process measurement, nor being able to respond strategically to innovation (Figure 41).

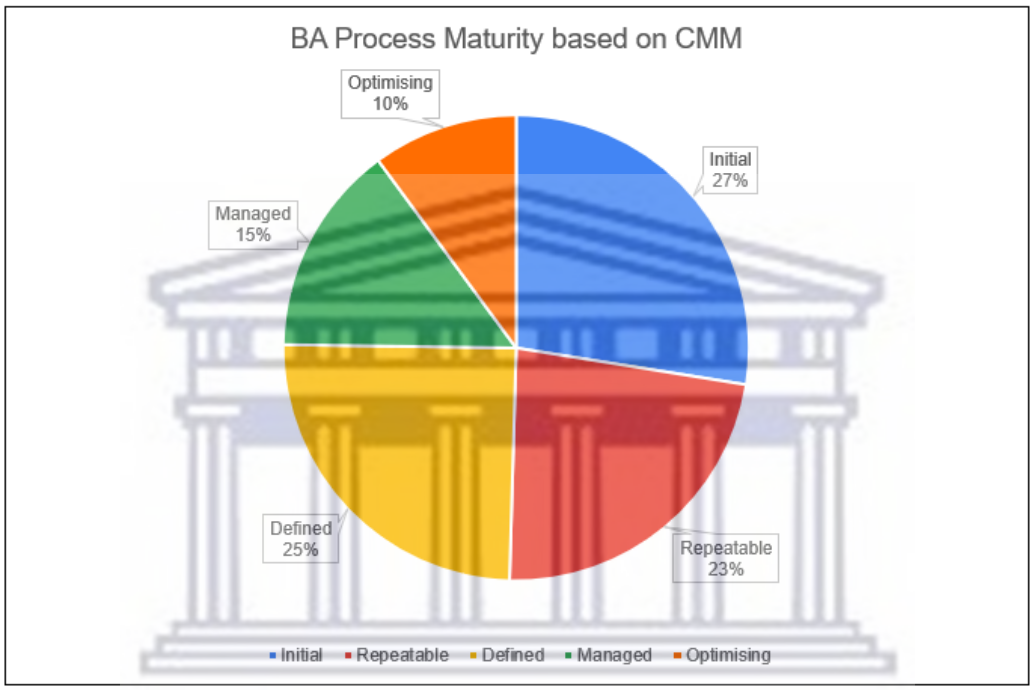

Figure 41: BA Process Maturity based on CMM

Figure 42 below overlays process maturity data (as per Figure 41), with the existence of a dedicated BA role in the organisation.

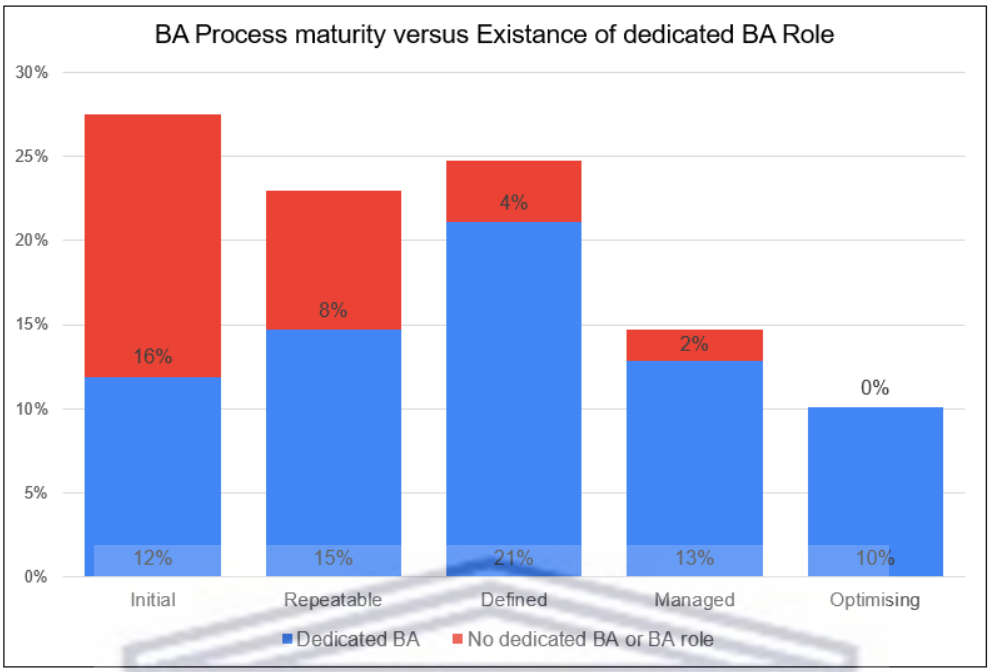

Figure 42: BA Process maturity vs Existence of dedicated BA Role

Where BA Process maturity is rated as Initial, 16% of respondents reported that no dedicated BA Role or team exists. Where BA Process maturity is rated as Defined, only 4% of respondents reported the absence of a dedicated BA role or team. These results resonate with the lack of involvement in the development of the BA practice by direct management as discussed Section 4.4.2 (The impact of a mandate for and support of direct management of the Business Architecture practice on its **success**).

Finding: ***Respondents perceived that BA processes are not measured in detail, well documented, or positioned to improve by using the results of process measurement. This impacts the practice's ability to respond strategically to innovation. In organisations where a dedicated BA role or team exists maturity of BA processes is higher than in organisations where this is not the case.***

4.5.3 *The role of Governance in the application of Business Architecture practice*

Respondents were asked: "Which statement describes the governance of the Business Architecture practices in your organisation?" and were then presented with a list to choose from. Figure 43 reports the results.

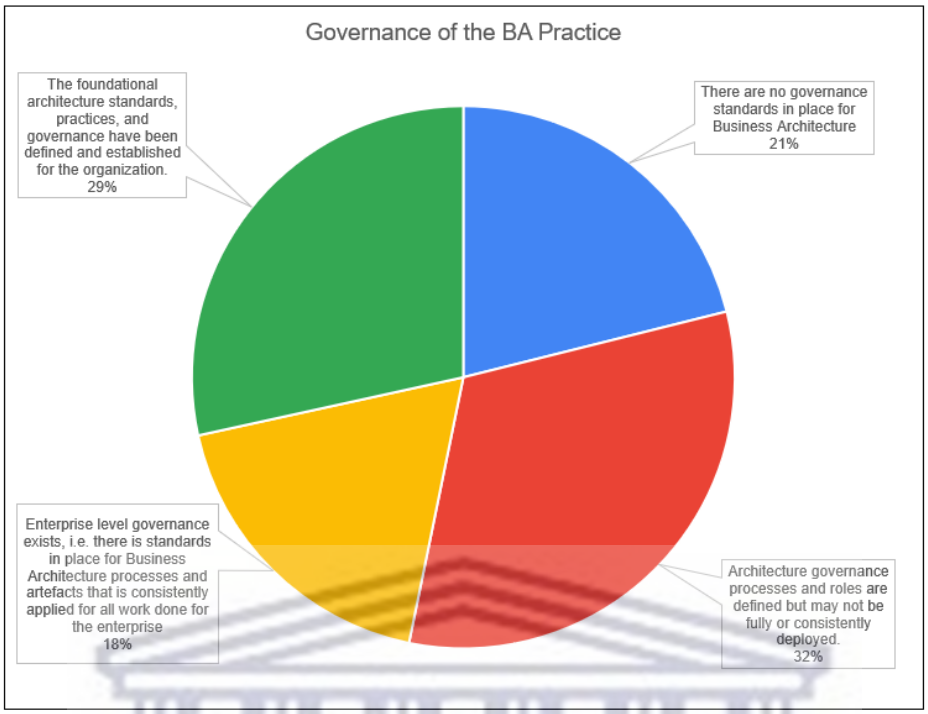

Figure 43: Governance of the BA Practice

21% of respondents indicated that no governance is in place, whilst 29% saw governance protocols to be only foundational in their organisations, leaving 32% of respondents who considered their governance protocols to be in place, yet needs to improve. Enterprise level governance protocols that ensure consistency and process adherence were only indicated by 18% of respondents.

This data also speaks to the maturity of the BA practice in the organisations where the respondents work. Figure 44 overlays the existence of governance practices with process maturity (as presented in Figure 40).

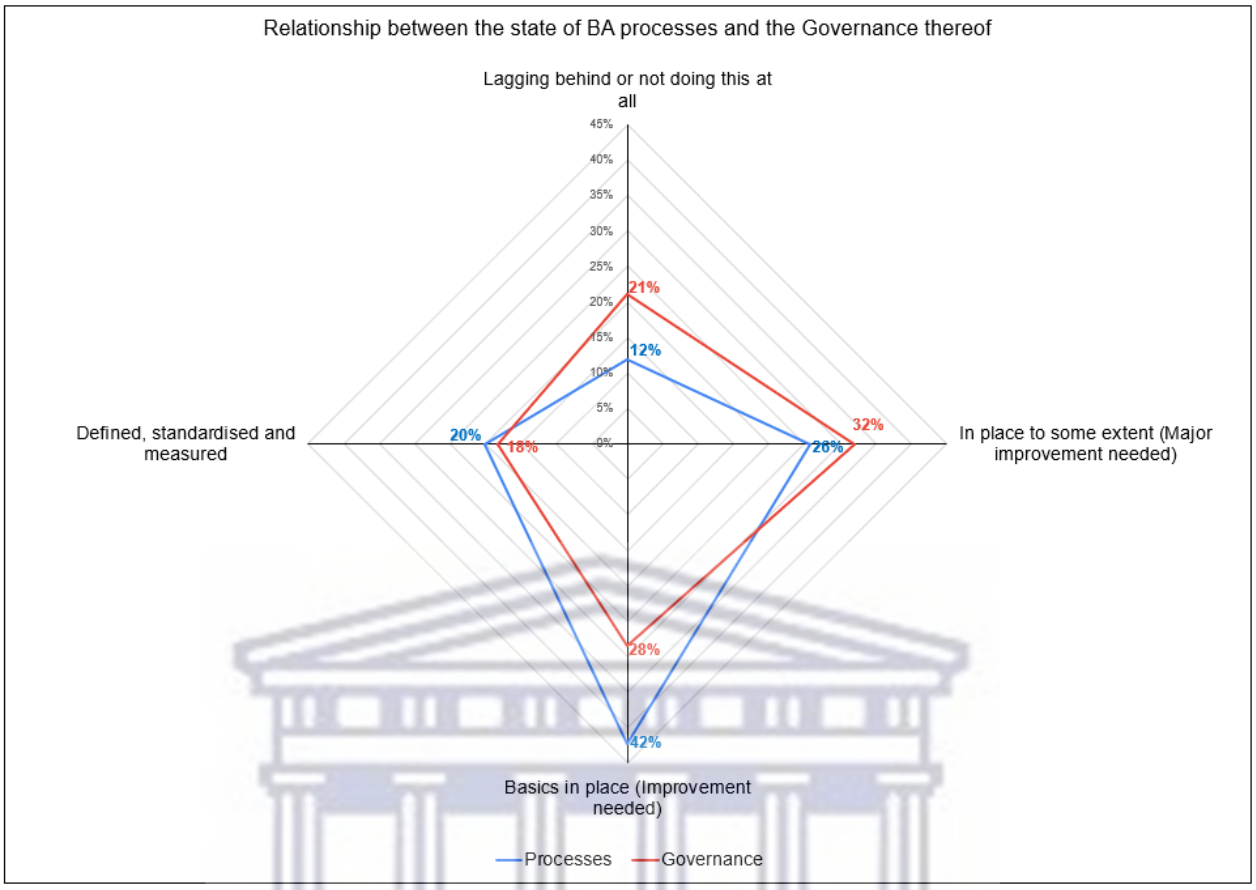

Figure 44: Relationship between the state of BA Practice and Governance thereof

The graphs align to some extent, except where respondents indicated that the basic governance protocols are in place as well as processes.

Finding: ***The results indicate that where governance protocols are not sufficiently embedded, BA processes may not be consistently applied throughout the enterprise.***

4.5.4 *The impact of Modelling Tools & Frameworks used on Business Architecture efficiency and application*

Figure 45 below depicts tool usage in the representation of architecture artefacts.

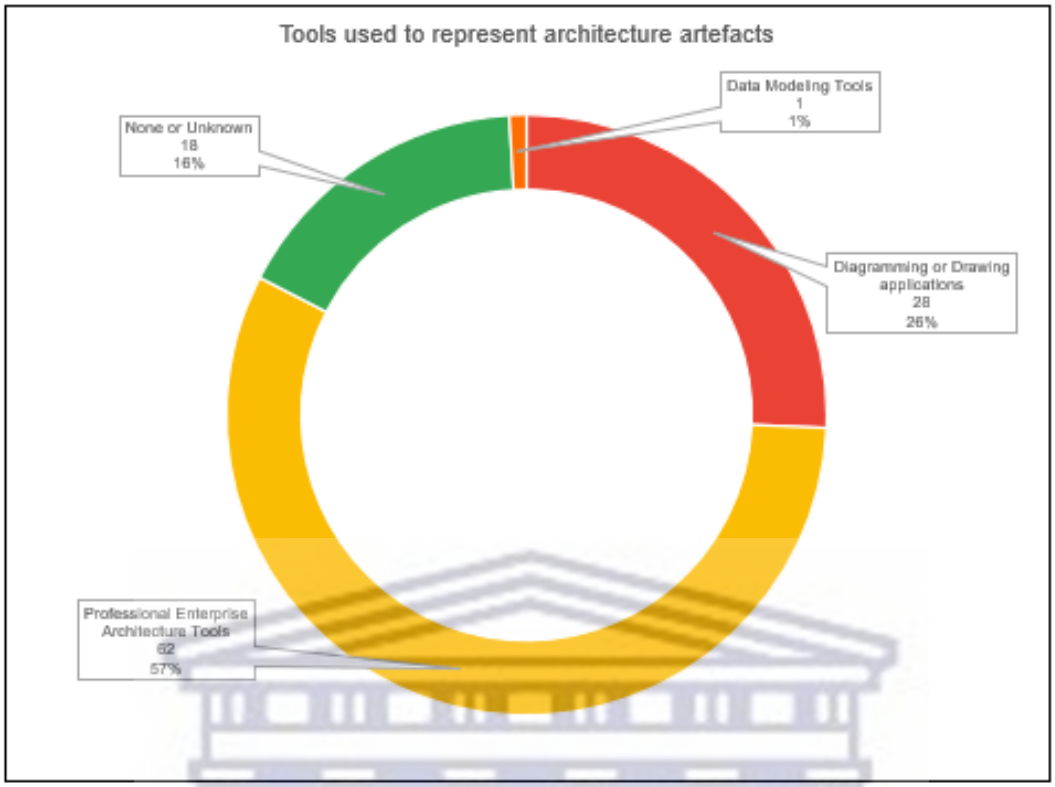

Figure 45: Tools used to represent architecture artefacts

57% of respondents indicated that they are using formal or professional enterprise architecture tools, whilst 28% use diagramming or drawing applications to aid the production of business architecture artefacts. There were also 16% of respondents who indicated that they are not in the know about the architecture tools being use in their organisation.

