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Impact of organisational structure on evidence-based decision making: The matrix versus hierarchical

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ABSTRACT

Leaders of organisations are faced with a challenging, rapidly changing business environment that results in increasing complexities. To deal with these complex environments the matrix structure, even though problematic, is often cited as the preferred structure to leverage from the efficient information flow. Organisational structure should facilitate strategy implementation and is often referred to as strategy-structure paradigm. The concept of organisational structure has been extensively researched. However there exists a gap in determining and relating the factors that influence the flow of information through organisational structure. Therefore further research into organisational structure is needed. This study contributed to the field of organisational structure by comparing matrix structure with hierarchical structure in an effort to determine the impact on evidence-based decision making.

The research method adopted for this study was a quantitative cross-sectional study. Data was collected through a self-administered questionnaire that was adapted from constructs presented in the literature review. The questionnaire was distributed employing convenience and snowballing sampling which resulted in 189 responses from 16 diverse industry sectors.

The pertinent findings of the study were that organisational structure has no impact on evidence-based decision making when comparing matrix organisations to hierarchical organisations. The comparison revealed that there is no significant relationship regarding information flow and evidence-based cultures. The study found that organisational culture is the main driver of evidence-based decision making.

KEYWORDS:

Matrix structures, hierarchical structures, evidence-based decision making, organisational strategy, information flow

DECLARATION

I declare that this research project is my own work. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration at the Gordon Institute of Business Science, University of Pretoria. It has not been submitted before for any degree or examination in any other University. I further declare that I have obtained the necessary authorisation and consent to carry out this research.

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CHAPTER 1: INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction

Globalisation and digitisation has resulted in pervasive and invasive advances of technology and these improvements are one of the most significant developments of modern times (Brown, Chui, & Manyika, 2011; McAfee & Brynjolfsson, 2012). Information availability is increasing rapidly. Whilst this is overwhelming to most organisations, great opportunity exists for organisations to exploit the vast amounts of information to make decisions that are based on evidence (Erevelles, Fukawa, & Swayne, 2015). Globalisation forces the need for complex strategies; hence organisations are adopting more complex forms of organisational design such as the matrix structure to deal with these complexities. Therefore allowing them to expand and exploit opportunities stemming from information-driven decision making (Egelhoff, Wolf, & Adzic, 2013; Galbraith, 2008). However organisations need to understand the impact of organisational structure on evidence-based decision making to achieve strategic goals. Beer, Voelpel, Leibold, and Tekie (2005); Egelhoff et al. (2013) and Venkatraman and Camillus (1984) argued that the underlying logic of linking structure to strategy is that organisational structure should facilitate strategy implementation, and is referred to as the strategy-structure paradigm. This research study aimed to determine the influences that strategy, structure and culture have on the flow of information to effect evidence-based decision making by comparing matrix structures with hierarchical structures.

Modern-day terminology for the vast amounts of information that is available at rapid speed and originating from various sources is called Big Data. Big Data provides organisations with new information-driven insights that may lead to organisational competitiveness (Brown et al., 2011; Erevelles et al., 2015; Lukić, 2014; McAfee & Brynjolfsson, 2012). However the flow of information through an organisation is vital, and to exploit this opportunity facilitation of the efficient and effective flow of information to drive evidence-based decision making is required (Pfeffer & Sutton, 2006). Therefore, the

research study further aimed to gain a more profound understanding of the impact of organisational structure on evidence-based decision making.

The available literature referred to the use of information to effect decisions as evidence-based decision making (McAfee & Brynjolfsson, 2012; Pfeffer & Sutton, 2006; Rousseau, 2006). However there exists a gap in determining the influences that strategy, structure and culture have on the flow of the information to allow for evidence-based decision making. The matrix structure is purported to allow for efficient exchange of information, which facilitates rapid responses to changes in environments (Galbraith, 2008). However the matrix structure has not managed to achieve its stated benefits and has been plagued with many challenges (Davis & Lawrence, 2007). Alternatively, hierarchical organisational structures are argued to limit communication and information flow across departments (Cummings & Worley, 2009). Even so, organisations move away from hierarchical structures to matrix structures to deal with the complexities of doing business (Galbraith, 2008). This study sought to add to the body of knowledge on organisational structure by comparing the matrix structure with hierarchical structure to determine the impact of these on evidence-based decision making.

1.2 Background and research problem

Organisational fit refers to alignment of corporate strategy, core competencies organisational design and culture (Beer et al., 2005). The alignment and synergy of these elements is seen as the golden thread that is vital for organisational competitiveness. Organisations may have a good strategy but without a suitable organisational structure and core competencies in place, the execution of strategy will fail. (Qiu & Donaldson, 2012; Waterman, Peters, & Phillips, 1980). Organisational structure can take many forms such as functional, matrix, hierarchical, process-based and network structures (Cummings & Worley, 2009). However, in environments characterised by globalisation, the matrix structure, even though problematic, is often cited as the preferred structure that is implemented (Egelhoff et al., 2013).

The matrix structure is flatter and grid-like by design and is argued to be the only structure that allows for efficient exchange of information which facilitates rapid responses to changes in environments (Galbraith, 2008). This implies that the entire organisation

becomes a web of information. Technical knowledge, market and product information together with financial information is exchanged vertically and horizontally allowing departments to make effective decisions (Egelhoff et al., 2013; Qiu & Donaldson, 2012). However the matrix has not achieved its stated benefits and has been plagued with many challenges such as decision strangulation, as leaders have to share decision rights and power struggles due to dual reporting lines (Davis & Lawrence, 2007).

Hierarchical organisational structures consist of a single reporting line and it is argued that structuring organisations in this way is useful because it facilitates clear authority and levels of responsibility (Goold & Campbell, 2003). However this structure's major limitation is the limited communication and information flow across departments (Cummings & Worley, 2009). These structures are also widely used by many organisations, but due to these limitations many organisations are moving away from hierarchical structures to matrix structures to deal with the complexities in doing business (Qiu & Donaldson, 2012).

This research study sought to determine the factors (organisational culture, organisational strategy and organisational structure) that have an effect on the flow of information through an organisation. The alignment of strategy, structure and culture are the foundation of creating synergy within the organisation and allowing it to gain competitiveness, and focusing on a single factor alone will not deliver the desired results (Zheng, Yang, & McLean, 2010). Hence the reason matrix structures are plagued with challenges (Davis & Lawrence, 2007). This study was exploratory in nature, to determine the interplay of these factors by comparing matrix organisations with hierarchical organisations to gain a more profound understanding of the impact of structure on evidence-based decision making.

The main element of evidence-based decision making is the flow of information through an organisation; other aspects that can either enhance or hinder the flow of information through an organisation are influenced by the organisational design and organisational strategy (Qiu & Donaldson, 2012). The concept of organisational design has been extensively researched in academic and business literature by scholars such as, Bartlett and Ghoshal (1993); Beer et al. (2005); Bryan and Joyce (2007); Galbraith (2008); Goold and Campbell (2002); Morrison, Brown, and Smit (2006); Venkatraman and Camillus (1984) and Waterman et al. (1980), and they have contributed extensively to developing the concept of organisational structure, strategy and culture. However there exists a gap in

determining and relating the flow of information through an organisational structure to assess the impact of organisational structure on evidence-based decision making with a focus on understanding the culture and its influence. Therefore further research into organisational structure is needed and this research study sought to further the field of organisational structure by comparing the matrix structure with the hierarchical structure.

To achieve efficient flow of information through an organisation, collaborative and sharing behaviours and values are required for information to move freely and efficiently through the organisation. Behaviours which are underpinned by organisational values drive organisational culture (House, Javidan, Hanges, & Dorfman, 2002). Evidence-based decision making is supported by an evidence-based culture which is connected to organisational culture, hence organisation culture plays a crucial role in the flow of information (Pfeffer & Sutton, 2006; Rousseau, 2006). The aim of this research was to determine how organisational structure facilitates the flow of information to enhance evidence-based decision making by analysing culture and strategy.

1.3 Research objectives and motivation

Since its inception more than three decades ago, matrix organisations have been widely adopted across all industry sectors (Egelhoff et al., 2013). Despite the various challenges, the effective flow of information is touted as one of its benefits (Sy, Beach, & D'Annunzio, 2005). Information processing requirements increase as business complexities increase. As organisations aspire towards competitiveness there is a greater need for tactical and strategic information processing (Wolf & Egelhoff, 2002).

Pertusa-Ortega, Molina-Azorín, and Claver-Cortés (2010) argued that organisational structure can affect the nature and quantity of information gathered and dispersed by the organisation. Wolf and Egelhoff (2002) posited that a good strategy-structure paradigm exists when organisations' strategic requirements of information processing are fulfilled by the information processing ability of its structure; however this does not explicitly take into account the flow of information through an organisational structure.

A hierarchical organisation unlike the matrix structure has a single reporting line and communication is generally limited with immediate line management and immediate

subordinates which is viewed as a disadvantage (Cummings & Worley, 2009). The advantage with these structures is that it facilitates clear authority and levels of responsibility (Goold & Campbell, 2003). To foster evidence-based decision making in an organisation there needs to be effective and efficient flow of information within the organisation and knowledge sharing across departments is a pertinent factor in providing information which leaders can make informed decisions (Pfeffer & Sutton, 2006).

The objectives of the study aimed to determine the effects of (1) organisational structure, (2) organisational strategy and (3) organisational culture on the flow of information through an organisation and subsequently assess the impact on evidence-based decision making by comparing matrix organisations with hierarchical organisations as the matrix structures are argued to facilitate the efficient and effective information flow whilst the hierarchical structures are considered to limit the information flow.

The scope of this research was limited to matrix and hierarchical organisations that are both multinational and local where evidence-based decision making is essential in achieving the organisation's strategic goals. The study further focussed on industries across all sectors as the value from evidence-based decision making is not limited to any industry sector; therefore providing organisations with deeper insights into evidence-based decision making as there is increasing pressure to remain competitive due to a turbulent business environment and growing pressures from both the market and consumers (Lee, 2013; McAfee & Brynjolfsson, 2012).

In summary, the purpose of this research was expected to benefit organisations to intricately understand the factors that influence the flow of information through an organisational structure to effect evidence-based decision making thereby gaining competitiveness in hypercompetitive markets. The objective of the research was to determine how organisational structure facilitates information flow and therefore evidence-based decision making with organisational culture and specifically evidence-based cultures mediating this flow by comparing matrix and hierarchically structured organisations. The insights gained from this research will provide organisations with empirical evidence on the impact of organisational structure on evidence-based decision making and hence either justify or dispel the current argument that matrix structure drive

and facilitate the efficient flow of information through an organisation to effect evidence-based decision making.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This section provides a literature review, which discusses academic literature for the major themes of this research study. The purpose of the research study was to gain a more profound understanding of the impact of organisational structure on evidence-based decision making. This literature review provides an overview of existing research on the factors that influence evidence-base decision making. This chapter arranges the literature associated with the research constructs and provides a connection to how these constructs relate to the aim of this study.

The literature review commences by discussing changes in the external environment that have affected the way business is conducted and the power associated with the flow of information through an organisational structure, emphasising Big Data's competitive advantage. The organisational strategy construct is reviewed, focusing on the role that strategy plays in the flow of information by dictating organisational structure, with focus on the strategy-structure paradigm. This leads to the assessment of the literature on organisational structure; this research focuses on comparing matrix organisations to hierarchical organisations. The various types of structures are discussed with stated benefits together with an explanation of how structure facilitates the flow of information through an organisation.

The chapter continues with the current literature on the flow of information, which provides some insight regarding the sources of and factors influencing the flow of information. The next section delineates some salient points with regard to the concept of culture and also draws attention to some fundamental benefits and states the current understanding of evidence-based culture.

Finally, the literature review summarises the gaps in the current understanding of the impact of organisational structure on evidence-based decision making and positions the research questions that are described more thoroughly in Chapter 3.

2.2 Globalisation

The 21st century business is driven by globalisation (Lukić, 2014). Organisations are continuously seeking the ability to gain competitive advantage in hypercompetitive markets (Lee, 2013). Organisations are required to adequately leverage information which comes at a greater speed, in massive volumes and emanates from various sources, which in turn may be a source of competitive advantage and innovation (Erevelles et al., 2015; McAfee & Brynjolfsson, 2012). However to leverage value from information, organisations need to ensure that organisational structure and organisational culture in the least provide support to the exploitation the information competitive advantage (Barlett & Ghoshal, 1989). Organisational structure provides the foundation of how an organisation will operate as well as identifying which individuals contribute to role specific decision-making processes (Cummings & Worley, 2009). The matrix structure allows for the efficient and effective flow of information through the organisation, while the hierarchical structure limits the flow of information (Egelhoff et al., 2013; Galbraith, 2008). Organisational culture drives desired behaviours in an organisation to entrench and shape the attitudes of employees to achieve its strategic objectives (Hofstede, 1980).

Neelie Kroes, Vice-President of European Commission responsible for digitisation views Big Data as the new “oil” thus indicative that data may be viewed as the fuel to drive innovation that powers and energises an economy (Beardsley et al., 2014). Big Data is simply information in high volumes that is available at increased speeds that stems from various sources adding a significant variety to the information. These attributes of information that constitute Big Data are a result of globalisation, as the world becomes connected and economic integration takes effect by deconstructing many information barriers that plagued organisations in the past (Lee, 2013). It is now possible for organisations to capitalise from the vast amounts of information stemming from globalisation to create a competitive advantage (Brown et al., 2011). However this phenomenon needs to be researched on a granular level as the concept of Big Data as fuel to drive organisational competitiveness is relatively new to academic literature (McAfee & Brynjolfsson, 2013).

Bryan and Joyce (2007) stated that modernising organisational designs for the 21st century business environment can result in competitive advantage for organisations as

organisational design is the competitive advantage that rivals cannot copy easily and leads to sustainability of the organisation. It can be argued that structure can be copied, however having a structure that is aligned with the organisational strategy and organisational cultures, which are the elements that create synergy, will lead to organisational competitiveness (Rowlinson, 2001). To derive value from organisational design, culture and skills are significant areas that should to be aligned with organisational strategy (Zheng et al., 2010). With the rapidly changing environment and the complexity of globalisation, organisational competitiveness is influenced by the concept of data as fuel, which drives the economy.

Annually, the rate of change in the business environment continuously increases with globalisation resulting in economic integration and trade liberalisation that allows organisations to leverage more markets and to gain access to vast amounts of information, referred to as Big Data (McAfee & Brynjolfsson, 2012). Organisations have the opportunity to leverage the value from Big Data to improve their data-driven decision making that is aligned to their strategic plans, as strategy is the element that sets the direction for the organisation (Rowlinson, 2001). In order to realise the value from data-driven decision making, the flow of information through an organisation is critical. Enterprise systems is the architectural foundation that enables effective and efficient flow of information through an organisation's structure by enabling organisations to manage complex structures (Nesheim, Olsen, & Tobiassen, 2011), however organisational strategy and organisational culture needs to support this. This study sought to provide the insights organisations require to gain a more profound understanding of the factors that influence the flow of information to effect evidence-based decision making.

2.3 The role of strategy

Organisational strategy is defined as the array of decisions that influences the organisation's strategic goals. Policies and plans are produced for attaining those goals that define the business purpose and markets to pursue (Andrews, 1987). This leads to the financial and non-financial contribution the organisation anticipates to accomplish for all stakeholders (Pertusa-Ortega et al., 2010). Furthermore, Andrews (1987) reported that one of the main components of strategy formulation is the ability to sense the environment to identify market opportunity and potential risks. The ability to sense the environment is

directly attributable to the processing of information as sensing the environment involves gathering information from various sources to enable data-driven insights, to determine the granular business environments and the roles these play in the success of businesses (Lee, 2013).

Sensing the environment is a main component of strategy formulation where information flow plays a crucial role in evidence-based decision making; once the strategy is formulated it needs to be executed (McAfee & Brynjolfsson, 2012). However, once organisational strategies are defined, execution remains a vital factor to realise the defined strategy. Central to the execution of strategy is organisational design, which improves efficiency, promotes teamwork and creates synergy within the organisation (Wolf & Egelhoff, 2001). This research aimed to provide insights regarding the flow of information through an organisation structure, by comparing matrix organisations with hierarchical organisations.

Beer et al. (2005) argued that the strategy-structure paradigm is also related to information processing requirements and capacity of organisation structure to fulfil those requirements to achieve strategic goals. However, Beer et al. (2005) did not consider factors that influence the flow of information through an organisational structure. The aim of the study is then related to the definition of organisational strategy and how organisations utilise the information to make patterns of decisions. Each organisation varies in size, form, age and origin hence making decisions on best practices or gut feel due to a lack of evidence without verifying if the decision will work across organisations will result in inadequate decisions that could potentially be expensive and risk the competitiveness of the organisation (Pfeffer & Sutton, 2006).

Pertusa-Ortega et al. 2010 mentioned that organisational structure has the ability to control information gathered and dispersed within the organisation thus influencing strategic decisions and organisational competitiveness. The next section delineates the alignment of strategy and structure.

2.4 Alignment of strategy and structure

“Organisational fit suggests that for an organisation to perform effectively, its business strategy must be aligned with its environment, its organisational capabilities with its

strategy, its organisational design and culture with its capabilities, and its leadership behaviour with its organisation design" (Beer et al., 2005, p. 447). The alignment and synergy of these elements is seen as the golden thread that is crucial for organisational success. Successful strategy execution entails a supportive organisational structure and capabilities to effect strategic goals (Qiu & Donaldson, 2012; Waterman et al., 1980).

Numerous authors (Beer et al., 2005; Egelhoff et al., 2013; Venkatraman & Camillus, 1984) argued that the underlying logic of linking structure to strategy is that organisational structure should facilitate strategy implementation and is frequently referred to as the strategy-structure paradigm. Organisational structure can take many forms such as functional, matrix, process-based and network structures (Cummings & Worley, 2009). However, in environments characterised by globalisation, the matrix structure, even though problematic, is often cited as the preferred organisational structure (Egelhoff et al., 2013; Galbraith, 2008; Qiu & Donaldson, 2012). Bryan and Joyce (2007) contended that harnessing the value from an organisational design is derived from maximising the returns on people and not capital; this research study sought to determine the role of culture as one of the three constructs, as culture drives employee behaviours which could influence the flow of information through an organisation and then influence evidence-based decision making.

Pertusa-Ortega et al. (2010) maintained that organisational structure exerts an indirect influence on performance through competitive strategy. Structure forms part of the organisation's internal design which is not always perceived by external stakeholders as value adding. However, organisational structure is argued to be a source of competitiveness (Barlett & Ghoshal, 1989). Furthermore it is argued that structure influences strategy and not strategy informing structure (Wolf & Egelhoff, 2001). It can therefore be inferred that the challenge for leaders to implement competitive strategy lies in incorporating organisational design strengths in the formulation of organisational strategy (Bryan & Joyce, 2007).

2.4.1 Multinational strategy-structure

International environments are associated with uncertainty, which leads to a significant increase in the requirement for sensing the environment related information processing

(Wolf & Egelhoff, 2002). The effective flow of information through the organisation is a vital element with which to execute organisational strategy. Various types of organisational structure facilitate certain types of information flow between departments, whilst some organisational structures restrict information processing. Wolf and Egelhoff (2001) claimed that matrix structures are more suited to multinational companies. They further reasoned that organisational structure helps to address more efficient information processing requirements; however the challenges with adoption continue to plague organisations (Davis & Lawrence, 2007).

The advantages associated with strategy–structure approaches for multinationals include clarity of when a certain structure is better suited, and the ability to recognise the components of strategy that are essential to an organisation's structure (Bryan & Joyce, 2007). These characteristics enhance the strategy–structure paradigm (Wolf & Egelhoff, 2002). However globalisation has brought about complexity for all organisations, which translates in complex strategies so it is vital that organisational structure is aligned with strategy to deal with these complexities (Pertusa-Ortega et al., 2010). Current literature state that the matrix structure has been proved to be the best suited for this alignment to occur (Galbraith, 2008). The next section explores the literature concerning organisational structure.

