PREDICTOR VARIABLES AND THE MEDIATING EFFECTS OF ORGANISATIONAL LEVERS AND CAPABILITIES ON ORGANISATIONAL FITNESS IN ZIMBABWE'S VOLATILE ENVIRONMENT

BY

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DECLARATION

I, Ntandoyenkosi Sibindi, hereby declare that this dissertation is my own work. The dissertation will be submitted in fulfilment of the requirements for the award of the degree of Doctor of Philosophy (PhD) in the field of Management at the University of the Witwatersrand, Johannesburg. I declare that the dissertation has not been submitted before for the award of any degree or examination at this or any other University**.**

I further declare that:

- ❑ I am aware that plagiarism (the use of someone else's work without permission and/or acknowledging the original source) is wrong.
- ❑ I have followed the required conventions in referencing the thoughts and ideas of others.
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I recognise that it was my responsibility to conduct this research in an ethical manner and according to guidelines of the University of the Witwatersrand, and according to any laws or legal frameworks that may apply, as well as according to the norms and expectations of the Management discipline.

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Abstract

The business environment in the twentieth and twenty-first centuries is driven by forces that have changed the industry landscape. These forces demand a new approach in management systems that ensure organisational survival and growth. Traditional approaches based on performance strategies in dealing with business environmental changes are proving to be limited. For organisations to address these shifts, organisational fitness has assumed a new intensified prominence in both organisational and management circles. Organisational fitness is conseptualised as the ability of the organisation to alignment to its environment to learn, and to build on organisational capabilities. What is evident from both management and organisational fields is the dearth of literature on organisational fitness. This dearth of literature has been attributed to the fact that organisational fitness and organisational performance are used interchangeably by authors.

What seems unclear in the emerging stream of research on organisational fitness is the nature of variables that predict and mediate the production of organisational fitness. Furthermore, a noticeable feature of the literature that deals with organisational fitness is that it is drawn from stable environments. No doubt, the nature and scope of organisational fitness conceptualised in a volatile socio-economic environment differs considerably from that which is conceptualised in relatively stable environments.

Based on existing literature, this study investigated the relationship among organisational size, organisational learning, organisational structure (predictor variables), organisational capabilities, organisational levers (mediating variables) and organisational fitness (outcome variable). In order to establish these relationships, an empirical study was conducted using public firms that are listed on the Zimbabwe Stock Exchange. A theoretical model portraying the relationships among the investigated constructs was developed and a number of propositions were formulated based on the theoretical model of the study.

The study employed a survey research design using a quantitative research strategy. Data were collected from a non-probability and probability sample of 277 managers. A standardised measurement instrument consisting of all the variables under investigation was used and administered personally through officials of the human resources departments of the participating organisations. The hypothesised relationships were empirically tested using various statistical methods. Reliability analyses were conducted on all the measurement scales and adequate reliability was established. The content and structure of the measured constructs

were investigated by means of exploratory factor analysis. To test the relationship among variables, structural equation modelling was used.

The exploratory research through the literature review considered the theoretical and conceptual differences, and the relationship between organisational performance and organisational fitness. It was established that organisational fitness plays a preparatory role that enables organisations to perform. The relationship between organisational fitness and organisational performance is largely reciprocal, as organisational performance emits feedback that enables organisational learning and informs the fitness process in its strategic alignment and organisational capabilities building roles. An organisational performance-fitness model was developed to describe the relationship between the two constructs.

The empirical research of this study established that predictor variables of organisational fitness from the existing literature (i.e., organisational size, organisational learning and organisational structure) do not predict organisational fitness in a volatile environment such as Zimbabwe. The mediating effects of organisational capabilities and organisational levers were also not confirmed by the research. The research confirmed a combined mediating effect of organisational capabilities and levers on the relationship between organisational structure and fitness. The research established interesting directions in the relationships between organisational size and organisational structure, organisational levers and organisational structure, organisational capabilities and organisational levers, organisational learning and organisational levers, and organisational capabilities and organisational fitness.

The findings of the present study represent an incremental and meaningful contribution to the existing literature on organisational fitness, particularly in a volatile environment. The study also provides practical implications that could assist organisational managers to design organisational structures that will foster organisational learning and develop capabilities that will assist in the alignment of organisations to the operating environment in order to achieve fitness. The adoption of a hybrid organisational structure that is both mechanistic and organic in nature will enable organisations to handle the volatile environment in a way that will foster organisational learning and create much-needed organisational capabilities.

The limitations of this research will trigger a scholarly interest in organisational fitness and will serve as a guideline for future research.

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DEDICATION

The thesis is dedicated to my late father Roy, my mother Gladys, my wife Thandazile, my daughter Thandinkosi Thandeka, my son Thandolwenkosi, my six brothers Khulekani, Mkhululi, Anele, Busani, Andisiwe and Ayanda, and my one and only sister Sukoluhle.

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CHAPTER 1

INTRODUCTION, BACKGROUND AND OBJECTIVES OF THE STUDY

1.1 Introduction

The business environment in the twentieth and twenty-first centuries is driven by forces that have changed the industry landscape. These ever changing trends demand a new approach in management systems that ensure organisational survival and growth. The forces are summarised by Beer, Voelpel, and Leibold (2003) as a shift from information to knowledge and wisdom; bureaucracies to networks; training and development to learning; national to global; competitive to collaborative thinking; and single strategy and linear novelty to complex and vigorous capabilities. The traditional approaches to management revolve around achieving organisational performance. From the 1950s to the 1960s, performance was based on business budgetary planning. This changed in the 1970s to optimising cooperative entities and functions (Beer *et al*., 2003; Beer, 2009). During the 1980s positioning took centre stage, and by the 1990s the resource-based view of competitive advantage became the focal point of organisational performance (Porter, 2012).

The work of Beer *et al*. (2003) and Beer (2009) exposed the limitations of traditional performance approaches in dealing with business environmental changes. For organisations to address these shifts, organisational fitness has assumed a new and intensified prominence in both organisational and management circles. A journal search on the meaning of organisational fitness reveals that the concept has had different meanings and conceptualisation depending on the guiding theory of the firms at that time. The period after World War II to the 1980s framed organisational fitness from the three perspectives of contingency, population ecology, and evolution. The three perspectives look at the ability to respond to the operating environment when describing organisational fitness. This conceptualisation of fitness dominated industrial organisation economics (Porter, 1980; 2012). It found its way to organisation and management theory, and eventually to enterprise literature (Young, 2009). This meaning has, however, been dismissed as insufficient by Durand (2006), who premised his dismissal on the fact that changes in the environment and organisations are reciprocal.

This dismissal has ushered in an alternative meaning of organisational fitness, guided by the strategic, population ecology, complexity, and co-evolutional, perspectives of the firm of the 1990s to contemporary times (Durand, 2006). Two broad issues central to the meaning of

organisational fitness emerge from the strategic perspective. Fitness means the ability of organisations continuously to learn about the environment and about themselves, and then to construct and reconstruct their internal systems, strategies, and leadership paradigm in line with the changing environment (Beer, 2000; 2009; Beer *et al*., 2003). This suggests the concept of strategic alignment. Core to organisational alignment is configuring organisational design (organisational structure), culture and people (capabilities and commitment) with continuous changes in the competitive and social environment (Beer, 2009; Beer and Eisenstat, 2004). Mapping a strategy involves environmental scanning (internal and external), a stage that sets the platform for fitness (Beer and Eisenstat, 2004).

Organisational fitness is about the ability of organisations to build on organisational capabilities that drive organisational performance (Voelpel, Leibold, and Mahmoud, 2004). The dynamic nature of these capabilities affords organisations an opportunity to re-strategise at the advent of change. This has been the concept of fitness associated with the work of Voelpel, Leibold, and Tekie (2006). From this perspective, organisational fitness is viewed as an incessant and dynamic condition that yields during effective implementation of strategy, organisational learning, and strategic reformulation.

In the population ecology domain, organisational fitness is the ability of the firm to protect its niche once it has established itself in the environment (Aldrich and Martinez, 2001). Once a niche has been established, it has to be protected against competition for continued fitness (Hannan and Freeman, 1977). Protection of the niche can be achieved by erecting barriers of entry to rival organisations (Young, 2009). This theory argues that 'inert' is synonymous with organisational fitness. Retention of the best practices that drive organisations is thought to be responsible for reproduction and achievement of population density, which is the optimal level of fitness in population ecology (Helfat and Peteraf, 2003). Organisational structure inertia is a result of external and internal forces that hedge against any change of strategy.

From the complexity perspective, organisational fitness is achieved by the organisational ability to instinctively get organised (Drazin and Sandelands, 1992). Faced with complexity, organisations should, according to Anderson (1999, p. 221), "self-organise; pattern and regularity emerge without the intervention of a central controller." Managers have a minimal role to play; the system is envisaged to self-organise. Human freedom, ethics, and impulsiveness are critical to an organisation's development and fitness (Young, 2009). Human freedom has to be regulated by a system, rules, and regulations. Emphasis on rules

and procedures points to formalisation as a critical structural variation in fitness formation from this lens (Levy, 1994). In the complexity theory, fitness is the ability to self-organise in the face of complex change and the monitoring of interconnectedness of the systems (Levinthal, 1997). Furthermore; the complexity perspective holds the view that a fit organisation should be ambidextrous (Gibson and Birkinshaw, 2004). Ambidextrous refers to the ability and capacity of an organisation to simultaneously adapt and align itself to the ever-changing environment. According to O'Reilley and Tushman (2004), an ambidextrous organisation should be able to exploit and explore capabilities and the environment.

Three dimensions of fitness emerge from the evolution theory. These include variation, retention, and selection (Murmann, Aldrich, Levinthal, and Winter, 2003). Variation is described as the departure from the norm as environments change (Hannan and Freeman, 1977). Retention distinguishes between innovations and rewards and between units of selection (Young, 2009). Selection constitutes the underlying principle of organisational fitness in the evolution perspective (Glor, 2015). Organisations have to select the best activities or behaviours that promote their objectives and goals (Aldrich, 1979; 2003). Organisational fitness is achieved through selecting the routines, processes, management systems, and leadership traits that align, construct, and deconstruct strategies in the context of an evolving environment (Durand, 2006).

The next sections discuss the various models and variables that constitute organisational fitness. The context of the study is also described.

1.2 Organisational Fitness Models: An overview

Three models of organisational fitness have emerged in recent decades that explained the relationship between antecedents and the result of organisational fitness. These include: the Model Systemic Control (Schwaninger, 2000), the Organisational Fitness Model (Beer, 2003), and the Dynamic Organisational Fitness Model by Voelpel *et al*. (2004). Each of these models draws its theoretical backing from strategic management, complexity, population ecology, and evolution perspectives.

1.2.1 The Model of Systemic Control

The Model of Systemic Control (Schwaninger, 2000) constructs fitness from the complexity theory (self-organisation) and draws from the cybernetics management ideology (effective organisation of organisations). Dimensions of organisational fitness are legitimacy,

effectiveness, and efficiency. Each dimension matches with a managerial level and type of fitness. At the top is legitimacy, which matches with normative management. At this level, the goals of all stakeholders have to be addressed and viability beyond survival is the ultimate fitness (Schwaninger, 2000). Control at this level is through organisational culture, structure, ethos, and vision. To be fit is being effective, and this has to be achieved at strategic management level; the key consideration at this level is doing the right things. Organisational core competence and competitive advantage are the key control variables. Efficiency fitness is achieved at the operative management level where doing things right is the major issue. Control at this level is traditional performance measures of profits, cash flows, and market share (Schwaninger, 2000).

1.2.2 The Organisational Fitness Model

The Organisational Fitness Model developed by Beer (2003) puts as its core the creation of organisational capabilities to build on the organisational capacity to learn in a changing competitive environment. From the model, organisational levers are responsible for the production of capabilities. Existing organisational literature has it that each of the levers are affected one way or the other by organisational structure and its variables. Yagil (2002), in his findings, concluded that leadership in organisations is regulated to an extent by organisational structure. Goffin and Mitchell (2005) and McMillan (2005) discussed the importance of organisational structure in the formulation of organisational culture. Work systems, management processes, and corporate context are a function of organisational structural variables (Bozeman, 2000; Tata and Prasad, 2004; Woodward, 1980). The discussion above suggests the need for an organisational fitness model that includes the prominent role of organisational structure and structural variables in the construction of organisational fitness.