Figure 46 provides a view of tools usage in relation to whether an EA Framework are used in the organisation.

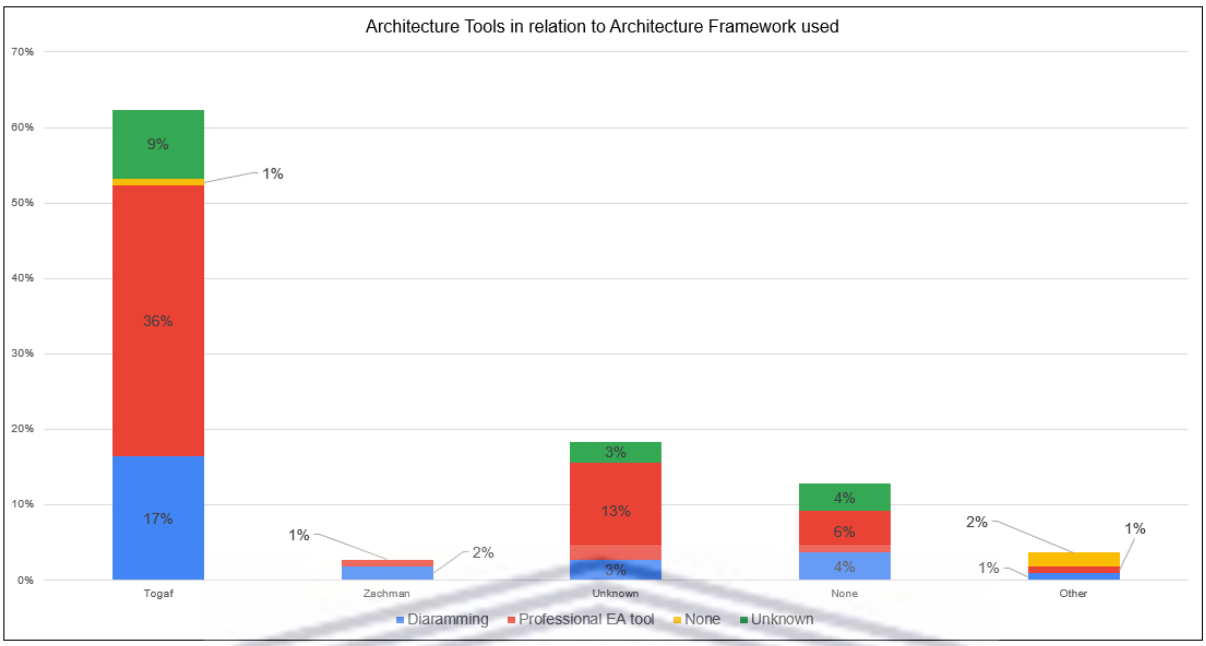

Figure 46: Architecture Tools in relations to Architecture Framework used

52% of respondents who use the TOGAF Framework for example, uses a professional EA Tool or some type of diagramming tool in their organisations.

Finding: ***Tool usage is perceived to be higher when there are a formal EA Framework such as TOGAF established, suggesting that tools of the trade go hand in hand with the application of a framework that guides the ways of working, and the outputs that are produced by the BA practice.***

4.5.5 *Business Architecture artefacts and their value*

Figure 47 depicts the familiarity of the respondents with the different architecture artefacts.

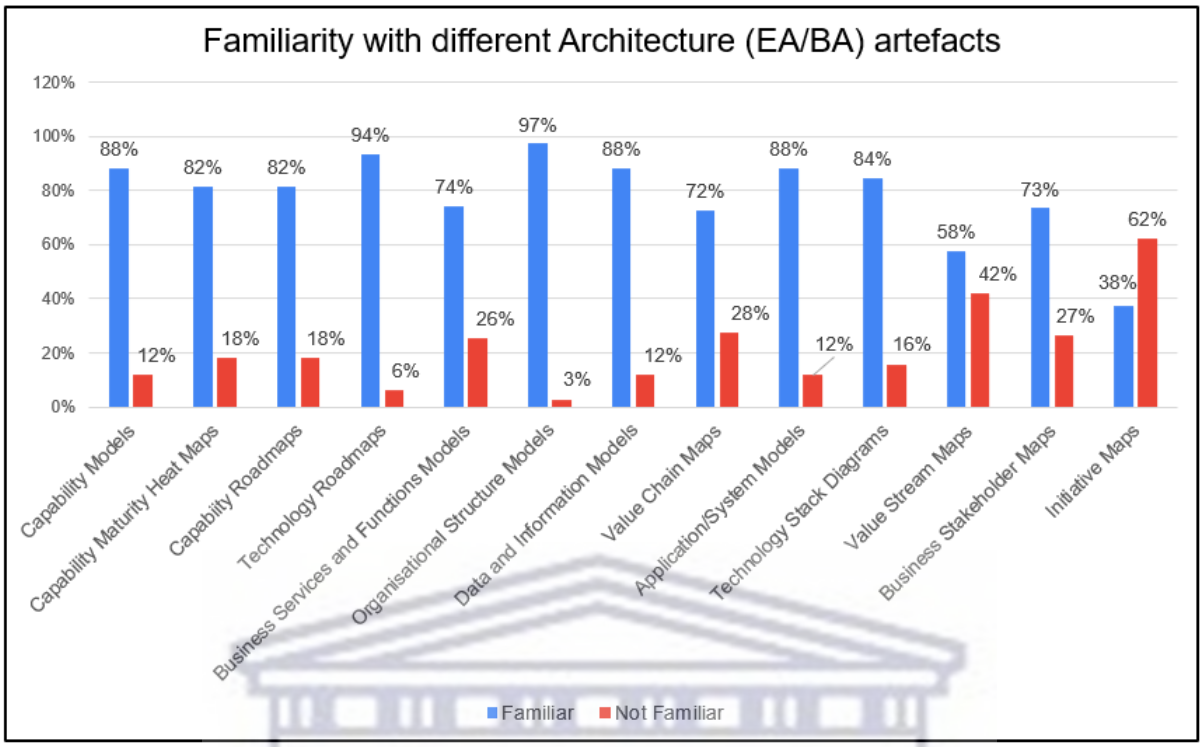

Figure 47: Familiarity with different EA Artefacts

The respondents were most familiar with technology roadmaps (94%) and organisational structure models (97%) and the least familiar with initiative maps (62%), and 42% of respondents were also not familiar with Value Stream Maps. Familiarity with the other artifacts overall were between 72% and 97%.

Figure 48 represents the respondents' agreement on whether BA is valued, used, and distributed everywhere and across multiple business units in the organisation.

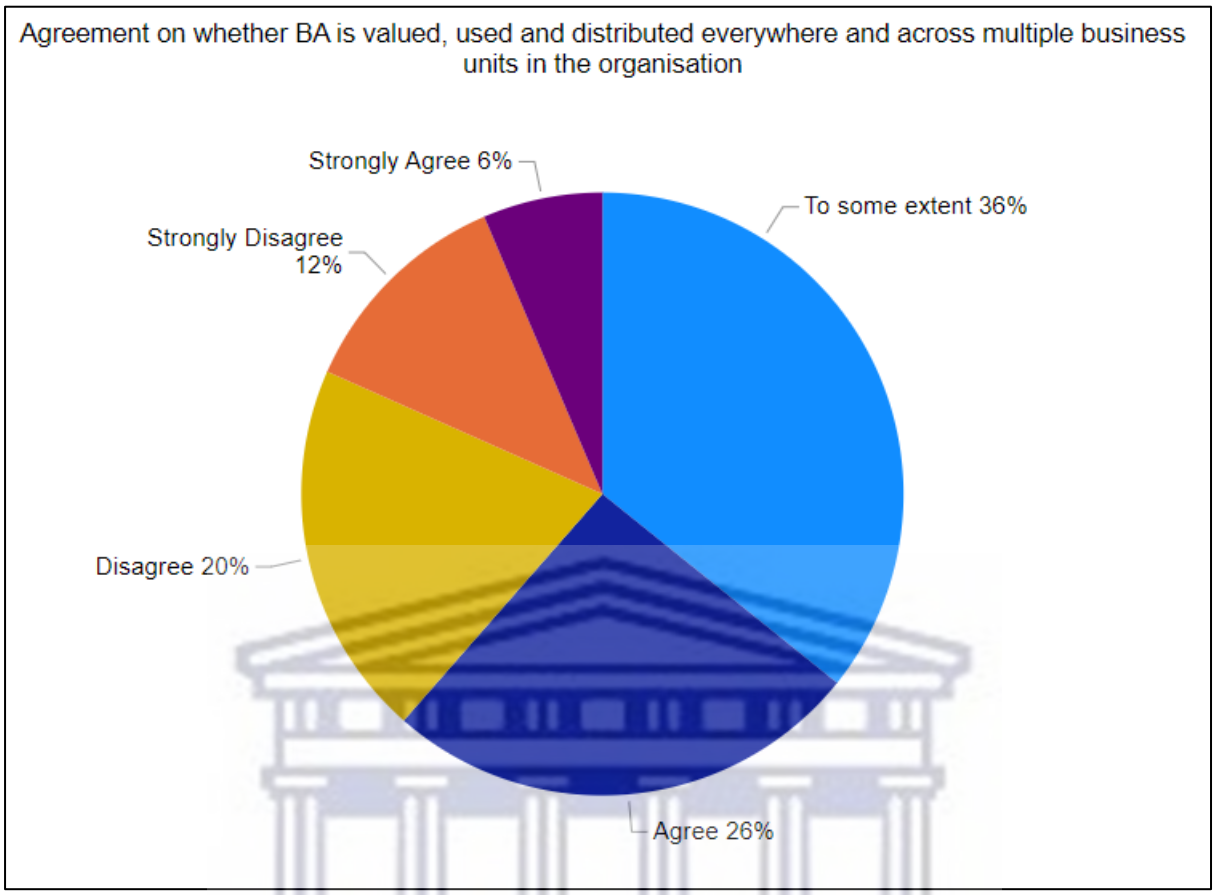

Figure 48: Agreement: BA is valued, used, and distributed everywhere and across multiple business units in the organisation

32% respondents either agreed or strongly agreed that this statement is true. 36% felt that this was true to some extent, whilst 32% either disagreed or strongly disagreed.

Reference is made to the results in Figure 15: Perception of Business/IT Alignment), where 60% of respondents agreed versus 407% disagreed that Business and IT were aligned on which business capabilities need to improve. The results in Figure 48 are surprising since most respondents indicated that they are familiar with capability maps and capability heat maps.

Finding: ***There is a perception that the value and useability of the outputs of BA is not widely communicated, understood, or recognised across the enterprise. Even though the respondents are familiar with these artefacts, the sharing, active discussion, and efficient use thereof to contribute to strategy and alignment are not pertinent.***

4.5.6 *Section Conclusion*

The nature of BA processes and artefacts is confirmed as a factor that enables the efficient application of business architecture methodology in that:

- BA processes and quality of artifacts should be measured in terms of maturity level since documented, standardised, and measured practices yield better results.
- BA processes and artefacts should be improved via feedback mechanisms and governance.
- A set of artifacts produced via the use of specific modelling tools should exist.

The conclusions drawn in this section are summarised below:

Most BA practices either have some business architecture mapping with supporting standards and practices or at least the Core Business Architecture domains have been defined, mapped, and captured within the business architecture knowledgebase. This indicates business mapping to defined and managed.

It seems that the value and useability of the outputs of BA is not widely communicated, understood, or recognised across the enterprise. Even though the respondents are familiar with BA artefacts, the sharing, active discussion, and efficient use thereof to contribute to strategy and alignment are not pertinent.

The results indicate that where both formal and informal mechanisms exist to measure quality, efficiency and maturity, the business mapping maturity of the BA practice is higher than where this is not the case. A Combination of formal and informal measurement could yield a more comprehensive result and point out where improvements are needed to mature the practice.

It is perceived that BA processes are not measured in detail, well documented, or positioned to improve by using the results of process measurement. This could impact the practice's ability to respond strategically to innovation. It also seems that in organisations where a dedicated BA role or team exists, maturity of BA processes is higher than in organisations where this is not the case.

The results suggests that where governance protocols are not sufficiently embedded BA processes are not consistently applied throughout the enterprise. Tool usage appears to be higher when there are a formal EA Framework, such as TOGAF, established. This suggests that tools of the trade go hand in hand with the application of a framework that guides the ways of working, and the outputs that are produced by the BA practice.

4.6 The Strategic Importance of Business Architecture methodologies

This section presents the findings related to strategic importance of BA methodologies as stipulated in Table 6: Application of the conceptual model in instrument design). It deals with how BA is part of strategy formulation, provides guidance into IT expenditure and plays a role in strategy planning and operating model design.

The objective is to present findings on:

- The strategic importance of BA in the organisation (core capability)
- At which point/when in either the software development lifecycle or strategy design is the BA artefacts used, including Operating Model design
- To what extent BA influences the IT expenditure

4.6.1 *The positioning of Business Architecture as core capability*

Figure 49 presents the responses on whether respondents consider BA is a core capability in their organisations.

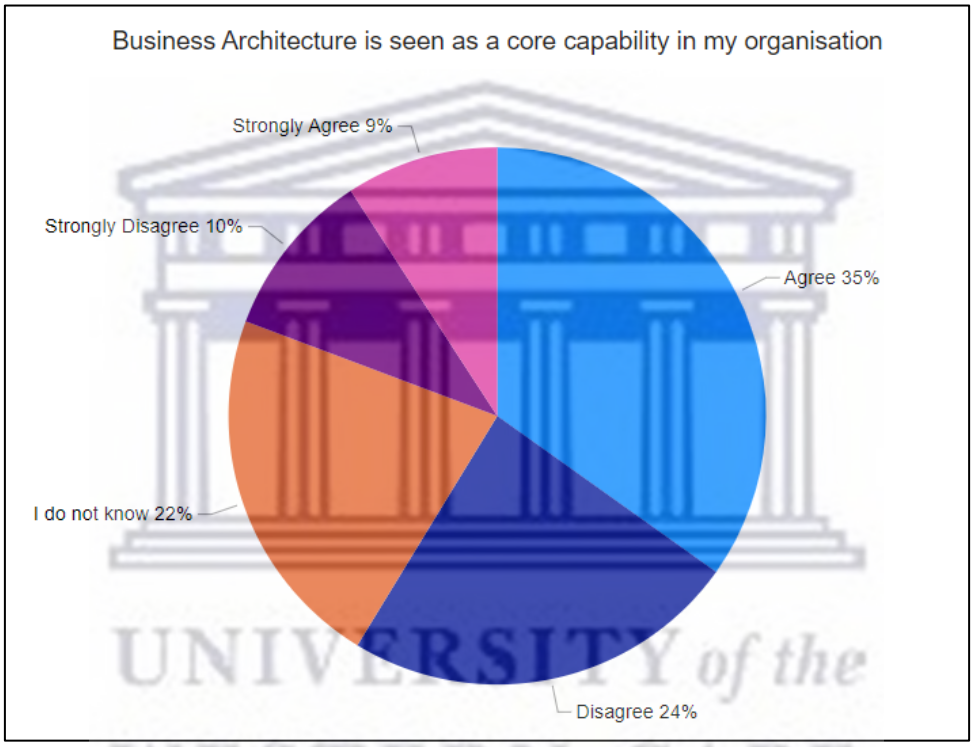

Figure 49: Business Architecture is seen as a core capability

The results show that 44% of respondents either strongly agree or agree with this statement. 22% were unsure and 34% either strongly disagreed or disagreed that BA is seen as a core capability in the organisation.