2.5 Organisational structure

Business environments are confronted with increased levels of complexity which have been brought about by globalisation (Bartlett & Ghoshal, 1993). In order for organisations to deal with the increasing complexity, strategies have similarly increased in complexity (Saraswat, 2013). Correspondingly, in order to execute complex strategies organisations have to organise correctly (Bryan & Joyce, (2007). Structural design can significantly influence an organisation's competitive advantage, as the structure of an organisation determines roles and responsibilities (Cummings & Worley, 2009).

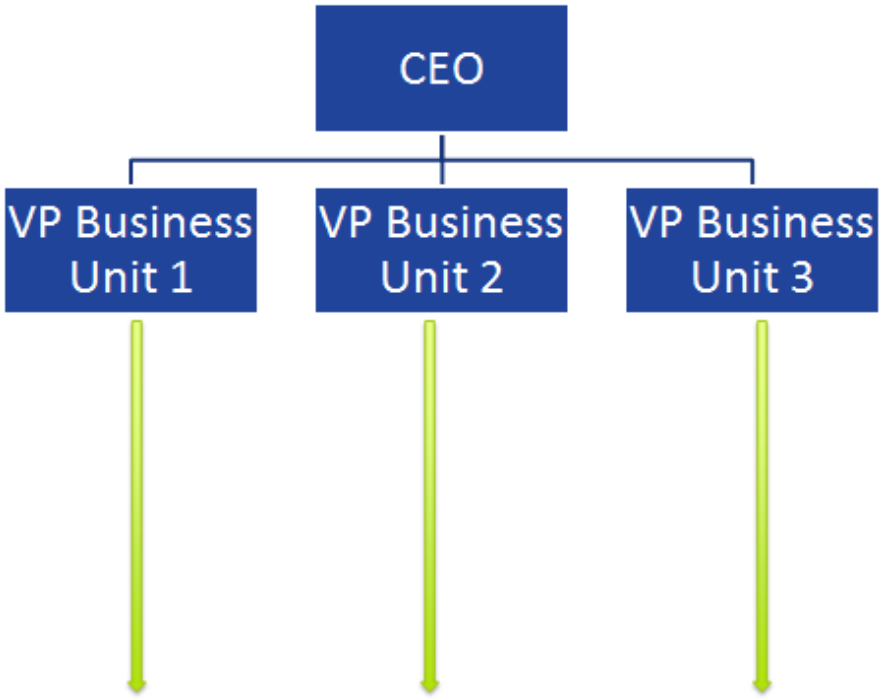
Strategy implementation failure can be attributed to organisational structures that do not support information processing requirements due to the lack of structural capability (Goold & Campbell, 2003). The appropriate structure that meets the organisation's information processing requirements can improve the competitive position of an organisation through

the ways in which information is gathered and distributed, both within and around an organisation to facilitate sensing the business environment (Burns & Wholey, 1993). Matrix structures are argued to facilitate rapid responses to changes in environments as the structure is flatter and allows for efficient exchange of information, and enables people from different departments to cooperate closely while hierarchical structures are argued to limit the flow of information through an organisation due to promoting silos by limiting the communication across departments (Galbraith, 2008). This research was directed at how organisational structure allows for information processing and essentially compared matrix structures with hierarchical structures.

2.5.1 Hierarchical structure

Hierarchical organisational structures consist of single reporting line as depicted in Figure 2.1. Employees of a hierarchical structure generally communicate with their immediate line manager and with their immediate subordinates. Structuring organisations in this way is useful because it facilitates clear authority and levels of responsibility (Sy et al., 2005).

Figure 2.1: A simplified view of a hierarchical structure depicting a single reporting line



Source: Adapted from Google images

Hierarchical organisational structures' major limitation is the limited communication and information flow across departments (Cummings & Worley, 2009). While these structures are also widely used by many organisations, the hierarchical structures' limitations have resulted in many organisations moving towards matrix structures to deal with the complexities of doing business (Egelhoff et al., 2013) Table 2.1 demonstrates the advantages and disadvantages of adopting a hierarchical structure, the attributes of the hierarchical structure do not seem to take into account organisational culture, as culture underpins the values and behaviours of employees within an organisation and the absence of a culture that facilitates collaboration and information sharing will render any structural benefits invalid (House et al., 2002).

Table 2.1: Advantages and disadvantages of hierarchical structures

Advantages	Disadvantages
• Authority and levels of responsibility are clear	• Communication and information flow across departments are limited and hindered
• Employees are able to narrow their field of expertise and become experts in specific functions	• Increased rivalry between departments as each departments takes care of their own interests and makes decisions in silos
• Promotes employee loyalty to respective departments	• Increased time to market as bureaucracy hinders speed to change

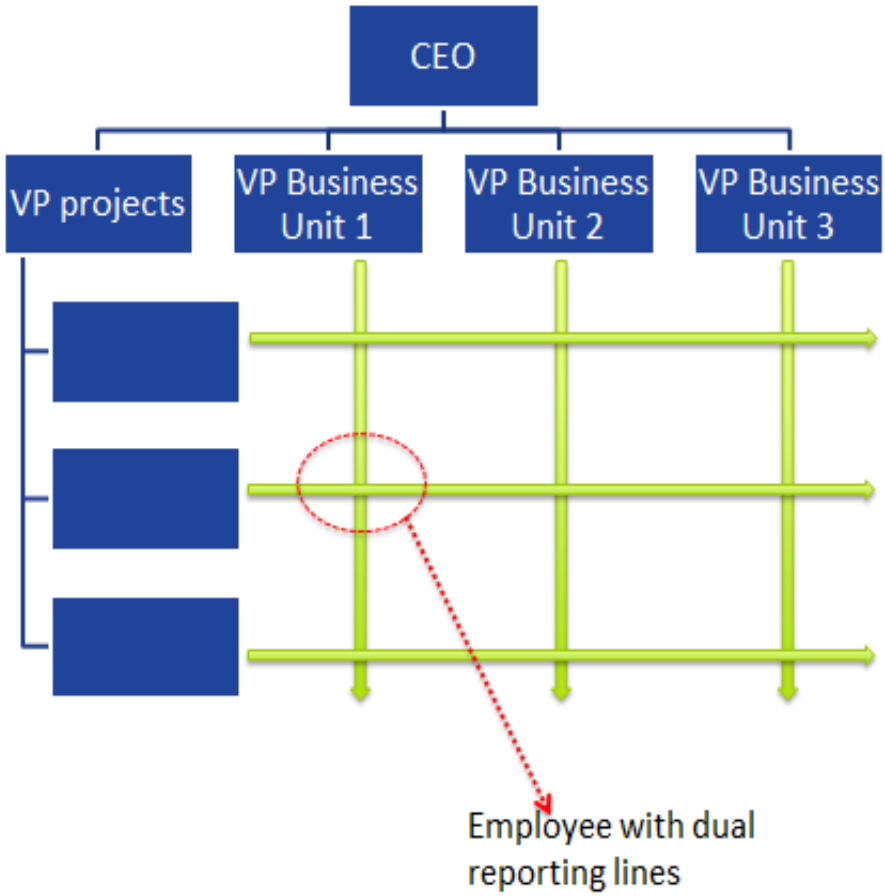
Source: Cumming and Worley (2009)

As more companies adopt the matrix structure to deal with complexity in the environment, it comes with many challenges that plague organisations. Although its benefit of improved information flow enables evidence-based decision making which results in competitiveness (Egelhoff et al., 2013; Goold & Campbell, 2003), there exists a gap in scholarly research relating to determining the impact of factors such as strategy and culture on the flow of information through an organisational structure.

2.6 Matrix structure

A matrix is an organisational structure that is built around multi dimensions (Figure 2.2) that are grid-like, and it is argued to be the only type of structure that facilitates multidimensional coordination with its origins stemming from the aerospace industry (Egelhoff et al., 2013; Sy et al., 2005). Organisations adopt the matrix structure to deal with complex businesses by addressing multiple business dimensions using multiple common structures (Goold & Campbell, 2003). Matrix structures are said to facilitate the sharing of lessons learnt from one project to the next; they also allow functional specialists to contribute to different projects and thereby facilitating the flow of information (Galbraith, 2008).

Figure 2.2: A simplified view of a matrix organisation showing dual reporting lines



Source: Adapted from Google images

Sy et al. (2005) classified the matrix forms into three types, namely the functional matrix, the balanced matrix and the project matrix. This research study focused on the overall matrix structure as the aim of the study was to provide a comparison of matrix versus hierarchical structure by analysing the factors that influence the flow of information through an organisation to effect evidence-based decision making. While the benefits of the matrix structure are well noted in the literature (Galbraith, 2008; Sy et al., 2005) implementation has generally been plagued with challenges (Davis & Lawrence, 2007). Egelhoff et al. (2013) conceptualised the advantages and disadvantages of matrix structures and focused on the behaviours that are important to successfully implement matrix structures. This research hence developed the findings of their study that emphasised behaviours by

determining the underlying culture and strategy of an organisation and by assessing how these influence the flow of information to effect evidence-based decision making.

Egelhoff et al. (2013) reported that the lack of scholarly research conducted on matrix structure was due to companies abandoning it in the 1980s due to the perceived challenges of the structure. However, many organisations have continued to use matrix structures and this can be attributed to its many benefits as stated in current literature (Galbraith, 2008). Table 2.2 summarises the advantages and challenges covered in literature on the adoption of matrix structures.

Table 2.2: Advantages and challenges in the adoption of matrix structure

Advantages	Challenges
• Improved information flow between the departments	• Power struggles due to ambiguity of authority between vertical and lateral structures
• Integration and coordination across the organisation	• Competition over limited resources
• Effective and efficient use of resources within the organisation	• Dual reporting lines leads to unclear roles and responsibilities between functional and project teams
• Improves response time to market for products and services	• Decision strangulation, leaders have to share decision rights
• Flexibility in decision making, pursing multiple goals with equal focus	
• Easy to establish economies of scale	

Source: Davis and Lawrence (2007); Egelhoff et al. (2013); Galbraith (2008); Goold and Campbell (2003) and Sy et al. (2005)

Current literature has provided insight into the advantages and challenges which is useful when attempting to determine the adoption of matrix structures. However the list fails to provide granular understanding of how organisational structure enhances evidence-based decision making. The next section delineates information processing in matrix organisations, as an inherent benefit of the matrix structure is improved information flow which facilitates evidence-based decision making.

2.6.1 Information processing in matrix organisations

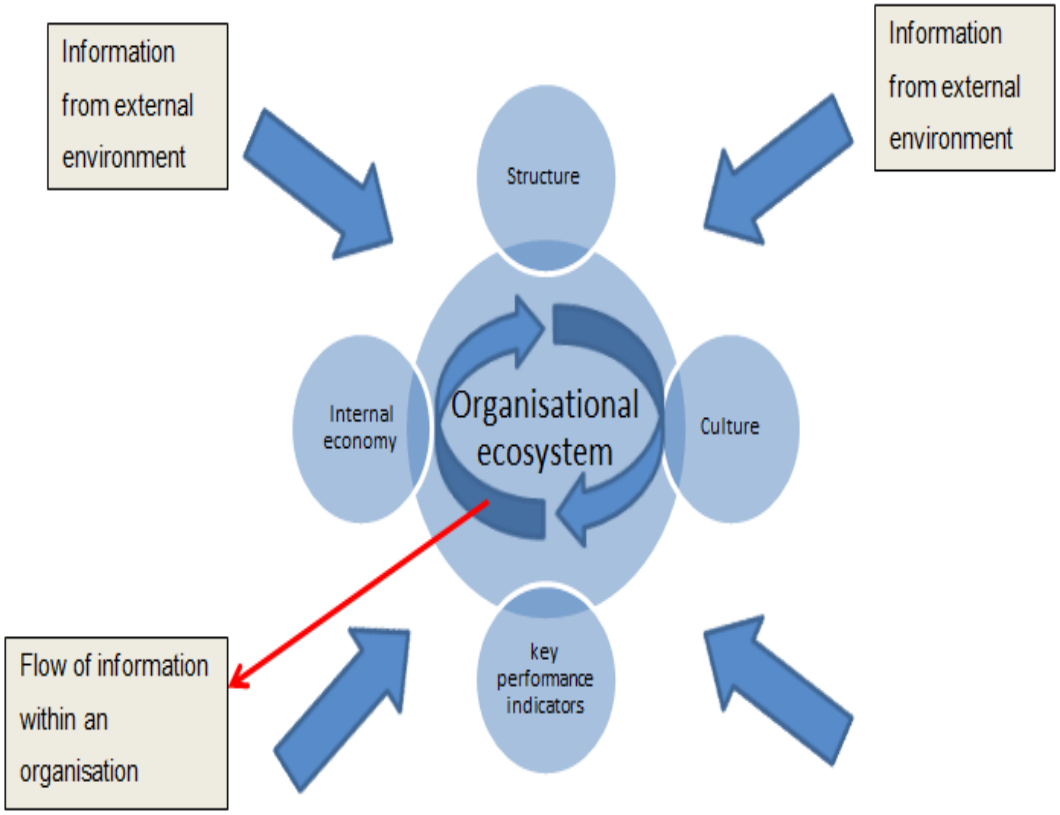
Egelhoff et al. (2013) concluded from their research that predictability is important for dealing with matrix organisations with complex strategies and expressed the need for more scholarly research to be done concerning the access of information to effect evidence-based decision making in organisations. A confusing matrix structure is one of the ailments that plague the modern organisation. However Galbraith (2008) reported that both Procter and Gamble and IBM have very complex structures with more than three dimensions of matrix yet they are very successful companies; this is evidence that the stated benefits of matrix structures can be realised should organisations understand the factors that can hinder them from achieving success when using the matrix structure. Organisational design that capitalises on collaboration among its human capital is a fundamental aspect of a progressive corporate strategy (Bryan & Joyce, 2007).

Organisational design should ideally be concerned with developing and implementing corporate strategy and companies who execute their corporate strategies effectively can create substantial new wealth for their stakeholders (Beer et al., 2005). Having an easily available and accessible flow of information within the organisation may enable an organisational structure to respond to the dynamic and rapidly changing environment more effectively (Cackowski, Najdawi, & Chung, 2000). The strategy-structure paradigm can be related to the fit between the information processing capability of an organisation's structure and the information processing requirements of in implementing strategy, while the lack of visibility into the organisation as a whole can be attributed to parochialism (Bartlett & Ghosal, 1993; Egelhoff et al., 2013). The next section explores literature on the flow of information as information drives evidence-based decision making.

2.7 The flow of information

Information flow in organisations is defined as the movement of data that is not limited to simply numbers but includes written information, from one department to another and from one system to another, both internal and external to the organisation (Nesheim et al., 2011; Pfeffer & Sutton, 2006).

Figure 2.3: The flow of information through an organisation and from external environment



Neilson, Martin, and Powers (2008) reported that effective strategy execution begin with clarifying decision authority and ensuring effective information processing to prevent silo mentality. However Neilson et al. (2008) neglected the effects of information emanating from the external environment, and the flow of information vertically, which is a salient feature of the matrix structure (Galbraith, 2008).

The flow of information through an organisation is directly related to information processing which is defined as transforming of data into information, together with the communication of the information as well as the storage of the information (Chi, Nystrom, & Kircher, 2004). Egelhoff et al. (2013) argued that organisational structure has an influence over information processing, stating that organisational structure can restrict the organisation's ability to process information.

As business complexities increase, information processing requirements between interdependent departments also increase as organisations strive to gain competitiveness (Lee, 2013). The study conducted by Wolf and Egelhoff (2002) used the relative distance through the organisation structure to define where the flow of information would be facilitated and/or hindered between departments. The implication of their study revealed that information processing capabilities of an organisation's structure must fulfil the information processing requirements of its strategy to ensure successful strategy execution.

This research sought to emphasise and determine the role and importance of efficient and effective information flow both internally and externally, while the central tenant of this research is dependent, amongst other factors, on culture. Organisational culture has an impact on organisational activities coupled with a rapidly changing external environment; organisations need to foster a culture that allows for change thereby crafting competitiveness (McAfee & Brynjolfsson, 2012; Morrison et al., 2006). An organisation that is goal focused and has the ability to adopt a culture that is continuously seeking opportunities in the market place and is focused on people is far more competitive than those seeking competitive advantage through organisational structure changes alone (Bartlett & Ghoshal, 1993; Peters, 1979). Thus, understanding an organisational culture is the starting point to developing strategic structural changes and this study aims to research the influence of organisational culture on evidence-based decision making. The next section explores current literature on organisational culture.

2.8 Culture

Culture as a general concept is defined as a collection of values within an ecosystem (Hofstede, 1880). Numerous studies (House et al., 2002; Hofstede, 1980) have focused on providing an understanding of alignment of national culture and organisational culture; however there exists a gap in understanding how organisational culture influences the flow of information through an organisation. National culture is defined as the collection of similar traits and values within a nation that is deemed as societal norms, which defines its members (Hofstede, 1980). Organisational culture is defined as the collective leadership behaviours that are most frequently enacted and that is deemed acceptable within an organisation (Morrison et al., 2006). These definitions imply that behaviours that are

underpinned by values drive organisational culture (House et al., 2002). To achieve efficient flow of information through an organisation, collaborative and sharing behaviours and values need to support communication flow so information can be transferred freely and efficiently through the organisation. The availability of information within an organisation provides the foundation for leaders to make decisions that are based on evidence rather than gut feel or intuition, which may be the differing factor when gaining competitiveness (McAfee & Brynjolfsson, 2012).

Cleland (1981) discussed that organisational culture is used to describe the environment of a business organisation. Referring to culture as an environment is very general and does not create a foundation for organisations to interpret what culture really is and it lacks insight into determining the dynamics of culture. The impact of culture is echoed in organisational functioning, one such aspect being problem solving techniques (Morrison et al., 2006). Evidence-based management is a type of culture that defines a particular problem solving technique. Rousseau (2006) contended that evidence-based management entails practises that solve organisational problems. However, studies on culture fail to provide a granular understanding of evidence-based cultures, which may provide tangible results to organisations on the ability to leverage information processing effectively and efficiently (Bartlett & Ghoshal, 1993).

2.9 Evidence-based decision making

The use of evidence to make decisions is rooted in medicine and emphasises a rational, objective and empirical approach to addressing business issues (Pfeffer & Sutton, 2006). Decision making is defined as the act of selecting an outcome that is most favourable when compared to the alternatives and taking the context into consideration (Lee, 2013). Decision making involves information gathering, information manipulation, and information storage and information transmission (Rousseau, 2006). These activities can be costly and time consuming if not facilitated effectively and efficiently through an organisation, which leads to delays in decision making and hence affects the competitiveness of an organisation (McAfee & Brynjolfsson, 2012). Evidence-based decision making is merely the use of information that is captured, integrated and analysed to provide more profound insights to make informed decisions that lead to business value resulting in desired outcomes for the organisations aligned with organisational strategy (Cao & Duan, 2014).

To effect evidence-based decision making in organisations an evidence-based culture needs to support it as culture defines the behaviours in an organisation.

2.10 Evidence-based culture

Closely aligned to this concept of evidence-based decision making is evidence-based culture, which refers to organisational culture in which decision making is based primarily on information that has been gathered, analysed and synthesised into distinct patterns (Rousseau, 2006).