1.2.3 The Dynamic Organisational Fitness Model

Voelpel *et al*. (2004) criticised Beer's (2003) fitness model for confining organisations to just responding to the environment. The Dynamic Organisational Fitness Model was mooted by Voelpel *et al*. (2004) in a bid to address the short comings of Beer's (2003) fitness model. The Dynamic Organisational Fitness Model attempts to make organisations proactive in the changing environment by shaping the environment rather than just responding to it. The model suggests the proactive fitness concept. It identified three levels within managerial structures that have to mould organisational fitness. These levels are responsible for the

creation of dynamic organisational capabilities. The capabilities enable organisations to deal proactively with changing environments (Voelpel *et al.*, 2004). The first phase is removal of fitness barriers (suggested by Beer *et al.*, 2003), the second phase is building capabilities, and the third is developing variety in the organisation to tackle a changing environment. Like its predecessor the Organisational Fitness Model, the Dynamic Organisational Fitness Model does not directly explore the role that organisational structure plays in moulding organisational fitness.

From reviewing the models above, the need to construct a model that incorporates the strengths, and excludes the weaknesses of each model becomes apparent. The models however give guidelines on the variables that constitute organisational fitness. Guided by the models and the conceptualisation of organisational fitness reviewed above, the following section presents and discusses the research variables.

1.3 Research Variables

From the preliminary literature review on the different conceptualisations of organisational fitness based on different perspectives and the models of fitness presented above, the following organisational variables are drawn out: organisational capabilities, organisational levers, organisational structure, organisational learning, organisational size and organisational fitness.

1.3.1 Organisational Structure as a Predictor Variable

The literature supports the notion that organisational structure is a predictor variable of organisational levers Yagil (2002) and organisational levers affect organisational capabilities and subsequently organisational fitness (Beer, 2003). Goffin and Mitchell (2005) and McMillan (2005) discussed the importance of organisational structure in the formulation of organisational culture. Work systems, management processes and corporate context are a function of organisational structural variables (Bozeman, 2000; Woodward, 1980). In this vein organisational structure is envisaged as a predictor variable of organisational fitness.

1.3.2 Organisational Size as a Predictor Variable

Given that the strategic perspective advocates for organisational alignment through the configuration of organisational structural (design), it is logical to assign organisational size as a predictor variable of organisational structure and subsequently of organisational fitness. The long-standing relationship between organisational size and structure can be traced back to the

seminal work of Weber (1947), which was advanced by Pugh and Hicknson (1976) and supported by contingency theorists, Child (1972), and Hall and Schneider (1972). This relationship is also carried through by contemporary researchers including Said, Abdullah, Uli and Mohamed (2014). Organisational size is concluded to have a regulating effect on organisational structure (Bozkurt, Kalkan, and Arman, 2014). This variable will be discussed in detail in Chapter 2.

1.3.3 Organisational Learning as a Predictor Variable

A learning organisation configures its organisational structure to align it to strategy and the environment. This conclusion is widely supported by the literature (Fiol and Lyles, 1985; Bapuji and Crosson, 2004; Zhang, 2008; Martinez-Leon and Martinez-Garcia, 2011). Such a view recognises organisational structure as an outcome of a learning process. The role of organisational learning in overall organisational fitness achievement is strongly supported by the literature. Other than influencing organisational structure, organisational learning has been found to be critical in the formation of organisational capabilities (Zollo and Winter, 2002). Given the underlying relationship organisational learning has with organisational structure, and its role in the formation of organisational fitness, organisational learning is considered to be a predictor variable in the current study. This variable will be discussed in detail in Chapter 2.

1.3.4 Organisational Capabilities as a Mediating Variable

Organisational capabilities have been presented as a linking factor among variables in the formation of organisational fitness. Such a role is evident in several models that seek to explain the organisational fitness model developed by Beer (2003), which charges organisational capabilities with the task of linking organisational levers to fitness. The work of Helfat and Peteraf (2003), Schienstock (2009), Tuan and Takahashi (2009), and Winter (2003) confirms a mediating role that organisational capabilities play in achieving competitive advantage, effectiveness and fitness. A detailed discussion of the nature, characteristics and scope of this variable is presented in Chapter 2 of this research.

1.3.5 Organisational Levers as a Mediating Variable

According to the available literature, the enabling organisational levers – which include culture, human resources systems, work systems, leadership and management processes – drive organisational capabilities (Beer, 2003; 2009; Heneman and Milanowski, 2011; Voelpel

et al., 2004). Organisational levers are themselves a function of organisational structure as suggested above. (The detailed relationship between these variables is discussed in Chapter 2.) In this vein, organisational levers are presented in this research as a mediating variable.

1.3.6 Organisational Fitness as a Dependent Variable

Organisational fitness is a function of organisational structure, levers, capabilities, size and learning; hence its treatment as a dependent variable. This notion is supported by the current and previous literature in both management and organisational literature (Schwaninger, 2000; Voelpel *et al*., 2004; Young, 2009).The model that expresses this relation is presented in Figure 2.4 and discussed in detail in Chapter 2. The model will be tested empirically in a volatile environment.

1.4 Research Context

The business environment in Zimbabwe is characterised by severe policy inconsistencies and liquidity challenges. Monyau and Bandara (2014) ranked the Zimbabwean business environment as the most risky and volatile environment outside a war zone. Such an environment has resulted in business organisations struggling for survival and, in some cases, closing down completely. In a bid to achieve organisational fitness in the context of a volatile economic environment in Zimbabwe, organisations have adopted different intervention strategies in human resources and financial and operations management. Prevalent among the fitness and survival strategies adopted by organisations operating in Zimbabwe is workforce downsizing (Nyanga, Zirima, Mupani, Chifamba and Mashavira, 2013).

Downsizing as a business strategy aims at improving the performance of an organisation by reducing its workforce (Appelbaum and Donia, 2001). This can be achieved through employee layoffs, early retirements, attrition and de-layering (Cummings and Worley, 2014). By the end of 2008 almost all of the companies listed on the Zimbabwe Stock Exchange had downsized in one way or another (Moyo, 2010). The Zimbabwe Congress of Trade Unions (ZCTU, 2015) reported that about 20 000 employees had been retrenched every year since 2005.The aftermath of downsizing has not yielded the much-desired results in the Zimbabwean context. Reporting on company performance, IMARA Africa (2013) noted that about 65 per cent of listed companies that had downsized in the previous five years faced challenges related to post-downsizing structural reorganisation.

Research indicates that downsizing has a direct impact on organisational structure and its variables (DeWitt, 1993). Organisational size as a structuring variable is directly affected by downsizing as well as by span of control and chain of command. Formalisation and centralisation are also affected by downsizing (Rehman and Naeem, 2012). Whilst the major objective of downsizing is to improve organisational performance, its consequences for organisational structure, organisational capabilities and levers are largely unknown, as they relate to organisational fitness (Rehman and Naeem, 2012). The little that is known is fragmented evidence that lacks scholarly congruence. The work of Beer (2003; 2009) and Voelpel *et al*. (2004) has treated structure as part of the work system and not as a stand-alone variable in their construction of organisational fitness.

1.5 Problem Statement

As a prevailing strategy among organisations operating in Zimbabwe, downsizing produces short-term overhead savings. In the absence of a wider reorganisation of structure and work systems, it only brings temporary relief and permanent decline in the fitness of an organisation. After downsizing, organisations are left with dysfunctional structures, compromised organisational levers, and unrealised capabilities that try in vain to increase performance. In line with this prevailing predicament, Beer *et al*. (2003, p. 1) believe that strategies like downsizing are "quick superficial change programs; leaders skilfully avoid learning the truth about poor coordination across vital activities in the value chain and the fundamental organization design".

The major challenge about downsizing is its attempt to increase organisational performance without subjecting the organisation through the fitness discourse that calls attention to organisational structure, capabilities and levers. Downsizing compromises organisational capabilities and levers in the construction of organisational fitness (Ngirande and Nel, 2012). For any organisation with compromised capabilities, achieving fitness – let alone increasing performance – becomes a very remote prospect (Beer, 2003).

Given that organisational capabilities (co-ordination, competitiveness, commitment and communication) are a function of organisational structure (Johari and Yahyah, 2009), an understanding of how an organisational structure in its aggregate form relates to fitness and how each structural variable affects organisational fitness will go a long way towards enabling managers to re-organise their structure after undertaking downsizing. Such a relationship, however, is not adequately exploited by researchers, and its knowledge is

fragmented and sparse, resulting in the lack of a platform for managers to construct organisational fitness. This lack of sufficient research in the organisational fitness construct is compounded by the prevailing volatile business environment, which has made what is known about organisational fitness inapt. This study is considers therefore the predictor and mediating variables on organisational fitness. Such insight will assist practitioners to design and configure organisations for fitness in a volatile environment.

1.6 Research Questions

The research questions serve to stipulate the precise details the researcher needs. According to Bryman and Bell (2015), the purpose of a research question is to guide the following activities in research: the literature review process, the research design, type of data to be collected, analysis of data, and the interpretation of the results. Guided by the preliminary literature review and the problem statement, the following are the research questions of this study:

1. What are the roles played by organisational structural variables in shaping organisational levers?

2. How do organisational structure variables relate to organisational capabilities?

3. What is the relationship among organisational structure variables, organisational levers, organisational capabilities, and organisational fitness as a dependent variable?

4. What relationship exists between organisational structure and organisational size as a structuring variable?

1.7 Research Objectives

A research objective is the researcher's version of a business problem. Objectives explain the purpose of the research in measurable terms, and define standards of what the research should accomplish (Bryman and Bell, 2015). In an attempt to address the research problems and provide an answer to the question initiating the research, the following research objectives were stated for the present investigation:

Primary objectives:

1) To distinguish between organisational fitness and organisational performance;

2) To identify and evaluate the relationships between variables that are predictors and mediators of organisational fitness;

3) To conceptualise these predictor and mediating variables within the framework of a structural model; and

4) To conduct an empirical study in order to establish the relationships between the predictor and mediating variables of organisational fitness.

Secondary objectives:

The primary objectives were to be achieved through the following secondary objectives:

1) To review the existing literature on organisational fitness and performance in order to establish the difference and the relationship between the two constructs;

2) To review the existing literature on predictor and mediating variables on organisational fitness in order to achieve the first and second primary objectives;

3) To validate the conceptualised structural model of predictors and mediators of organisational fitness using a Structural Equation Modelling to achieve the third primary objective in a volatile environment; and

4) To design a research methodology that could be followed in the conduct of the empirical study.

1.8 Justification of the study

The Zimbabwean business environment is charecterised by turbulent socio-economic contexts coupled with volatile political environments. Unemployement rate is estimated to be over 85%. The country has no currency of its own. The failure to achieve a positive balance of payment as reported by ZCTU (2015) has resulted in the shortage of foreign currency in the country. The low gross domestic product (GDP) which is ever declininig is an indicator of a troubled economy. From 2008 to 2013, Zimbabwe's GDP recorded a mean of 2% (Monyau and Bandara (2014). The economic and political policies adopted by the government have been held responsible for such an economic scenario (Monyau and Bandara, 2014). The confussion surrounding the indigenisation policy has repealed the much needed direct foreign investment (ZCTU, 2015).

This scenario poses a serious survival threat to business organisations. Zimbabwean Stock Exchange has been depressed and perfomaning way below other markets in the region (IMARA Africa, 2013). In the last five years, 90% of the listed companies posted negative results with depressed share prices.Intricate operational environment of this magnitude more often than not repels application of conventional management theories and practices. This calls for adoption of management strategies that mitigate this environment and propel businesses towards survival and sustainability.

The development of organisational fitness has been influenced by business environmental change (Beer, 2003; Beer, 2009; Voelpel *et al.*, 2004). Technological advances and globalisation are prevalent as change drivers in most academic works that have attempted to profile organisational fitness (Voelpel *et al.*, 2004; Young, 2009). The gap in the literature is the consideration of other change drivers such as social (cultural), economic and political factors that have far-reaching consequences in the nature and pace of change (Beer and Nohria, 2001).

The existing literature and the theoretical framework that underpin organisational fitness seem to suggest that organisational capacity is the key to being fit (Beer, 2003; Helfat, Finkelstein, Mitchell, Peteraf, Singh, Teece and Winter, 2009).This notion brings into the fold an inquiry into how organisations produce and process capacity in their bid to be fit. Production of organisational capacity is a function of capabilities that the organisation cultivates to achieve its objectives (Beer, 2003). Capabilities such as co-ordination, communication, and creativity are the roles that organisational structure plays in any organisation (Johari and Yahyha, 2009). The role of organisational structure and its structural variables in the formation of organisational fitness remains a dimension that has not adequately captured the interest of researchers, thus explaining the dearth of research into it in the fields of management and organisational studies. The lack of the prominence of organisational structure in organisational fitness research can be attributed to stable and moderate environments that have dominated its construction. This is congruent with the conclusion of Burns and Stalker (1961) that, in stable environments, organisational structure remains largely the same, and the organisation relies on procedures, rules and hierarchical control. Thus, in stable environments, organisational structure is an invariable. More often than not, invariables struggle for scholarly attention in research; and, in this context, organisational structure is no exception.