Figure 50 presents the data by sector as a percentage of the total in the categories Strongly Agree/Agree, Unsure and Strongly Disagree/Disagree.

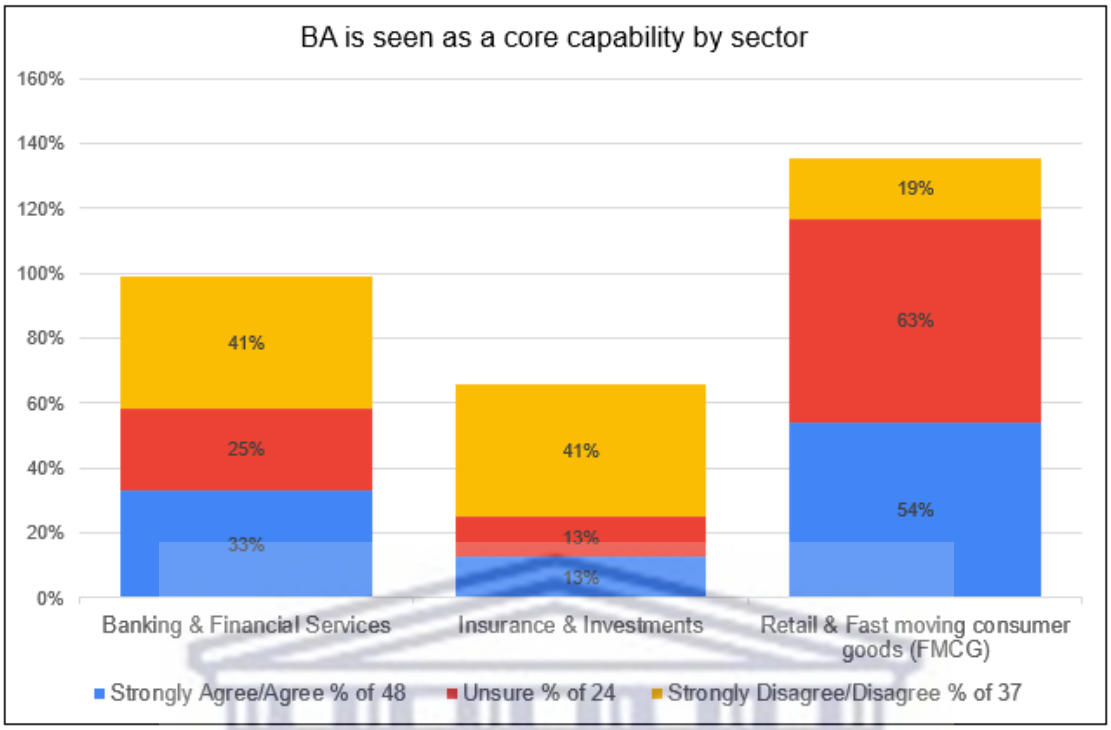

Figure 50: BA is seen as core capability by sector (presented as % of category)

The strongest agreement exists within the Retail & FMCG sector (54%), but it is also the sector where the greatest uncertainty exists (63%). Within the Banking and Financial Services sector 33% saw BA as a core capability, but the majority disagreed to this statement (41%) or were unsure (25%). The Insurance and Investments sector had the same percentage of disagreement (41%) and much lower percentages for agreement or uncertainty (13% in each case).

Figure 51 represents the findings on the recognition of BA as strategic partners.

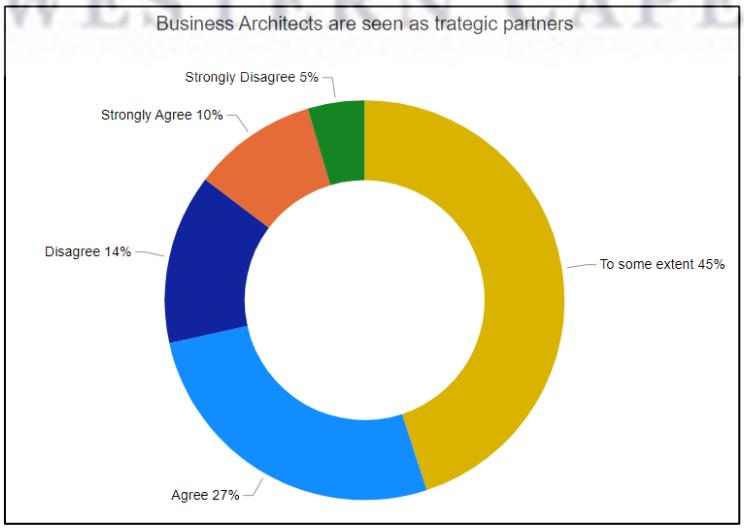

Figure 51: Strategic Partnership with BA

37% of respondents either strongly agreed or agreed that business architects are seen as strategic partners in their organisations. At the same time 45% were unsure if this statement rang true, whilst 19% either strongly disagreed or disagreed.

Figure 52 represents the agreement of respondents to the statement "IT is only there to make sure that systems are up and running".

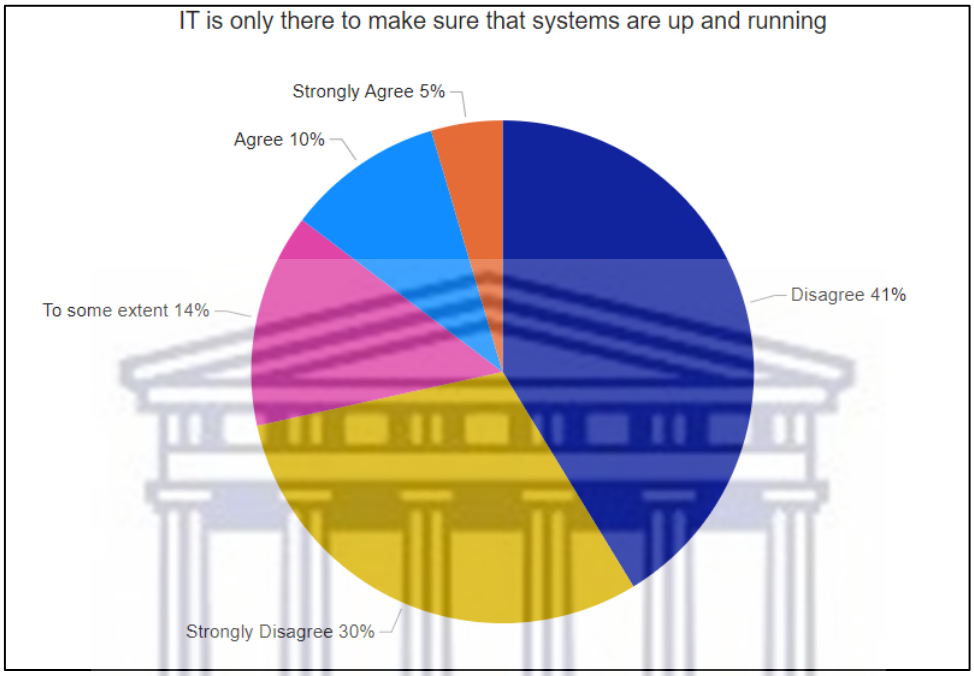

Figure 52: Agreement with the statement that IT is only there to make sure that systems are up and running

71% Respondents strongly disagreed/disagreed with this statement, whilst 15% agreed that this would indeed be the case, and 14% indicated that this is true to some extent in their organisations.

Finding: ***Although IT is not only seen as a support shop ensuring that systems keep on running, BA specifically, is not outright seen as a core capability in most organisations and similarly business architects are not necessarily seen as strategic partners. The findings do suggest that there is a higher expectation from IT than just keeping the lights on.***

4.6.2 *The application of business architecture methodology*

Table 12 below presents the results on the question "Indicate if Business Architecture artefacts are applied and used in your company for the purposes listed". Respondents were then asked to either answer Yes, No or Unsure to each listed purpose. The results are presented as a percentage of the number of the respondents within the sector (i.e., Retail & FMCG 48

respondents, Banking & Financial Services 37 respondents and Insurance & Investments 27 respondents).

Table 12: Use of BA artefacts by sector

	Banking & Financial Services			Insurance & Investments			Retail & FMCG		
Response (Yes/No/Unsure)	**Yes**	**No**	**Unsure**	**Yes**	**No**	**Unsure**	**Yes**	**No**	**Unsure**
Formulate a business capability roadmap for the organisation	68%	14%	19%	58%	38%	4%	75%	10%	15%
Drive innovation and business change	62%	22%	16%	42%	50%	8%	52%	25%	23%
Determine if the implemented business model matured specific business capabilities	43%	35%	22%	29%	58%	13%	44%	19%	38%
Guide investment in Information Technology	57%	24%	19%	46%	38%	17%	44%	19%	38%
Prioritise IT projects and the implementation of new technologies	62%	19%	19%	46%	54%	0%	50%	21%	29%

As far as the use of BA artefacts for the formulation of business capability roadmaps for the organisation is concerned the Retail & FMCG sector reported the highest usage (75%), followed by the Banking & Financial Services sector (68%). The Insurance & Investments sector reported the lowest percentage (58%). This sector also was the most unsure about this use of BA artefacts (19%).

62% of the respondents in the Banking & Financial Services sector indicated that BA artefacts are used to drive innovation and business change. Much lower percentages were reported for the other two sectors.

Figure 53 below focus on the "Yes" results (i.e., BA Artefacts are indeed used for the listed purpose). The results are presented as a percentage of the number of the respondents within the sector (i.e., Retail & FMCG 48 respondents, Banking & Financial Services 37 respondents and Insurance & Investments 27 respondents).

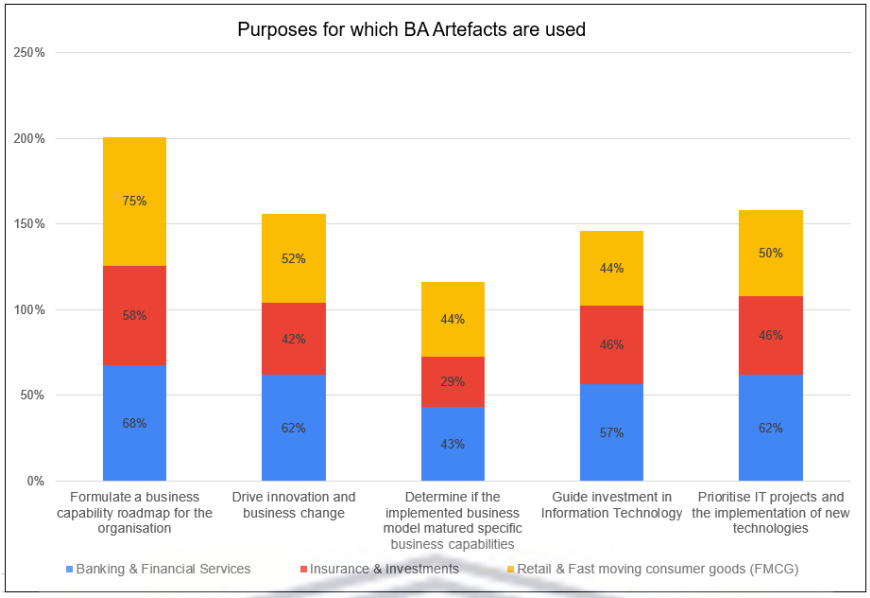

Figure 53: Purposes for which BA Artefacts are used ("Yes" responses)

The results show that in all three the sectors there were highest agreement amongst respondents that BA artefacts are used to formulate a business capability roadmap for the organisation. The purposes of prioritising IT projects and implementing new technologies as well as drive innovation and business change were chosen by almost the same percentage of respondents, positioning it in joined second place. This is then followed by guiding investment in technology and lastly determining if the implemented business model matured specific business capabilities.

Finding: ***The results indicate that BA Artefacts are mostly used to formulate a business capability roadmap for the organisation. They are the least applied to determine if the implemented business model matured specific business capabilities. This result resonates with the disagreement that Business and IT were aligned on which business capabilities need to improve in Section 4.3.2***.

Table 13 below presents the results on the question "Indicate when Business Architecture artefacts are applied and used in your company for the purposes listed". Respondents were then asked to either answer Yes, No or Unsure to each listed purpose.

The results are presented as a percentage of the number of the respondents within the sector (i.e., Retail & FMCG 48 respondents, Banking & Financial Services 37 respondents and Insurance & Investments 27 respondents).

Table 13: When BA artefacts are used by sector

	Banking & Financial Services			Insurance & Investments			Retail & FMCG		
Response (Yes/No/Unsure)	**Yes**	**No**	**Unsure**	**Yes**	**No**	**Unsure**	**Yes**	**No**	**Unsure**
When the business raises a request for a new piece of technology	62%	19%	19%	46%	46%	8%	79%	13%	8%
When there is a change in the business model (i.e., the services/ products offered, distribution of services/products, new business ventures are included, or new capabilities are needed)	68%	14%	19%	42%	50%	8%	71%	10%	19%
When new market trends spark innovation in the organisation	41%	27%	32%	29%	54%	17%	35%	23%	42%
When the organisation's strategy evolves or changes	54%	24%	22%	42%	42%	17%	54%	13%	33%
When the strategy and objectives have already been set	43%	30%	27%	42%	46%	13%	56%	6%	38%
During Operating Model design	41%	35%	24%	42%	42%	17%	56%	10%	33%
Before new strategic objectives are identified and formulated	32%	32%	35%	42%	42%	17%	35%	29%	35%
Iteratively throughout the lifecycle of IT projects	35%	43%	22%	50%	42%	8%	50%	17%	33%

The results show that the highest percentages of positive responses were received for the statement that BA Artefacts are used when the business raises a request for a new piece of technology, with the Retail & FMCG sector reflecting a high 79%, Banking & Financial Services 62% and lastly the Insurance & Investments sector with 46%.