This evidence-based culture is directly juxtaposed to gut-feel organisational culture, as evidence-based culture has a deep rooted insight gathered from sources of information (Pfeffer & Sutton, 2006). Rousseau (2006) stated that evidence-based management allows for managerial decisions that are successfully implemented and more aligned with organisational goals. This finding was confirmed by McAfee and Brynjolfsson's (2012) research as they related turning information into competitive advantage and concluded that organisations need a more evidence-based culture to unearth this competitive advantage. McAfee and Brynjolfsson's (2012) conclusions are notable for forming a link between an evidence-based culture and performance; as they stated that organisations that used evidence-based management were on average, five percent more productive and six percent more profitable when compared to competitors. Hence more research is needed to determine the impact of organisational structure on evidence-based decision making.

2.11 Conclusion

Leaders of today are confronted with the challenges of a rapidly changing business environment driven by globalisation (Brown et al., 2011). Organisations have the opportunity to leverage the value from the massive amounts of available information to improve their data-driven decision making aligned to their strategic plans, as strategy is the element that sets the direction for the organisation (McAfee & Brynjolfsson, 2012). In order to realise the value from information to drive decision making the flow of information through an organisation is vital, thereby allowing organisations to leverage more markets and gain competitiveness (Brown et al., 2011). It is argued that organisations' structure

can contribute to competitive advantage by enabling organisations to manage complex structures (Qiu & Donaldson, 2012); however organisational strategy and organisational culture are required to support this.

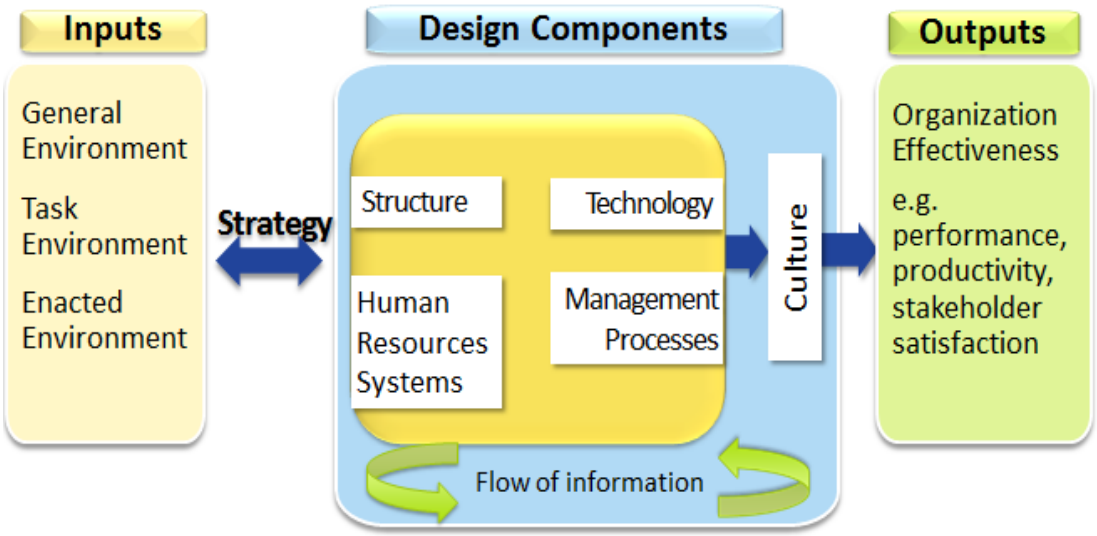
The matrix structure is argued to the only structure that allows for efficient exchange of information which facilitates rapid responses to changes in environments (Galbraith, 2008). However the matrix has not attained its stated benefits and has been plagued with many challenges such as decision strangulation and power struggles due to dual reporting lines (Davis & Lawrence, 2007). Hierarchical organisational structures consist of single reporting lines hence useful as it facilitates clear authority and levels of responsibility. However the major limitation is the limited communication and information flow across departments (Burns & Wholey, 1993). Hierarchical structures are widely used by many organisations however due to these limitations many organisations are moving towards matrix structures to deal with the complexities of doing business (Qiu & Donaldson, 2012).

To foster evidence-based decision making in an organisation there needs to be effective and efficient flow of information within the organisation, and knowledge sharing across departments is a pertinent factor in providing information that leaders can utilise to make informed decisions (Wolf & Egelhoff, 2002). Factors such as organisational culture, organisational strategy and organisational structure, affect the flow of information through a matrix structure. Organisational competitiveness can be achieved with the alignment and synergy of strategy, environment, organisational design, culture and core competencies (Zheng et al., 2010). These elements are seen as the golden thread that is crucial for organisational success.

The concept of organisational design has been extensively researched in the academic and business literature by scholars such as Bartlett and Ghoshal (1993); Beer et al. (2005); Bryan and Joyce (2007); Galbraith (2008); Goold and Campbell (2002); Morrison et al. (2006); Venkatraman and Camillus (1984) and Waterman et al. (1980). They have contributed extensively to developing the concept of organisational structure. However a gap exists in linking and understanding the flow of information through an organisational structure and how it can enhance evidence-based decision making with a focus on understanding the culture and its influence. Therefore further research into organisational structure is required.

Figure 2.4 shows the relationship of strategy, structure and culture to achieve organisational competitiveness. This research study will further develop this model and aimed to demonstrate how the flow of information is influenced by structure, strategy and culture.

Figure 2.4: Organisational-level diagnostic model



Source: Adapted from Cummings and Worley (2009)

CHAPTER 3: RESEARCH QUESTIONS

3.1 Introduction

This section explains the research questions that were required to better understand the relationship between organisation structure and evidence-based decision making. This study made use of research questions as the researcher attempted to make a general enquiry about the constructs (Saunders & Lewis, 2012).

This study broadly investigated the impact of organisational structure on evidence-based decision making by comparing matrix and hierarchical organisational structures. Structural design can significantly influence an organisation's competitiveness, by facilitating the flow of information to enhance evidence-based decision making (Nielson et al., 2008). Organisations are confronted with increased levels of complexity which has been brought about by globalisation (Lukić, 2014). In order for organisations to deal with the increasing complexity, strategies have increased in complexity as well (Wolf & Egelhoff, 2002). Similarly in order to execute complex strategies organisations have to organise correctly (Bryan & Joyce, 2007). Thus this study sought to determine whether there is a difference between the matrix and hierarchical structure by analysing the impact of organisational structure on evidence-based decision making.

Studies (McAfee & Brynjolfsson, 2012; Pfeffer & Sutton, 2006; Rousseau, 2006) have shown that evidence-based decision making is linked to organisational competitiveness and performance, stating that organisations that use evidence-based decision making were more productive and more profitable than their competitors. Qui and Donaldson (2012) claimed that the main element of evidence-based decision making is the flow of data through an organisation structure. Therefore there exists a gap in current literature in determining the impact of organisational structure on evidence-based decision.

The researcher designed and planned the research study based on the stated research questions. The researcher considered the implications of the research question as well as the measurements and variables that were involved, and determined the statistical methods that were used to analyse the data. The data analysis techniques are comprehensively discussed in Chapter 4.

3.2 Overarching research question

Organisation structure provides the foundation of the organisation's operations and determines decision making authority (Cummings & Worley, 2009). The matrix structure allows for the efficient and effective flow of information through the organisation, while the hierarchical structure limits the flow of information (Barlett & Ghoshal, 1989; Galbraith, 2008). Adequately leveraging information may result as a source of competitive advantage and innovation (McAfee & Brynjolfsson, 2012). However to leverage value from information, organisations need to ensure that structure support the exploitation of the information to gain competitive advantage (Barlett & Ghoshal, 1989). Thus the overarching research question this study aims to determine the impact of organisational structure on evidence-based decision making by comparing matrix and hierarchical structures.

3.3 Research Question 1

Organisational culture has an impact on organisational activities and coupled with a rapidly changing external environment, organisations need to foster a culture that allows for change thereby crafting competitiveness (McAfee & Brynjolfsson, 2012; Morrison et al., 2006). An organisation that is goal focused and has the ability to adopt a culture that is continuously seeking opportunities in the market place and is focused on people is far more competitive than an organisation that seeks competitive advantage through organisational structure changes alone (Bartlett & Ghoshal, 1993). Thus, understanding an organisational culture is the starting point for developing strategic structural changes and this study aims to research the influence of organisational culture on evidence-based decision making. The use of evidence to make decisions emphasises a rational, objective and empirical approach to addressing business issues (Pfeffer & Sutton, 2006). Closely aligned to this concept of evidence-based decision making is evidence-based culture, which refers to organisational culture in which decision making is based primarily on information that has been gathered, analysed and synthesised into distinct patterns (Rousseau, 2006). Research Question 1 focused on organisational culture and thus sought to determine the influence of organisational culture on the flow of information to enhance evidence-based decision making.

3.4 Research Question 2

Organisations exist in ecosystems and are highly interactive with the environment in which they operate; information flows from within and out of these ecosystems into organisations' environments and vice versa (Moore, 1993). However the ability of an organisation to distil and disperse this information is fundamental to harnessing the competitive advantage that information can deliver (Neilson et al., 2008). The flow of information through an organisation is influenced by its structure (Pertusa-Ortega et al., 2010). The fit between information processing capability and requirements of an organisation can be related to the strategy-structure paradigm (Wolf & Egelhoff, 2001). The aim of this study was to extend the field of research on organisational structures and evidence-based decision making, by gaining a greater insight of the difference the flow of information between matrix structure and hierarchical structures, thus Research Question 2 sought to determine the impact of organisational structure on information flow within organisations.

3.5 Conclusion

The aforementioned research questions have helped to determine the influence that strategy, structure and culture have on the flow of the information to allow for evidence-based decision making. The purpose of this research was expected to benefit organisations to understand on a granular level the factors that influence the flow of information through an organisational structure to effect evidence-based decision making, thereby gaining competitiveness in hypercompetitive markets. The objective of the research was to determine how organisational structure facilitates information flow, and therefore evidence-based decision making with organisational culture and specifically evidence-based cultures mediating this flow by comparing matrix and hierarchically structured organisations. The insights gained from this research sought to provide organisations with empirical evidence on the impact organisational structure has on evidence-based decision making and hence either justifying or dispelling the current argument that matrix structure drives and facilitates the flow of information through an organisation to effect evidence-based decision making

The next chapter delineates the methods that were used to answer the research questions raised in this chapter.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

This section describes the methodology that was employed to conduct the research. The research aimed to determine how organisational structure facilitates the flow of information which in turn may facilitate evidence-based decision making. The literature review provided a thorough description of the various constructs that were evaluated. The research study was descriptive in nature, and aimed to produce a more granular understanding of the influences on the flow of information through an organisational structure (Williams, 2011). The research methodology was based on a survey research strategy, which was suited to the collection of primary data from a sample of the target population (Zikmund, Babin, Carr, & Griffin, 2012).

4.2 Research methodology and design

4.2.1 Research philosophy

A positivist philosophy was followed, as the research study presented a structured approach in the literature review and the research questions sought to generalise the findings and allow for future replication (Saunders & Lewis, 2012).

The research study furthermore followed a deductive approach, which involved the testing of research questions. By obtaining data for each construct that was analysed to answer the research questions, the deductive approach allowed the researcher to gain an understanding of the factors that influence the flow of information through an organisation to effect evidence-based decision making. The deductive approach was deemed more suitable for this study as an inductive approach typically involves using facts to form rules and principles (Field, 2013).

4.2.2 Research type and strategy

The research methodology adopted for this study was quantitative and descriptive in nature (Weiers, 2011). Saunders and Lewis (2012) defined descriptive research as "research designed to produce an accurate representation of persons, events or situations" (p. 111) which is considered to be appropriate as the objective of the study was to understand the constructs that influence evidence-based decision making through an organisation focusing on the following constructs; organisation culture, information flow and organisation strategy. These constructs were addressed through empirical assessments. The research study entailed a cross-sectional study that involved a single contact session with the selected sample (Field, 2013). This was the most suitable approach for the study for the desired investigation of the constructs. A longitudinal study was not appropriate as the researcher was not testing a pattern of change over a period of time (Williams, 2011).

This study employed a survey research strategy which involved the collection of data from a large population using a questionnaire as the structured method to produce quantitative results (Zikmund et al., 2012). The questionnaire was developed from established questions, these questions have been assessed and adequate Cronbach Alpha's were determined. The constructs were further tested as part of the analysis to reconfirm reliability. The generally accepted lower limit for Cronbach's Alpha is 0.60, further testing of the constructs obtained Cronbach alpha's that were within the acceptable range (Chakrapani, 2004).

Surveys have several advantages over other methods, in that they are inexpensive and allow for quick and accurate data collection. Zikmund et al. (2012) advised that surveys are subject to non-response error. This may have influenced this research study as some of the respondents may have operated in a dual structure, that is matrix and hierarchical, which may also affect the likelihood of an employee responding to the survey. It was also noted that surveys may suffer from response bias, where respondents may consciously or unconsciously alter their answers.

Statistical tests are subject to erroneous outcomes. Errors are expressed as follows:

Table 4.1: Definitions of error types

Type of Error	Definition
Type I	A type I error is proclaiming a finding as true when it is actually false, often referred to as a false positive. This leads to the researcher indicating a given condition has been satisfied when in reality it has not been satisfied.
Type II	A type II error is where a test result specifies that a condition failed, while in reality it was successful, often referred to a false negative. A Type II error is performed when the researcher fails to acknowledge a true condition.

4.3 Population and unit of analysis

Population is defined as “the complete set of group member” (Saunders & Lewis, 2012, p. 132). The unit of analysis refers to the entity that is being analysed in a study (Zikmund et al., 2012). The population for this study was organisations. Due to the descriptive nature of this study, a board classification across industries in various sectors provided a thorough study. As previously stated, the study aimed to compare and understand the difference between hierarchical organisations and matrix organisations. This population was selected because they represent the target of the research.

The unit of analysis for this study were employees within organisations. Employees within an organisation play an important role in driving and executing the organisational strategic plans by their style of work that aligns to the values of the organisation. Therefore employees working within an organisation are best suited to describe the flow of information and the culture that exists to assess the flow of information through the organisation that facilitates evidence-based decision making.

4.4 Sampling method

A sample is a sub-set of the population under investigation as it is impractical to approach every member of a large population due to constraints such as time and cost (Weiers, 2011). The research employed non-probability sampling. This sampling technique is employed when it is not possible to garner a comprehensive list of the total population and

the sample cannot be taken at random (Saunders & Lewis, 2012). The data was gathered using the non-probability techniques of convenience sampling and snowball sampling. Convenience sampling was employed by obtaining access to organisations available from the researcher's MBA class and from her networks. Snowball sampling was employed by the researcher's classmates and networks distributing the surveys within their respective organisations and onto their networks. The snowball method allowed a large variety of respondents to participate and gathered momentum quickly (Zikmund et al., 2012). However snowball sampling leads to the bias of having like-minded people respond to the surveys, leading to response bias. There was a high probability that the person being referred was similar to the first person (Zikmund et al., 2012).

4.4.1 Sample size

Weiers (2011) stated that the distribution of samples can be assumed to be normal if the sample size is sufficiently large, greater than 30. As the sample becomes greater than 150 the distribution of the mean approaches normal distribution. This study therefore required a sample of 150 responses, and achieved a sample of 189 respondents, from employees within organisations to achieve a normal distribution of the mean.

4.5 Data collection method

The research adopted a quantitative methodology which utilises empirical assessments that involves numerical measurement and analysis (Zikmund et al, 2012). This method was appropriate for this study as it allowed the research to test specific research questions from a large sample and to use the results to generalise conclusions. Data collection was achieved through structured responses from surveys. Surveys can be classified into interviews and questionnaires. The data collection method employed for this study was a survey in the form of a self-administered questionnaire where respondents read and answered the questions themselves. The preferred data collection method was selected over interviews for the following reasons:

- Questionnaires can be distributed to respondents that are geographically dispersed.
- There were a large number of responses required in a short time frame.

- It is convenient as it can be administered remotely.
- Due to the short time frame and limited resources available for data collection, it is cost-effective; the researcher can save resources that would normally be expended to conduct interviews.
- The nature of the study warranted closed-ended questions.
- The questions were pre-determined and lacked ambiguity, therefore facilitated interviews were not required.
- The questionnaire allowed for the avoidance of interviewer influence, hence results were consistent.
- Anonymity of respondents allowed honesty resulting in a higher likelihood of more accurate data, especially regarding aspects of organisational strategy and culture.
- The survey data can be extrapolated in a quantitative method to analyse the data to determine validity, reliability and statistical significance.

The researcher acknowledges the following disadvantages as the reliability of survey data collected may depend on the following factors (Saunders & Lewis, 2012):

- Response rates for this method are generally low. This could result in a self-selecting bias which could lead to an accurate representation of the total population.
- Respondents may not feel encouraged to provide accurate, truthful answers and it will not be possible to conduct follow-ups to validate the responses.
- Respondents may not feel at ease with providing answers that represent themselves or their organisations in an uncomplimentary manner which could be perceived to be negative.
- Respondents may impede the validity of the data by not be fully being aware of their given responses due to a lack of memory or boredom on the subject.
- Data errors due to question non-responses may exist.

4.5.1 Questionnaire design

Saunders and Lewis (2012) stated that when designing a questionnaire the questions should be reused or adapted from previous similar studies or otherwise designed to be study-specific. In designing the questionnaire for this study the researcher predominantly

reused and adapted questions from previous studies that tested the same or similar constructs. The questionnaire measured the following constructs:

Table 4.2: Constructs with reference from previous studies

Construct	Adapted from
Evidence-based culture	O'Reilly, Chatman, and Caldwell (1991)
Information flow	Van de Ven and Ferry (1980)
Organisational strategy	Kudla (1980)

Questionnaire accuracy is achieved if the questionnaire is both reliable and valid (Weiers, 2011). Research validity refers to “the extent to which (a) data collection method or methods accurately measure what they intended to measure and (b) the research findings are really about what they profess to be about.” (Saunders & Lewis, 2012, p. 127). While the selected questions had been tested by prior authors to be reliable and valid in measuring the constructs, The Cronbach Alpha was recalculated as part of the analysis to ensure that the questions measured the same constructs as perceived by the respondents. The retesting achieved acceptable scores.

The questionnaire was set using a five-point Likert scale. The Likert scale is a measure of attitude typically from: strongly disagree along to disagree, neither and then to agree and lastly to strongly agree (Saunders & Lewis, 2012). The Likert scale assumes that each question has an equivalent attitudinal value in terms of the issue raised in the question. The questions were ordered logically to follow the objective of the study and were themed according to constructs. The results of a Likert scale are ordinal in nature as the distance between scale items is not known (Zikmund et al., 2012). SurveyMonkey was used to create the online survey. Table 4.3 shows the advantages and disadvantages of likert scales.

Table 4.3: Advantages and disadvantages of Likert scales

Advantages:	Disadvantages:
Provides a common method of collecting data that aids the researcher in understanding the answers provided.	Questions tend to be one dimensional due to a limited number of options. This leads to the assumptions that the space between each possibility is equidistant; however this is not true in real life. Hence the true attitude is not actually measured.
It is easy to analyse the data and derive conclusions, results and graphs from the data gathered.	Previous questions can have an influence on responses to further questions.
The use of the scale allows respondents to express opinions freely, while allowing them to be neutral should they so choose to do so.	Respondents may have a tendency to automatically avoid extremes, which may lead to responses being expected rather than providing real honesty.
Quick and easy to run survey that is able to be sent out through all modes of communication.	

Source: Zikmund et al. (2012)

The researcher's choice in the online survey containing a Likert Scale is appropriate for this study as the research understands the limitations of the tool is able make generalisations of the factors that influence the flow of information through an organisation to facilitate evidence-based decision making. The questionnaire contained four sections. A sample of the questionnaire is provided in Appendix A.