What seem to have received scholarly attention are the effects on organisational structure following organisational changes in volatile environments (organisational structural inertia concept prevalent in adaptive perspective, population ecology, evolution and complex theories; Hannan and Freeman (1977); Murmann *et al.* (2003)). Rehman and Naeem (2012) argue that if organisational structure and the design principle that constructs it are not aligned to the environment, the organisation is unlikely to survive to grow successfully later on. This notion reinforces the need to consider organisational structure in the organisational fitness research. In practice, organisations are reluctant to tamper with organisational structures, as they threaten power bases and peoples' positions of comfort – a scenario that Beer (2009) calls 'organisational silence'.

The work of Beer *et al*. (2003) addressed fitness in a rapidly-changing world. Their works were by-and-large theoretical, and the only empirical construction was a case study from a Canadian firm generalising from a case study that has shortcomings. A common criticism of the case study method is its dependency on exploration of a single case, making it difficult to reach a general conclusion (Yin, 2011). Though providing valuable insights into organisational fitness in a rapidly changing world, the work of Beer *et al*. (2003) used Theory E and Theory O (Beer and Nohria, 2001) as a framework of organisational fitness. Those theories to a very large extent ignore the direct role that organisational structure, capabilities, and levers play in shaping organisational capabilities.

Two issues are noticeable in the scholarship of organisational fitness. Firstly, the literature on the issue is very sparse and fragmented, despite its long-standing association with the management and organisational domains. Young (2009) attributes this to the fact that organisational fitness is used interchangeably with organisational performance because of the same domain and space that the two concepts share in the management and organisational literature. Secondly, the factors that contribute to organisational fitness, and the nature of their relationship in the production of organisational fitness, have been constructed and conceptualised in fairly stable environments where change drivers differ considerably from a highly volatile environment. This makes what is known about organisational fitness absolutely irrelevant in highly volatile situations such as the Zimbabwean scenario. This calls for an investigation into the role and relations among different variables that constitute organisational fitness in a volatile environment.

By distinguishing between the two concepts, 'fitness' and 'performance', it is hoped that this study will spark an interest in organisational fitness as a research variable with the view of contributing to the currently sparse literature. By considering the nature, scope and relationships among variables that constitute organisational fitness in a volatile environment, it is envisaged that the knowledge gap alluded to in the above discussion will be bridged. Furthermore, an insight into the relationship among organisational fitness variables will go a long way towards informing managerial practice in the formation of organisational fitness strategies.

In light of the above discussion, the current research is concerned with addressing the predictor variables and the mediating roles of organisational capabilities and levers in a volatile operating environment. Organisational structure and its associated regulating variables of organisational size and learning are considered to be predictor variables

1.9 Contributions of the Study

Practical contribution

Managers are in a better position to achieve organisational performance if they create fit organisations (Voelpel *et al*., 2004). The creation of fit organisations needs a sound understanding of the relationship between organisational size, structure, and learning as predictor variables, and the mediating effects of organisational capabilities and levers (Beer, 2009). Prevalent managerial intervention practices such as downsizing and streamlining – which are aimed at increasing performance and turning around the fortune of organisations – are on the contrary a threat to organisational fitness if not handled with care (Beer and Eisenstat, 2004). This results in even poorer performance by organisations. These practices leave organisations with a dysfunctional organisational structure, insufficient organisational levers, and greatly compromised capabilities. The understanding of the nature of the relationship between organisational fitness variables will enhance practical intervention from both policy-makers and business executives, resulting in greatly improved organisational fitness and thus organisational performance. By distinguishing between organisational fitness and performance, this study hopes to assist managers and business practitioners in developing strategies that could be used to construct organisational fitness for their organisations. Being fit will enable organisations to be proactive in their implementation of business strategies in an ever-changing environment (Young, 2009). Evaluation of organisational fitness variables will allow the re-organisation of organisational structure, and the development of

organisational levers to continuously construct, deconstruct and recreate organisational capabilities that are essential for organisational learning and fitness in a volatile environment.

Theoretical Importance

The existing literature on organisational fitness has been constructed in moderate environments where change has been driven mostly by technological and globalisation advances, among other drivers. The conceptualisation of organisational fitness in extreme and highly volatile environments where change drivers are political and socio-economic in nature such as in Zimbabwe is not known in the existing literature. This is a gap that the research hopes to address. The Zimbabwean situation has given researchers in any field a peculiar scenario that can lead to the creation of novel knowledge (Moyo, 2010). It is also hoped that the study will contribute to knowledge in the broad field of strategic management by relating structure, levers, size, capabilities and learning to fitness in a consolidated model – a notion that has not been given much attention by previous researchers. It is also hoped that the study will further advance the frontier of knowledge in the general field of organisational studies. By distinguishing between 'performance' and 'fitness', the research hopes to bring the literature about the two into a unity, and to inspire further research into the latter in order to remedy the paucity of the existing literature.

1.10 Outline of the study

Chapter 1 has presented the introduction, the research problem, the research questions, and the research objectives to ground the study. Furthermore, the chapter has discussed the preliminary literature and a review of the known models of organisational fitness prior to selecting the predictor and mediating variables for the study. The significance of the study has also been discussed.

Chapter 2. In this chapter research variables are conceptualised. Related literature in order to establish the significant relationships between the research constructs is reviewed. Empirical and theoretical justification for the research propositions is also provided and reviewed in this chapter. The conceptualised structural model of the predictor variables and mediating effects of organisational capabilities and levers on fitness are presented at the end of the chapter. Research proposition are also presented in this chapter.

Chapter 3 concentrates on the methodology employed in carrying out the empirical research. This includes the research population, research design, sampling strategy, procedure for data

collection, description of the measuring instruments, and the methods used in analysing the collected data.

Chapter 4 presents the results of the data analyses. Statistical data analyses are reported and interpreted in a meaningful manner. The research propositions are also tested statistically in this chapter. Both the measurement and the structural models are presented, and their model fit statistics using Lisrel are presented and discussed in this chapter.

Chapter 5 revisits the research question and stated objectives of the research. The research results are also discussed in this chapter, and the theoretical and practical managerial implications of the research findings are addressed. In addition, the limitations of the empirical study are identified, while recommendations based on the research findings are presented, and suggestions are made for possible future research in the area of organisational fitness.

1.11 Summary of chapter

Chapter 1 has presented the introduction, the research problem, the research questions, and the research objectives to ground the study. Furthermore, the chapter has discussed the preliminary literature and a review of the known models of organisational fitness prior to selecting the predictor and mediating variables for the study. The chapter has identified organisational size, structure and learning as predictors of organisational fitness. Organisational capabilities and organisational levers have also been identified as mediating variables between predictor variables and the dependent variable (organisational fitness). The significance of the study has also been discussed in this chapter.

The next chapter will focus on the literature review and the theoretical framework of the predictor and mediating variables of organisational fitness; it will also evaluate the degree of the relationships between each of these variables. Based on the articulation of the relationships between the constructs under investigation, the study hypotheses are formulated and the conceptualised model of the study is presented.

CHAPTER 2

A THEORETICAL REVIEW OF ORGANISATIONAL FITNESS, STRUCTURE, SIZE, LEARNING, LEVERS AND CAPABILITIES

2.1 INTRODUCTION

This chapter presents the theoretical conceptualisation that provided the background for the construction of causal relationships among organisational fitness, organisational size, organisational levers, organisational structure, organisational capabilities and organisational learning. The chapter distinguishes between organisational fitness and organisational performance.

In this chapter, each of the six selected constructs is discussed within the context of their definition and conceptual development. This is followed by a discussion of the relationships between the various constructs, which results in the formulation of a research proposition for each relationship. The conceptualised theoretical model of the study is also presented and explained, thus setting the stage for its empirical testing. The chapter will ground Organisational Fitness in the theoretical lenses that have set out to describe it. Models of organisational fitness are also discussed in this chapter.

2.2 ORGANISATIONAL FITNESS

The purpose of this section is to bring into the fold the definition and conceptualisation of organisational fitness, and familiarise the reader with the dimensions of organisational fitness and how it has been conceptualised over time in different contexts. Measurements of organisational fitness are also reviewed in this section.

2.2.1 Conceptualisation of Organisational Fitness

Of the 20 journal articles over the last 20 years that have discussed organisational fitness, only three treated organisational fitness as a central theme. The rest of the scholarly articles only make a brief reference to the concept. This has resulted in a fragmented and sparse definition and conceptualisation of organisational fitness. This can be attributed to the observation of Young (2009, p.21) that "organizational fitness and performance have frequently been viewed as closely related concepts with overlapping domains, so scholars have struggled to establish a useful, non-tautological definition of organizational fitness".

A journal search of the meaning of organisational fitness reveals that the concept has had a different meaning and conceptualisation, depending on the guiding theory of the firms in that period. The period from World War II to the 1980s viewed organisational fitness from the contingency, population ecology, and evolution perspectives. These three perspectives describe organisational fitness as the ability to respond to the operating environment. This conceptualisation of fitness dominated industrial organisation economics (Porter, 1980; 2012). It found its way into organisation and management theory, and eventually into enterprise literatures (Young, 2009). However, this meaning has been dismissed as insufficient by Durand (2006), who premised his dismissal on the fact that changes in the environment and organisations are reciprocal.

Durand's dismissal has ushered in an alternative meaning of organisational fitness that is guided by the complexity, co-evolutional, and strategic perspectives of the firm of the 1990s to contemporary times. Two broad issues central to the meaning of organisational fitness have emerged. Firstly, fitness means the ability of organisations to learn continually about the environment and about how they then construct and reconstruct its internal systems, strategies, and leadership paradigm in line with the changing environment (Beer, 2000, 2003; 2013). Secondly, organisational fitness is about the ability of organisations to build on organisational capabilities that drive the attainment of organisational performance (Voelpel *et al*., 2004; Le-Mens, Hannan, and Polos, 2014). A different meaning of Organisational Fitness as organisational self-control is advanced by Schwaninger (2000). This view attempts to answer the question of how an organisation should function "... in order to achieve comprehensive organisational fitness" (Schwaninger, 2000, p.255). An organisation is considered fit when it achieves a balance between itself and the environment. This view is further advanced by Sparrow and Cooper (2014), who found that a well-balanced, fit organisation will always anticipate changes within itself and the environment resulting in strategic alignment well before crises hit the organisation.

Any other definition of fitness that comes during or after the 1990s seems to provide an expansion of, or a variation on, the two central concepts of fitness: organisational learning and organisational capabilities building. Helfat *et al*. (2009) conceptualised and operationalised fitness in terms of how well capabilities assist organisational survival and growth. To Davenport, Leibold, and Voelpel (2006), organisational fitness is the innovation of capabilities to deal with contingencies as presented by the environment. Jones (2005) sees

fitness as the firms' ability to interact with its external environment. The work of Dervitsoitis (2004) concluded that organisational fitness is the possession of repertoires readily available to correspond with changes in the operating environment. Larréché (2002) defined organisational fitness as the direct relationship between organisational capabilities and competitive advantage.

Table 2.1 displays the various descriptions of organisational fitness from various scholarly articles that have discussed organisational fitness.

Table 2.1: Summary of Organisational Fitness meaning.

Author (s)	**Definition**
Porter (1980,2012)	Organisation's ability to compete
Beer (2000,2003,2013); Le-Mens *et al*. (2014)	Organisational learning and alignment of organisational internal systems, leadership and strategies
Voelpel *et al*. (2004)	Building of organisational capabilities
Helfat *et al.* (2009)	How well capabilities assist organisational survival and growth
Davenport *et al.* (2006)	Innovation of capabilities to deal with contingencies as presented by the environment
Jones (2005)	Firms environmental interaction activities as the degree of organisational fitness
Dervitsiotis (2004)	Possession of repertoires readily available to correspond with changes in the operating environment
Larréché (2002)	Direct relationship between organisational capabilities and competitive advantage
Schwaninger (2000); Sparrow and Cooper (2014)	Organisational self-control

Source: Author's Conceptualisation

Even though the definition of organisational fitness is sparse and fragmented, three distinguishable elements of its meaning – alignment to environment, ability to learn, and building organisational capabilities – bring its definition to a consensus in both organisational and management literature. This study offers an integrated meaning of fitness that seeks to address a volatile operating environment. This novel view addresses organisational flexibility

and organisational re-shaping that allows for organisational rapid-learning in a rapidly changing environment.