This is followed by the statement that BA Artefacts are used when there is a change in the business model (i.e., the services/products offered, distribution of services/products, new business ventures are included, or new capabilities are needed).

Figure 54 below focus on the “Yes” results (i.e., BA Artefacts are indeed used when indicated by the statements).

The results are presented as a percentage of the number of the respondents within the sector (i.e., Retail & FMCG 48 respondents, Banking & Financial Services 37 respondents and Insurance & Investments 27 respondents).

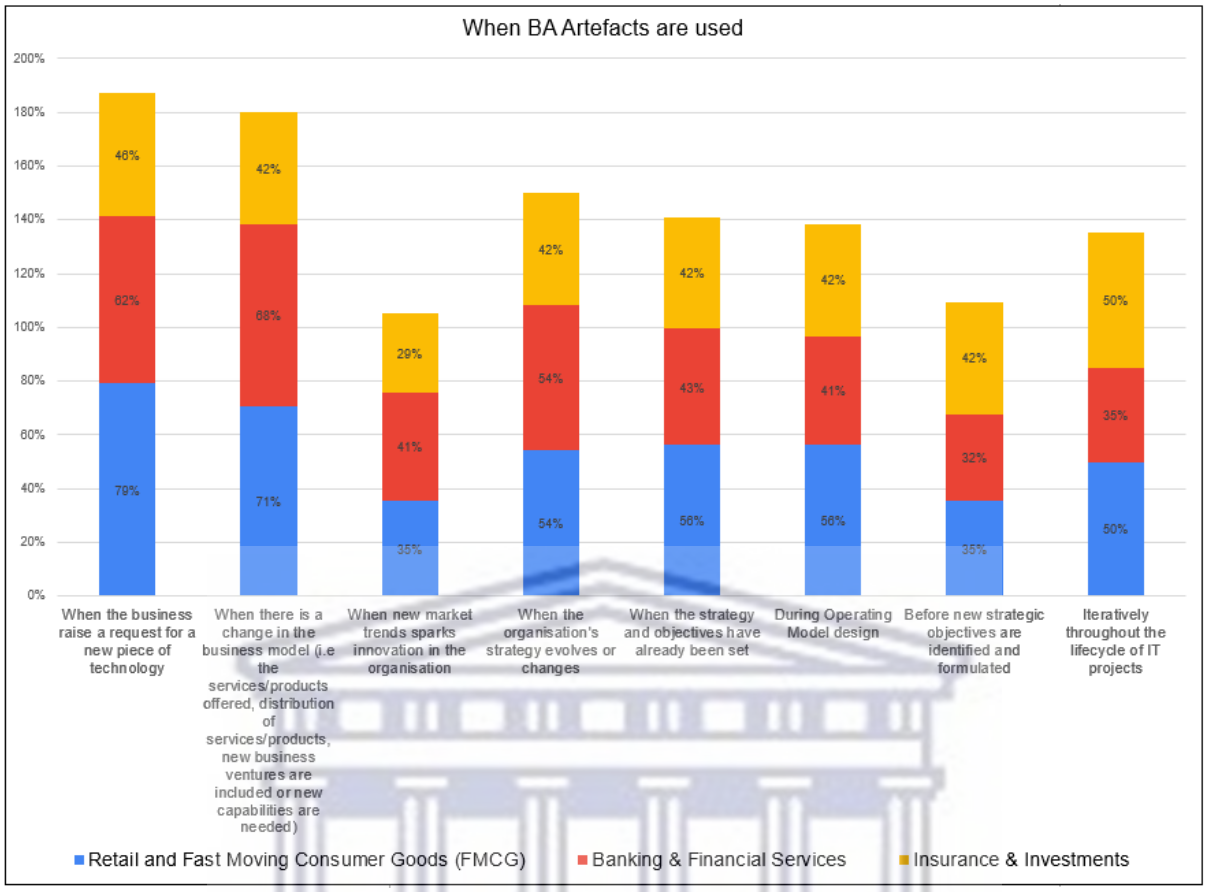

Figure 54: When BA Artefacts are used ("Yes" responses)

Positive responses are lowest for the statements that relate to innovation, strategy formulation and evolvement and during operating model design. These are also the statements where the biggest percentages of uncertainty occurred.

Figure 55 below present the results only on the use of BA Artefacts during Operating Model Design.

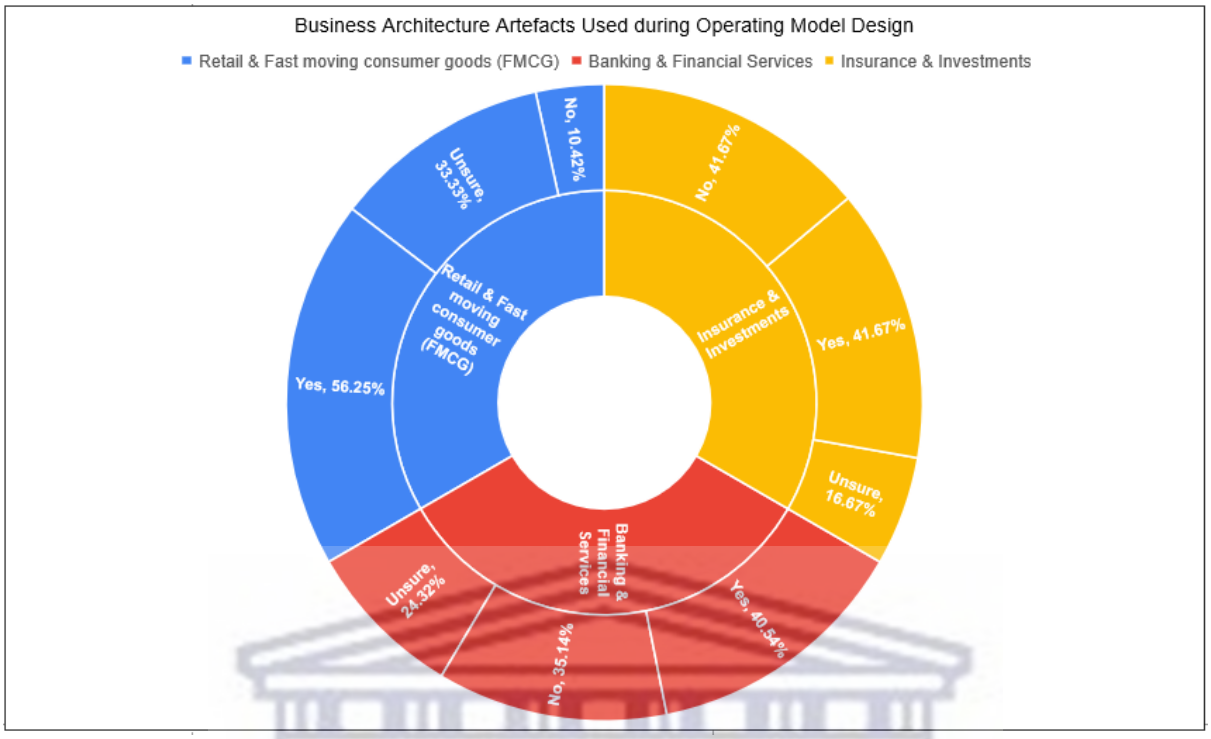

Figure 55: BA Artefacts Used specifically during Operating Model Design

56% of the Retail & FMCG sector respondents indicated that BA Artefacts are used during this process, followed by 42% of respondents in the Insurance & Investments sector and 41% in the Banking & Financial Services sector. However, the negative responses in the Insurance & Investments sector were the highest (BA Artifacts not used during Operating Model Design – 42% and uncertain 17%).

Respondents were asked to evaluate the **use and value** of BA Artefacts during operating model design (Figure 56), transposed on the BA Guild's maturity model (Table 4).

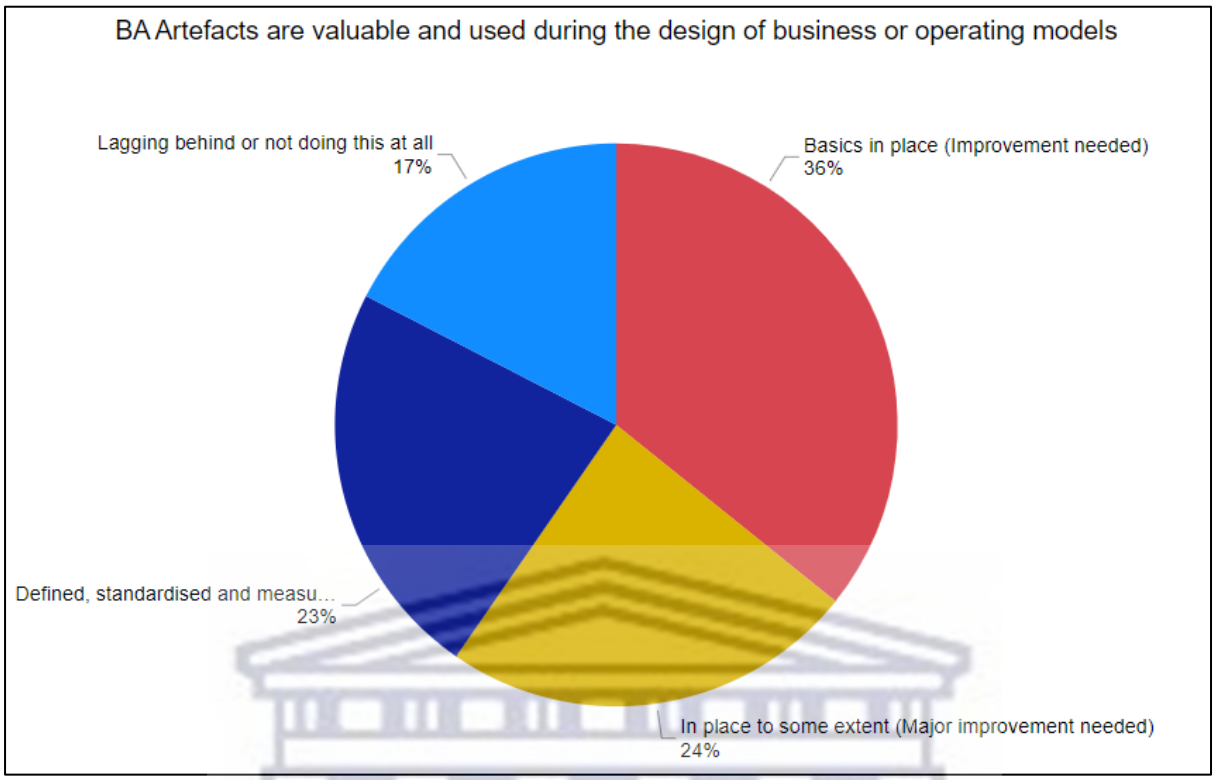

Figure 56: BA Artefacts' value and use during Operating Model Design

41% of respondents indicated that maturity is either lagging (or not doing this at all), or that major improvement is needed, indicating a Level 1 maturity. 36% of respondents indicated that basic are in place but improvement is needed, i.e., Level 2 maturity, and lastly 23% of respondents perceived the value and use of BA Artefacts in business/operating model design to be defined, standardised, and measured, i.e., Level 3 maturity. None of the respondents considered this aspect to be strategically executed or fully integrated.

Figure 57 overlays the results of involvement in Operating Model design with the existence of dedicated team/business architects.

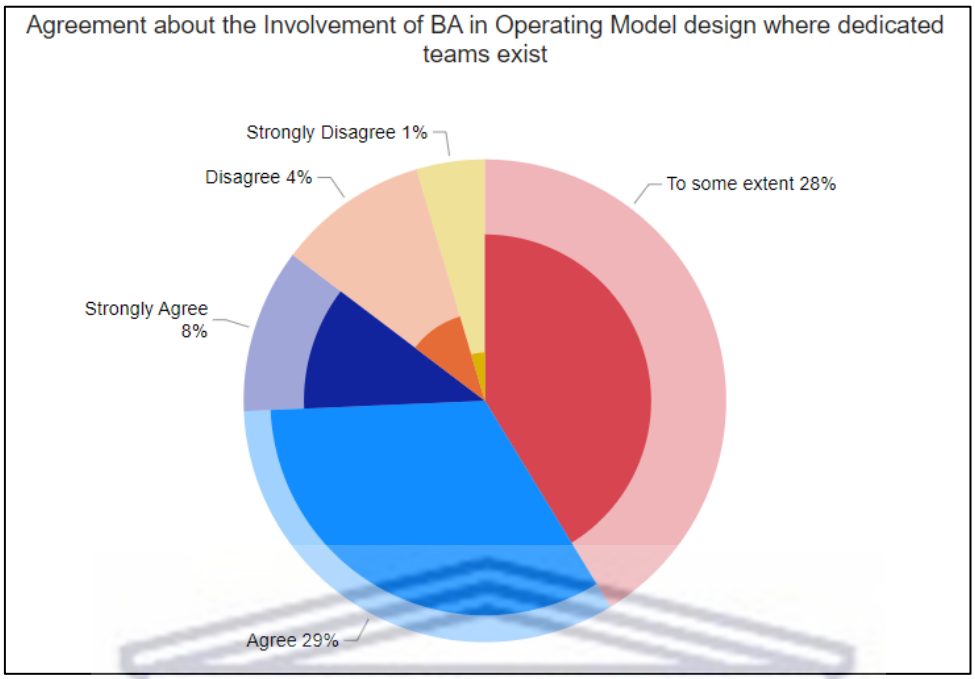

Figure 57: Involvement of BA in Operating Model design where dedicated teams exist

37% of respondents either strongly agree or agree that involvement in operating model design is higher when there is a dedicated BA or BA team. 28% indicated that this is the case to some extent, whilst a low 5% strongly disagreed or disagreed with this statement. It is reasonable to say that there much better integration of BA in operating model design where a dedicated BA are assigned.

***Finding*: Respondents indicated that BA Artefacts are mostly used to formulate a business capability roadmap for the organisation and to drive innovation and business change to some extent. They are the least applied to determine if the implemented business model matured specific business capabilities. However, BA Artefacts are re-actively used when there is a change in the business model (i.e., the services/products offered, distribution of services/products, new business ventures are included, or new capabilities are needed).**

It seems BA Artefacts are less used in strategy formulation, evolvement, and operating model design. The overall use of and perceived value of BA Artefacts during Operating Model Design is lagging, however, there is higher involvement where dedicated business architects provide services to the business. The conclusion can be made that the use of BA Artefacts is related to the perceived value thereof.

4.6.3 *Representation of strategy in Business Architecture artefacts*

Figure 58 represent the respondents' evaluation of how well the strategic objectives and plans of their organisations are represented in the BA artifacts produced.