4.5.2 Demographics

Demographic questions helped to provide data on the respondent such as age, gender and work experience. Nine questions were asked in this section. These questions were intended to shape the descriptive analysis to assess the variability of the sample and also served as a mechanism to assess the respondents' relevance to the study. All questions were designed to be fixed alternative questions to reduce the skill and time required to answer the questions. Such standardised questions also allow for easier coding, interpretation and analysis (Zikmund et al., 2012). Refer to Section A in Appendix A.

4.5.3 Evidence-based culture

Questions relating to evidence-based culture were asked. Eight questions formed this section and evaluated the way decisions are made at the respondent's organisation. A five-point Likert scale was used in evaluation of evidence-based culture and the scale anchors were: 1–Strongly disagree; 2–Disagree; 3–Neutral; 4–Agree; 5–Strongly agree. Refer to Section B in Appendix A.

4.5.4 Information flow

The flow of information was evaluated in Section C (Appendix A). Seven questions were asked to measure the ease or difficulty in obtaining or transferring information through the respondent's organisation. A five-point Likert scale was used to evaluate the flow of information. By asking respondents how often they had contact with other departments, they were prompted to think of actual examples they have had and how long ago it occurred. This method attempted to avoid the tendency of individuals overestimating their responses when asked directly to assess their level of communication and flow of information.

4.5.5 Organisational strategy

Questions relating to organisational strategy were evaluated in Section D (Appendix A). Three fixed-alternative questions were asked to ascertain whether the organisation has a long-term strategy and to determine the type of planning to which the organisation subscribes. An optional comment box was also provided to allow the respondent to elaborate and provide insights corresponding to the question item. The comments were analysed for common themes however no common themes were identified from the responses.

4.6 Pre-testing of the questionnaire

Once the questionnaire was finalised, pre-testing was performed to confirm the validity and reliability of the questionnaire by allowing the researcher to determine whether there are any concerns in the design (Weiers, 2011). This provides the researcher with an

opportunity to correct issues such as misinterpretation of the question or grammar mistakes before the data collection phase. Ten random individuals were chosen to perform the pre-testing as a statistical sample was not required (Weiers, 2011). The individuals selected were based on convenience and the results were used to examine whether the questionnaire would fit the research questions of this study (Zikmund et al., 2012).

The pre-testing discovered the following:

- Section A, Question 9 required further explanation regarding the definitions of matrix and hierarchical structure. This was addressed by adding a description of each structure as part of the questionnaire and elaborating on the definitions in the introduction of the questionnaire.

- Section C, Question 5 did not read well and was addressed by rewording the question.

- The format and question styles proved to be easy to understand and complete.

- The time taken to complete the questionnaire averaged between 7 and 10 minutes, which was acceptable to the pre-test respondents. However the researcher was asked to include the time allocation in the introduction; this was done.

- There was initially no thank you message after completion of survey; the researcher added this to the survey design.

These pre-testing allowed the researcher to subsequently address all the feedback before the actual data for the study was collected.

4.7 Data gathering process

Online survey questionnaires were selected as the sole collection channel and the questionnaire link was emailed to all respondents. The advantages of this method are the speed and ease of distribution, quicker turnaround time, increased flexibility and the elimination of paper questionnaires (Zikmund et al., 2012). This process also allows respondents to maintain anonymity and caters for respondents who are geographically

dispersed. However, the disadvantages of this method are ambiguity of questions, low response rate leading to non-response error, and respondents not having an avenue to be assisted with any clarifications to questions (Weiers, 2011).

By distributing the online questionnaire via email, researchers are able to monitor responses and send reminders when responses are low. Zikmund et al. (2012) reported that the average response rate for online survey is around 11%. For this research, the response rate was challenging to calculate as snowball sampling was employed. The following methods were employed to urge respondents to participate which facilitated the gathering of 189 respondents in a short period of time:

- A covering letter indicating the purpose of the study was emailed with the link to the questionnaire.
- The respondents were requested to issue internal communication to their colleagues within their organisation to indicate the purpose of the study to encourage participation.
- Follow up email reminders were sent to respondents urging them to complete the questionnaire.

4.8 Data coding

Raw data often also contains errors, both in the form of respondent errors and non-respondent errors. A respondent error is a mistake made by the respondent, a non-respondent error is a mistake made the researcher in creating the electronic data file representing the responses (Zikmund et al., 2012). An important part of the editing, coding, and filing stages is inspecting for errors. Errors in the data present a risk in the transformation of raw data into intelligence (Field, 2013). For this study, individual responses were downloaded from SurveyMonkey in a Microsoft Excel format and the data was edited to scrutinise for completeness and consistency. The edited data was then numerically coded from the word format questionnaires. For the purposes of data analysis, data coding was completed and numerical values were assigned. However, the comment field under Section D which formed part of the organisational strategy question was not coded but was instead analysed to identify specific themes. The data coding process was

executed using Microsoft Excel and later transferred on to IBM® SPSS version 22 where various tests were conducted to assess the research constructs.

The following actions were taken to code the data in SPSS:

- Measure scales were assigned to each variable. All Likert-style questions in Sections B and C of the questionnaire were set as ordinal while demographic questions in Section A were set as nominal or ordinal as appropriate.
- The ordinal demographic questions in Section A were coded from low to high starting with a score of 1. Associated values were also assigned.
- Nominal data in Section A and D were coded with numbers and associated values assigned.
- Five point Likert-style questions measuring the respondents' agreement to statements in Section B and C were coded from 1 to 5.

4.9 Analysis approach

The raw data collected via SurveyMonkey was downloaded into Microsoft Excel. The data was then coded and analysed in IBM® SPSS version 22. Descriptive statistics were used to analyse the data together with multivariate analysis. Descriptive statistics are used to summarise and describe the characteristics of a sample based on the data collected without making any inferences. Multivariate statistical analysis tests research questions involving multiple variables; this aids researchers in considering the effects of multiple variables simultaneously (Field, 2013).

4.9.1 Descriptive statistics: Mean, mode and standard deviation

Due to the ordinal nature of the data, non-parametric testing was employed. This method of testing is less affected by outliers (Weiers, 2011). The questionnaire included various demographic questions that were utilised in reviewing the characteristics of the respondents, with the intention of verifying that the responses had the necessary variation across all the important demographic variables. Descriptive statistics were conducted for constructs as well, illustrating the frequency and mean of the respondents to the evidence-based culture and information flow as well as organisation strategy.

4.9.2 Principle Component Analysis (PCA)

Principal components analysis is a variable reduction technique that shares many similarities to exploratory factor analysis as it does not make a distinction between independent and dependent variables (Field, 2013). This multivariate technique allows for large data sets to be reduced to a smaller number of factors which help with data analysis (Zikmund et al., 2012). Each construct measured consisted of a series of questions. For each of the constructs, the factors were measured by employing the test to each question; hence the values for each construct were combined to achieve a more accurate measure (Weiers, 2011).

Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy

The KMO measures linear relationships between the constructs and thus whether it is suitable to conduct a principal component analysis on the data gathered. Values range from 0 to 1, with a lower limit of 0.6 for sampling adequacy, however values above 0.8 are considered meritorious to marvellous and indicative of principal components analysis being beneficial, as demonstrated in the Table 4.4 below (Kaiser, 1974).

Table 4.4: KMO measure meaning

KMO Measure	Meaning
KMO ≥ 9	Marvellous
0.8 ≤ KMO < 0.9	Meritorious
0.7 ≤ KMO < 0.8	Middling
0.6 ≤ KMO < 0.7	Mediocre
0.5 ≤ KMO < 0.6	Miserable
KMO < 0.5	Unacceptable

Source: Kasier (1974)

4.9.3 Cronbach Alpha

The Cronbach Alpha test was conducted to establish reliability and validity of the research instrument (Field, 2013). An instrument that is reliable allows for consistency in the results. The generally accepted lower limit for Cronbach's Alpha is 0.60 (Chakrapani, 2004). An acceptable Cronbach Alpha score denotes content validity, which is, data gathered from

the questionnaire answers the research question and meets all objectives; and construct validity, which is, the questions collect data according to what they intended to measure (Weiers, 2011). This test was run for the evidence-based culture and information flow constructs of the questionnaire.

4.9.4 Level of confidence

In order to test statistical significance it was necessary to ascertain a confidence level. A confidence level informs the researcher that the results have not arisen by chance (Field, 2013). The desired level of confidence was set by the researcher. The confidence level carries with it probability (Weiers, 2011).

The researcher has set the confidence level at 95%. Therefore if the probability (*p*-value) is less than 0.05 this would be interpreted as a statistically significant finding as this would mean that there is a greater probability that the results would not have been achieved by chance, being greater than 95% certainty.

4.9.5 Independent t-test

The independent-samples t-test was used to ascertain whether there exists a difference between the means of two independent groups on a continuous dependent variable. More specifically, it enabled the researcher to determine whether the difference between the two groups was statistically significant (Field, 2013). The dependent variable for this study is organisational structure. Data was coded as 1 for matrix and 2 for hierarchical structures. Organisational structure was tested against evidence-based culture, information flow, organisational strategy and multinational versus local organisations.

Levene's test for equality of variances was used to ascertain whether the population variances were equivalent. If the population variance of both groups was equivalent to each other, this test would have returned a *p*-value greater than 0.05, indicating that the research study met the assumption of homogeneity of variances. However, if the test returned a *p*-value less than 0.05, the population variances were then unequal and the research study would have violated the assumption of homogeneity of variances.

The independent t-test result showed the statistical significance difference between the mean scores for evidence-based culture, information flow, organisational strategy and multinational versus local organisations when compared to matrix and hierarchical structures. These results allowed the researcher to infer the difference between relationships of organisational structure and evidence-based culture, information flow, organisational strategy and multinational versus local organisations.

4.9.6 Pearson's *r* correlation

Correlation analysis is employed to analyse the degree to which the change in one variable is related to changes in another to measure the strength of the relationship (Field, 2013). For this study, organisational structure was tested against evidence-based culture and information flow. Zikmund et al. (2012) stated that likert-scale data are analysed at the interval measurement scale and hence associations for Likert-scale data should be analysed using Pearson's *r* correlation test. The value for correlations range from -1 to +1, if the value is -1, it denotes a weak relationship; 0 denotes no relationship and 1 denotes a strong relationship (Weiers, 2011).

A two-step process was followed to determine the strength of the association that exists between structure and evidence-based culture. Subsequently, it was determined whether each of the organisational structures has any association with evidence-based culture. A significance level of p=0.05 was used in the research.

Eigenvalue 1 rule

Eigenvalues for the correlation matrix that are greater than 1 determine the factors to include in the analysis. A disadvantage of this process is that it is subjective (Field, 2013).

4.10 Assumptions

The assumptions for independent t-test include the following:

- There should be no significant outliers in the two groups of the independent variable in terms of the dependent variable.

- The dependent variable should be approximately normally distributed for each group of the independent variable.

PCA:

- Variables must be linearly related and there must be no outliers.

4.11 Limitations

This section describes potential research limitations that could exist due to the design and sampling selections, as well as expected response biases.

4.11.1 Design limitations

As the research was quantitative in nature and required a selection of answers from a fixed set of questions, some unforeseen aspects that may influence the flow of information through an organisation may not be accounted for. The study was limited to the constructs identified in the literature.

The scope of the study was not industry specific and thus could impact the results as the organisations might have differed in goals and objectives. The use of descriptive statistics is a once off snapshot of the condition in matrix organisations at the time of the survey. The Pearson's *r* correlation is not able to express the difference between dependent and independent variables.

4.11.2 Sampling limitations

Data gathered utilised non-probability sampling based on convenience and snowball methods therefore the sample is not statistically representative of the population (Saunders & Lewis, 2012). When employing non-probability sampling, the researcher's level of experience is important to the analysis and it is noted that the researcher may not have adequate experience in the field. Snowball sampling leads to the bias of having like-minded people respond to the surveys leading to response bias. There is a high probability that the person being referred is similar to the first person (Zikmund et al., 2012)

4.11.3 Biases

Non-response error is particularly prone in online surveys that are distributed to a wide audience and may result in a non-representative sample (Zikmund et al., 2012). Although the response rate was good for this study, respondents that were more engaged with the organisation may have been more likely to respond to the survey.

Weiers (2011) also emphasised that self-administered surveys, in particular, may suffer from non-response. Response bias may occur when respondents, either consciously or unconsciously, respond to questions with a certain frame (Zikmund et al., 2012). Due to the multiple-choice question formats, respondents of this study may have been inclined to answer questions similarly to earlier answers.

4.12 Conclusion

This chapter provided insight into the research methodology which was quantitative and descriptive in nature to accomplish the objective of this study. A survey research strategy which entailed online questionnaire was used for the collection of data from the identified sample representing the population of organisations. Non-probability sampling with convenience sampling and snowballing sampling techniques were employed. The data collection process using the questionnaire was discussed and the statistical analysis that was employed to answer the research questions was documented.

Limitations of the research methodology were noted and the researcher was aware of the limitations and the implications that it may have had on the results, and subsequent influence it might have had on the interpretation of the results.

The analysis and interpretation of the data collected as detailed in this chapter is presented in the next chapter.

CHAPTER 5: RESEARCH RESULTS

5.1 Introduction

This chapter provides the key findings of the data gathered using the methods described in Chapter 4. The purpose of this analysis was to explore the research questions raised in Chapter 3. The overarching research question sought to determine the impact of organisational structure on evidence-based decision making. Research Question 1 focused on organisational culture and thus sought to determine the influence of organisational culture to facilitate evidence-based decision making. Research Question 2 focuses on the information flow within organisations, and thus directly sought to ascertain the impact of structure on information flow to leverage the benefits associated with effective and efficient information flow.

The chapter commences with demographic characteristics that are particularly related to the structure of an organisation. The means, modes, and standard deviations for various factors related to evidence-based culture, information flow and organisational strategy are presented. Kaiser-Meyer-Olkin (KMO) and Barlett's tests of sphericity were performed to ascertain if factor analysis using principal component analysis was appropriate. Cronbach's Alpha test was performed to check for internal consistency and reliability of the data. Pearson's *r* correlation test between structure and evidence-based culture was also conducted to check for correlations. An independent t-test was conducted to determine if a difference exists between the means of two independent groups on structure. This further helped the researcher to determine whether the difference between the two groups is statistically significant between organisation structure and the information flow and thus tested whether the research questions were valid.

5.1.1 Survey response rate and industry descriptive statistics

Snowball sampling technique allowed for a large set of data to be collected in short time period as most respondents were referred by the initial participants. 189 respondents completed the online survey questionnaire which was sent to respondents in a variety of different industry sectors. The respondents constituted 84.1% from 16 different industries

with 16.9% from “other”. The greatest number of responses was garnered from the Finance and Financial Services industry and the lowest number of responses was retrieved from the Transportation and Delivery Industry. The industries to which the 189 respondents belong are tabulated in Table 5.1.

Table 5.1: Industry sectors to which respondents belong

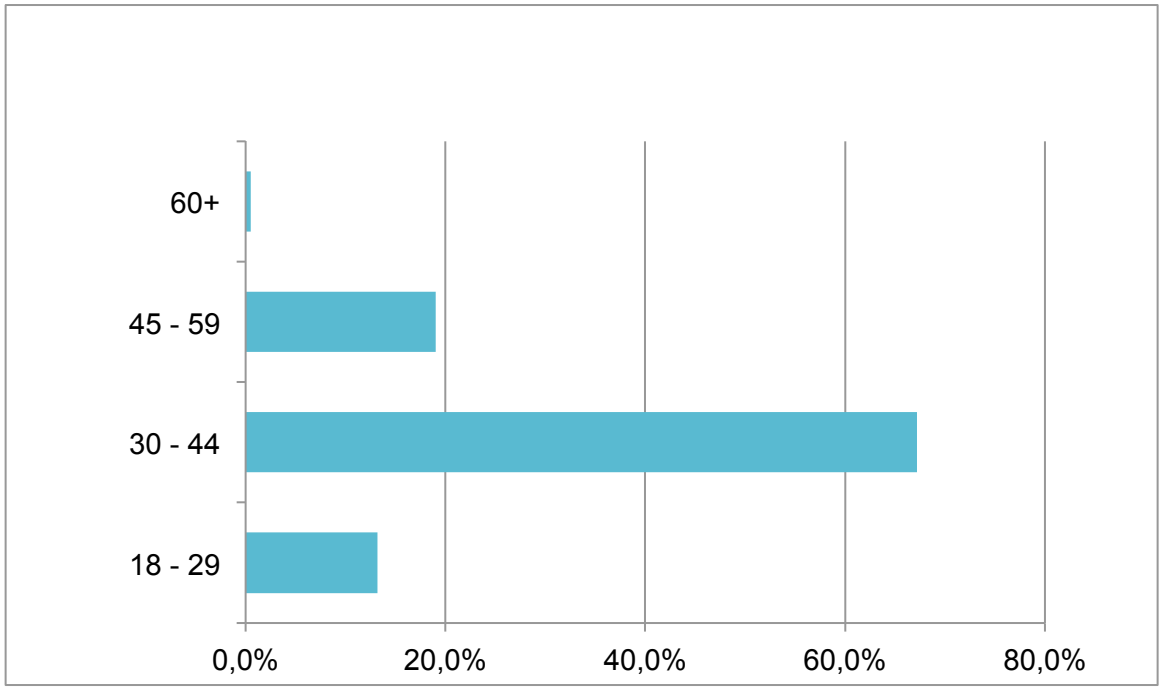
Answer Options	Response Percent	Response Count
Advertising & Marketing	1.1%	2
Automotive	1.6%	3
Business Support & Logistics	2.6%	5
Education	1.6%	3
Finance & Financial Services	21.2%	40
Food & Beverages	3.2%	6
Healthcare & Pharmaceuticals	5.8%	11
Insurance	2.1%	4
Manufacturing	9.0%	17
Retail & Consumer Durables	1.6%	3
Telecommunications, Technology, Internet & Electronics	16.4%	31
Transportation & Delivery	0.5%	1
Utilities, Energy, and Extraction	16.4%	31
Other	16.9%	32
		189

5.1.2 Descriptive statistics of the sample group

The descriptive statistics of the sample group indicates that the questionnaire was answered by 83 females and 103 males, which accounts for approximately 45% female and 55% male respectively.

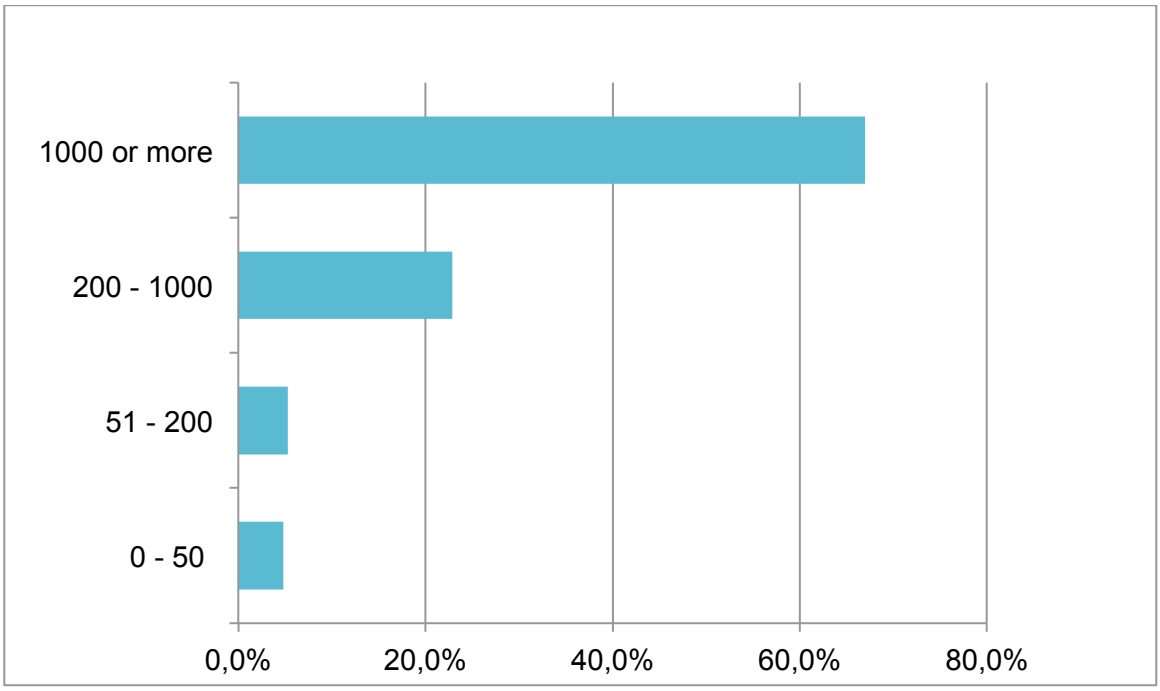
The respondents fell under the following four age groups: 18-29, 30-44, 45-59, and 60+. The majority of the respondents were in the age range of between 30 and 44 years, with 127 (67.2%) respondents selecting that category, while the least represented age range was those who were 60+ years old.