2.2.2 Genesis and Location of Organisational Fitness Concept in Management and Organisational Theory

Despite its long history, Organisational Fitness is, by and large, an emerging concept in both organisational and management research. The concept can be traced to Beckhard's (1967) famous Organisational Development works. The 'confrontation meeting' (Beckhard, 1967) as a management tool enables managers to check the health of their organisations and take remedial actions. From the confrontation meeting concept, the foundations of organisational fitness were laid.

Very little scholarly work has considered Organisational Fitness as a major research construct since Beckhard (1967) suggested it. The work of Schwaninger (2000), Beer (2000, 2003, and 2013), Voelpel *et al.* (2004), Davenport *et al*. (2006), Larréché (2002) and Jones (2005) has popularised it in the last two decades. Two factors, according to Beer *et al.* (2003), can be attributed to the growing interest in organisational fitness in the last twenty years or so. Firstly, the forces resulting in shifts from information to knowledge and wisdom; from bureaucracies to network; from training/development to learning; from national to global; from competitive to collaborative thinking; and from single strategy and linear novelty to complex and vigorous capabilities (Beer *et al.*, 2003). These shifts are a result of ever-changing complex business environments. Secondly the failure of the prevailing traditional management processes and practices to deal with the complex environments has seen the growing importance of organisational fitness as a mitigation approach and practice at the face of dynamic business environments. According to Schwaninger (2000) and Sparrow and Cooper (2014), the traditional management process of achieving and pursuing efficiency through placing emphasis on profits has failed to achieve effectiveness in turbulent environments.

To address this gap, Cameron and Whetten (1983) called for a novel interpretation of organisational fitness that is entrenched in multiple integrated perspectives of organisational theory. In response to Cameron and Whetten's call, Cybernetics Management Planning Theory concepts were synthesised to formulate the bases of Organisational Fitness

(Schwaninger, 2000). The cybernetics management concept was mooted by Stanford Beer in the 1950s. According to Skyttner (2001), cybernetics is a science that encompasses the management of biological and mechanical systems using feedback. In management theory, good regulations, supervision, and communication enable organisations to handle complex situations.

In Beer's (1956, 1959) formation, management cybernetics is preoccupied with the consequence of processes within an organisation, looking at the cohesive part of these processes. Gathering and applying both existing and new knowledge drives cybernetics management. Ever-changing business environments have resulted in both practitioners and scholars looking for mitigation approaches to inform their tactics, and cybernetics management proved to be relevant. It is in consideration of this that Espejo and Schwaninger (1993) and Espejo and Reyes (2011) concluded that organisational fitness can be achieved through pursuing a cybernetics management system. From the above discussion it is therefore fitting to conclude that the origins of Organisational Fitness can be located in two concepts, Organisational Development and Management Cybernetics.

2.2.3 Measurements of Organisational Fitness

Literature on the measures of organisational fitness is very thin. Only 23 journal articles discussed it in the last decade (Sibindi and Samuel, 2016). The issue appears as a sub-theme in change management discussions in the work of Helfat *et al*. (2009), Schwaninger (2000), and Le-Mens *et al*. (2014) among others. The strategic field has also had its own share of contribution in the measurements of organisational fitness, including the work of Beer (2000, 2013) and Beer *et al*. (2003). Three prominent organisational fitness measures are found in the literature: the Organisational Fitness Profiling (Beer and Esteinstat, 2004), the Viability Systems Model (Beer, 1975) and the Strategic Fitness Process (Beer, 2003).

Organisational Fitness Profiling

Organisational Fitness Profiling aims to address and assess the soft aspects of organisational capabilities that are fundamental to organisational performance. Developed by Beer and Eistenstat (2004), it is built on the concept of Organisational Development (Beckhard, 1967). The concept suggests that organisations have to 'brave up' and confront difficult issues with fairness and honesty (Beer, 2002, 2013). It advocates and enables diagnosis of the

organisation as a system, and develops a plan to redesign and change organisational levers. It is a systematic change process that guides change structure in an organisation. Fitness Profiling uses data collected throughout the organisation to identify enablers and barriers of achieving organisational strategic objectives. It hinges its operations on organisational levers and capabilities. Through Organisational Learning and staff development nurtured by Fitness Profiling, fitness is achieved (Beer, 2013). Organisational Fitness Profiling takes place in three stages. The first stage involves orientation and planning. Data collection follows. Meeting to give feedback and allow corrective measures concludes the profiling (Voelpel *et al.*, 2003). The use of Fitness Profiling allows organisations to be 'X-rayed', giving way to co-operative renewal through identifying organisational strengths and weaknesses and taking corrective action.

Viability System Model

The Viability System Model can be traced to the work of Beer (1972, 1985). It systematically measures the alignment of strategy to the environmental changes. Espejo and Harden (1989) describe the system as a model of an autonomous system capable of reproducing itself in a way that enables organisations to organise and mitigate the demands of surviving in a changing and dynamic environment. The functions of the system include: policy, control, implementation, coordination and intelligence (Beer, 1972). The self-organising nature of the model allows operations, management and control of the environment. A mechanism that copes with the environment equips organisations with strategies that allow them to adopt complex processes in line with the dynamic environment (Espejo and Gill, 1997; Espejo and Reyes, 2011).

Strategic Fitness Process

Central to the Strategic Fitness Process is the reinvention of the strategic process as the organisation aims to achieve its goals and objectives in a changing environment (Beer, 2013). It attempts to overcome organisational silence about the misalignment with the environment of the chosen strategy (Beer, 2013). The process is a collaborative inquiry and an action-learning undertaking that involves top managers and external experts. The Strategic Fitness Process, according to Beer (2013), is a nine stage process. The first stage involves strategic direction given by the top management who, among other things, appoint a task force. The task force team is then trained by the external experts. Data are then collected and analysed before the task force reports the 'unvarnished' truth. This stage is followed by the diagnosis

of the organisation as a system by the senior management team. The organisation is then redesigned by the senior management team. The task force then challenges the new design and suggests corrections in the process. Guided by comments and revision notes by the task force, the senior management team crafts a new design that is used to mobilise the organisation to change (Beer, 2013).

Though used with success in more than 150 companies, as reported by Beer (2013), the process is vulnerable to the dictatorship of the senior management team. The team has the initial input of strategic direction, and the final decision in redesigning the organisation. This makes the process a guided one in line with the views of the senior management team. It fails to address the gulf between employees and senior management in strategic formulation and organisational redesign. In as much as the external experts have the much-needed ability of organisational redesign and strategic alignment, their input in the whole process lacks depth, given the lack of intimate organisational information that is normally held by the ordinary employees (Le-Mens *et al.*, 2014).

2.2.4 Theoretical Background of Organisational Fitness

In the 1960s and 70s, the notion of organisational fitness appeared in the open system view that contextualised the contingency theories. In this perspective, organisations had to interact and fit into the environments in which they operated (Anderson, 1999). However, this approach confined organisations just to being reactive to the environment, as latter dictated the pace. Other than in a contingency lens, this study explores organisational fitness and the treatment of its predictor and mediating variables in an organisational evolution lens, a strategic management lens, a complexity lens, and an organisational population lens, all of which have considered and theorised about organisational fitness in their discussions over time. Considering fitness and its predictor and the mediating variables in the light of these different lenses will provide a platform to discuss different determinants, relationships, dimensions and measurements of the research variables - i.e organisational structure, size, learning, capabilities and levers.

Organisational Evolution Lens

The organisational evolution perspective considers an organisation as a collection of individuals with exclusive goals. It attempts to explain the dynamic process of a firm's adjustment to constantly changing environments (Winter, 2013; Nelson and Winter, 2009). It finds its roots from the work of Campbell (1994, 1969). In this theory, organisations fail or

succeed because they are more-or-less fit for the particular environment in which they operate. Having organisational traits of a particular environment has been envisaged to be fit to survive in that situation (Murmann, 2003). This notion, however, ignores the probability that a manager might not possess the relevant traits needed in each anecdotal situation. Survival by satisfying and maximising the probability of achieving goals constitutes fitness of an organisation (Murmann, 2003).

Three dimensions of fitness that emerge from this theory include variation, retention and selection (Murmann *et al*., 2003). Variation is described as the departure from the norm as environments change. Retention distinguishes between innovations and rewards and between units of selection (Young, 2009). Selection constitutes the underlying principle of organisational fitness in the evolution perspective. Organisations have to select the best activities or behaviours that promote their fitness (Aldrich, 1979; 2003). What has ignited debate among scholars is how organisations can select the activities and behaviours that enhance fitness, and what to select. Two different dominant views have emerged about how to select the individual selection (Weick, 1979) and the multi-level selection (Aldrich, 2003).

The individual selection approach adopts individuals as the unit of analysis (Weick, 1979). Its weakness is that individuals are driven by personal objectives and goals ahead of organisational goals; they might be fit as units, but such fitness might not be organisational fitness. In multi-level selection, organisations are the unit of analysis. The conclusion is that what benefits (or decreases) the fitness of a unit within a larger unit raises (or decreases) the fitness of the larger unit (Aldrich, 2003). No empirical evidence has sustained the conclusion by Aldrich (2003). Aldrich (2003) illustrated and supported his claim by borrowing the 'Envision flocks of chickens on an egg' example from Sober and Wilson (1999).

On what is to be selected, Winter and Nelson (2009) and Winter (2003) put forward routines and competencies as the unit of selection. Routines and competencies that promote fitness have to be cultivated and nurtured to give competitive advantage and survival in a changing environment. Routines are represented by rules and procedures in organisations, which Wang and Noe (2010) referred to as formalisation. Winter's (2003) bases for selecting routines and competencies is premised on the conviction that rules and procedures promote consistent and quick decisions in the face of evolving environments. It is further argued that routines give organisations a stock of knowledge to fall back on in changing times (Winter, 2003).

Aldrich (2003, 2008) dismissed the selection of routines and competencies put forward by Winter (2003) entirely. He premised his dismissal on the fact that organisations produce routines and competencies, not the other way round, and hence the need to select organisation in the discourse of organisational fitness. Aldrich (2003, p. 5) concludes that

> If selection works on routines and competencies, organizations are just the temporary repositories of routines and competencies. They are just carriers or vehicles. The distribution of these routines and competencies depend upon the selective survival and growth of organizations.

From the above sentiment it is clear that the unit of selection for fitness is the organisation that comprises routines and competencies. Organisational fitness scrutinised from an evolutionary lens is connected to a gradual, path-dependent development of the organisation (Young, 2009). The context of the present study is characterised by a radical and unpredictable change-making evolutional lens. Athough it provides a theoretical platform and meaning of organisational fitness, it is insufficient to deal with the dynamics of organisational fitness – hence the need to integrate it with other lenses to provide an integrated approach to fitness.

Strategic Management Lens

Strategic management is concerned with setting objectives, crafting plans to achieve them, and deployment and development of organisation resources. Evaluation gives feedback on the whole process. A mapping strategy involves environmental scanning (internal and external) – a stage that sets the platform for fitness (Durand, 2014). The internal environment consideration gives the assessment of an organisation's capabilities that are the cornerstone of the selection and implementation of a strategy. The dynamic nature of these capabilities affords organisations an opportunity to re-strategise at the advent of change. This has been the concept of fitness associated with the work of Voelpel *et al*. (2006). Organisational fitness viewed in this lens is the achievement of set objectives, aligning the strategy with both its internal and external environment, and developing dynamic capabilities that enable the organisations to adapt and be fit (Beer *et al.,* 2003). Change in this lens is said to be unpredictable and sudden (Durand, 2006; Dameron and Durand, 2013). Organisational structure appears in this lens as an internal capability of the firm. The nature and

characteristic of the role it plays in achieving organisational fitness is thin in the organisational and management literature. Ever since Chandler's (1966) famous question about structure following strategy, what has been of interest to researchers is how performance relates to variables such as culture, structure, and leadership.

Complexity Lens

Complexity theory, according to Haynes (2015), is interested in the relationship an organisation has with its complex environment, characterised by unpredictable change. The seminal work of Simon (1996) defined a complex system as one composed of a huge number of parts that have many interactions. Departing from the traditional linear relationship view between an organisation and its environment, held by contingency theorists, complexity theorists believe that an organisation relates with its environment in a non-linear multi-faceted manner (Anderson, 1999; Tafoya, 2010; Grant, 2016). Other than non-linearity, complexity holds self-organisation as its core concepts (Stacey, 1995; Rhodes, Murphy, Muir and Murray, 2011).

In the self-organisation domain, organisational fitness is achieved by the organisational ability to become organised instinctively (Drazin and Sandelands, 1992). When faced with complexity, organisations should, according to Anderson (1999, p. 221) "….. Self-organise; pattern and regularity emerge without the intervention of a central controller". Under such a scenario, managers have a minimal role to play as the system is capable of self-organisation. While human freedom, ethics and impulsiveness are critical to an organisation's development and fitness, such freedom has to be regulated by a system, rules and procedures (Young, 2009). Emphasis on rules and procedures points to formalisation as a critical structural variation in fitness formation in this lens (Haynes, 2015).