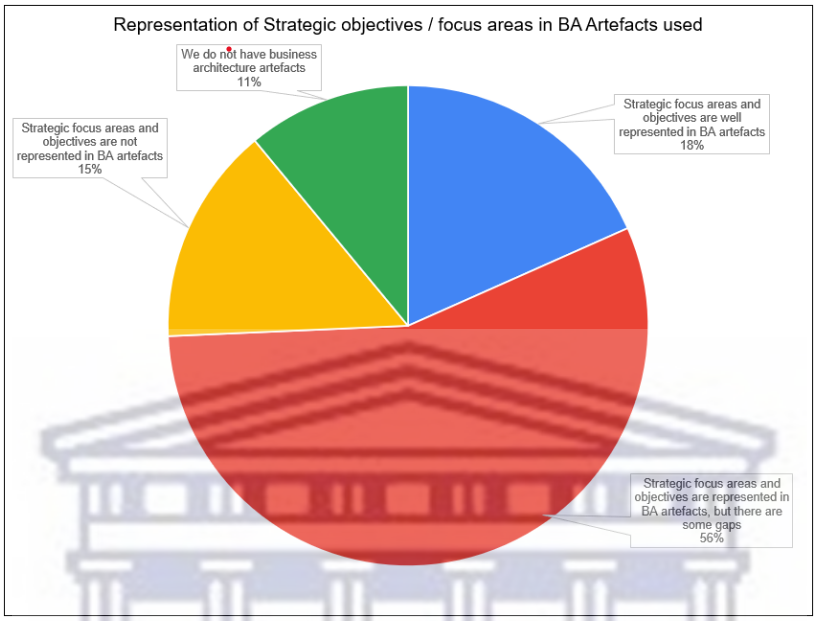

Figure 58: Representation of Strategic objectives in BA Artefacts used

Only 18% of respondents were confident that their strategic objectives are well represented in their BA artefacts, whilst 56% indicated that, although they are represented, there were some gaps. There were also 15% respondents who indicated that their strategic objectives were not represented in BA Artefacts, which is indicative and confirmative of lower strategic representation.

Figure 59 represent the responses where representation exist/exist with gaps, by the sector in which the respondents work.

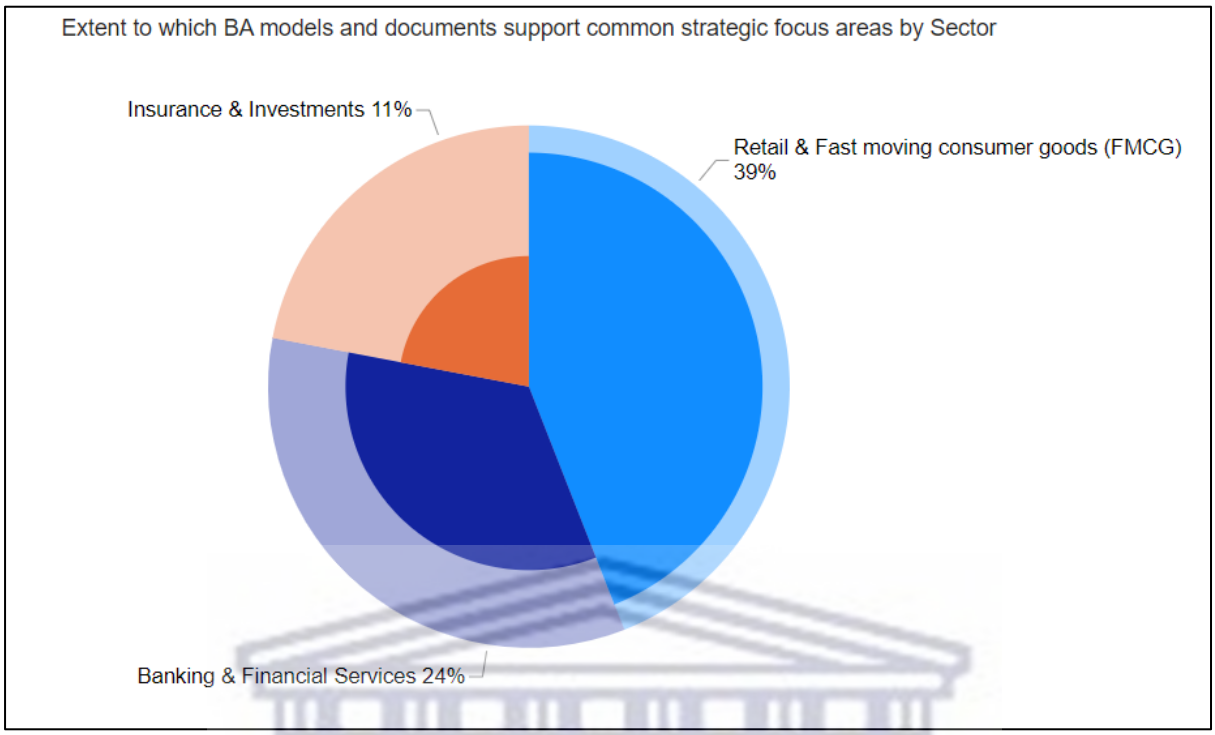

Figure 59: The extent to which BA models and documents support common strategic focus areas by sector

Respondents in the Retail & FMCG sector are the most comfortable that the BA artefacts produced does represent their strategic objectives (39%), followed by the Baking & Financial Services sector (24%) and lastly the Insurance & Investments sector (11%).

Finding: ***There is a perception that strategic objectives and plans are not well represented in BA Artefacts and where it is indeed the case, it is mostly in the Retail & FMCG sector.***

Respondents were asked to provide their views on statements which probes the strategic importance of BA, by considering it in the context of the BA Guild's maturity model. Figure 60 presents the results.

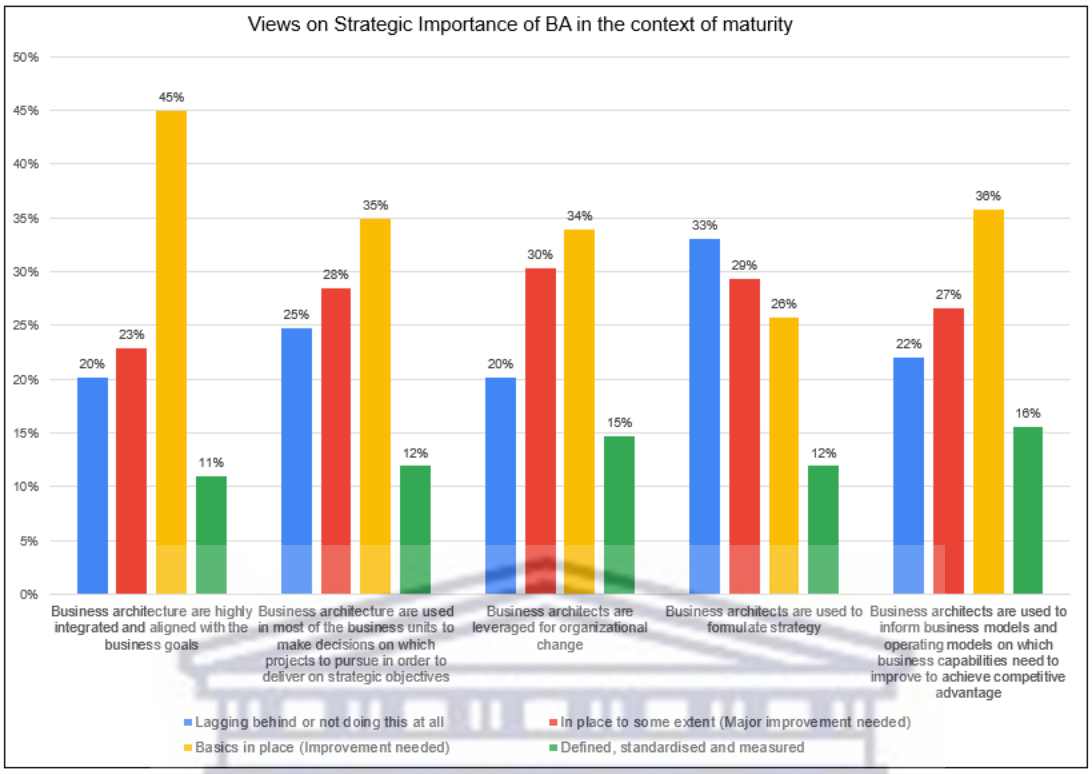

Figure 60: Strategic Importance of BA within the context of the BA Guild Maturity Model

On the statement that Business Architecture are highly integrated and aligned with the business goals, 45% of respondents indicated that only basics are in place and that improvement is needed. 20% indicated that they are lagging, or that the integration exists to some extent (I.e., major improvement is needed). Only 11% considered their business architecture integration to be defined, standardised, and measured. For the rest of the statements presented to the respondents a similar pattern of results emerged.

<u>Finding:</u> The data suggest that BA's strategic importance is not well recognised and immature.

4.6.4 *The impact of Business Architecture in driving of IT Expenditure*

Figure 61 represents the results on the agreement of the respondents to a statement that BA has no influences on IT Expenditure.

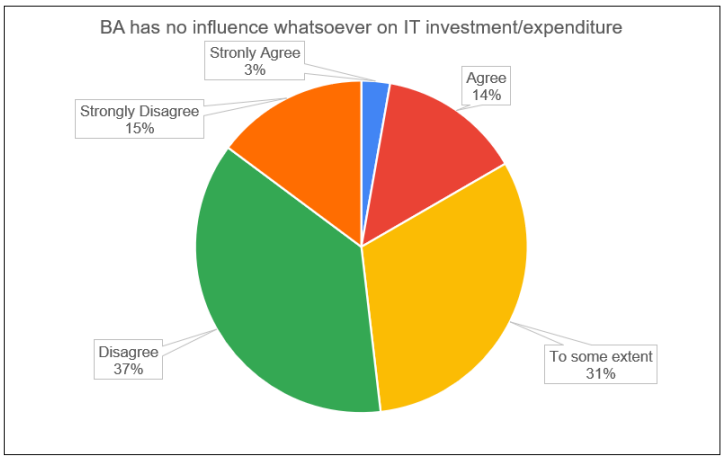

Figure 61: BA has no influence on IT Expenditure

A small percentage of respondents (17%) do not think that BA has any influence on IT Expenditure, whilst 52% disagreed or strongly disagreed that BA has no influence over the matter. 31% indicated that that BA has some influence over IT Expenditure. There seems to be consensus that BA has a role to play in the investment and expenditure on IT.

To understand these responses in more detail, respondents were asked to indicate their **agreement with specific statements** around the influence of BA on IT Expenditure. The results are depicted in Figure 62: BA involvement in IT Expenditure.

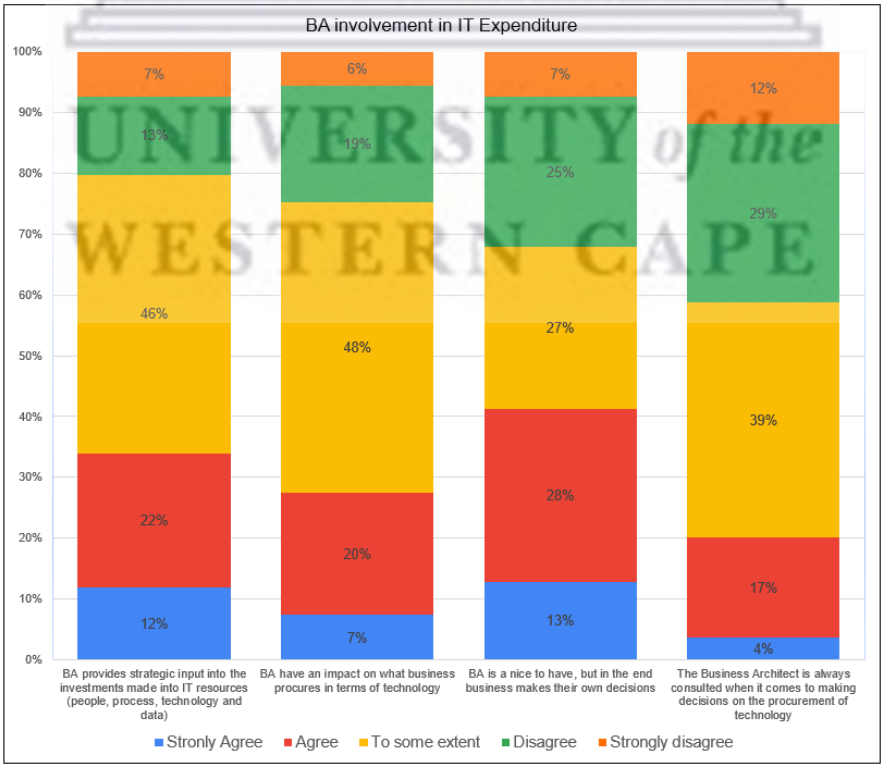

Figure 62: BA involvement in IT Expenditure

Evaluating the statement whether BA provides strategic input into the investments made into IT resources (people, process, technology, and data), 34% of respondents either strongly agreed or agreed whilst 46% felt that strategic input is provided by BA to some extent. 20% of respondents disagreed or strongly disagreed with the statement.

28% of respondents either agreed or strongly agreed that BA as a practice have an impact on what technology the business procures. 48% indicated that this was true to some extent, whilst 25% either disagreed or strongly disagreed with this statement. Furthermore, 41% strongly agreed or agreed that in the end business will make their own decisions on what technology to invest in. 27% of respondents felt that BA is a nice to have and the business will make their own decisions to some extent, whilst 32% disagree or strongly disagreed with this statement.

As far as consultation with the BA is concerned when making decisions on the procurement of technology goes, 20% strongly agreed or agreed that consultation happens. 39% indicated that consultation happens to some extent and 41% either disagreed or strongly disagreed.

<u>Finding:</u> BA are considered as strategic input into the investment in IT resources, which included people, process, technology, and data. However, BA as a practice, seems to have influence over what technology is procured by the business to some extent, and the BA/BA team is not consulted in the procurement decision making process. In most cases, BA is seen as a nice to have and business makes their own decisions.

4.6.5 *Section Conclusion*

The recognition of the strategic importance of BA is confirmed as a factor that enables the efficient application of business architecture methodology in that:

- BAs should be part of strategy discussions and formulation.
- Investment or expenditure on IT should be made based on BA.
- BAs should play a key role in business strategy planning and operating model design.

The conclusions drawn from this section are summarised below:

Although IT is not only seen as a support shop ensuring that systems keep on running, BA specifically, is not outright seen as a core capability in most organisations and similarly business architects are not necessarily seen as strategic partners. However, the findings do suggest that there is a higher expectation from IT than just keeping the lights on.