Figure 5.1: Respondents' age distribution



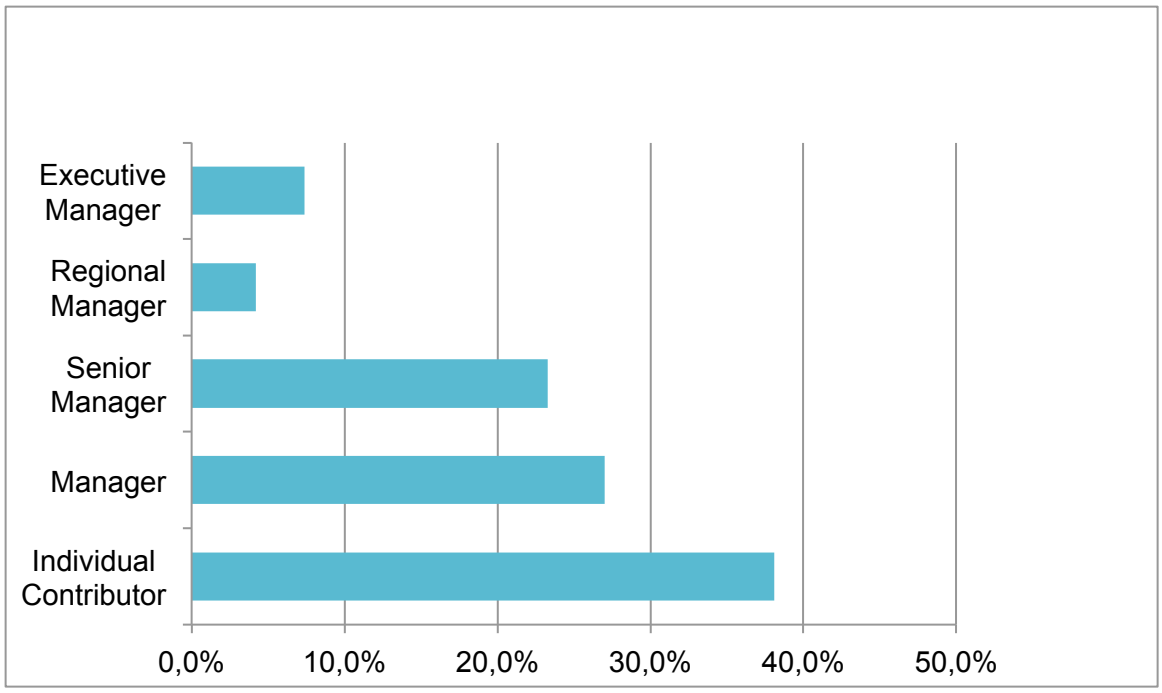
There were nine respondents who were from organisations that employ 50 or less employees, which made up the least represented category for this section. Most respondents (126) were from organisations that employed more than 1000 employees.

Figure 5.2: Respondents' organisation size



The spread of data among the roles of an organisation was varied, with the highest number of respondents, 72 (38.1%) were categorised as individual contributors, and the least amount of respondents, eight (4.2%), represented regional managers. Figure 5.3 shows the full spread of the data. Individual contributors are respondents that have no direct reports and are classified as managing self. Managers are respondents that have direct reports and are classified as managing others. Regional managers are respondents that have direct reports in more than two geographical locations and are classified as managing others. Executive managers are respondents that form part of the leadership of the organisation and are classified as managing managers.

Figure 5.3: Respondents' role category



Of the respondents who filled in the questionnaire, 14 (7.4%) of them have worked in their current organisation for less than six months, while 14 (7.4%) respondents have worked in their current organisation for six months to one year, and 26 (13.8%) respondents have between one and two years' experience. The majority of respondents, 75 (39.9%), have between three and seven years' experience at their current organisations, while 59 (31.4%) respondents have eight or more years' experience at their current organisations. This data verifies that the majority of the respondents have been in their current organisation for more than 3 years therefore the results are based on longer employee experience. Figure 5.4 depicts the total number of years of experience in industry per respondent, with the majority of respondents having a total of between six and ten years of experience.

Figure 5.4: Total number of years of experience

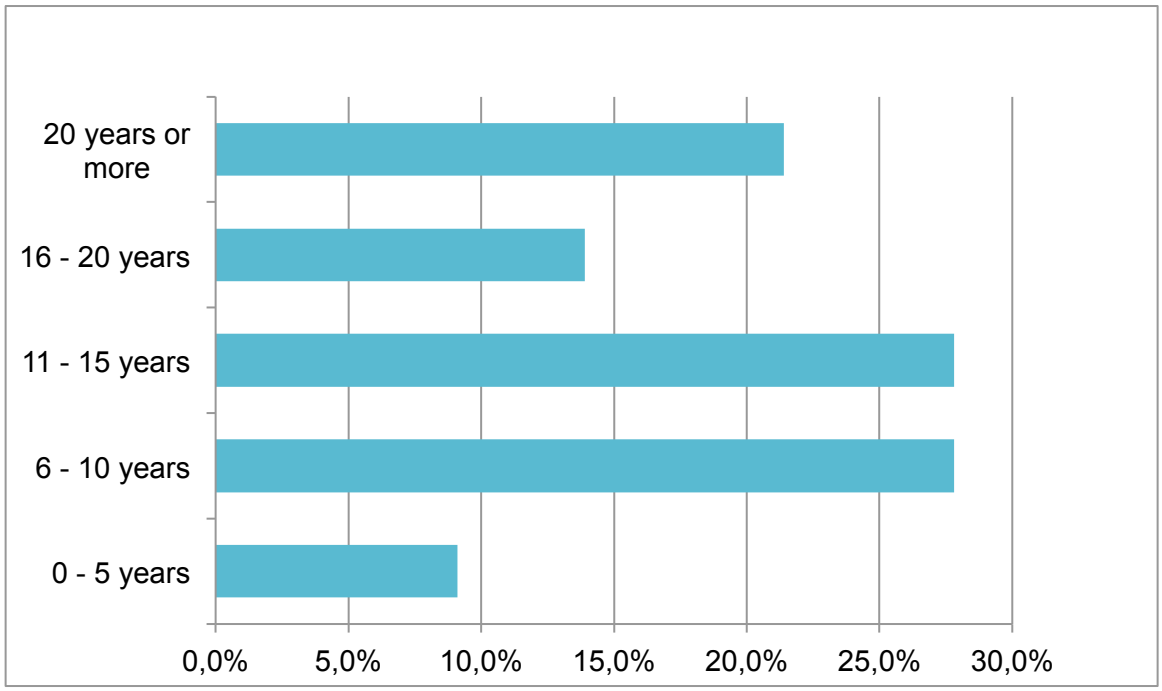
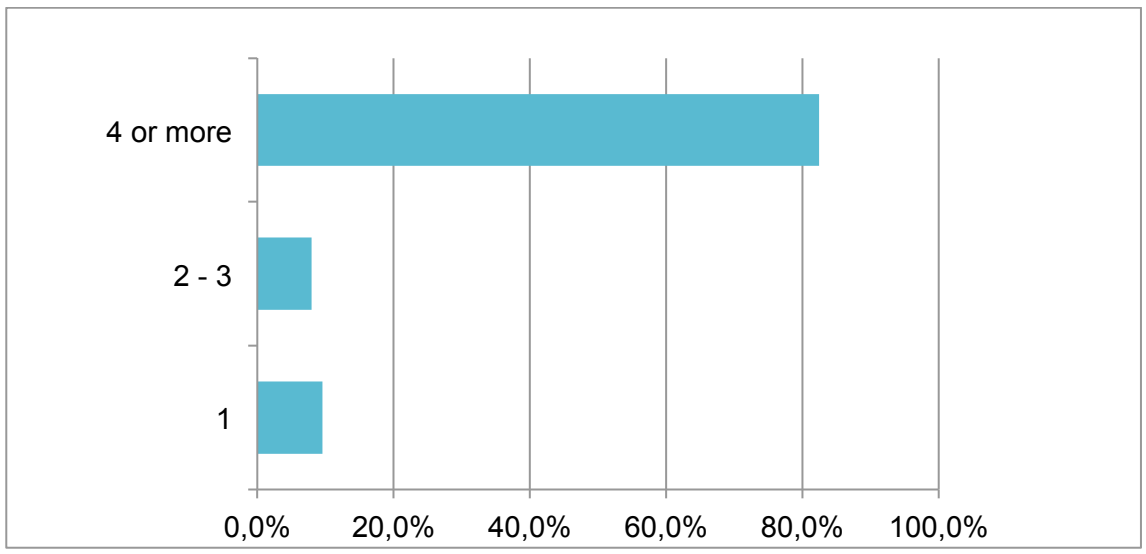


Figure 5.5 illustrates that the majority of the respondents, 155 (82.4%), represent organisations that operate in four or more countries.

Figure 5.5: Number of countries



From the 189 respondents, 55 (29.6%) represented organisations that are hierarchical, 131 (70.4%) represented matrix structured organisations, and four respondents indicated a combination of hierarchical and matrix organisational structure.

5.2 Research Question 1

Determining the influence of organisational culture on the flow of information to facilitate evidence-based decision making.

5.2.1 Cronbach's Alpha test for internal consistency and reliability

The data from evidence based culture and flow of information section of the questionnaire was assessed for internal consistency and reliability. Questions that are Likert-scale based must be tested for reliability. The Cronbach Alpha scores for most measures were good. The scores are tabulated below.

Table 5.2: Cronbach Alpha scores

	Cronbach Alpha	Number of items
Evidence based culture	0.835	Q10 – Q17

As shown in Table 5.2 the score for evidence-based decision making was 0.835. This is good score as it is above the lower limit score of 0.60 (Chakrapani, 2004).

5.2.2 Principal Component Analysis (PCA)

The Kaiser Meyer Olkin (KMO) measure of sampling adequacy for the questions relating to evidence-based culture (question 10 to question 17) in the analysis was 0.826, which is greater than 0.6 (minimum requirement) and the Bartlett's test for sphericity is statistically significant, $p < 0.05$. Hence factor analysis was appropriate.

Table 5.3: KMO and Bartlett's test results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.826
Bartlett's Test of Sphericity	Sig.	0.000

Using the Eigen value 1 rule, two components were extracted and represented 62.59% of the variance, see Appendix C for SPSS output.

Component one:

- It is important to think things through carefully before acting on them.
- All business decisions should be analysed from every possible angle before they are implemented.
- People should always think carefully before they act.
- It is always better to stop and plan that to act quickly.
- No matter what the situation, it is always worth the extra time it takes to develop a comprehensive plan.
- Even if it takes more time, business decisions should always be made based on analysis not intuition.

Component two:

- The outcome of a business decision can be predicted accuratley by a logical analysis of that decision.
- A logical argument is as persuasive as visible evidence that something will work.

The factor analysis created two independent variables by grouping the questions into two components. These two components refer to **think before you act** and **logic**. **Think before you act** involves the individual and his/her ability to think first before making any decisions in the organisation so that they rely on analysis rather than intuition to make decisions. **Logic** is then defined as the ability to make a persuasive argument based on the proper and reasonable way of thinking that provides sound reasoning.

5.2.3 Descriptive analysis for evidence-based culture construct

The evidence-based culture construct contained eight questions that allowed each respondent to describe the evidence-based culture in their respective organisations. Table 5.4 indicates the response description for each of the evidence-based culture questions based organisational structure. The mode for all questions on matrix structure was 4, while the mode for hierarchical structure was one 5 and the remainder 4. The overall mean score for matrix organisations is 3.80 and that of hierarchical organisations is 3.79. These scores indicated that respondents have similar evidence-based cultures in both the matrix and hierarchical organisations. The frequency tables for each of the eight questions are presented in Appendix C. There is good variance in the spread of the data gathered from the respondents and provides great value in understanding the relationship between evidence-based culture and organisational structure.

Table 5.4: Response description for Construct 1 – Evidence-based culture

	Matrix		Hierarchical	
	Mean	**Mode**	**Mean**	**Mode**
Q1: It is important to think things through carefully before acting on them.	4.28	4	4.42	5
Q2: All business decisions should be analysed from every possible angle before they are implemented.	3.98	4	3.89	4
Q3: People should always think carefully before they act.	4.21	4	4.15	4
Q4: Even if it takes more time, business decisions should always be made based on analysis not intuition.	3.74	4	3.53	4
Q5: The outcome of a business decision can be predicted accurately by a logical analysis of that decision.	3.54	4	3.44	4
Q6: A logical argument is as persuasive as visible evidence that something will work.	3.55	4	3.60	4
Q7: It is always better to stop and plan than to act quickly.	3.70	4	3.63	4
Q8: No matter what the situation, it is always worth the extra time it takes to develop a comprehensive plan.	3.44	4	3.66	4

5.2.4 Pearson's *r* correlation

Table 5.5: Pearson's *r* correlation

	Structure	Think before you act
Think before you act		
Pearson *r* Correlation	-0.008	
Sig. (2-tailed)	0.917	
Logic		
Pearson *r* Correlation	-0.012	0.442**
Sig. (2-tailed	0.877	0.000

Structure:

The Pearson's *r* correlation shows that the correlation is statically insignificant at 5% significance level as the significance value is 0.917. There was a negative correlation between **structure** and **think before you act**, $r = -0.008$, $p < 0.05$, The r value is very close to 0 hence it can be assumed that no relationship exists with **structure** and culture-**think before you act**.

The Pearson's *r* correlation confirms that the correlation is statically insignificant at 5% significance level as the significance value is 0.877. There was a negative correlation between **structure** and **logic**, $r = -0.012$, $p < 0.05$, with **structure** explaining 0% of the variation in logic. The r value is very close to 0 hence it can be assumed that no relationship exist with **structure** and culture, **logic**.

Think before you act and logic:

The Pearson's *r* correlation shows that the correlation is statically significant at 5% significance level as the significance value is 0.000. Hence the change in **think before you act** is correlated to the change in **logic**. There was a moderate positive correlation between **think before you act** and **logic**, $r = 0.442$, $p < 0.05$.

The results for the Pearson's *r* correlation were then further classified into organisational structure. Table 5.6 illustrates matrix organisations; the Pearson's *r* correlation shows that the correlation is statically significant at 5% significance level as the significance value is 0.000. Hence the change in **think before you act** is correlated to the change in **logic** in matrix organisations. There was a moderate positive correlation between **think before you act** and **logic**, $r = 0.489$, $p < 0.05$.

Table 5.6: Matrix organisation Pearson's *r* correlation for evidence-based culture

Matrix	**Think before you act**
Logic	
Pearson's *r* Correlation	0.489**
Sig. (2-tailed)	0.000

Table 5.7 illustrates hierarchical organisations; the Pearson's *r* correlation shows that the correlation is statically significant at 5% significance level as the significance value is 0.015. There was a moderate positive correlation between **think before you act** and **logic**, $r = 0.333$, $p < 0.05$.

Table 5.7: Hierarchical organisation Pearson's *r* correlation for evidence-based culture

Hierarchical	**Think before you act**
Logic	
Pearson's *r* Correlation	0.333**
Sig. (2-tailed)	0.015

5.2.5 Independent t-test

Table 5.8: Independent t-test

		Levene's Test for Equality of Variances	T-test for Equality of Means			
		Sig.	T	Df	Sig. (2-tailed)	Mean Difference
Think before you act	Equal variances assumed	0.502	0.105	177	0.917	0.01182
Logic	Equal variances assumed	0.985	0.155	177	0.877	0.01932

Think before you act:

- There was homogeneity of variances for **think before you act** scores for matrix and hierarchical, as assessed by Levene's test for equality of variances (p = 0.502).
- The matrix mean **think before you act** score was 0.12 (95% Confidence interval, -0.21 to 0.23) higher than the hierarchical **think before you act** score.
- There was a statistically insignificant difference in mean **think before you act** score between matrix and hierarchical, $t(177) = 0.105$, $p = .917$.

Logic:

- There was homogeneity of variances for **logic** scores for matrix and hierarchical, as assessed by Levene's test for equality of variances (p = .985).
- The matrix mean **logic** score was 0.19 (95% Confidence interval, 0.12 to -0.23) higher than hierarchical **logic** score.
- There was a statistically insignificant difference in mean **logic** score between matrix and hierarchical, $t(177) = 0.155$, $p = 0.877$.

In summary, when testing correlation for structure and evidence-based culture, the r value is very close to 0 hence it can be assumed that no relationship exists with structure and

the two components of culture, **think before you act** and **logic**. The correlation for components of evidence-based culture resulted in a moderate positive correlation between **think before you act** and **logic**, $r = 0.442$, $p < 0.05$.

Thereafter matrix versus hierarchical correlations were performed that reveal matrix to have a moderate positive correlation between **think before you act** and **logic**, $r = 0.489$, $p < 0.05$. Hierarchical also exhibited a moderate positive correlation between **think before you act** and **logic**, $r = 0.333$, $p < 0.05$

The independent t-test revealed a statistically insignificant difference in mean **think before you act** score between matrix and hierarchical organisations, $t(177) = 0.105$, $p = 0.917$. Similarity there was a statistically insignificant difference in mean **logic** score between matrix and hierarchical organisations, $t(177) = 0.155$, $p = 0.877$.

5.3 Research Question 2

Determining the impact of organisational structure on information flow within organisations.

5.3.1 Cronbach's Alpha test for internal consistency and reliability

The data from the information flow section was assessed for internal consistency and reliability. Questions that are Likert-scale based must be tested for reliability. The score is tabulated below.

Table 5.9: Cronbach Alpha Score for information flow

	Cronbach Alpha	Number of items
Flow of information	0.591	Q18 – Q19

The score for flow of information was acceptable at 0.591 suggesting that the data for two questions from this construct is reliable (Chakrapani, 2004). The total number of questions in the information flow construct consisted of seven questions as discussed below in the descriptive statistics. Only two of the questions returned a Cronbach Alpha 0.591, being Question 18 and Question 19 from the questionnaire. The other questions are therefore unreliable and were not used in the inferential tests of this research. All reference to the

information flow construct was based on Question 18 and Question 19. Question 18 refers to the collaboration between people from different departments and Question 19 refers to communication across departments regarding goals and processes.

5.3.2 Descriptive analysis of the results from information flow construct

The information flow section of the questionnaire contained seven questions that allowed each respondent to describe the flow of information in their respective organisations. Table 5.10 indicates the response description for each of the information flow questions based organisational structure. The mode for all questions on matrix and hierarchical organisations ranged from 2 to 5. The overall mean score for matrix organisations is the 3.58 and that of hierarchical organisations is 3.46. These scores indicate that respondents have similar information flow in both the matrix and hierarchical organisations. The frequency tables for each of the eight questions are provided under Appendix D. There is a good variance in the spread of data gathered from the respondents and provides great value in evaluating the relationship between information flow and organisational structure.