In the complexity theory, fitness is the ability to self-organise in the face of complex change and the monitoring of interconnectedness of the systems. Rules and procedures aligned to formalisation in an organisational structure formation regulate the fitness of the system. It is surprising that – despite complexity theory's interest in the relationship that formalisation has in enabling an organisation to self-organise itself – research on the role of organisational structure and other structural variables in the construction of fitness is sparse in organisational complexity theory.

Population Ecology Lens

In the population ecology lens, organisational fitness is the ability of the firm to protect its niche once it has established itself in the environment (Aldrich and Martinez, 2001; 2010). Once a niche has been established it has to be protected against competition for continued fitness (Hannan and Freeman, 1993; Harrison and St. John, 2010). Protection of the niche can be achieved by erecting barriers of entry to rival organisations (Young, 2009; Maguire, Allen and McKelvey, 2011). This theory argues that being stable and unyielding to the external environment is synonymous with organisational fitness (Harrison and St. John, 2010). Retention of the best practices that drive organisations is thought to be responsible for the reproduction and achievement of population density, which is the optimal level of fitness in population ecology (Helfat and Peteraf, 2003). Organisational structure inertia is a result of external and internal forces that hedge against any change of strategy (Maguire *et al*., 2011). What is of interest to ecologists is how structure maintains fitness and not its role in the production of organisational fitness.

2.2.5 Existing models of Organisational Fitness

Three models of organisational fitness have emerged over the past decades that explain the relationship between antecedents and the result of organisational fitness. These models are: the Model of Systemic Control (Schwaninger, 2000), the Organisational Fitness Model (Beer, 2003), and the Dynamic Organisational Fitness Model (Voelpel *et al*., 2004). The models are explained in the next section.

The Model of Systemic Control

The Model of Systemic Control (Schwaninger, 2000) constructs fitness from the complexity theory (self-organisation) and also draws from the cybernetics management ideology (effective organisation of organisations). The model is presented in Figure 2.1.

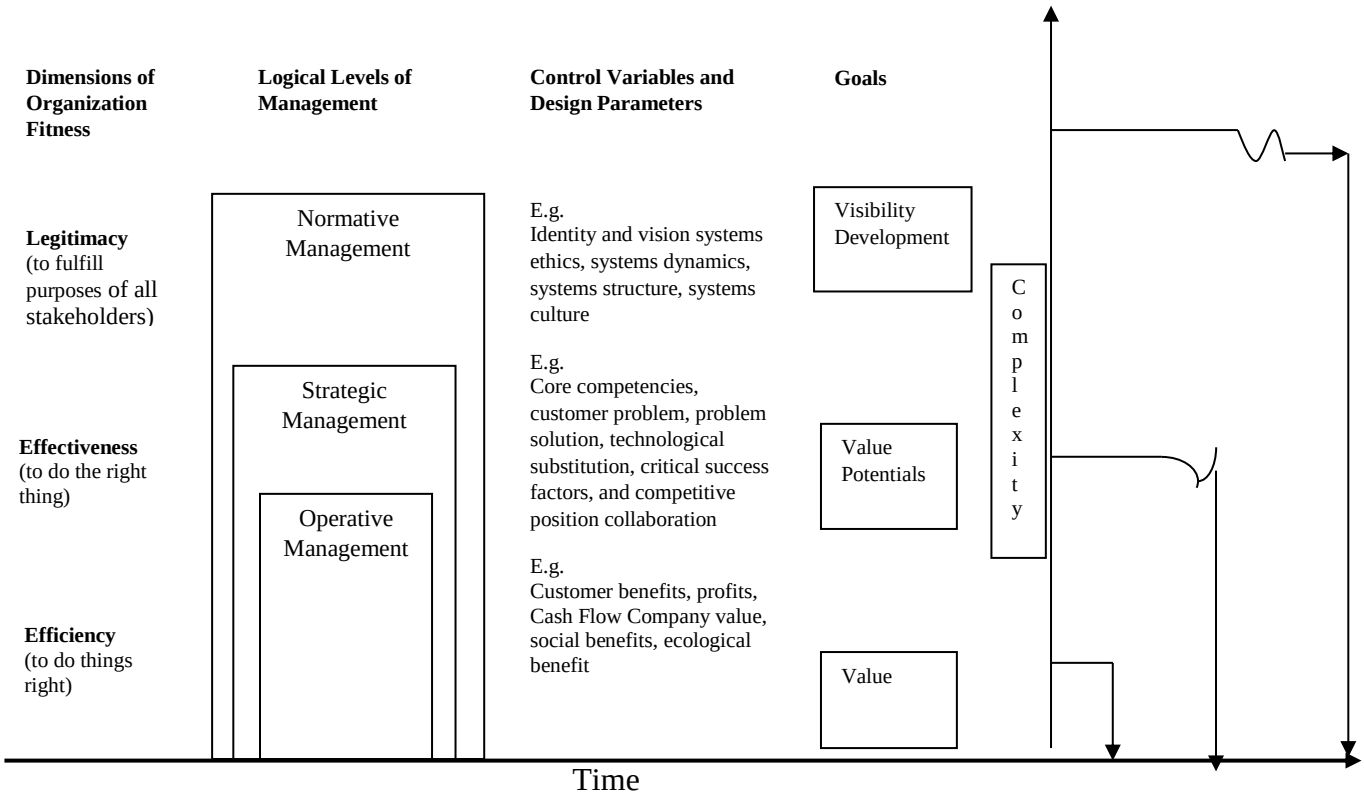

Figure 2.1: Goal and Control Variables at Different Logical levels of Management. Adopted from: Schwaninger (2000, p. 216).

According to the model, dimensions of organisational fitness are legitimacy, effectiveness and efficiency. Each dimension corresponds with a managerial level and type of fitness. At the top is legitimacy corresponding with normative management. At this level, goals of all stakeholders have to be addressed while viability beyond survival level is the ultimate fitness (Schwaninger, 2000). Control at this level is through organisational culture, structure, ethos and vision. To be fit is being effective, and this has to be achieved at strategic management level while the key consideration at this level is doing the right things. Organisational core competence and competitive advantage are the key control variables. Efficiency fitness is achieved at the operative management level where doing things right is the major issue. Control at this level is traditional performance measures of profits, cash flows and market share (Schwaninger, 2000).

Organisational Fitness Model

This model was developed by Beer (2003); at its core is the creation of organisational capabilities that will build organisational capacity to learn in a changing competitive environment. Figure 2.2 represents the Organisational Fitness Model.

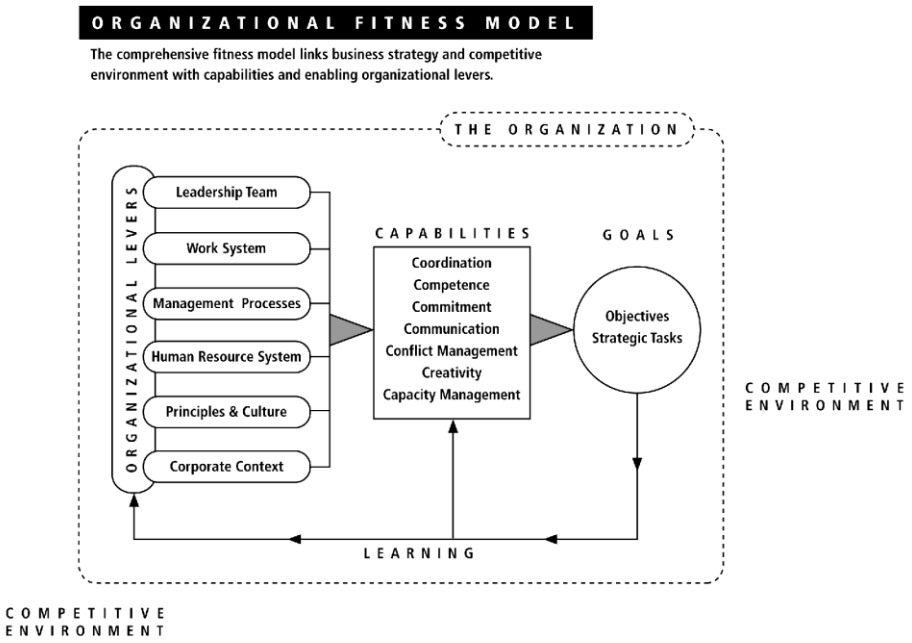

Figure 2.2: Organisational Fitness Model.
Adopted from: Beer (2003, p. 6)

From the model, organisational levers are responsible for the production of capabilities. Existing organisational literature posits that each of the levers is, in one way or the other, affected by organisational structure and its variables. Yagil (2002), in his findings, concluded that leadership in organisations is regulated to an extent by organisational structure. McMillan (2005) discussed the importance of organisational structure in the formulation of organisational culture. Work systems, management processes and corporate context are a function of organisational structural variables (Woodward, 1980; Bozeman, 2000; Tata and Prasad, 2004; Boxall and Macky, 2009). The discussion above suggests the need for an organisational fitness model that includes the prominent role of organisational structure and structural variables in the construction of organisational fitness.

The Dynamic Organisational Fitness Model

Voelpel *et al.* (2004) discussed limitations of Beer's (2003) fitness model in light of confining organisations just to responding to the environment. In order to remedy the shortcoming in Beer's model, the Dynamic Organisational Fitness Model by Voelpel and colleagues was conceptualised to make organisations proactive in the changing environment by shaping the environment rather than just responding to it. The model suggests the proactive fitness concept. This concept calls for managers to predict the future and come up with mitigating strategies when faced with dramatic change (Hasenfeld, 2009).

The model conceptualised three levels within managerial structure to achieve dynamic organisational capabilities that will enable organisations to deal pro-actively with changing environments (Voelpel *et al*., 2004). The first phase is removal of fitness barriers (suggested by Beer *et al*., 2003). The second phase is building capabilities, while the third is developing a variety of strategies that an organisation can use to deal with a changing environment. Like its predecessor (the Organisational Fitness Model), the Dynamic Organisational Fitness Model does not directly explore the role that organisational structure plays in modeling organisational fitness. Instead, it locates the different levels at which organisational capabilities are created in an organisation. It is of interest to note that the models of organisational fitness discussed above were theoretical conceptualisations, and no empirical evidence has been provided to support them. This lack of empirical evidence has, therefore, partly motivated the present study to construct a fitness model that is supported by empirical evidence.

2.3 THE CONCEPT OF PERFORMANCE

In order to be able to distinguish between organisational fitness and performance, the concept of performance is discussed in the following section.

2.3.1 Conceptualisation of Organisational Performance

Even though organisational performance is of interest in the fields of organisational theory and management, its literature was described as a "virtual desert" (Campbell, 1990, p. 704). Close to two decades later the literature is awash with different conceptualisations of organisational performance with varied meanings of the concept. It evolved from being a 'desert' in the 1990s to a major theme among researchers by 2010. Richard, Devinney, Yip

and Johnson (2009) identified 439 academic journals that cited organisational performance as a central theme over three years.

Diverse notions seem to suggest what organisational performance is. The action or behavioural concept in the work of Campbell (1990), Kanfer (1990), and Roe (1999) is still prevalent among contemporary researchers such as Moqbel, Nevo and Kock (2013), Tseng and Lee (2014), and Larsen, Manning and Pedersen (2013), who suggest that organisational performance is the action or actions an organisation undertakes as its core business. Whatever action organisations take should be guided by organisational goals. Organisational performance in this vein is also conceptualised as the outcome of the action or behaviour that the organisation undertakes (Kurien and Qureshi, 2012). This standpoint envisages performance as a function of behaviour, or the actions that organisations undertake (Aguinis, 2007).

A narrow definition of organisational performance as financial performance is advanced by Otley (2002). This view is based on the past and short-term position of the organisation. Organisational performance as business performance that goes beyond financial performance to include non-financial aspects of the organisation, such as market share and competitive advantage as advanced by Ittner, Larcker and Meyer (2003) and Stewart (2003), bring an inclusive and long-term meaning to the concept.

A lucid meaning of organisational performance is perhaps suggested by Williamson (2003), McCann (2004), Walker and Brown (2004), and more recently Liu, Love, Davis, Smith and Regan (2014), as effectiveness. This is a broad meaning that identifies manifold organisational goals and the influence of external and internal stakeholders, who have a claim in the organisation, be it latent or manifest. The vast amount of literature that has dealt with organisational performance in the last decade seems to agree that the five notions of action (behaviour), outcome, financial performance, business performance, and effectiveness define organisational performance. Table 2.2 summarises the meaning of organisational performance by different authors.