BA Artefacts are mostly used to formulate a business capability roadmap for the organisation. They seem to be the least applied to determine if the implemented business model matured specific business capabilities. However, BA Artefacts are re-actively used when there is a change in the business model (i.e., the services/products offered, distribution of services/products, new business ventures are included, or new capabilities are needed).

BA Artefacts are less used in strategy formulation, evolvement, and operating model design. The overall use of, and perceived value of BA Artefacts during Operating Model Design is lagging, however, there is higher involvement where dedicated business architects provide services to the business. It seems that the use of BA Artefacts is related to the perceived value thereof. The data also suggest that BA's strategic importance is not well recognised and immature.

It also seems that strategic objectives and plans are not well represented in BA Artefacts and where it is indeed the case, it is mostly in the Retail & FMCG sector. BA are considered as strategic input into the investment in IT resources, which included people, process, technology, and data.

However, respondents think that BA as a practice only have influence over what technology is procured by the business to some extent, and BA is not consulted in the procurement decision making process. In most cases, BA is seen as a nice to have and business makes their own decisions.

4.7 Skills and knowledge levels of practitioners

This section presents the findings related to the skills and knowledge of architecture practitioners as stipulated in Table 6: Application of the conceptual model in instrument design) and deals with practitioners' level of understanding and leveraging of BA (including how they share), the soft- and technical skills levels as well as the development of practitioners.

The objective of the section is therefore to present findings on:

- the individual skills rating for specific soft- and technical skills as identified in the literature,
- whether development, training, and career paths for Business Architects in the organisation exists.

4.7.1 *Current state of Soft Skills and Technical Skills of Architect*

Figure 63 reflects the self-evaluation from respondents on their soft skills. Respondents were asked to rate their competence in the listed soft skills by selecting a skills level from below average to exceptional.

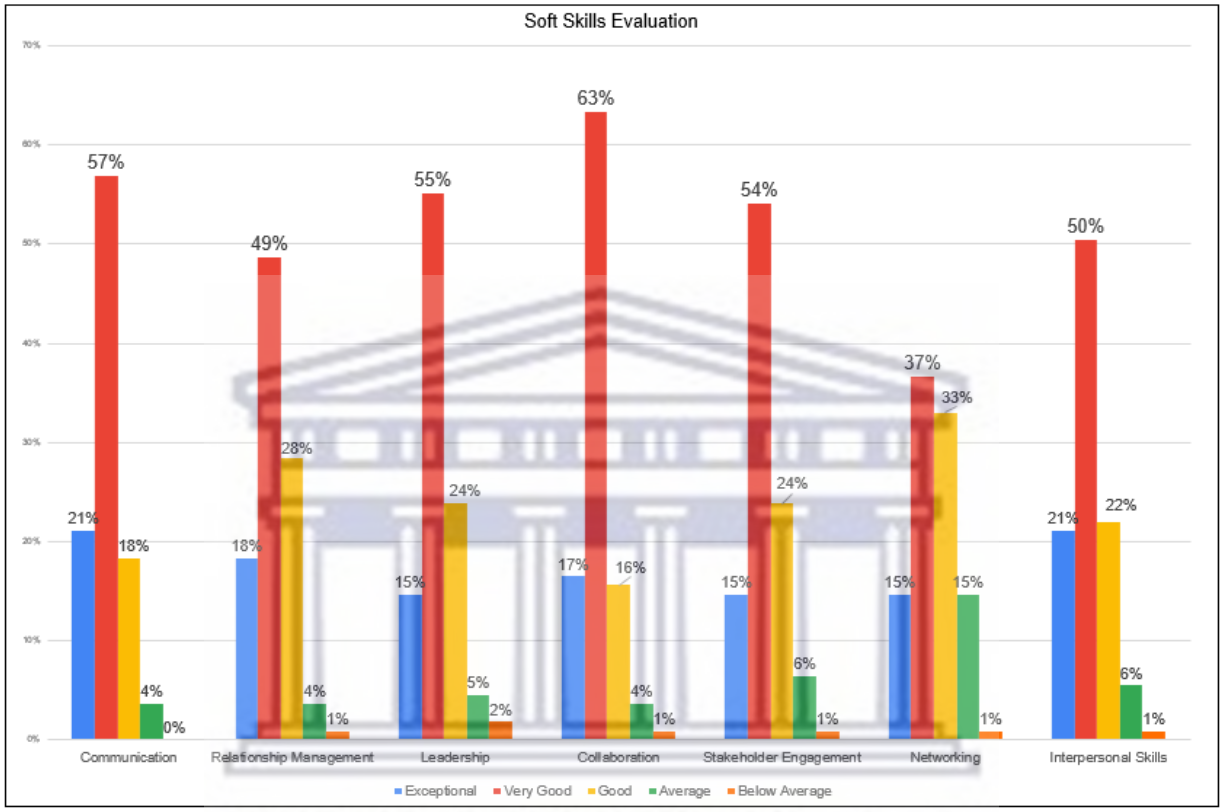

Figure 63: Evaluation of Soft Skills

Most respondents evaluated their soft skills to be either Exceptional, Very Good or Good with the lowest confidence level in their ability to Network. 16% of respondents indicated their abilities to be average or below average in networking, and 84% felt that their abilities were either exceptional, very good or good in this area. Respondents were the most comfortable with their communication abilities in that 96% indicated their skill level to be exceptional, very good or good.

Finding: ***Considering the gaps already identified in*** Figure 23, ***it seems that even though respondents are skilled communicators, the actual communication is lacking. It was already suggested that shared understanding of the business and communication between Business and IT are key to the relationship and achieving better alignment, which provides opportunity for respondents to apply themselves more effective in this area.***

Figure 64 summarises the results where respondents indicated their soft skills to be exceptional, very good or good.

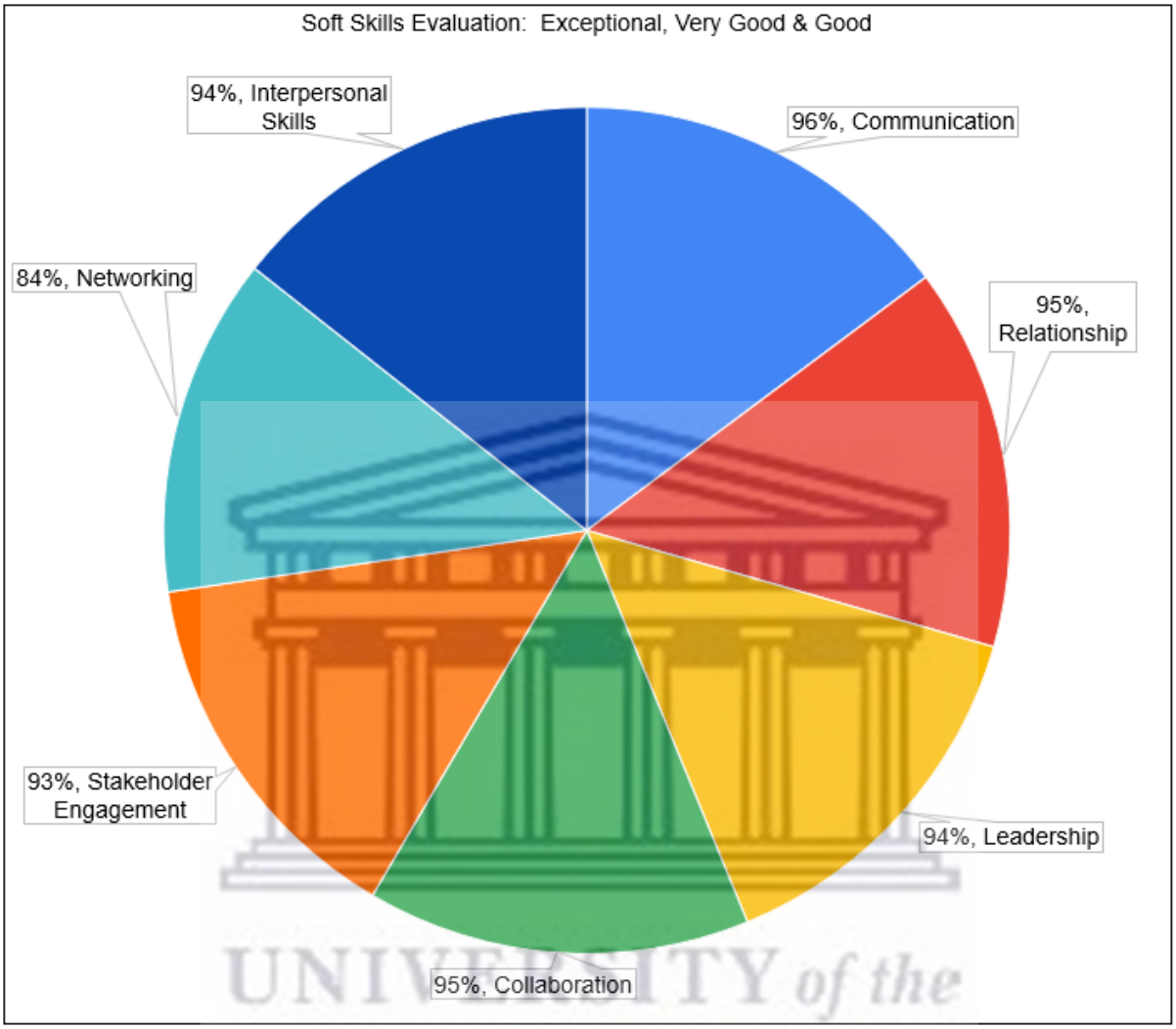

Figure 64: Summary: Soft Skills levels rated as Exceptional, Very Good & Good

As far as soft skills are concerned, on average, 93% of respondents were comfortable with their abilities in the listed soft skills.

<u>Finding:</u> Respondents considered skill levels in terms of Soft Skills to be overall very good.

Figure 65: Evaluation of Technical Skills reflects the self-evaluation from respondents on their technical skills. Respondents were asked to rate their competence in the listed soft skills by selecting a skills level from below average to exceptional.

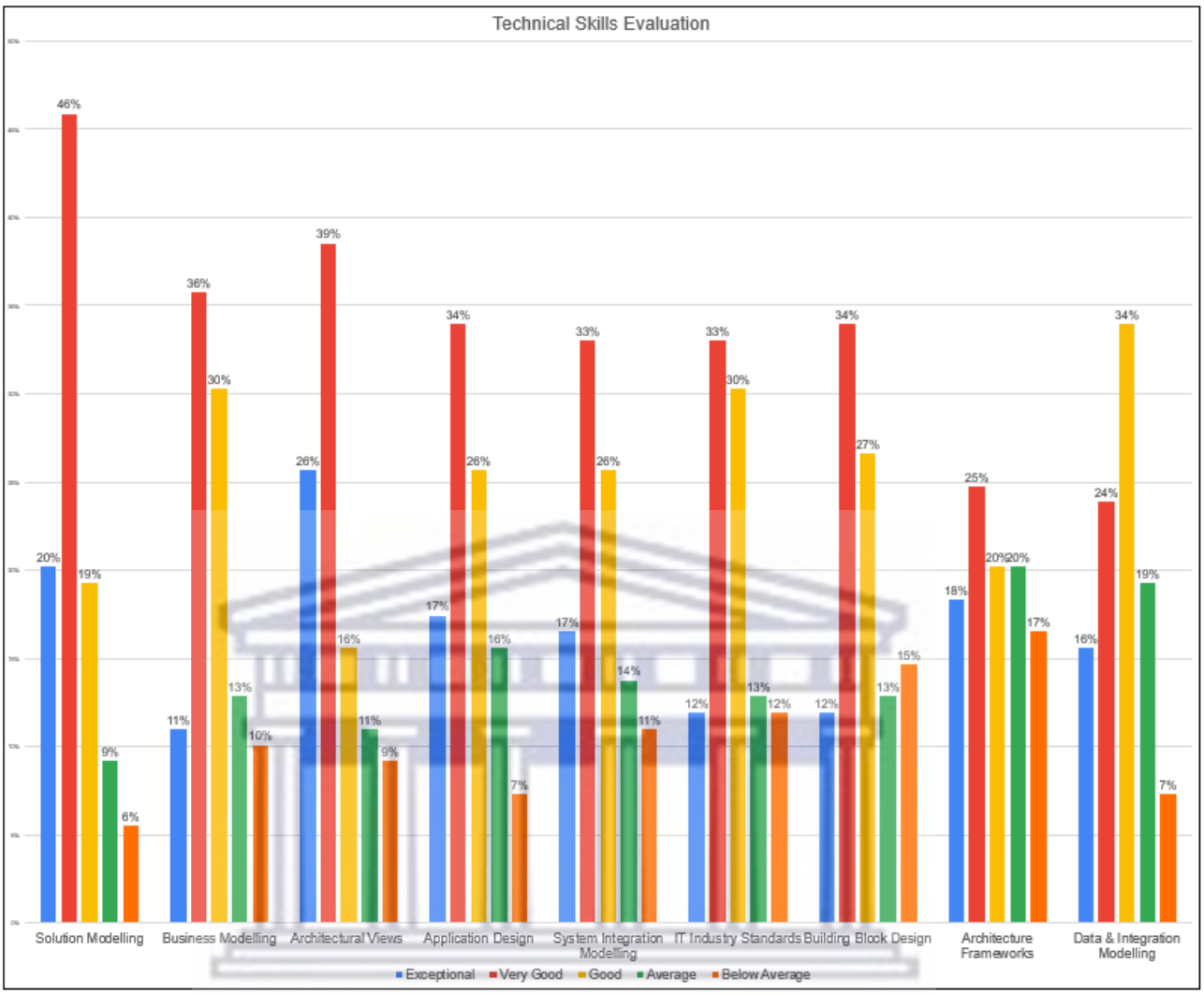

Figure 65: Evaluation of Technical Skills

Respondents' confidence level was the highest in Solution Modelling. A total of 85% of respondents evaluated their ability in this area to be exceptional, very good or good. Confidence was lowest in Architectural Frameworks, with 63% rating their abilities as exceptional, very good or good, which means that 37% considered their skills to be average or below average in this area.

This result is not surprising, since only 32% respondents indicated (as per Figure 46: Architecture Tools in relations to Architecture Framework used) that they either do not use an EA Framework in their organisations or they were unsure about it.

Figure 66 summarises the results where respondents indicated their technical skills to be exceptional, very good or good.