Table 5.10: Response description for Construct 2 – Flow of information

	Matrix		Hierarchical	
	Mean	**Mode**	**Mean**	**Mode**
Q1: How well are you personally acquainted with the people from other departments that you work closely with? **(Question 18 in the questionnaire)**	3.87	4	3.76	4
Q2: How well informed are you about the specific goals and services of the other departments in the organisation? **(Question 19 in the questionnaire)**	3.55	4	3.29	3
Q3: During the past six months how frequently have people in your department been in contact with people in the other departments/business units?	4.60	5	4.39	5
Q4: When you want to communicate with individuals in other departments how much difficulty have you had in getting a hold of them?	2.90	3	2.84	3
Q5: How much difficulty do you experience in getting ideas clearly across to other people?	2.69	2	2.49	2
Q6: To what extent did individuals in the other departments hinder your department in performing functions during the last six weeks?	3.52	4	3.49	3
Q7: During the past six months to what extent has your department changed or influenced the service or operations of another department/ business unit?	3.96	4	3.94	4

5.3.3 Pearson's *r* correlation

As mentioned above, only two questions from the information flow section proved to have a reliable Cronbach Alpha score of 0.591, hence Pearson's *r* correlation was conducted on Questions 18 and 19. The correlation was divided according to organisational structure. Table 5.11 illustrates matrix organisations, the Pearson's *r* correlation shows that the correlation is statically significant at 5% significance level as the significance value is 0.000. Hence the change in information flow Question 18 is correlated to the change in information flow Question 19 in matrix organisations. There was a moderate positive correlation between Question 18 and Question 19, $r = 0.430$, $p < 0.05$.

Table 5.11: Matrix organisation Pearson's *r* correlation for flow of information

Matrix	Flow of information, question 18
Flow of information, question 19	
Pearson's *r* Correlation	0.430**
Sig. (2-tailed)	0.000

Table 5.12 illustrates hierarchical organisations; the Pearson's *r* correlation confirms that the correlation is statically significant at 5% significance level as the significance value is 0.004. Hence the change in information flow Question 18 is correlated to the change in information flow Question 19 in hierarchical organisations. There was a moderate positive correlation between Question 18 and Question 19, $r = 0.397$, $p < 0.05$.

Table 5.12: Hierarchical organisation Pearson's *r* correlation for flow of information

Hierarchical	Flow of information, question 18
Flow of information, question 19	
Pearson's *r* Correlation	0.397**
Sig. (2-tailed)	0.004

5.3.4 Independent T-test

Table 5.13: Independent t-test

		Levene's Test for Equality of Variances	t-test for Equality of Means			
		Sig.	T	Df	Sig. (2-tailed)	Mean Difference
Q18. How well are you personally acquainted with the people from other departments that you work closely with?	Equal variances assumed	0.416	0.794	174	0.428	0.107
Q19. How well informed are you about the specific goals and services of the other departments in the organisation?	Equal variances assumed	0.169	1.624	173	0.106	0.254

There was homogeneity of variances for information flow Q18 scores for matrix and hierarchical structures, as assessed by Levene's test for equality of variances (p = 0.416). The matrix mean information flow Q18 score was 0.11 (95% Confidence interval, -0.159 to 0.374) higher than hierarchical information flow Q18 score. There was a statistically insignificant difference in mean information flow Q18 between matrix and hierarchical structures, $t(174) = 0.794$, p = 0.428.

There was homogeneity of variances for information flow Q19 scores for matrix and hierarchical structures, as assessed by Levene's test for equality of variances (p = 0.169). The matrix mean information flow Q19 score was 0.16 (95% Confidence interval, -0.055 to 0.563) higher than hierarchical information flow Q19 score. There was a statistically insignificant difference in mean information flow Q19 between matrix and hierarchical structures, $t(173) = 1.624$, p = 0.106.

5.4 Organisation strategy

5.4.1 Descriptive analysis of the results from strategy construct

The organisational strategy construct contained three questions and a comment box that allowed each respondent to describe the organisational strategy in their respective organisations. The comments supplied on the comment box field from the questionnaire can be found in Appendix E. These comments were analysed and no common themes were identified.

As discussed in Chapter 4, question one and two were closed-ended questions, while question three required was a description of the organisation strategy, with each respondent selecting from the options of comprehensive; future oriented and systematic. Table 5.14 and Table 5.15 indicates the frequency of each of the organisational strategy questions based on organisational structure. These scores indicate that respondents in both the matrix and hierarchical organisations have a formal long-term strategic plan. As evidenced from Table 5.15 both matrix and hierarchical organisations have a strategic plan that spans over three years.

Table 5.14: Frequency table for long-term plan

Structure		Frequency	Valid Percent
Matrix	Yes	109	87.2
	No	16	12.8
	Total	125	100.0
Hierarchical	Yes	48	94.1
	No	3	5.9
	Total	51	100.0

Table 5.15: Frequency table for long-term plan of more than three years

Structure		Frequency	Valid Percent
Matrix	Yes	97	90.7
	No	10	9.3
	Total	107	100.0
Hierarchical	Yes	44	91.7
	No	4	8.3
	Total	48	100.0

Table 5.16 represents the type of strategic plans that exist in each of the organisational structures. It was noted that a matrix organisation seems to have more varied combinations of strategic plans.

Table 5.16: Organisational strategy classifications for matrix and hierarchical organisations

Structure		Frequency Percent
Matrix	Comprehensive, Systematic & Future	27.5
	Systematic	5.3
	Comprehensive	7.6
	Systematic Future	2.3
	Future	18.3
	Comprehensive Future	12.2
	Comprehensive Systematic	1.5
Hierarchical	Comprehensive, Systematic & Future	18.2
	Systematic	5.5
	Comprehensive	25.5
	Future	20.0
	Comprehensive Future	10.9

Table 5.17 indicates the multinational respondents compared to local organisations divided according to each organisational structure. The majority of the respondents represented multinational organisations.

Table 5.17: Respondent percentage from multinational versus local organisations

	Matrix	Hierarchical
Local	11.9%	7.7%
Multinational	88.1%	92.3%

5.4.2 Independent t-test

Table 5.18: Organisation strategy and multinational independent t-test

		Levene's Test for Equality of Variances	T-test for Equality of Means			
		Sig.	T	Df	Sig. (2-tailed)	Mean Difference
Strategy	Equal variances not assumed	0.006	-0.279	96.335	0.767	-0.101
Local vs multinational	Equal variances assumed	0.097	-0.811	168	0.418	-0.08344

Strategy:

The assumption of homogeneity of variances was violated, as assessed by Levene's test for equality of variances (p = 0.006). The matrix mean strategy score was -0.101 (95% Confidence interval, -0.77 to 0.57) higher than hierarchical strategy score. There was a statistically insignificant difference in mean strategy score between matrix and hierarchical, $t(96) = -0.297$, $p = 0.767$, which is greater than 0.05.

Multinational organisation compared to local organisation:

There was homogeneity of variances for matrix and hierarchical, as assessed by Levene's test for equality of variances (p = 0.097).

The matrix mean multinational score was -0.08 (95% Confidence interval, -0.29 to 0.12) higher than hierarchical multinational score.

There was a statistically insignificant difference in mean multinational between matrix and hierarchical structures, $t(168) = -0.811$, $p = 0.418$.

5.5 Conclusion

In summary, principal component analysis indicated factor analysis was appropriate and hence the data could be reduced to build two higher indexes for the evidence-based construct. Component one was **think before you act** and component two was **logic**. The statistical tests for reliability (Cronbach Alpha) demonstrated the data was reliable for the constructs used.

Table 5.19 provides an effective summary of the results obtained from the inferential tests performed in this study to answer the overarching research question that sought to determine the impact on organisational structure on evidence-based decision making. The results indicated statistically insignificant correlations between the two constructs (evidence-based culture and information flow) and organisational structure when comparing matrix and hierarchical. It is further noted that the results indicated a statistically insignificant difference in the means between local and multinational organisations. There was also a statistically insignificant difference in the means between matrix and hierarchical organisational strategies.

Table 5.19: Executive summary of results

Matrix versus Hierarchical		
	Correlation	**Statically significant difference in means**
Research Question One	No	No
Research Question two	No	No
Organisational Strategy	-	No
Multinational vs local organisations	-	No

CHAPTER 6: DISCUSSION OF THE RESULTS

6.1 Introduction

It is widely proposed that matrix organisational structures facilitate rapid responses to changes in environments as the structure is flatter and allows for efficient exchange of information (Galbraith, 2008). A hierarchical organisation, unlike the matrix, has a single reporting line and communication is generally limited (Cummings & Worley, 2009). The advantage with a hierarchical structure is that it facilitates clear authority and levels of responsibility. The objective of this research study was to determine how organisational structure facilitates information flow and therefore evidence-based decision making with organisational culture and specifically evidence-based cultures mediating this flow by comparing matrix and hierarchically structured organisations.

It may be argued that in order to facilitate evidence-based decision making, the flow of information through an organisation is imperative and therefore structure may serve as a mediator of information flow (Burns & Wholey, 1993). Scholars such as Bartlett and Ghoshal (1993); Beer et al. (2005); Bryan and Joyce (2007); Galbraith (2008); Goold and Campbell (2002); Morrison et al. (2006); Venkatraman and Camillus (1984) and Waterman et al. (1980) have contributed extensively to developing the concept of organisational structure. However there exists a gap in determining and relating the flow of information through an organisation and ascertaining the impact of organisational structure on evidence-based decision.

Matrix structures are used widely in multinational organisations as international environments are associated with uncertainty, which leads to a significant increase in information processing requirements (Wolf & Egelhoff, 2001). Aside from organisational design, organisational strategy is another aspect that can either enhance or hinder the flow of information through an organisation (Qiu & Donaldson, 2012). The effective flow of information through the organisation is then a vital element to execute on the organisational strategy, hence the adoption of the matrix structure (Galbraith, 2008). Therefore this research was aimed at determining how organisational structure facilitates the flow of information to either enhance or hinder evidence-based decision making by

comparing matrix with hierarchical structures to provide organisations with empirical evidence that would either justify or dispel the current literature and confirm or repute that matrix structures are better suited to facilitate the flow of information through an organisation to effect evidence-based decision making.

Evidence-based decision making stems from creating an evidence-based culture which is related to organisational culture, hence organisation culture plays an essential role in the flow of information (Pfeffer & Sutton, 2006; Rousseau, 2006). This study aims to provide a granular understanding of evidence-based cultures, which may provide tangible results to organisations and the ability to leverage information processing effectively and efficiently.

This research study sought to answer two research questions:

1. Determining the influence of organisational culture on the flow of information to enhance evidence-based decision making by comparing matrix and hierarchical structures.
2. Ascertaining the impact of organisational structure on information flow within organisations by comparing matrix and hierarchical structures.

In answering the overarching research question regarding the impact of organisational structure on evidence-based decision making, organisational strategy and multinational versus local organisations were further analysed.

Results from Chapter 5 indicated that no relationship exists with structure and the two components of culture, **think before you act** and **logic** r = -0.008 and -0.012 respectively. Evidence-based culture is moderately associated to **think before you act** and **logic**, r = 0.442, while both matrix and hierarchical structures are moderately associated to **think before you act** and **logic**, r = 0.489 and r = 0.333 respectively. Similarly both matrix and hierarchical are moderately associated to information flow, **collaboration** and **communication** across departments, r = 0.430 and r = 0.397 respectively. There exists a statistically insignificant difference in mean organisational strategy score between matrix and hierarchical, p = 0.767. Similarly there was a statistically insignificant difference in mean multinational and local between matrix and hierarchical, p = 0.418.

The data from the 189 respondents were analysed quantitatively and the results were presented in the previous chapter to assist in answering the research questions as stated in Chapter 3. This chapter aims to discuss the statistical findings by referring to the relevant literature reviewed in Chapter 2 and by examining the relation to the research questions raised in Chapter 3. The results do not support the findings based on the existing literature that measured the impact of organisational structure on evidence-based decision making. The findings further illuminate other conclusions pertinent to the discussions of information flow, organisational culture and organisational strategy. The analysis and discussions are structured according to the organisational structure by comparing matrix organisations to hierarchical organisations.

6.2 Sample demographics

The demographic characteristics of the respondents included 55% male and 45% female respondents, which represents a fairly balanced sample based regarding gender. The age group that consisted majority of the responses was classified between the ages of 30 and 44 (67%) and came from 16 widely categorised industries. The majority (126) of the respondents were from large organisations (greater than 1000 employees) and only nine were from small organisations (less than 50) and 53 represented medium to large organisations.

Furthermore, the flow of information may be better facilitated in a small organisation when compared to a medium or large organisation, as people are better acquainted with each other in smaller organisations, underpinning this is the organisational culture that drives behaviours in any size organisation, hence in the absence of culture, communication will be hindered. Hence this research study aimed to provide a thorough analysis of the impact of organisational structure on evidence-based decision making by analysing the flow of information within an organisation.

The demographics of the sample population indicated that the data gathered was suitable to answer the research questions of this study, and the results may provide significant information for organisations to determine, on a granular level, the factors that influence their decision making.

6.3 Research Question 1

Organisations seeking competitive advantage is likely to achieve this by being goal focused and adopting a culture that is continuously seeking opportunities in the market place than organisations that focus on organisational structure changes alone (Bartlett & Ghoshal, 1993). Organisational culture has an impact on organisational activities hence leaders need to foster a culture that allows for change thereby crafting competitiveness (McAfee & Brynjolfsson, 2012; Morrison et al., 2006). Thus, understanding an organisational culture is the starting point for developing strategic structural changes and this study aimed to research the influence of organisational culture on evidence-based decision making.

The use of evidence to make decisions emphasises a rational, objective and empirical approach to addressing business issues (Pfeffer & Sutton, 2006). To facilitate evidence-based decision making organisations need to foster an evidence-based culture, which refers to an organisational culture (Rousseau, 2006). Thus Research Question 1 focused on organisational culture and thus sought to determine the influence of organisational culture on the flow of information to enhance evidence-based decision making.

In order to analyse the relationship between evidence-based culture and organisational structure the correlation between evidence-based culture and structure needed to be validated. The independent t-test was used determine whether a difference exists between the means of two independent groups and whether the difference between the two groups is statistically significant. Correlation tests were conducted to verify the association between the two variables.

The KMO and Bartlett measures provided good indications that the questions related to the constructs of the study are being measured. The data gathered confirmed consistency and reliability established by the high Cronbach Alpha score of 0.835. The factor analysis created two independent variables by grouping the questions into two components. These two components refer to **think before you act** and **logic**. **Think before you act** involves the individual and his/her ability to think first before making any decisions in the organisation so that they rely on analysis rather than intuition to make decisions. **Logic** is

then defined as the ability to make a persuasive argument based on the proper and reasonable way of thinking that provides sound reasoning.

Pearson *r* correlation was conducted for both the components on structure before it was performed for each structure, that is matrix and hierarchical organisational structures. The relationship between the two components of evidence-based culture were statistically insignificant, with both exhibiting a negative correlation and a *r* value close to zero denoting no relationship exists before evidence-based culture and structure. The results demonstrated that as structure changes there can be no predictions about the organisational evidence-based culture. The culture that is present in an organisation is structure independent. Culture is fostered through the behaviours and actions of leadership, therefore an inference can be made that organisational structure has no effect on how leaders behave in their organisations. Culture stems from the values of the organisation (Hofstede, 1980), therefore the results are aligned with the theory of organisational culture as it was evident from the results that an evidence-based culture drives the efficient flow of information through an organisation to effect evidence-based decision making.

Cao and Duan (2014) argued that in order to inculcate an evidence-based culture, a primary concern is the flow of information. The matrix structure is said to facilitate the flow of information through an organisation better, therefore the following tests were conducted to compare evidence-based decision making with matrix and hierarchical organisation structures.

Table 6.1: Statistical summary of results per component of evidence-based culture

	Matrix		Hierarchical		Matrix and Hierarchical	
	Average score	**Pearson's *r* correlation**	**Average score**	**Pearson's *r* correlation**	**Independent T-test**	**Pearson *r* correlation**
Think before you act	3.89	0.489**	3.88	0.333	0.917	-0.008
Logic	3.55		3.53		0.877	-0.012

The average scores for matrix and hierarchical were similar, indicating respondents from both matrix and hierarchical organisations agreed that there was an evidence-based culture in their respective organisations. The Pearson's *r* correlation result for a matrix

structure demonstrated a statistically significant, moderate positive correlation. As the **think before you act** culture increases in an organisation, so too does a **logic** culture increase. However it was also evident from the results that structure and evidence-based culture are statistically insignificant with an *r* value close to zero denoting no relationship. These results are in contradiction to the study by Egelhoff et al. (2013), who stated that matrix organisation better facilitated the flow of information more than other organisational structures. This research study builds on the work from previous studies as there exists a gap in current literature on determining the influence of organisational culture and comparing that influence to matrix and hierarchical structures. Hence determining whether the stated benefits of each structure are valid in light of culture driving desired behaviours within an organisation to entrench and shape the attitudes of employees to achieve its strategic objectives.

A reason for this is the fact that culture is independent of organisational structure and organisations can achieve an evidence-based culture regardless of organisational structure. It can also be seen that the Pearson's *r* correlation result for a hierarchical structure shows a statistically significant, moderate positive correlation. The researcher is aware of the fact that there may exist a type II error. A type II error is where a test result specifies that a condition failed, while in reality it was successful (Field, 2013). Making inferences from this sample about the population, considering the limitations of the research and the assumptions of the research, could lead to a type II error.

The independent t-test result affirmed a statistically insignificant difference between the mean scores for evidence-based culture when compared to matrix and hierarchical organisations. This indicates that an inference can be made that there is no impact of organisational structure on evidence-based culture.

It became evident from the results that the evidence-based culture construct indicates that there is no link between organisation structure and organisational culture. This finding suggests that evidence-based decision making is mostly associated with good entrenchment of cultural values to allow for the flow of information through the organisation, and are not dependent on the organisation's structure to facilitate the flow of information; however a structure that promotes silos can hinder information flow (Morrison et al., 2006). This finding may be attributed to culture as it determines the basic beliefs,

values and norms regarding decision making in organisations (House et al., 2002). It is evident from this finding that organisations need to create a culture that is conducive to evidence-based decision making.

The results of this study illuminated the inadequacy of examining only the benefits of organisation structure for organisations, and while studies (Egelhoff et al., 2013; Galbraith, 2008; Sy et al, 2005) have demonstrated that matrix structures facilitate the flow of information through an organisation, the key element of organisational culture could have been ignored and it shown in this study by the comparison between matrix and hierarchical structures.

6.4 Research Question 2

Organisations exist in ecosystems with information flowing within this highly interactive environment (Moore, 1993). However the ability of an organisation to distil and disperse this information is fundamental to harnessing the competitive advantage that information can deliver (Neilson et al., 2008). Organisational structure can influence the information processing capability of the organisation. Wolf and Egelhoff (2001) contented that the fit between structure and strategy can be related to information processing requirements and the capability of its structure to deliver on those requirements. However their research did not consider the flow of information through an organisational structure. The aim of this research study was to extend the field of research on organisational structures and evidence-based decision making, by gaining a greater insight of the difference in the flow of information between matrix structures and hierarchical structures, thus Research Question 2 sought to determine the impact of organisational structure on information flow within organisations.

Beer et al. (2005); Egelhoff et al. (2013); and Venkatraman and Camillus (1984) claimed that organisational structure should facilitate strategy implementation which is referred to as the strategy-structure paradigm. Organisational structure can take many forms however, in environments characterised by globalisation, the matrix structure is often cited as the preferred structure (Galbraith, 2008; Qiu & Donaldson, 2012). Despite current literature the results obtained from this research study indicated that it does not matter which structure is adopted by organisations, as both can facilitate the flow of information

and an evidence-based culture can exist in either structure. This research was directed at how organisational structure allows for information processing, an inference can be made that an evidence-based culture supports organisational structure and not organisational structure supporting an evidence-based culture.