Table 2.2: Summary of Organisational Performance Meaning

Author (s)	Definition
Campbell (1990); Kanfer (1990); Roe (1999) Moqbel, Nevo and Kock (2013); Tseng and Lee (2014); Larsen, Manning and Pedersen (2013)	Action or behaviour
Campbell (1990); Kanfer (1990); Roe (1999) Kurien and Qureshi, (2012)	Outcome
Otley (2002)	Financial Performance
Ittner and Larcker (2003); Stewart (2003)	Business Performance
Williamson (2003); McCann (2004); Walker and Brown (2004); Liu *et al*. (2014)	Effectiveness

Source: Author's Conceptualisation

2.4 Organisational Performance and Organisational Fitness: Conceptual Differences

Having defined and conceptualised organisational fitness and performance, the following section presents the theoretical differences between the two constructs. This is consistent with the primary research objective 1 (see 1.7) of this study, which is to distinguish between organisational fitness and organisational performance. A clear distinction between the two concepts will address the concern on the dearth and fragmentation of literature on the concept of organisational fitness, despite its long standing association with management and organisational theory domains. Young (2009) attributes this paucity of literature to the fact that organisational fitness is used interchangeably with organisational performance, because the two concepts share the same domain and space in management and organisational theory literature. It is hoped that differentiating the two concepts will spark an interest in organisational fitness as a research variable in order to increase the amount of available literature. The section will also present a comparison of measures of the two, and finally presents a theoretical model that explains the differences and relationships between the two concepts.

2.4.1 Comparison of the Definitions

Having defined the two concepts, i.e. organisational fitness and organizational performance, Table 2.3 exhibits the characteristics of the two constructs.

Table 2.3: Comparison of the Definitions

	Organisational Fitness	**Organisational Performance**
Purpose	Alignment of strategy, systems, leadership with internal and external environments	Measures outcome(s)
Focus	Organisational Learning	Organisational Assessment
Dimensions	Organisational Capabilities	Organisational Effectiveness
Characteristics	Feedforward	Feedback
Time frame	On going	Periodical

Source: Author's Conceptualisation

From Table 2.3, the purpose of organisational fitness is to align strategy, leadership, and work systems with the prevailing internal and external organisational environment (Beer, 2013). This makes organisational fitness a feedforward undertaking that regulates inputs (Le-Mens *et al*., 2014). On the other hand, the purpose of organisational performance is to measure organisational outcomes. In this vein, organisational performance is a feedback concept (Walker and Brown, 2014). The focus for organisational fitness is organisational learning (Helfat *et al.*, 2009). On the other hand, the focus of organisational performance is organisational assessment (Tseng and Lee, 2014). Assessment of work systems, management and strategy are central to organisational performance (Tseng and Lee, 2014). Through organisational learning, capabilities are created (Walker and Brown, 2014). Organisational capabilities are the main dimensions of organisational fitness (Helfat *et al.*, 2009). As for organisational performance, dimension is defined by organisational effectiveness (Liu *et al.*, 2014). Organisational fitness is an ongoing process that an organisation undergoes all the time (Beer, 2009), given that the operating environment changes all the time and business

threats come in different forms all the time (Young, 2009). According to Sparrow and Cooper (2014), organisational fitness enables an organisation to face new threats as they emerge, based on the people that define its culture and the competencies such people have that create value for the organisation. This makes organisational fitness an ongoing process that involves competent people with purpose in an organisation. Organisational performance seems to be periodical (Tseng and Lee, 2014). Assessment of organisational performance is done at a certain time in an organisation, especially financial reviews (Otley, 2002).

2.4.2 Organisational Performance and Organisational Fitness Theoretical Differences

The following section synchronises the literature on the concepts of organisational fitness and organisational performance through the four theoretical lenses (i.e., evolution, complexity, strategic, population ecology) that underpin them. The conceptualisation of organisational fitness through the four lenses was presented in section 2.1.4. The focus in this section is to discuss each theoretical perspective on performance and draw a theoretical comparison with organisational fitness.

In the evolution lens, after selecting the appropriate routines, processes, management systems, and leadership traits, the fitness process informs performance action, which, through its outcomes, emits feedback for organisational learning and further selection by the fitness process (Nelson and Winter, 2009). Thus, in the selection paradigm of the evolution perspective, the relationship between organisational fitness and performance is cyclical to make selection a continuous undertaking.

In the complexity perspective, a fit organisation is said to be ambidextrous (Gibson and Birkinshaw, 2004; Haynes, 2015). The ability of an ambidextrous organisation is its capacity simultaneously to adapt and align itself to the ever-changing environment. According to O'Reilley and Tushman (2004), an ambidextrous organisation should be able to exploit and explore capabilities and the environment. The conceptualisation of fitness in the ambidexterity perspective synthesises the characteristics of organisational fitness as strategic alignment and adaptability to the environment (Porter, 1980; 2012; Beer, 2000; 2009; Beer *et al*., 2003). Performance under the complexity lens is a cycle of action and reaction of continuous shaping and reorganisation in search of stability and fitness (Porter, 2006). As in the evolution perspective, performance is an outcome that informs reorganisation strategies (fitness process) to trigger regeneration of the next set of actions as the environment changes.

The relationship between the two constructs occurs in serial and in parallel so that achievement overlaps in the domain they share; hence the common treatment of these two.

Organisational fitness is a pre-requisite to organisational performance when considered from a strategic management paradigm, thus serialising the relationship between the two constructs. Organisations have to subject their systems to a fitness process that involves mooting organisational levers – capabilities whose major responsibility is to align strategy to the environment (Beer, 2000; 2003; 2013; Beer *et al.,* 2003; Voelpel *et al*., 2004; Jones, 2005; Young, 2009). The failure among American firms to achieve fitness is envisaged to be the main cause of their failure to achieve high performance, and subsequently leads to their collapse (Beer, 2000).

In the population ecology formation, organisational fitness is the ability of the firm to protect its niche once it has established itself in the environment (Aldrich and Martinez, 2001). Once a niche has been established, it has to be protected against competition for continued fitness (Hannan and Freeman, 1977). Protection of the niche can be achieved by erecting barriers of entry to rival organisations (Young, 2009). Organisational performance under the population ecology perspective is the ability to be accountable and reliable (Aldrich and Martinez, 2010). The efficiency concerns of performance play second fiddle to reliability and accountability as customers, investors, and other stakeholders are more concerned about the consistency and dependability of the organisations (Harrison and St. John, 2010). The relationship between organisational performance and fitness in this perspective is reciprocal. Structural inertia enables organisations to be accountable and reliable as the environment surges with its selection of fit organisations (Aldrich and Martinez, 2010).

2.4.3 Comparison of Measurements of Organisational Performance and Organisational Fitness

Comparing the measurements of the two constructs will enable an explicit portrayal of their differences and consolidate their relationship. The measurements of organisational fitness have been presented and discussed in Section 2.1.3. In this section, the performance measurements are presented and a comparison of the two (fitness and performance) is discussed. Organisational performance measures have dominated debate among scholars in management and organisational theory domain. Short and Palmer (2003) suggested that about 788 performance measures had been used in management circles in the United States of America alone. The period after World War II saw financial measures emerge strongly as a

performance measurement. Customer measures (Dore, 2000), the balanced score card (Kaplan and Norton, 2005), learning and growth measures (Clarkson, 1995), and triple bottom line measures (Elkington, 2004) emerged in the last century to counter the limitations of the financial measures.

Driven by the return of shareholder value, financial measures dominated the Anglo-American view of measuring organisational performance (Dore, 2000). The profit-driven measurement was accused of being one-stakeholder (shareholder) centred; it downplayed other non-financial stakeholders (Malik and Nadeem, 2014). Furthermore, its quantitative nature ignored the qualitative aspects of performance such as customer perspectives. The Japanese and continental Europe customer approach ignited interest in non-financial measurement, such as customer-based measures (Mahmood, Iqbal and Sahu, 2014). This measurement focused on customer retention, attraction, and satisfaction.

To balance these measures, Kaplan and Norton (2005) presented the famous balanced scorecard. The instrument considers the stakeholder's interest in the performance of the organisation and all other facets that are performance-related. The scorecard gives an overview of the organisation and enables managers to measure performance comprehensively. The growing concern about social responsibility and environmental issues measuring organisational performance saw the birth of the triple bottom line that captured the three major concerns of contemporary society; people, planet, and profits (Elkington, 2004). It is interesting to note that all these measures are prominent in the strategic lenses of organisational theory and management circles. Organisational Fitness Profiling aims at addressing and assessing the soft aspects of organisational capabilities that are fundamental to organisational performance. The Viability System Model systematically measures the alignment of the strategy to the environmental changes. The Central to Strategic Fitness Process is the re-invention of the strategic process as the organisation aims to achieve its goals and objectives. (See section 2.1.3 for the discussion of organisational fitness measures).

Organisational performance measures are outcomes-based; on the contrary, organisational fitness measures are input-based. Essential to the fitness measures are the alignment of strategy to the environment, and the building of organisational capabilities that ensures achievement of objectives and goals (performance). A subtle difference in the relationship between the two is that organisational fitness is a forerunner of organisational performance: organisations have to be fit in order to achieve.

2.4.4 Organisational Performance-Fitness Relationship Model

Having discussed the definitions, roles, measurements, and conceptualisation of the two constructs under the four theoretical lenses, an Organisational Performance-Fitness Relationship model is depicted in Figure 2.3.

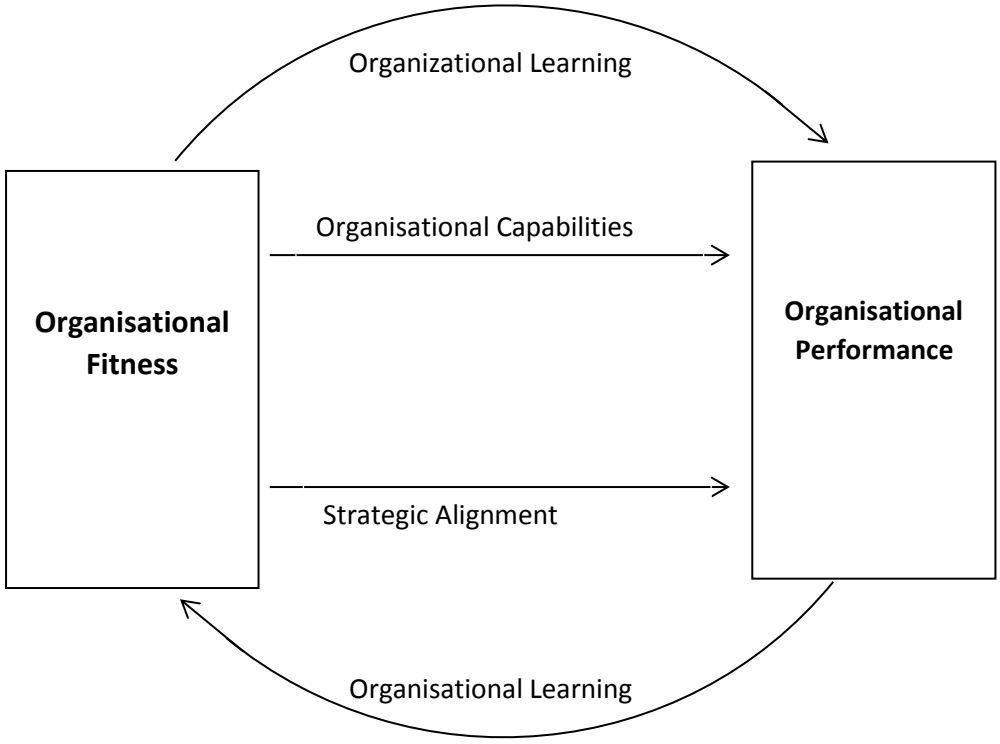

Figure 2.3: Organisational Performance-Fitness Relationship Model

Adopted from: Sibindi and Samuel (2016, p.13)

Figure 2.3 shows that organisational fitness relates to organisational performance through the building of organisational capabilities that enable performance to be achieved. The organisational fitness process realigns with organisational strategies as the environment changes resulting in organisational performance. This makes organisational fitness a precursor of organisational performance. Organisational learning makes the relationship

between the two cyclical and reciprocal, as organisational performance informs the organisational fitness process that, in turn, regulates performance. From the conceptualisation of organisational fitness and performance, two major conclusions are drawn about how they relate to each other:

1. Organisational fitness relates to organisational performance through the mediating effects of organisational capabilities and strategic alignment.

2. The relationship between organisational fitness and organisational performance is cyclical and reciprocal through the effects of organisational learning.