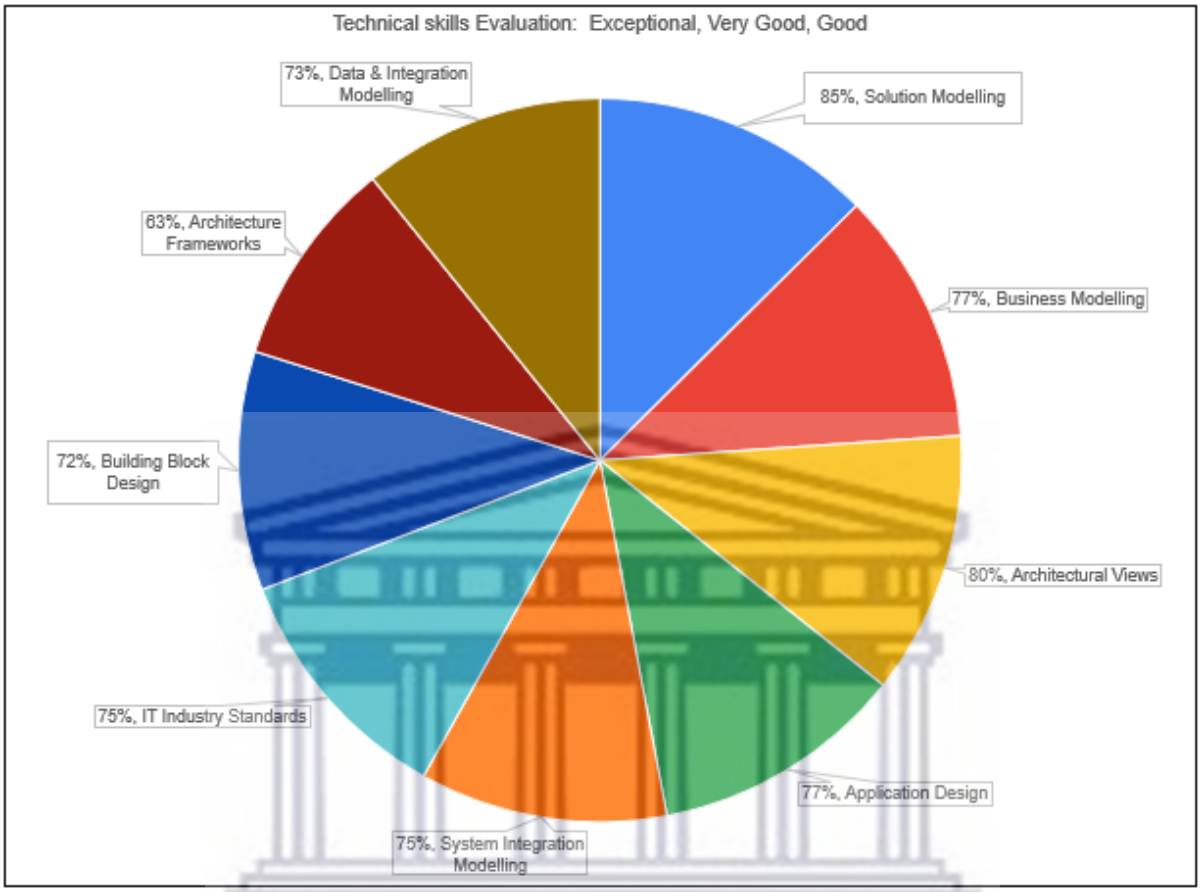

Figure 66: Summary of Technical Skills levels: Exceptional, Very Good & Good

The results that on average respondents were 75% comfortable with their abilities in the listed technical skills.

Finding: ***The results show that proficiency in technical skills is not as high in comparison to soft skill. Gaps in the competency levels exist, especially as far as architecture frameworks are concerned.***

4.7.2 *The importance of development, training, and career paths for Business Architects*

Figure 67 represents the results on the existence of a training curriculum for EA/BA practitioners.

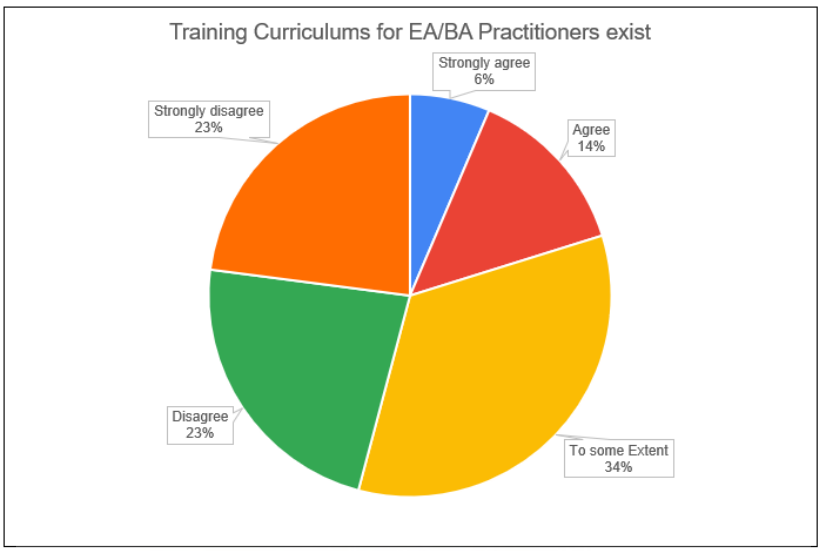

Figure 67: The existence of Training Curriculums for practitioners

Only 20% of respondents agreed or strongly agreed that there indeed was such a training curriculum in their organisations. 34% felt that a training curriculum existed to some extent and 46% disagreed or strongly disagreed.

Finding: ***There seems to be a low occurrence of defined career paths and training curriculums that support them. This might very well be why lower comfort levels exist for technical skills and suggests that practitioners are mostly left to their own devices to learn on the job or seek other means to improve and learn new skills.***

Figure 68 presents the results on the perception of business architect knowledge and competency in their roles. Respondents were asked to what extend do they agree that in their organisations, Business Architect knowledge is excellent, with solid competency by a majority.

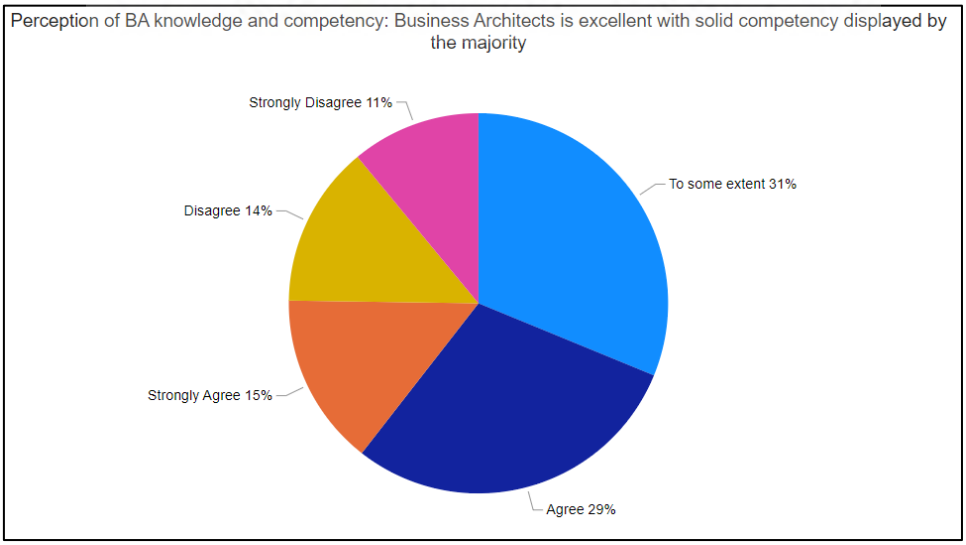

Figure 68: Perception of Business Architect's knowledge and competency

The results show that 44% either agreed or strongly agreed that this was the case and 31% felt that there are some gaps in knowledge and competency levels, whilst 25% had more pertinent concerns (Disagree/Strongly disagree with the statement).

Figure 69 overlays the positive responses (Agree/Strongly Agree) with the sectors in which respondents work.

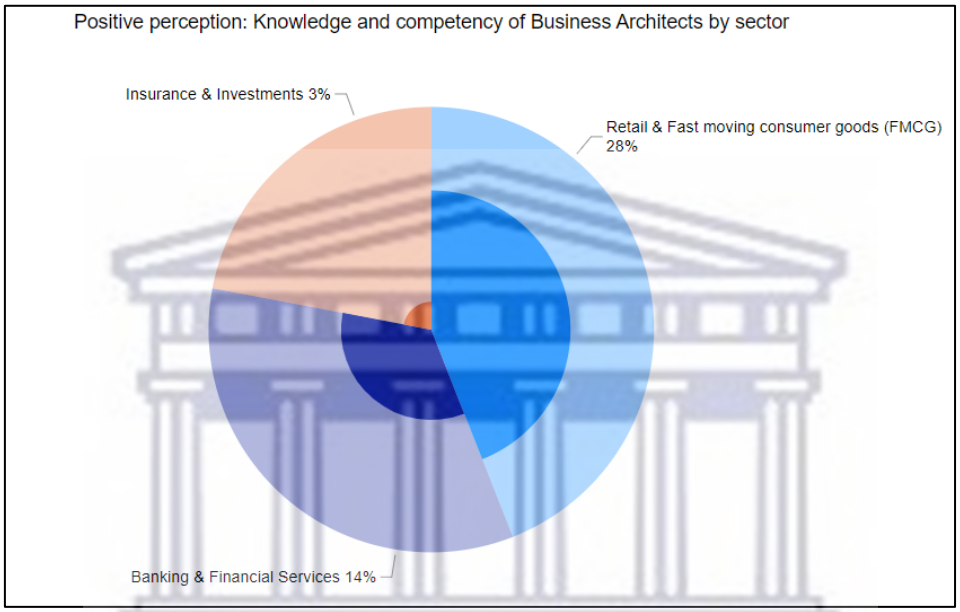

Figure 69: Perception of BA knowledge/competency by sector (Positive responses)

The results show that the lowest percentage of agreement exists in the Insurance & Investments sector (3%), followed by the Banking & Financial Services sector (14%). The Retail & FMCG sector had the most positive perception about the competency and knowledge of Business Architects in their organisations. 28% agreed or strongly agreed that in their organisations business architects has excellent knowledge and that solid competency is displayed by the majority.

Figure 70 below depicts the existence of a training curriculum by sector, i.e., respondents who agreed or strongly agree that career paths are defined and supported with a training curriculum.

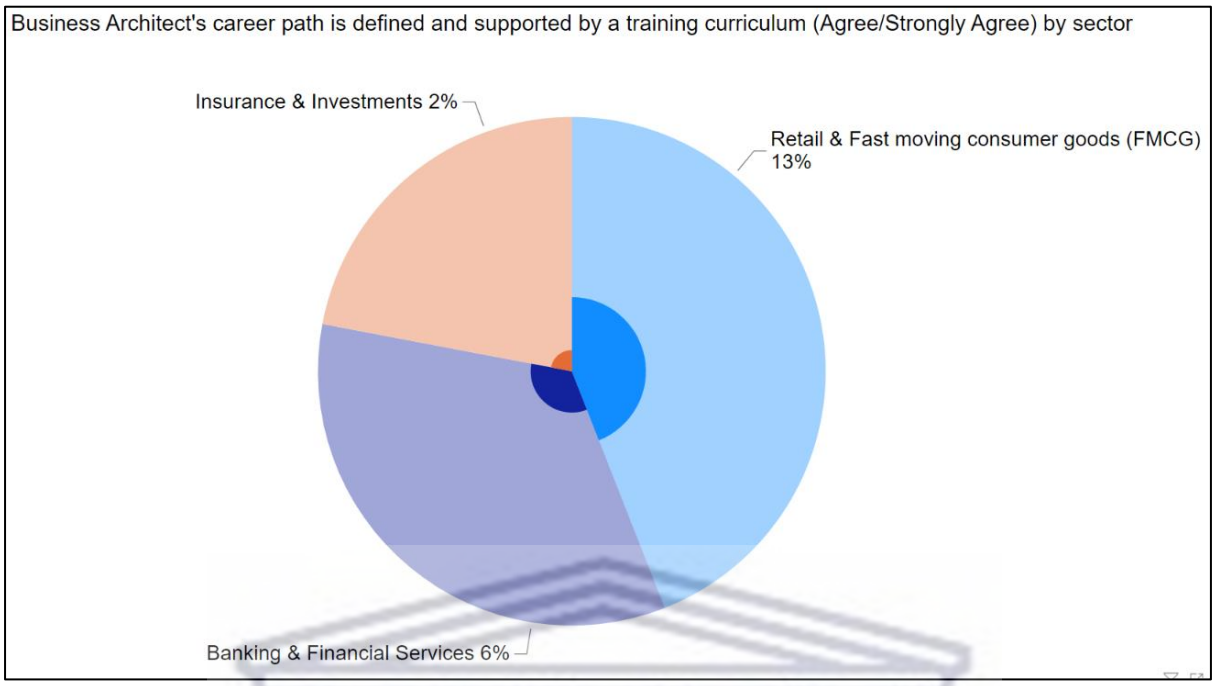

Figure 70: Existence of career paths supported by a training curriculum

This result shows that career paths and training curriculums that support them are more pertinent in the Retail & FMCG sector (13%), as appose to the Insurance & Investment sector (2%) and Banking & Financial Services sector (6%). Considering this result in the context of Figure 69, there is a relationship between this result and the perception of knowledge and competency.

Finding: ***Where a career path for business architects is defined and supported by a training curriculum, the overall perception of their knowledge and competency are more positive than where it is not the case.***

4.7.3 *Section Conclusion*

The knowledge and skills of BAs is confirmed as a factor that enables the efficient application of business architecture methodology in that:

- BAs should be advanced in their understanding and leveraging of the BA practice to achieve the strategic value.
- BAs should be competent in soft- and technical skills to apply their methodologies efficiently.
- Development initiatives, career paths and supporting curriculums should exist.
- The knowledge of BA's should be leveraged and shared across the organisation.

The conclusions drawn from this section are summarised below:

In general, there seem to be high comfort levels on proficiency in the probed soft skills.

Even though respondents are skilled communicators, there is a pertinent lack of actual communication impacting on the level of Business/IT Alignment. It was already found that shared understanding of the business and communication between Business and IT are perceived to be key to the relationship and achieving better alignment. This provides opportunity for respondents to apply themselves more effective in this area.

The perception of proficiency in technical skills is not as high in comparison to soft skills. Gaps in the competency levels exist, especially as far as architecture frameworks are concerned.

There seem to be low occurrence of defined career paths and training curriculums that support them, however better results were reported in the Retail & FMCG sector. The low occurrence of training for business architects might be why lower comfort levels exist for technical skills and suggests that practitioners are mostly left to their own devices to learn on the job or seek other means to improve and learn new skills.

It can be concluded that where a career path for business architects is defined and supported by a training curriculum, the overall perception of their knowledge and competency are more positive than where it is not the case.

4.8 Chapter Summary

The purpose of this chapter was to present the results and the findings based on the literature review presented in Chapter 2, in relation to the research objectives.

The researcher identified models and frameworks that may be applied to assess the level of maturity of the practice of business architecture resulting in the conceptual model presented in Figure 8: Conceptual research context based on relevance and literature review).