The data gathered confirmed consistency and reliability based on the acceptable Cronbach Alpha score of 0.591. This acceptable score was only measured for two out of the seven questions on the information flow data that was gathered from the questionnaire, hence the data for the other five questions were not utilised further in the statistical testing. There was no need to conduct a factor analysis on two questions. Question 18 refers the interaction within departments in an organisation and Question 19 refers to communication between departments in the organisation.

The summarised results between information flow and structure are tabulated below.

Table 6.2: Statistical summary of results per component of information flow

	Matrix		Hierarchical		Matrix and Hierarchical
	Average score	**Pearson's *r* correlation**	**Average score**	**Pearson's *r* correlation**	**Independent T-test**
Question 18	3.87	0.430**	3.76	0.397**	0.428
Question 19	3.55		3.29		0.106

The average scores for matrix and hierarchical organisation structures were similar, which indicated that respondents from both matrix and hierarchical organisations agreed that there was a flow of information in their respective organisations. The Pearson's *r* correlation result for the matrix and hierarchical structures respectively showed a statistically significant, moderate positive correlation. As the interaction between the departments increases in an organisation so too does the communication between the departments.

The independent t-test result demonstrated a statistically insignificant difference between the mean scores for flow of information when compared to matrix and hierarchical

organisations. These findings indicated once again that an inference can be made that there is no impact of organisational structure on the flow of information.

These results are in contradiction to available theory, as the study by Gabraith (2008) stated that matrix structures are argued to facilitate rapid response to change in environments as the structure is flatter and allows for efficient exchange of information as this enables people from different departments to cooperate closely; as was evidenced from these results there exists a moderate positive correlation in both matrix and hierarchical organisations. These results lead to the inference that matrix organisations are not a better structure to facilitate information when compared to that of a hierarchical structure.

This leads on from the findings of Research Question 1, where it was confirmed that culture drives evidence-based decision making and if the correct culture is entrenched in an organisation there is no dependence on organisation structure to influence evidence-based decision making. The flow of information needed to facilitate evidence-based decision making can be created with an evidence-based culture and not necessarily a matrix structure, as organisational culture functions as an instrument that directs and moulds the attitudes and behaviours of employees to achieve the organisation's strategic objectives.

6.5 Organisational strategy construct

Organisational design should be concerned with developing and implementing corporate strategy and that companies who execute this strategy-structure paradigm can create substantial new wealth for their stakeholders (Beer et al., 2005). The strategy-structure paradigm can also be represented by the information processing capacities of an organisation's structure and the information processing required in implementing its strategy and the lack of visibility into the organisation as a whole can be attributed to parochialism (Bartlett & Ghosal, 1993; Egelhoff et al., 2013). Organisations that have an easily available and accessible flow of information are able to respond to the dynamic and rapidly changing environment more effectively (Cackowski et al., 2000).

The results from both research questions have confirmed that there is no significant difference in the mean scores between a matrix organisational structure and that of a

hierarchical organisational structure with regard to evidence-based culture and the flow of information through the organisation. The results obtained indicated that structure does not have an impact on evidence-based decision making. The flow of the information through an organisation is also not impacted by the structure of the organisation.

The results for organisational strategy are discussed below to conclude the constructs of this study and to answer the overarching research question.

Table 6.3: Results for independent t-test for organisational strategy and multinational versus local organisations

	Independent T-test
Strategy	0.767
Multinational vs Local	0.418

The independent t-test result provided a statistically insignificant difference between the mean scores for strategy when compared to matrix and hierarchical structured organisations. This indicates that an inference can be made that there is no impact of organisational structure on organisational strategy.

The independent t-test result also showed a statistically insignificant difference between the mean scores for multinational versus local organisations when compared to matrix and hierarchical organisations. This indicates that an inference can be made that there is no impact of organisational structure on whether an organisation is local or multinational.

6.6 Overarching research question

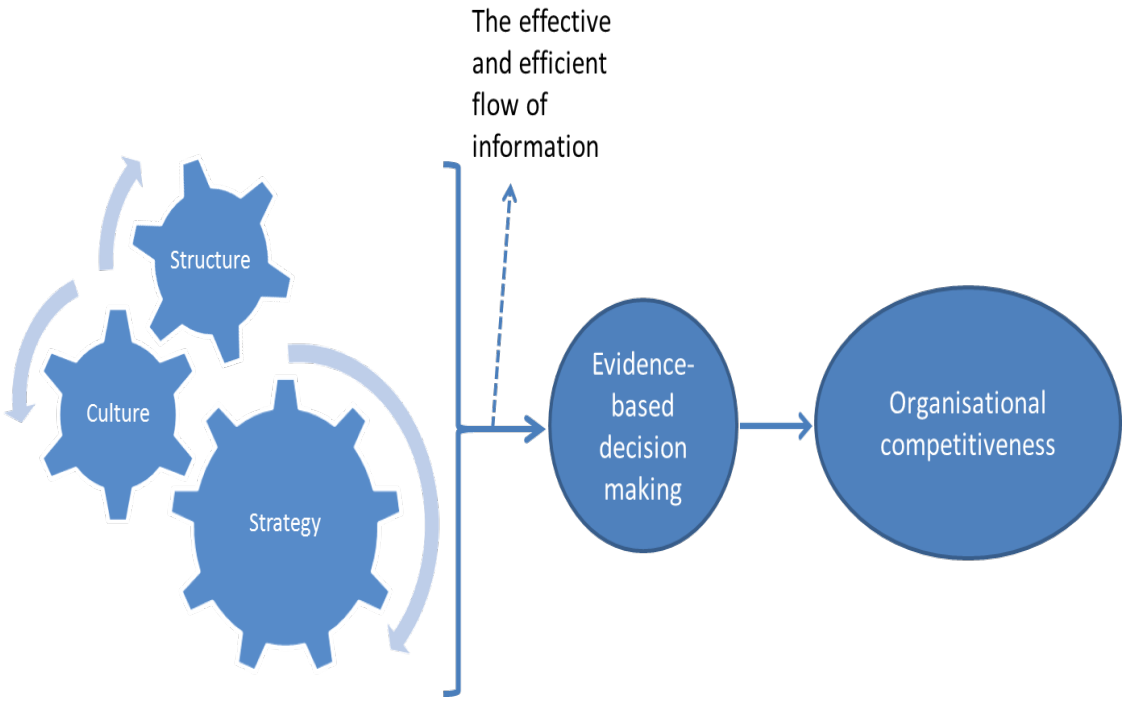
The overarching research question sought to determine the impact of organisational structure on evidence-base decision making. This study analysed three constructs, namely evidence-based culture, information flow and organisational strategy. These constructs were examined by comparing matrix and hierarchical organisational structures.

The findings of these constructs affirmed that there is no impact or relationship between organisational structure and the three constructs, leading to the inference that organisational structure does not impact evidence-based decision making. However this

study brings to the readers' attention the power and influence of organisational culture. The interrelationships between culture, structure and strategy are very closely linked and organisations that are adaptive and consistent in their behaviours, underpinned by the values of the organisation, have higher tendencies to utilise the power of Big Data to drive evidence-based decision making (McAfee & Brynjolfsson, 2012). Having an easily available and accessible flow of information within the organisation may enable an organisational to respond to the dynamic and rapidly changing environment more effectively and hence gain competitiveness (Egelhoff et al., 2013).

Figure 6.1 represents alignment of the three constructs that were analysed in this study. Alignment is defined as the quality of synchronisation between a set of variables over time that facilitates the attainment of organisational goals and is an ongoing dynamic process (Andrews, 1987). The alignment of strategy, structure and culture is major finding of this research in answering the overarching question of the impact of organisational structure on evidence-based decision making. Results from this study have confirmed that organisational culture is the main driver of evidence-based decision making from the organisations that were sampled. However it is the alignment of strategy, culture and structure that creates the synergy within an organisation to facilitate the flow of information through an organisation that enhances evidence-based decision making so that organisations can gain competitiveness in hypercompetitive markets, thereby rendering the organisation sustainably profitable (Pfeffer & Sutton, 2006).

Figure 6.1: A representation of the alignment between strategy, culture and structure that leads to organisational competitiveness



6.7 Conclusion

Qui and Donaldson (2012) maintained that the main element of evidence-based decision making is the flow of data through an organisation, although for evidence-based decision making an evidence-based culture must exist in the organisation. The results of this research confirmed that there is no relationship between organisation structure and evidence-based culture as well as flow of information. The results indicated that organisational culture is crucial to fostering an environment that facilitates evidence-based decision making with a statistically insignificant difference in mean scores between matrix and hierarchical organisational structures.

Egelhoff et al. (2013) argued that structure is the element that facilitates the flow of information to effect evidence-based decision making in an organisation. The findings of this research dispute this as regardless of the information processing requirements having an evidence-based culture, culture drives the effective flow of information through an organisation to effect evidence-base decision making.

The findings of the three constructs (organisational culture, information flow and organisational strategy) affirmed that there is no difference in the mean scores and no associations in the relationship between organisational structures and the three constructs leading to the inference that organisational structure has no impact on evidence-based decision making when comparing matrix and hierarchical organisational structures. However this study brings to the attention the power and influence of organisational culture. Embedding a culture that is aligned with the structure and strategy will enable organisations to utilise the power of Big Data to drive evidence-based decision making (McAfee & Brynjolfsson, 2012).

CHAPTER 7: CONCLUSION

7.1 Introduction

The resounding adoption of the matrix structure by organisations from various sectors of the economy is evidence of the value that companies envisage in embracing this complex design to deliver on the organisation strategy and hence performance (Galbraith, 2008). Inherent in the matrix structure is the efficient flow of information within the organisation, which is stated in current literature as a benefit (Burns & Wholey, 1993). This research study analysed factors such as organisation culture and organisation strategy on the flow of information by comparing matrix and hierarchical organisations to determine the impact of organisational structure on evidence-based decision making. The purpose of this chapter is to consolidate the main findings of the research that are consistent with the objectives that were originally formulated in the introduction of this research study as well as the limitations of the study. The chapter further makes recommendations to business for the purpose of applying the findings and finally presents recommendations for future research.

The main aim of this study was to determine the impact of organisational structure on evidence-based decision making. The results of this research add to the organisational structure and evidence-based management body of knowledge and suggest that the efficient flow of information is influenced by the organisation culture when comparing matrix with hierarchical organisations. The results of the research study also add a new dimension to evidence-based cultures and the influence it has on driving strategic decisions that are evidence-based rather than those that are based on gut feel or intuition (McAfee & Brynjolfsson, 2012).

7.2 Principal findings

The researcher tested three constructs to garner a more profound understanding of the impact of organisational structure on evidence-based decision making. These constructs were:

- evidence-based culture
- information flow
- organisational strategy

The results from the questionnaire were compared between matrix and hierarchical structures to ascertain the impact of organisational structure on evidence-based decision making.

The key element of evidence-based decision making is the flow of data through an organisation coupled with an evidence-based culture (Qui & Donaldson, 2012). The results of the research study asserted that there is no relationship between organisation structure and evidence-based culture. The results indicated that organisational culture is the main factor that fosters an environment that facilitates evidence-based decision making with a statistically insignificant difference in the mean scores between matrix and hierarchical structures.

The information processing requirements of an organisation's strategy that is satisfied by the information processing capacities of its structure is contented as a good fit between structure and strategy (Egelhoff et al., 2013). The findings of this research study dispute prior, as regardless of the information processing requirements having an evidence-based culture drives the effective flow of information through an organisation, despite organisational structure, to enhance evidence-base decision making. Results also indicated no difference in mean scores between organisational structure and organisational strategy when comparing matrix and hierarchical structures, hence the researcher inferred that strategy does not necessarily inform the structure of the organisation. When comparing multinationals and local organisations the results indicate that an inference can be made that there is no impact between the type of organisational structure and whether an organisation is local or multinational.

The researcher emphasises the summary of the results in table 7.1 to prove that organisational structure has no impact on evidence-based decision making when comparing matrix organisations to hierarchical organisations, as was evidenced from the results obtained. There exists no relationship and there was statically insignificant difference in the means against all constructs identified for this study.

Table 7.1: Executive summary of results

Matrix versus Hierarchical		
	Correlation	**Statically significant difference in means**
Research Question One	No	No
Research Question two	No	No
Organisational strategy	-	No
Multinational vs local	-	No

The researcher deduced that alignment of strategy, structure and culture is the major finding of this research in answering the overarching question of the impact of organisational structure on evidence-based decision making. Results from this study have shown that organisational culture is the main driver of evidence-based decision making in the organisations that were sampled. However it is the alignment of strategy, culture and structure that creates the synergy within an organisation to facilitate the flow of information through an organisation that enhances evidence-based decision making so that organisations can gain competitiveness.

Although this study presents significant findings and supplements the organisational design body of knowledge, the results should be interpreted in light of its limitations.

7.3 Implications for management

The results of this study have greatly led to practical as well as theoretical contributions. In attempting to determine the impact of organisational structure on evidence-based decision making, substantial knowledge was gained from this research study that will help researchers in further studies on this subject. The results will also greatly assist organisations in understanding the factors that influence evidence-based decision making within their organisations.

Many organisations still view organisational structure as mechanisms to drive and facilitate the flow of information and the matrix structure is seen as the best suited for this purpose (Egelhoff et al., 2013). Through analysing the factors that influence the flow of information within an organisation, this research study brings to the attention the importance of creating and entrenching an organisational culture by focusing on an evidence-based culture to enhance evidence-based decision making.

Amongst the factors analysed in this research (organisation structure, organisation strategy, and organisational culture), culture has the strongest influence on the flow of information through an organisation. This implies that evidence-based decision making practices need to focus on integrating culture building activities to nurture an environment that is evidence-based. While this research study proved the importance of culture, it is imperative that business understand the interplay between culture, strategy and structure to gain competitiveness.

7.4 Limitations of the research

The results from this study dispute current literature that only the matrix structure facilitates efficient and effective flow of information; a reason for this could be that previous studies have not considered the influence of organisational culture; however the researcher is aware that a type II error may have occurred. A type II error is where a test result specifies that a condition failed, while it actually was successful (Field, 2013). Making inferences from this sample about the population considering the limitations of the research and the assumptions of the research could lead to a type II error.

The use of Likert scales gave the study a subjective nature of analysis. However, in this respect, most of the characteristics of organisational culture and organisational strategy are difficult to measure with objective data.

The respondents could have been from a mixed structure and have hence indicated that they are from a matrix structure; hence these findings could be skewed with organisations that operate from a mixed structure.

Matrix structures are largely adopted by multinationals, it must be noted that the majority of respondents were from multinational organisations hence the sample was dominated from respondents in matrix organisations. It is also noted that convenience and snowball sampling was employed and a disadvantage of this type of sampling technique is having like-mind people respond, hence the results could have been biased by a certain type of view based on their respective organisations.

7.5 Suggestions for future research

This research study focused on matrix organisations in general. Further research on the different types of matrix and the effects of evidence-based culture within the different types of matrix structure could be conducted, specifically relating to functional divisions, geographical regions and product divisions. The strategy-structure paradigm also requires further empirical work to address the interaction of matrix structures with critical behaviours for implementing multi-dimensional strategies.

The research study was cross-sectional in design and therefore evaluated the impact of organisational structure on evidence-based decision making a particular point in time. Further research could be conducted as a longitudinal study to establish how the flow of information through an organisation could be influenced by strategy and culture over a period of time.

The focus of this study was on the impact of organisational structure on evidence-based decision making. However, further research is required to address whether evidence-based management improves the process and outcome of decision making in organisations.

7.6 Conclusion

The environment in which business operates has become increasingly dynamic and competitive (Brown et al., 2011; McAfee & Brynjolfsson, 2012). Leaders are constantly searching for and techniques they can adapt to achieve competitive advantage. Organisations can achieve competitive advantage if their strategy, culture and structure are aligned (Rowlinson, 2001). Organisations must develop a coherent programme of

actions to facilitate the flow of information to enhance evidence-based decision making (Beer et al., 2005). It is important to note that strategy and its execution cannot be separated. A good strategy encapsulates the overall challenge and delineates a method or process for dealing with the challenge (Andrews, 1987).

Strategy, structure and culture of an organisation constitute critical sources for success (Wolf & Egelhoff, 2001). Whilst there has been numerous studies on the influence these factors have on organisation outcomes, this research study focused on the gap in scholarly research to determine the impact of organisational structure on evidence-based decision making by analysing strategy, culture and the flow of information through an organisation. The principal finding of this study indicated that for an organisation to entrench evidence-based decision making, organisational structure has no influence on the efficient flow of information to effect evidence-based decision making, however having an evidence-based culture is the key to driving strategic decisions with evidence that will result in competitiveness. Culture cannot exist alone, it is the alignment of strategy, structure and culture that will foster an evidence-based decision making organisation (Rowlinson, 2001).

Organisational structures need to be flexible enough to respond swiftly to changes in the environment. Communication of these changes needs to flow efficiently and effectively across all departments in an organisation (McAfee & Brynjolfsson, 2012; Zheng et al., 2010). The main lesson from this research study was that managers should not become too enthralled by entrenching an evidence-based culture alone. The real difference between success and failure is the alignment of strategy, structure and culture. Evidence-based decision making can be sustained in the organisation if it is embedded in the culture of an organisation that is aligned with strategy and supported by structure.

The results from the research study provided organisations with insight about the factors that influence the flow of information through an organisation to effect evidence-based decision making. Furthermore, the research study emphasised the importance of organisational culture that is aligned with strategy and supported by structure, in fostering an evidence-based culture to ensure that strategic decisions are based on evidence to gain organisational competitiveness.