2.5 CONCEPTUALISATION OF ORGANISATIONAL STRUCTURE, SIZE, ENVIRONMENT AND LEARNING

This section begins with the description of an organisation. It defines and conceptualises organisational structure and its structural variables. It discusses organisational size and organisational learning. These constructs have been identified as predictor variables in this study. The section also discusses the nature of the relationship between organisational structure and organisational fitness, with specific reference to the theoretical model of this study. The section will also make research propositions about organisational structure, size, environment and learning.

2.5.1 Organisation Defined

A review of the literature (spanning more than a century and devoted to defining an organisation) revealed that any definition that might be functional is subjective. The field of organisational theory and management is characterised by numerous approaches, each with its own set of definitions reflecting a certain bias.

Central to Burns and Stalker (1961), Thompson (1967), Clegg, Konberger and Pitsi (2005) and, most recently, Jones (2010), is the environment of the organisation; they defined organisations in the context of their environment. The work of Woodward (1980), Perrow (1986), and Tata and Prasad (2004) explained organisations in terms of their technologies. The seminal work of Weber (1947) conceptualised organisations with regard to the system of control, which he termed the ideal bureaucratic organisation. This conceptualisation of an organisation has dominated organisational and management studies over the last century or so (Lawrence, Suddaby and Leca, 2009). Buchanan and Huczynki (2003) explained

organisations as social units seeking specific goals. Any one approach with its own set of definitions is likely to ignore some aspects of organisations that another approach considers vital. Tolbert and Hall (2015, p: 14) provided a definition of an organisation that seems to include most of the major notions suggested by other scholars of organisational theory. Tolbert and Hall note that:

> An organisation is a collection with a relatively identifiable boundary, a normative order, authority ranks, and communication systems and a membership coordinating system. That collectively exists on a continuous basis in an environment and engages in activities that are usually related to a goal or set of goals.

From the above definition, an organisation is a collection of individuals who are bound together by common objectives and lines of authority. An organisation has to have a boundary that, according to Wickham (2004), regulates membership and resources. The literature from both the last century and contemporary research seems to agree with Hall's definition of an organisation (Mintzberg, 2003; Wickham, 2004).

2.5.2 Organisational Structure and Structural Variables

The concept of organisational structure can be traced to the genesis of organisational theory over the past century (Stacy and Mowles, 2016). The conceptualisation of what structure is has varied considerably over the last century (Tolbert and Hall, 2015). The early work of Merton, Fiske and Kendall (1956) conceptualised organisational structure from a sociological perspective; they concluded that a structure is a defined pattern of activities in an organisation tied together by organisational objectives. Bernard (1968) conceptualised organisational structure as a combination of different units within an organisation that are brought together by the organisation's executive powers. The long-standing work of Blau (1970) concluded that an organisational structure is a distribution of authority in an organisation that influences and shapes role connections among members of the organisation. The works that deal with organisational structure in the last ten years adopt one or more of the definitions of organisational structure presented above. For instance, the work of Schein (2010) defines organisational structure as influenced by the earlier conceptualisation of organisational structure by Merton *et al*. (1957). The work of Podsakoff, Whiting, Podsakoff and Blume (2009) is influenced by Bernard (1968) in their conceptualisation of organisational structure.

Blau's (1970) conceptualisation of organisational structure is also evident in the work of Thornton, Ocasio and Lounsburg (2012), while Tolbert and Hall (2015) adopt all three definitions of organisational structure.

This varied conceptualisation of organisational structure has led to a disagreement among scholars about organisational structure (Burt, 2009). This disagreement, according to Tolbert and Hall (2015), can be attributed to the fact that researchers attempt to offer a very broad conceptualisation of organisational structure in a bid to capture both the formal and informal aspects of an organisation. A formal aspect of an organisation refers to the official authority and procedures in an organisation. On the other hand, an informal aspect refers to the norms and unofficial procedures in an organisation (Scott and Davis, 2015). A comprehensive conceptualisation of organisational structure, according to Tolbert and Hall (2015), should distinguish between informal and formal aspects of an organisation. In this vein, formal organisational structure can be conceptualised as the structure that includes organisational specifications such as tasks, responsibilities and relationships between organisational members and roles (chain of command and span of control). On the other hand, informal structure refers to the unofficial definition of tasks, responsibilities and relationships between organisational members and roles (Tolbert and Hall, 2015).

According to Cummings and Worley (2013), five organisational theories have inspired research on the relationship between organisational structure and operating environments. These include the classical organisational theory, the neoclassical organisational theory, the contingency theory and the functionalist theory. Core to the classical theory, developed in the first part of the 20th century, is Weber's (1947) bureaucratic perspective. Weber concluded that establishing a hierarchy was the best way to organise for efficiency in big business. The organisational structure in this perspective is mechanistic and impersonal (Jones, 2010). Criticism of it has focused on its lack of empirical evidence; it remains a conceptual model (Meier and O'Toole, 2006). It has also been noted that this approach neglects the informal elements of an organisation, such as human relationships, leadership, communication networks and motivation (Hummel, 2007). Central to the neoclassical theory are the people who perform the tasks – hence the human relationships approach. Organisational structure viewed through the neoclassical lens is a social system that is organic by nature (Tolbert and Hall, 2015).

Unlike the bureaucratic schools of thought represented by Weber (1947) and Urwick (1956),

the functionalist movement adopted the case study approach, which provided empirical evidence to establish the contingency theory (Clegg, Konberger and Pitsi, 2005). The functionalist perspective is identified in the work of Blau (1970), the Aston Group (Pugh and Hickson (1976), Woodward (1980) and, most recently, Scott and Davis (2015). The work of the functionalist group focused primarily on organisational process rather than on the structural characteristics of organisations themselves.

In the contingency approach, organisational structure is a function of the current situation and environment. This approach is dominated by the seminal work of Burns and Stalker (1961), who proposed that mechanistic structures suit stable environments well, while organic structures are suited to unstable environments. Sine, Mitsuhashi and Kirsch (2006) report that in the past five decades or so, numerous studies have examined Burns and Stalker's propositions, and have largely concluded that organisations in dynamic environments do better if their structures are more organic. The work of Aiken, Bacharach, and French (1980) applied these propositions of Burns and Stalker (1961) to large and long-established firms. When considered in the context of new venture firms, the propositions of Burns and Stalker (1961) were found to be inconsistent by Sine *et al.* (2006).

The contingency theory informs the contemporary view of organisational structure (Burt, 2009). From this perspective, an organisational structure's major task is to deal with contingencies (Watson, 2013). It has been argued that "contingency is something that managers cannot avoid" (Clegg *et al*., 2005, p. 125). The contingency theory premises its argument on the notion that there is no single way an organisation can structure itself. Instead, the optimal way organisations can structure themselves is determined by internal and external constraints (Burt, 2009). Dominant organisational contingences have been identified as size, technologies and environment (Clegg *et al*., 2005; Van de Ven, Ganco and Hinings, 2013). The central consideration by the contingency theorists revolves around the way in which organisational structure interacts with size, environment and technology, and how each of these contingencies determines structural design (Huczynki and Buchanan,2010). To their credit, contingency theorists have informed organisational structure researchers with empirical evidence on the relationship between organisational structure (structural variables) and its contingencies (size, environment and technology). Child (1972) found a relationship between organisational structure, size and its environment. This relationship has been confirmed and advanced by contemporary researchers Boxall and Parcell (2013).

Notwithstanding the divergence in the origination and the conceptualisation of organisational structure, there seems to be a consensus about its definition and its latent variables. Daft (2015), Robbins, Coulter, Sidani and Jamali (2011), and Smither, Houston and McIntire (2016) describe structure by its key functions and variables. The first variable is complexity. This refers to the amount of vertical, horizontal and spatial differentiation. The second variable is formalisation, in reference to the degree of use of rules and procedures. The third is centralisation, which locates where decision making lies in an organisation (Daft, 2001; Robbins *et al*., 2011; Smither *et al*., 2016). These structural variables, according to Clegg *et al*. (2005), represent organisational structural properties that one would expect to find in any population of organisations, but are distributed in a different manner in each organisation. Functional specialisation is another structural variable that is defined "as the concentration of the types of tasks assigned to any one founding team member" (Sine *et al*., 2006, p.124). Specialisation is concerned with the extent to which individual employees concentrate their efforts on the performance of micro or macro sets of tasks (Anderson and Brown, 2010). The work of Dalton, Todor, Spedolini, Gordon and Lyman (1980) and, more recently, Daft (2012) categorised the organisational structural variables into two: structural and structuring. Structural variables include physical attributes such as size and span of control. Structuring variables are policies and activities occurring within an organisation that prescribe or restrict the behaviour of members. These structuring variables include formalisation, complexity, specialisation and centralisation (Dalton *et al*., 1980; Daft, 2015). The following section discusses the structural variables in detail.

2.5.2.1 Complexity

Daft (2012, 2015) describes 'complexity' as the number of activities or subsystems within the organisation. Uhl-Bien, Marion and McKelvey (2007) suggested three measures of complexity that are operationalised within the organisational context: vertical differentiation, horizontal differentiation, and spatial differentiation. Vertical differentiation has been defined as the number of levels in an organisational hierarchy; it denotes the depth of an organisation (Stacey and Mowles, 2016). Vertical differentiation is measured by counting the number of hierarchical levels separating the chief executive from the employees working in the organisation (Stacey and Mowles, 2016). Hodge and Anthony (1988) warned that organisations with many hierarchical levels are likely to experience coordination and integration problems. The same sentiments are echoed later by the researcher Jones (2010).

Horizontal differentiation represents the number of job titles or departments across the organisation and is based on the orientation of members, the nature of the tasks they perform, and their education and training (Jones, 2010). The greater the number of different occupations within an organisation that require specialised knowledge and skills, the more complex an organisation is (Harper, 2015). An increase of specialisation, either functional or social, results in increased complexity within an organisation (McQuaid, 2010).

Spatial differentiation has been described as the number of geographical locations. It encompasses the degree to which jobs are dispersed geographically (Mohrman, 2007). It is measured by the number of separate locations, the average distance of these sites from headquarters, and the proportion of the organisation's personnel located at these separate units (Wang and Thai, 2003). Another aspect of complexity is the time required to train the person in their specialty. Thus, the greater the number of occupations and the longer the training of the professionals, the more complex an organisation is (Wang and Thai, 2003). With regard to the open-system view of organisations, the concept of complexity in an organisation goes beyond the structural variable; it also characterises the organisational environment (Anderson, 1999; McQuaid, 2010). Like organisational structure in general, this structural variable has not been considered in the organisational fitness production.

2.5.2.2 *Centralisation*

'Centralisation' describes how decision-making power is distributed in relation to resource allocation within the organisation (Daft, 2012). Managers assume responsibility for exercising such decision-making powers according to their position within the organisational hierarchy. In some organisations, decisions are concentrated at the centre (e.g. head-office); in others, power is devolved (decentralised) across all levels of authority (Scattolini, 2009). The practice in some organisations is to allocate power to only a few individuals occupying certain job categories, while other organisations allow much wider participation (Andrews, 2009).

Daft (2001) proposed a measure of centralisation that has been adopted by contemporary researchers such as Pertusa-Ortega, Zaragoza-Saez, and Claver-Cortes (2010), and Willem and Buelens (2009). Daft (2001) wrote:

> Centralization or authority or hierarchy is measured by the proportion of occupation or jobs whose occupants participate in decision making and the number of areas which they participate. The lower the proportion of occupations or jobs whose occupants participate and the fewer the decision areas in which they participate the more centralised is the organisation (Daft, 2001, p.79).

The impact that centralisation has on organisational fitness remains unexploited. What has received attention since the advent of the Weberian bureaucracy concept in 1947 is its relationship with performance (Andrews, 2009). With the rapid growth of industries after the Second World War, centralisation was thought to lead to greater effectiveness due to the ability of the decision-maker to plan, coordinate and control activities (Hempel, Zhang and Han, 2012). With growing technology and complex environments in which organisations find themselves operating, centralisation was thought to be a hindrance to employee innovation, adaptiveness and involvement. Later and contemporary researchers concluded that it adversely affected performance (Andrews, 2009; Anderson and Brown, 2010). Fitness enables organisations to perform. It is the production of organisational fitness in which the present study is interested. The extent of the effect that centralisation has on organisational fitness has not received attention among scholars; thus this research proposes to attend to this unrecognized gap.

2.5.2.3 *Formalisation*

Daft (2012) describes 'formalisation' as established operational procedures, rules, regulations and policies. These administrative procedures are fully documented, and the extent of such documentation defines the intensity of formalisation in the organisation (Daft, 2012; Liao, Chuang and To, 2011). Formalisation is often measured by simply counting the number of pages of documentation containing the administrative procedures within the organisation (Lindner and Wald, 2011). One of the widely acknowledged attributes of modern organisational structure is the extent to which tasks and functions are defined and formalised (Lindner and Wald, 2011; Patel, 2011).