This also entailed the interrogation of the dimensions identified in the conceptual research context to understand the efficient application of BA methodology in operating model design. The findings provide detailed information to explain each of the interrogated dimensions, maturity levels where applicable, confirming them as factors that enable the efficient application of BA methodologies in operating model design.

The factors that enable and should be matured to efficiently apply BA methodology during operating model design are:

- The leveraging of BA to improve the level of Business/IT Alignment
- The recognition of the strategic importance of BA
- The support and recognition of the BA practice by management/Executive sponsorship
- The nature and maturity of the BA practice processes and artefacts
- The knowledge and skills of BA practitioners

In the final chapter a simplified maturity model to aid the maturity measurement of the factors is presented. Chapter 5 will also evaluate the attainment of research objectives, potential limitations of the study and recommendations for future research.

Chapter 5: Conclusions and recommendations

5.1 Introduction

This chapter concludes by providing a reflection on the research process and the attainment of the research objectives. It concludes the findings of this study and describes the contributions of this research. This chapter also examines the implications of the research findings and provides recommendations for future research.

The chapter summarises the findings (Section 5.4) and then presents a business architecture practice framework. The framework is developed to aid the maturity assessment of the factors that enable the efficient application of BA methodology in operating model design.

5.2 Overview of the research process

The researcher identified literature relevant to the study, conducted a thorough literature review on the listed topics and documented the findings, insights, and conclusions in Chapter 2.

The literature review led to the identification and discussion of models and frameworks that may be applied to assess the level of maturity of the practice of business architecture.

These frameworks provided a conceptual research context of validated dimensions (Figure 8: Conceptual research context based on relevance and literature review) which were identified as:

- Business/IT Alignment.
- The nature of process and artefacts used within Enterprise Architecture and Business Architecture in particular.
- The knowledge and skills of practitioners.
- The support of management of the practice and involvement in the development thereof.
- The strategic importance of Business Architecture.

The study addressed the research question through a survey research design. A survey research design was suitable for this study as the goal was to establish general laws of behaviour and experiences within different contexts and it presented the best method to collect data from individuals.

The data collection was accomplished through a structured, online research questionnaire. The researcher applied decomposition techniques informed by the conceptual research

framework (Figure 8) to construct an online questionnaire in line with the survey research design chosen for this study. The online questionnaire set out to determine the use of business architecture (including during business operating model design) in selected South African business sectors.

The researcher formulated questions based on the conceptual research context provided by the literature. The researcher incorporated the related concepts to define an objective for each of the lines of investigation, which were then used to formulate the questions in the instrument, as depicted in Table 6: Application of the conceptual model in instrument design. Each objective was linked to the corresponding question in the instrument. The research instrument consisted mainly of closed questions with a few open-ended questions.

The data from closed questions were analysed, categorised and numerical values were attached to responses where appropriate. Thematic analysis (TA) was applied to the few open ended questionnaire responses. A process of compiling, disassembling, reassembling, interpreting, and concluding were applied to analyse and apply the findings within the context of the study.

The research conducted descriptive analysis and applied tabulation and comparison of data. Univariate, bivariate, and multivariate analysis were done to provide the findings outlined in Chapter 4.

Charts and graphs were used to make comparisons between the different data topics, showing trends and relationships and adding emphasis on specific areas. The research applied thematic analysis to the few open-ended questions posed in the online questionnaire.

The findings provided detailed information to explain each of the interrogated dimensions, and maturity levels where applicable, confirming them as factors that enable the efficient application of BA methodologies in operating model design.

The analysis and subsequent findings were documented in Chapter 4.

5.3 The attainment of the research objectives

The researchers set out to attain the research objectives as documented in Section 1.4.

The first objective was to identify literature relevant to business strategy, operating models, enterprise and business architecture, business architecture maturity, Business/IT Alignment, and IT expenditure. The second objective was to identify models and frameworks that may be applied to assess the level of maturity of the practice of business architecture. These two

objectives were attained by conducting a thorough literature review which was documented in Chapter 2.

The third objective was to design an assessment tool to determine the use of business architecture (including during business operating model design) in selected South African sectors. This objective was attained by the formulation and deployment of an online research questionnaire, in line with the survey research design chosen for this study. The method of designing the assessment tool is documented in Section 3.3. The full research questionnaire is attached here to as Annexure A.

The fourth research objective was to undertake quantitative analysis to determine the factors that enable the efficient application of business architecture methodology during operating model design. The researcher conducted a thorough analysis of the data collected through the research instrument. The analysis results and findings were documented in Chapter 4.

Finally, the objective to integrate the findings into a business architecture practice framework was attained through the development of such a practical framework as documented in Section 5.5 below.

5.4 Summary of key findings: Factors impacting the efficient use of Business Architecture in operating model design.

The research results and analysis as documented in Chapter 4 confirmed the factors impacting on the efficient use of Business Architecture methodology during operating model design. These factors are summarised in Table 14 below:

Table 14: Summary of Key Findings

Factor	Key Findings
Business/IT alignment	There is a relationship between Business/IT Alignment and the application of Business Architecture methodologies, in that where Business Architecture is involved better alignment exists. BA is valuable as a method to achieve better alignment, cost savings and maturing the right business capabilities. The achievable benefit through BA is overwhelmingly recognised, however involvement of BA in operations and implementation of technologies are more pertinent than in the strategic development of business capabilities and business models.

Factor	Key Findings
Management Support & Involvement	The support and development of the BA practice itself, and the involvement of management in BA practice development seems to be low in general. A defined mandate and clearly articulated goals either exist or exist to some extent. Support and involvement of direct leadership in the practice, a defined mandate and clearly articulated goals can have an impact on the maturity of the BA practice, and therefore the efficient application of BA methodologies.
Business Architecture Processes and Artefacts	Most BA practices either have some business architecture mapping with supporting standards and practices or at least the Core Business Architecture domains have been defined, mapped, and captured within the business architecture knowledgebase. This indicates business mapping to defined and managed. Even though the respondents are familiar with BA artefacts, the sharing, active discussion, and efficient use thereof to contribute to strategy and alignment are not pertinent. As far as measuring efficiency goes, a combination of formal and informal measurement could yield a more comprehensive result and point out where improvements are needed to mature the practice. Where governance protocols are not sufficiently embedded BA processes are not consistently applied throughout the enterprise. Tools of the trade go hand in hand with the application of a framework that guides the ways of working, and the outputs that are produced by the BA practice.
Strategic Importance of BA	Although IT is not only seen as a support shop ensuring that systems keep on running, BA specifically, is not outright seen as a core capability in most organisations and similarly business architects are not necessarily seen as strategic partners. The overall use of, and perceived value of BA Artefacts during Operating Model Design is lagging, however, there is higher involvement where dedicated business architects provide services to the business. It seems that the use of BA Artefacts is related to the perceived value thereof. The efficient application of BA methodologies impacts the perception of the strategic importance of BA, similarly the other way around.
Skills and Knowledge of BA practitioners	The perception of proficiency in generally high in soft skills and higher than the perception of proficiency in technical skills. The low occurrence of training for business architects might be why lower comfort levels exist for technical skills and suggests that practitioners are mostly left to their own devices to learn on the job or seek other means to improve and learn new skills. Where a career path for business architects is defined and supported by a training curriculum, the overall perception of their knowledge and competency are more positive than where it is not the case.

5.5 Business Architecture Practice Framework

Table 15 below presents a Practical Business Architecture Framework, which the researcher developed. This framework can be applied in practice by business architecture professionals to easily understand the maturity of their practice and quickly identify the efficiency factors which they need to improve and focus on.

This framework encompasses the factors already identified as impacting on the efficient application of Business Architecture methodology in operating model design (and business modelling in general).

Each of the factors are listed as an efficiency factor with explained levels of maturity, ranging from "Nothing exists/Just started" as the lowest level of maturity to "Strategically Implemented" as the highest level of maturity.

The practice framework provides a gauge to quickly pitch the Business Architecture practice in the organisation at a maturity level, which will then highlight which areas need to be investigated and actioned for improvement. This framework provides visibility to Business Architecture practitioners and practice managers allowing them to research, devise and implement improvement plans.

Business Architecture practitioners can evaluate each of the efficiency factors by way of a maturity statement which relates to a maturity indication. For example: When considering the efficiency factor or Business/IT Alignment, practitioners will evaluate whether their Business/IT Alignment could be explained as "Nothing to talk about", "Little Alignment exists", "Mostly Aligned on the important things. Benefits of Business Architecture are communicated" and so forth. Each of these explanations are then aligned with a maturity indication, i.e., "Little Alignment exists" equates to Maturity Level: ***Learning and Improving.*** This maturity indication provides insight into areas that need to be researched and actioned for improvement.

Table 15: Business Architecture Practice Framework

Efficiency Factor	Nothing exists/Just started	Learning & improving	Defined & governed	Advanced & measured	Strategically Implemented
Business/IT Alignment	Nothing to talk about	Little Alignment exist	Mostly Aligned on the important things Benefits of Business Architecture are communicated	Good Alignment exist across the enterprise and can be measured by way of feedback. Benefits of Business Architecture communicated and realised.	Business and IT are aligned and in sync on Strategy & Operations. Feedback and recommendations are implemented. Business Architecture depicts current, transformational, and future states and are used by Business and IT to make joint decisions.
Business Architecture Processes	Nothing to talk about	Ad hoc, Undocumented	Processes are documented and exist in a framework, mostly followed and quality is checked.	Processes are documented, exists in a framework, and measured for adherence, quality, and efficiency.	Processes are documented, optimized & constantly improved. Processes exist in a framework, is relevant, up to date and executed extensively throughout the enterprise.
Business Architecture Artefacts	Nothing to talk about	Ad hoc, Not governed	Artefacts are documented in a framework and mostly used in the Business Architecture ways of working. Check lists are in place to govern the use and distribution of artefacts.	Artefacts are documented in a framework and used extensively in the Business Architecture ways of working. Check lists are in place to govern the use and distribution of artefacts. Quality is checked.	Business Architecture Artefacts are documented in a framework, and delivery thereof is formally quality assured & measured. Formal assessment is done to improve artefacts and govern the use and distribution thereof. Continuous improvement goals are set.
Knowledge and skills: Soft Skills of practitioners	Nothing to talk about	We are learning as we go	Training courses on an Ad hoc bases are available. Attendance is tracked for each Business Architect. The level of competency is visible. Business Architects have an idea of their own skills levels.	Skills are evaluated to determine gaps. Structured training curriculum exists and are implemented across the team to address gaps. Improvement is measured. Business Architects are considered skilled and proficient.	Skills are regularly evaluated to determine gaps. Structured training curriculums exist and is keeping up with latest best practices. Training curriculums are implemented across the team to address gaps. Improvement is measured, and Business Architects have a career path. Business Architects are skilled, and highly competent.

Efficiency Factor	Nothing exists/Just started	Learning & improving	Defined & governed	Advanced & measured	Strategically Implemented
Knowledge and skills: Technical Skills of practitioners	Nothing to talk about.	We are learning as we go.	Training courses on an Ad hoc bases are available. Attendance is tracked for each Business Architect. Business Architects have an idea of their own skills levels.	Skills are evaluated to determine gaps. Structured training curriculum exists and are implemented across the team to address gaps. Improvement is measured. Business Architects are considered skilled and proficient.	Skills are regularly evaluated to determine gaps. Structured training curriculums exist and is keeping up with latest best practices. Training curriculums are implemented across the team to address gaps. Improvement is measured, and Business Architects have a career path. Business Architects are skilled, and highly competent.
Management support & involvement	Nothing to talk about.	We are working towards establishing a dedicated Business Architecture role/Team. Management buys into the idea of Business Architecture and what it delivers.	There are dedicated Business Architecture roles/team in place that have a job description. Management supports the roles/team by providing guidance when asked and implementing ways of working. Management supports Business Architecture as a professional practice.	There are dedicated Business Architecture roles/team in place, with detailed job descriptions. Business Architects have KPI's & measurements in place for efficiency and improvement. Management supports the roles/teams by measuring and providing regular feedback on performance as well as adherence to ways of working. Initiatives for improvement are supported.	There are dedicated Business Architecture roles/team in place, with detailed job descriptions. Business Architects have KPI's & measurements in place for efficiency and improvement. Management supports the roles/teams by measuring and providing regular feedback on performance as well as adherence to ways of working. Management actively implements improvements, advocates, and market the value of the Business Architecture practice.

Efficiency Factor	Nothing exists/Just started	Learning & improving	Defined & governed	Advanced & measured	Strategically Implemented
The strategic importance of Business Architecture	Nothing to talk about.	Business has some idea of the strategic value of Business Architecture. The work of the Business Architecture is shared but not well-known or widely shared or communicated.	Business Architecture as a practice are understood and stakeholders have some idea of the strategic value the practice brings to an organisation. The Business Architect is invited to join discussions about strategy, operating models, and innovation.	Business Architecture is known as a professional practice and recognised as adding strategic value. Business Architects engage in conversations about strategy formulation. Business Architecture artefacts are known by business and provide the business modelling to aid discussions about strategy, operating models, and innovation.	Business actively seeks the involvement of Business Architect to support strategic discussions and strategy formulation. Business sees the Business Architects as strategic partners. Business Architecture artefacts are actively used by business and provide the business modelling to aid decisions about strategy, operating models, and innovation.

5.6 Contribution to knowledge and practice

The importance of optimal Business/IT Alignment in organisations as well as the alignment of an organisation's business strategy and operating models with its business architecture was confirmed by this study. The results showed that such alignment has a downstream effect on the organisation in respect of its ability to make sound decisions regarding IT expenditure.

The findings confirmed the factors (of which Business/IT Alignment is one) enabling the efficient application of Business Architecture methodology in operating model design.

The study highlighted (i) the prevailing low level of maturity of the business architecture practice, and (ii) the lack of effective application of business architecture artefacts during operating model design. This enabled the development of a simplified, practical Business Architecture Practice Framework, that will assist in maturing the practice to achieve the desired outcomes.

5.7 Limitations of the study

The research was conducted by way of an online questionnaire and focused on three major economic sectors in South Africa, namely Retail & FMCG, Insurance & Investments and Banking & Financial Services.

The remaining of the economic sectors were not included in the study. It is also noted that 109 responses were received on the online survey and only 21 of these respondents worked in the field of business architecture.

5.8 Recommendations for future research

The subject matter of this study could be enriched for the South African context by extending the research to more economic sectors within the South African economy as well as a wider population of Business Architect practitioners.

The usability of the developed Business Architecture Practice Framework in improving the application and efficient use of Business Architecture in strategic planning as well as business modelling, must be confirmed. Inclusion of the framework in future research could proof valuable.

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Annexures

Annexure A: Research Instrument (Online Questionnaire)

Annexure B: Ethical Clearance