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Appendix A: Questionnaire

Online Questionnaire:			
Demographics:			
No:	**Question:**	**Type of Question:**	
Q1	Job title	Ranges [Junior management],[Middle management],[Senior management],[Executive management]	
Q2	Age	Ranges [0-30],[31-40],[41-50],[51 and older]	
Q3	Gender	Drop down [Male],[Female]	
Q4	Industry sector	Drop down [Financial services], [Energy],[Media],[Agriculture],[Mining and quarrying],[Manufacturing],[Electricity], [Gas and water supply], [Construction], [Wholesale and retail], [Transport, storage and communication], [other]	
Q5	How long have you been employed with the current organisation.	Ranges [0-2],[3-7],[8 or more]	
Q6	Number of employees in the	Ranges [0-50],[51-200],[201-500],[501 or	

	organisation	more]	
Q7	Number of years of experience	Ranges [0-5],[6-10],[11-15],[15-20],[20 or more]	
Q8	How many countries does your organisation operate in	Ranges [1],[2 to 3],[4 or more]	
Q9	what is your current organisational structure	Drop down [Hierarchical] ,[Matrix]	
Construct 1 – Evidence Based Culture			
No:	**Question**	**Type of Question**	**Reference**
	In your organisation, to what extent do you agree with the following statements?	**1: Strongly disagree; 2: Disagree; 3:Neutral; 4: Agree 5: Strongly agree**	**Cronbach Alpha – 0.71**
Q1	It is important to think things through carefully before acting on them	Likert Scale (1-5)	O'Reilly, Chatman, and Caldwell (1991)
Q2	All business decisions should be analysed from every possible angle before they are implemented	Likert Scale (1-5)	O'Reilly, Chatman, and Caldwell (1991)
Q3	People should always think carefully before they act	Likert Scale (1-5)	O'Reilly, Chatman, and Caldwell (1991)
Q4	Even if it takes more time, business decisions should always be made based on analysis not intuition	Likert Scale (1-5)	O'Reilly, Chatman, and Caldwell (1991)

Q5	The outcome of a business decision can be predicted accurately by a logical analysis of that decision	Likert Scale (1-5)	O'Reilly, Chatman, and Caldwell (1991)
Q6	A logical argument is as persuasive as visible evidence that something will work	Likert Scale (1-5)	O'Reilly, Chatman, and Caldwell (1991)
Q7	It is always better to stop and plan that to act quickly	Likert Scale (1-5)	O'Reilly, Chatman, and Caldwell (1991)
Q8	No matter what the situation, it is always worth the extra time it takes to develop a comprehensive plan	Likert Scale (1-5)	O'Reilly, Chatman, and Caldwell (1991)
Construct 2 – Flow of Information through organisation structure			
No:	**Question**	**Type of Question**	**Reference (adapted from)**
Q1	How well are you personally acquainted with the people from other departments/business units that you work closely with	Likert Scale (1-5) not at all acquainted, little acquainted, somewhat acquainted, quite acquainted, very well acquainted	Van de Ven and Ferry (1980)
Q2	How well informed are you about the specific goals and services of the other departments/business units in the organisation.	Likert Scale (1-5) not at all informed, little informed, somewhat informed, quite informed, very well informed	Van de Ven and Ferry (1980)
Q3	During the past 6 months how frequently have people in your departments/business units been in contact with people in the other	Likert Scale (1-5) not once, 1 to 2 times, monthly, every 2 weeks, about weekly	Van de Ven and Ferry (1980)

	departments/business units		
Q4	When you want to communicate with individual in another departments/business units how much difficulty have you had in getting a hold of them	Likert Scale (1-5) no contact, no difficulty, little difficulty, some difficulty, quite a lot difficulty	Van de Ven and Ferry (1980)
Q5	How much difficulty do you experience in getting ideas clearly across to other people	Likert Scale (1-5) no contact, no difficulty, little difficulty, some difficulty, quite a lot difficulty	Van de Venn and Ferry (1980)
Q6	To what extent did individuals in the other departments/business units hinder your department/ business unit in performing functions during the last 6 weeks	Likert Scale (1-5) don't know, no extent, little extent, some extent, considerable extent	Van de Ven and Ferry (1980)
Q7	During the past 6 months to what extent has your departments/business units changed or influenced the service or operations of another department/ business unit	Likert Scale (1-5) don't know, no extent, little extent, some extent, considerable extent	Van de Ven and Ferry (1980)
Construct 3 – Organisational strategy			
No:	**Question**	**Type of Question**	**Reference**
Q1	Is there a formal long range plan	Drop down [Yes],[No]	Kudla (1980)
Q2	If yes then is it written covering 3 years ahead	Drop down [Yes],[No]	Kudla (1980)
Q3	If yes, is the plan comprehensive, systematic and future orientated	Tick box [comprehensive],[Systematic],[Future orientated]	Kudla (1980)

Appendix B: Frequency tables for demographics per organisational structure

Table 1: Respondents Job Role spilt per Structure

STRUCTURE		Frequency	Percent	Valid Percent	Cumulative Percent
Matrix	Individual Contributor	45	34.4	34.4	34.4
	Manager	36	27.5	27.5	61.8
	Senior Manager	31	23.7	23.7	85.5
	Regional Manager	6	4.6	4.6	90.1
	Executive Manager	13	9.9	9.9	100.0
	Total	131	100.0	100.0	
Hierarchical	Individual Contributor	26	47.3	47.3	47.3
	Manager	14	25.5	25.5	72.7
	Senior Manager	13	23.6	23.6	96.4
	Regional Manager	2	3.6	3.6	100.0
	Total	55	100.0	100.0	

Table 2: Respondents Age spilt per Structure

STRUCTURE		Frequency	Percent	Valid Percent	Cumulative Percent
Matrix	18-29	18	13.7	13.7	13.7
	30-44	85	64.9	64.9	78.6
	45-59	28	21.4	21.4	100.0
	Total	131	100.0	100.0	
Hierarchical	18-29	6	10.9	10.9	10.9
	30-44	41	74.5	74.5	85.5
	45-59	7	12.7	12.7	98.2
	60+	1	1.8	1.8	100.0
	Total	55	100.0	100.0	

Table 3: Respondents' gender categorised by structure

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
Matrix		Female	58	44.3	44.3	44.3
		Male	73	55.7	55.7	100.0
		Total	131	100.0	100.0	
Hierarchical		Female	24	43.6	44.4	44.4
		Male	30	54.5	55.6	100.0
		Total	54	98.2	100.0	
	Missing	System	1	1.8		
	Total		55	100.0		

Table 4: Respondents' current experience categorised by structure

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
Matrix		6 months - 1 year	8	6.1	6.8	6.8
		1 - 2 years	17	13.0	14.4	21.2
		3-7 years	57	43.5	48.3	69.5
		8 years and more	36	27.5	30.5	100.0
		Total	118	90.1	100.0	
	Missing	System	13	9.9		
	Total		131	100.0		
Hierarchical		6 months - 1 year	6	10.9	11.3	11.3
		1 - 2 years	8	14.5	15.1	26.4
		3-7 years	17	30.9	32.1	58.5
		8 years and more	22	40.0	41.5	100.0
		Total	53	96.4	100.0	
	Missing	System	2	3.6		
	Total		55	100.0		

Appendix C: SPSS output for evidence-based culture construct

Frequency tables

It is important to think things through carefully before acting on them -

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
1.00	Valid	Strongly Disagree	1	.8	.8	.8
		Disagree	5	3.8	4.0	4.8
		Neutral	3	2.3	2.4	7.2
		Agree	65	49.6	52.0	59.2
		Strongly Agree	51	38.9	40.8	100.0
		Total	125	95.4	100.0	
	Missing	System	6	4.6		
	Total		131	100.0		
2.00	Valid	Disagree	2	3.6	3.8	3.8
		Agree	25	45.5	47.2	50.9
		Strongly Agree	26	47.3	49.1	100.0
		Total	53	96.4	100.0	
	Missing	System	2	3.6		
	Total		55	100.0		

All business decisions should be analysed from every possible angle before they are implemented -

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
1.00	Valid	Strongly Disagree	1	.8	.8	.8
		Disagree	8	6.1	6.4	7.2
		Neutral	15	11.5	12.0	19.2
		Agree	69	52.7	55.2	74.4
		Strongly Agree	32	24.4	25.6	100.0
		Total	125	95.4	100.0	
	Missing	System	6	4.6		
	Total		131	100.0		
2.00	Valid	Disagree	7	12.7	13.2	13.2
		Neutral	7	12.7	13.2	26.4
		Agree	24	43.6	45.3	71.7
		Strongly Agree	15	27.3	28.3	100.0
		Total	53	96.4	100.0	
	Missing	System	2	3.6		

	Total		55	100.0		

People should always think carefully before they act -

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
1.00	Valid	Strongly Disagree	1	.8	.8	.8
		Disagree	5	3.8	4.0	4.8
		Neutral	6	4.6	4.8	9.6
		Agree	68	51.9	54.4	64.0
		Strongly Agree	45	34.4	36.0	100.0
		Total	125	95.4	100.0	
	Missing	System	6	4.6		
	Total		131	100.0		
2.00	Valid	Disagree	4	7.3	7.7	7.7
		Neutral	4	7.3	7.7	15.4
		Agree	24	43.6	46.2	61.5
		Strongly Agree	20	36.4	38.5	100.0
		Total	52	94.5	100.0	
	Missing	System	3	5.5		
	Total		55	100.0		

Even if it takes more time, business decisions should always be made based on analysis not intuition -

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
1.00	Valid	Strongly Disagree	1	.8	.8	.8
		Disagree	18	13.7	14.4	15.2
		Neutral	20	15.3	16.0	31.2
		Agree	60	45.8	48.0	79.2
		Strongly Agree	26	19.8	20.8	100.0
		Total	125	95.4	100.0	
	Missing	System	6	4.6		
	Total		131	100.0		
2.00	Valid	Disagree	11	20.0	20.8	20.8
		Neutral	12	21.8	22.6	43.4
		Agree	21	38.2	39.6	83.0
		Strongly Agree	9	16.4	17.0	100.0
		Total	53	96.4	100.0	
	Missing	System	2	3.6		
	Total		55	100.0		

The outcome of a business decision can be predicted accurately by a logical analysis of that decision -

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
1.00	Valid	Strongly Disagree	3	2.3	2.4	2.4
		Disagree	20	15.3	16.0	18.4
		Neutral	20	15.3	16.0	34.4
		Agree	70	53.4	56.0	90.4
		Strongly Agree	12	9.2	9.6	100.0
		Total	125	95.4	100.0	
	Missing	System	6	4.6		
	Total		131	100.0		
2.00	Valid	Disagree	12	21.8	23.1	23.1
		Neutral	9	16.4	17.3	40.4
		Agree	27	49.1	51.9	92.3
		Strongly Agree	4	7.3	7.7	100.0
		Total	52	94.5	100.0	
	Missing	System	3	5.5		
	Total		55	100.0		

A logical argument is as persuasive as visible evidence that something will work -

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
1.00	Valid	Strongly Disagree	3	2.3	2.4	2.4
		Disagree	18	13.7	14.3	16.7
		Neutral	20	15.3	15.9	32.5
		Agree	77	58.8	61.1	93.7
		Strongly Agree	8	6.1	6.3	100.0
		Total	126	96.2	100.0	
	Missing	System	5	3.8		
	Total		131	100.0		
2.00	Valid	Strongly Disagree	1	1.8	1.9	1.9
		Disagree	5	9.1	9.4	11.3
		Neutral	14	25.5	26.4	37.7
		Agree	27	49.1	50.9	88.7
		Strongly Agree	6	10.9	11.3	100.0
		Total	53	96.4	100.0	
	Missing	System	2	3.6		
	Total		55	100.0		

It is always better to stop and plan than to act quickly -

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
1.00	Valid	Strongly Disagree	3	2.3	2.4	2.4
		Disagree	18	13.7	14.4	16.8
		Neutral	19	14.5	15.2	32.0
		Agree	59	45.0	47.2	79.2
		Strongly Agree	26	19.8	20.8	100.0
		Total	125	95.4	100.0	
	Missing	System	6	4.6		
	Total		131	100.0		
2.00	Valid	Strongly Disagree	1	1.8	1.9	1.9
		Disagree	8	14.5	15.4	17.3
		Neutral	9	16.4	17.3	34.6
		Agree	25	45.5	48.1	82.7
		Strongly Agree	9	16.4	17.3	100.0
		Total	52	94.5	100.0	
	Missing	System	3	5.5		
	Total		55	100.0		

No matter what the situation, it is always worth the extra time it takes to develop a comprehensive plan -

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
1.00	Valid	Strongly Disagree	2	1.5	1.6	1.6
		Disagree	31	23.7	24.6	26.2
		Neutral	22	16.8	17.5	43.7
		Agree	52	39.7	41.3	84.9
		Strongly Agree	19	14.5	15.1	100.0
		Total	126	96.2	100.0	
	Missing	System	5	3.8		
	Total		131	100.0		
2.00	Valid	Strongly Disagree	1	1.8	1.9	1.9
		Disagree	8	14.5	15.1	17.0
		Neutral	9	16.4	17.0	34.0
		Agree	25	45.5	47.2	81.1
		Strongly Agree	10	18.2	18.9	100.0
		Total	53	96.4	100.0	
	Missing	System	2	3.6		

Total	55	100.0		

Principal component analysis results

Communalities

	Initial	Extraction
It is important to think things through carefully before acting on them -	1.000	.602
All business decisions should be analysed from every possible angle before they are implemented -	1.000	.679
People should always think carefully before they act -	1.000	.672
Even if it takes more time, business decisions should always be made based on analysis not intuition -	1.000	.601
The outcome of a business decision can be predicted accurately by a logical analysis of that decision -	1.000	.629
A logical argument is as persuasive as visible evidence that something will work -	1.000	.674
It is always better to stop and plan than to act quickly -	1.000	.568
No matter what the situation, it is always worth the extra time it takes to develop a comprehensive plan -	1.000	.582

Extraction Method: Principal Component Analysis.

Component Matrix

	Component	
	1	2
It is important to think things through carefully before acting on them -	.618	-.469
All business decisions should be analysed from every possible angle before they are implemented	.801	-.194
People should always think carefully before they act -	.729	-.376
Even if it takes more time, business decisions should always be made based on analysis not intuition -	.774	.043

The outcome of a business decision can be predicted accurately by a logical analysis of that decision -	.680	.408
A logical argument is as persuasive as visible evidence that something will work -	.319	.756
It is always better to stop and plan than to act quickly -	.747	.100
No matter what the situation, it is always worth the extra time it takes to develop a comprehensive plan -	.753	.122
Extraction Method: Principal Component Analysis.		
a. 2 components extracted.		

Total variance explained

Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.844	48.046	48.046	3.844	48.046	48.046	3.070	38.372	38.372
2	1.164	14.547	62.593	1.164	14.547	62.593	1.938	24.220	62.593
3	.801	10.017	72.609						
4	.668	8.345	80.954						
5	.502	6.275	87.229						
6	.390	4.876	92.105						
7	.358	4.470	96.575						
8	.274	3.425	100.000						
Extraction Method: Principal Component Analysis.									

Appendix D: Frequency tables for information flow

How well are you personally acquainted with the people from other departments that you work closely with -

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
1.00	Valid	Little Acquainted	7	5.3	5.6	5.6
		Somewhat Acquainted	32	24.4	25.6	31.2
		Quite Acquainted	56	42.7	44.8	76.0
		Very Well Acquainted	30	22.9	24.0	100.0
		Total	125	95.4	100.0	
	Missing	System	6	4.6		
	Total		131	100.0		
2.00	Valid	Little Acquainted	2	3.6	3.9	3.9
		Somewhat Acquainted	15	27.3	29.4	33.3
		Quite Acquainted	27	49.1	52.9	86.3
		Very Well Acquainted	7	12.7	13.7	100.0
		Total	51	92.7	100.0	
	Missing	System	4	7.3		
	Total		55	100.0		

How well informed are you about the specific goals and services of the other departments in the organisation -

STRUCTURE			Frequency	Percent	Valid Percent	Cumulative Percent
1.00	Valid	Not at all informed	2	1.5	1.6	1.6
		Little Informed	17	13.0	13.7	15.3

		Somewhat Informed	36	27.5	29.0	44.4
		Quite Informed	49	37.4	39.5	83.9
		Very well informed	20	15.3	16.1	100.0
		Total	124	94.7	100.0	
	Missing	System	7	5.3		
	Total		131	100.0		
2.00	Valid	Little Informed	9	16.4	17.6	17.6
		Somewhat Informed	22	40.0	43.1	60.8
		Quite Informed	16	29.1	31.4	92.2
		Very well informed	4	7.3	7.8	100.0
		Total	51	92.7	100.0	
	Missing	System	4	7.3		
	Total		55	100.0		

Appendix E: Comment box for organisational strategy

How organisational structure enhances evidence-based decision making

Please add any comments on your organisational strategy that you think is relevant to this study		
Answer Options		**Response Count**
		22
answered question		**22**
skipped question		**167**
Number	**Response Date**	**Response Text**
1	**Jun 30, 2015 3:57 PM**	There is an end goal. Areas of focus but no clear road map
2	**Jun 30, 2015 7:22 AM**	The strategy is outlined however the execution of the strategy most crucial to its success. There is currently very little with regards to an execution plan
3	**Jun 29, 2015 5:44 PM**	It is not as robust as it should be. Does not always anticipate the changing business environment and its follow on impact
4	**Jun 26, 2015 9:14 AM**	Overall key objectives have been defined based on industries that the company would like to gear themselves towards servicing. The strategy is systematic in the sense that it is broken up in terms of priorities. Certain aspects are worked on prior to others and all are interlinked to ensure the operating model is aligned to the marketing and sales strategy.
5	**Jun 25, 2015 10:50 AM**	None
6	**Jun 24, 2015 2:33 PM**	We have a road map for future possible projects and a plan for which accounts to expand by when. However in IT-space the plans have to be agile to adapt to the changes in the environment.

7	Jun 24, 2015 6:35 AM	Organisational structure should not be a hindrance to an employee's ability to innovate and drive the company forward
8	Jun 24, 2015 5:59 AM	Poor management (all levels), poor management and lack of resources can also be a major problem in the organisation and influence the employee morale, productivity and company engagement. If the underlying structure is weak/problematic, the strategy still won't be implemented properly and it will remain a growth and profit problem. Management and proper leadership is vital to organisational structure.
9	Jun 24, 2015 5:52 AM	N/A
10	Jun 24, 2015 5:48 AM	When doing planning with regards to the nature of our business you need to take into account all your resources and how it can be utilised to the fullest keeping in mind the Legislative factors. Clear communication to relevant departments will also be a key factor so all can understand what's expected from them. In addition we also need to have a contingency plan to assist if the basic/ original plan not meeting the requirements as per planning. Clear goals and time frames need to be set out and monitored and communicated to relevant role players.
11	Jun 23, 2015 12:17 PM	n/a
12	Jun 23, 2015 10:42 AM	Sasol Technology went through a restructuring exercise recently and some answers may be biased on this fact
13	Jun 23, 2015 10:23 AM	The organisation changed in the last 2 years from silo'd structure to a corporate structure. This caused enormous challenges.
14	Jun 22, 2015 1:12 PM	Not too sure on how the plan is laid out.
15	Jun 22, 2015 6:03 AM	Long term strategy with short term goals are clear and communicated in the organisation. All employees work together towards these goals and strategic objectives
16	Jun 21, 2015 6:29 PM	Employee engagement on organizational strategy is still lacking.

17	**Jun 17, 2015 7:21 PM**	A strategy should be revised on an annual basis to ensure that it is still relevant in the changing business environment. It needs to be communicated to all levels within the organisation.
18	**Jun 17, 2015 1:57 PM**	KPIs and Strategy should be aligned on an individual level
19	**Jun 17, 2015 1:49 PM**	In Matrix-based organisations, I feel that alignment and accountability to shared goals/kpi's - both hard and soft - will go a long way in achieving targets.
20	**Jun 17, 2015 1:42 PM**	It is imperative for any Financial Services Group to have a comprehensive long term strategy in place, but to also have a flexible approach and the ability to act quickly should market conditions change.
21	**Jun 17, 2015 1:22 PM**	The strategy is reviewed once a year, with it being developed both top down and bottom up.
22	**Jun 17, 2015 9:34 AM**	Global leveraging and it is also future orientated

Appendix F: Ethical clearance form

Gordon Institute
of Business Science
University of Pretoria

Dear Shanitha Nannoolal

Protocol Number: **Temp2015-01041**

Title: **How does organisational structure enhance evidence-based decision making**

Please be advised that your application for Ethical Clearance has been APPROVED.

You are therefore allowed to continue collecting your data.

We wish you everything of the best for the rest of the project.

Kind Regards,

GIBS Ethics Administrator

Appendix G: Questionnaire permission letter

Dear Participant

You are herewith invited to participate in a research project. Given the tough business environment organisations are currently operating in, this research project aims at understanding how organisational structure enhances evidence-based decision making.

Please note that participation in this survey is completely **voluntary and anonymous.** Your responses will be treated with the highest **confidentiality** and is to be used solely for the purpose of research. The research findings will be available on request from Shanitha Nannoolal (447047@mygibs.co.za).

By completing this research questionnaire, it is generally accepted that you give full consent to the researcher that your responses may be used for research purposes ***ONLY*** and that your responses will be treated in an anonymous and confidential manner.

You will note that the research questionnaire contains 4 sub-questionnaires and a total of 27 questions that need to be completed. Please answer all the questions in the questionnaire. The questionnaire will only take 10 minutes of your time.

I truly appreciate your willingness to participate in this important research project and the valuable time you are willing to commit in completing this research questionnaire.

Kindest regards,

Shanitha Nannoolal