Bureaucracy often characterises task performance in highly formalised organisations. To this extent, a job incumbent exercises a limited amount of discretion in terms of a job description

and the modality for its accomplishment (Robbins *et al*., 2011; Patel, 2011). In other words, what is to be done, when it is to be done, and how it should be done are prescribed in the rules and procedure document, and all that is required of a job incumbent is to act strictly according to the rules and procedures. Such regimented behaviour does not enable employees to exercise any form of work autonomy or innovation.

In a bureaucratic or highly formalised organisation, tasks are performed using the same input in the same way, thus achieving a consistent and uniform output (Liao, Chuang and To, 2011). Highly formalised organisations are characterised by explicit job descriptions, a high volume of organisational rules, and clearly-defined procedures for work processes (Jones, 2010). However, in organisations with low formalisation, employees' behaviour is more often relatively non-programmed (Pertusa-Ortega *et al*., 2010). Such a flexible work process assists organisations to adopt a contingency management strategy in unstable business environments, thus laying the basis for an organic structure (Burns and Stalker, 1961; Wilden *et al*., 2013).

The degree to which jobs are codified and a range of variation or latitude is tolerated within the rules is also referred to as 'formalisation' by Pertusa-Ortega *et al*. (2010). Wang and Tai (2003) referred to formalisation in the same way as Pertusa-Ortega *et al.* (2010). They noted that rules and procedures can vary from highly stringent to extremely lax. Freedom of discretion is enhanced or limited by the extent to which behaviour is programmed. Willem and Buelens (2009) referred to rules and procedures as both 'formalisation' and 'standardisation'. Willem and Buelens (2009) concluded that in highly formalised, standardised and specialised situations, the behaviour of the occupant of the role is highly specified, leaving him few options when carrying out his job. Like centralisation, formalisation has been considered in relation to performance, and the role it plays in organisational fitness has not received proper attention. Rules and procedures that point to formalisation seem to have been given prominence and assigned to the fitness discourse by complexity and evolutionary theories.

2.5.3 Organisational Size

The role that organisational size plays in organisational design in particular – and in managerial and organisational practices in general – has been of long-standing interest to

researchers and managers (Daft, 2012). This section discusses the conceptual and operational meaning of 'organisational size', its organisational roles, attributes and relations with other organisational structural variables.

2.5.3.1 Conceptualisation of Organisational Size

As long ago as 1976, Kimberly (1976) indicated that by 1974, more than 80 studies had considered organisational size as a research variable. These studies presented conceptual challenges and theoretical dilemmas on the concept; and more than forty years later they are still evident in any form of research that considers organisational size (Tolbert and Hall, 2015). Organisational size has been grounded in the structuralists' perspective, which draws concepts from Weber (1947) and found in the work of Hall and Schneider (1972), Meyer (1972), and – more recently – Burton and Obel (2013). The core theme of organisational size in this perspective is how size structures the organisational structural variables of formalisation, complexity and centralisation (Maguire, 2003). Tolbert and Hall (2015) sum up the structural perspective by highlighting the following common questions found in research that has dealt with organisational size from a structuralist perspective:

- What are the relationships between structural variables and organisational size?
- What are the determinants of organisational structure?

The enquiry has led to the 'imperative' approach to organisational size (Burton and Obel, 2013). The imperative approach to organisational size concludes that size is a major determinant of organisational structure (Jones, 2010). The structuralist's perspective regards size as an independent variable (Tsoni, Koufopoulos and Gkliatis, 2010).This is consistent with the imperative approach of organisational size.

2.5.3.2 Measuring Organisational Size: An Operational Definition

Considering how to measure organisational size will enable an operational definition of the term. How to measure organisational size is a long-standing debate in both organisational and management literature (Jones, 2010). Burton and Obel (2012) state that the meaning of organisational size is constrained by challenges concerning the operationalisation of its measures. This ambiguity about organisational size can be traced to the work of Kimberly (1976), who attributed it to the fact that the concept is too global a measure to warrant a clear specification. This ambiguity is compounded by the fact that organisational size has empirical and theoretical aspects that need to be specified (Burton and Obel, 2012). Furthermore,

research has proved that different types of organisational size might indicate different causalities among variables in different organisations (Goode and Gregor, 2009).

Quantitative measures of size have emerged over the years to include variables such as the total number of employees, sales turnover, and market share and capital employed (Ajila, 2006; Jones, 2010). The Aston Group of researchers (Pugh and Hickson, 1976) used the total number of employees as the size measurement for forty-four organisations, and concluded that the larger the organisation, the more bureaucratic it was likely to be, and the smaller it was, the less bureaucratic it was likely to be. Such findings were confirmed by Goode and Gregor (2009). These conclusions were generalised from a single measurement of size that was applied to many different types of industry. For instance, a capital-intense organisation such as an optical operation employs fewer people than a supermarket, yet its capital is far more than that of a supermarket. No single measurement can be used, therefore, to define the size of an organisation. Jones (2010) justified the use of the total number of employees as the best measure of size because it correlates well with other measures. Furthermore, the weighting indices of size can mitigate the weaknesses of using this method, some of which include the engagement of part-timers in the workforce (Goode and Gregor, 2009).

2.5.3.3 Organisational Size and Structural Variables

The relationships between size and other structural components have received considerable attention in both organisational and management literature (Said *et al*., 2014). Basing their research on a case study, Basol and Dogerlioglu (2014) concluded that size has an interactive effect on other structural variables, as it determines and moderates the span of control, specialisation, complexity, centralisation and formalisation. This conclusion confirms the earlier findings of Blau (1970) and Pfeffer and Leblebici (1973). Burton and Obel (2012) concluded that organisational size acts as an interface between the internal structures and the environment. Size often characterises the scale of the work being conducted. Of interest to this study is how size relates to centralisation, complexity and formalisation.

The relationship between organisational size and centralisation has long been an issue in both organisational and management circles (Damanpour and Schneider, 2009). Drawing on the work of Weber (1947) and the classical theorists, a number of studies from the 1970s to the 1990s concluded that the larger the organisation was, the higher the degree of centralisation would be – and conversely that the smaller the organisation, the lower the degree of centralisation. Recent studies by Goode and Gregor (2009) have confirmed these findings.

Influenced by the human relations approach and by technological advances, research on the relationship between organisational size and centralisation in the past two decades seems to have dismissed the earlier findings and concluded that – apart from size – other factors influence the degree of centralisation in an organization (Child and Kieser, 2003). In their investigation of manufacturing firms, Huang, Rode and Schroeder (2011) found a low degree of centralisation (decentralisation). The variation was attributed to technology and leadership styles, among other factors. The same results were confirmed by Arena and Azzone (2009) who considered firms in the service industry. The problem of directing larger numbers of people makes it impossible to continue employing a personalised, centralised style of management, and should perhaps adopt a decentralised approach – as suggested by Andrews *et al*. (2009), who concluded that large public organisations can be managed better through a decentralisation of power. There seem to be agreement in the literature that organisational size affects the degree of centralisation in organisations. There is disagreement, however, about the nature and scope of the relationship, as discussed above.

On the relationship between formalisation and organisational size, Miller (2014) found larger size to be the most powerful predictor of formalization.This is related to the bureaucratic dimensions of specialisation, the use of procedures, and a dependence on paperwork. On the other hand, smaller organisations were found to be less formalised (Andrews, 2009). In smaller organisations, Andrews (2019) found the general rule to be fewer rules and procedures. Oliveira and Takahashi (2012) and Puranam, Raveendran and Knudsen (2012) found that organisational size on its own does not influence formalization – but other variables, such as organisational culture and industrial type, do affect formalisation.

Since the seminal work of Hall *et al.* (1967), Klatzky (1970), and Pugh and Hicknson (1976) the relationship between organisational size and complexity has been inconsistent. Hall *et al*. (1967) concluded that complexity cannot be assumed from size, as the relationship between the two is weak. On the other hand, Aldrich (1979) found that organisational size relates to complexity. Contemporary research by Baumann-Pauly, Wickert, Spence and Scherer (2013) has found a causality between organisational size and complexity. As organisational size increases, complexity increases. Using large manufacturing firms, De-Clercq, Dimov and Thongpapanl (2013) confirmed this finding.

If strands of the arguments about the relationship between organisational size and structural variables are drawn together, the following hypothesis can be made:

Hypothesis 1: Organisational Size is significantly associated with Organisational Structure.

2. 6 ORGANISATIONAL ENVIRONMENT AND ORGANISATIONAL STRUCTURE

The argument of the relationship between organisational structure and the environment can be traced and located within the use of open systems in the study of organisation (Ackoff, 1981; Mansor and Tayib, 2013). The environment is documented as one of the central contextual issues that influence innovation (Tornatzky, Fleischer and Chakrabarti, 1990). Contingency and strategic choices are the two perspectives that have influenced the enquiry into how organisational structure is influenced by the environment. The contingency view, based on the seminal work of Burns and Stalker (1961) and of Lawrence and Lorsh (1967), perceives organisations as responding to the operational contingencies dictated by the environment. The strategic choice approach, influenced by the seminal work of Child (1972), sees organisations as able to act in a way that influences the choice of strategy through leadership actions. Both approaches conceptualise the environment as consisting of technological advances and market situations (Burns and Stalker, 1961). The two approaches treat the environment as an independent variable and organisations as a dependent variable. The strategic choice approach understands the relationship between the two as inter-dependent (Tornatzky *et al.*, 1990).

2.6.1 Organisational Environment and Organisational Structure: A Contingency Approach

The contingency (or situational) perspective as advanced by Burns and Stalker (1961) has two widely-held views on the relationship between organisational structure and the environment. Firstly, a fast-changing organisational environment influences the adoption of an organic organisational structure. Secondly, a stable environment results in the adoption of a mechanistic structure (Burns and Stalker, 1961).

As the environments change, organisations need to adopt a structure that allows them to be flexible and match the new trends in the environment. Such an organic structure allows for both organisational survival and innovation (Damanpour, 2010). Andrews (2009) concluded that the organic structure is an interface between organisations and the environment – and perhaps the solution to the challenges posed by a changing environment. To respond to changing environments, organisations need to decentralise, adopt specialisation, and allow

more employee involvement and team work to address uncertainty. On the other hand, mechanistic structures are centralised, highly formalised, and standardised (Rogers, 2010). This contingency relationship between organisational structure and the environment was dismissed by Child (1972) as inadequate because "it fails to give due attention to the agency of choice by whoever has the power to direct organisations". This dismissal sees the relationship as simplistic, and relegates the organisations to being merely recipients of environmental changes (Damanpour, 2010).

2.6.2 Organisational Environment and Organisational Structure: A Strategic Choice Approach

To address the inadequacies of the contingency explanation of the relationship between organisational structure and the environment, the strategic choice approach gained momentum in the early 1970s, following the seminal work of Child (1972). The strategic choice approach locates the strategy-structure relationship within the context of an environment. Managerial decisions are thought to have an effect on structural designs. The strategic choice approach concludes that the relationship between organisational structure and the environment is interdependent. External constraints are not the sole determinants of organisational design, as rooted in the contingency paradigm; managerial actions and choices also have a stake (Child, 1997).

Even though proving a strong proposition that organisational structure is affected by external constraints, the earlier work of Burns and Stalker (1961) and Child (1972; 1997) limited the definition of 'environment' to technological advances and market conditions. Environments are characterised by socio-economic and political factors, and the rate of change is a mediating variable in the relationship between the two (Sine *et al.*, 2006). The contingency and strategic choice approaches explain the relationship between organisational structure and environment in generic circumstances. The present study accounted for the relationship between the two approaches in a volatile business environment with specific change drivers. There is evidence from the literature that organisational structure is affected by the environment. This argument is promoted by contemporary researchers such as Tolbert and Hall (2015).

2.7 ORGANISATIONAL LEARNING

Organisational learning appears prominently in the discourse of organisational fitness; hence the need to explore the literature that has discussed it. Organisational learning is a process that involves the adjustment of what is known (Easterbuy-Smith and Lyles, 2011). In this process knowledge is acquired, created, disbursed and retained (Rahim, 2010). Beer *et al.* (2003, p.3) saw organisational fitness as "the capacity to learn and change to fit new circumstances". This locates organisational learning as a driver of fitness. There seems to be consensus in the literature about the role that organisational learning plays in the construction of fitness. From a strategic lens perspective, organisational learning is envisaged as the restructuring agent of fitness (Beer *et al.*, 2003; Beer, 2009). It shapes organisational levers and capabilities to align with the environment. Through learning, organisations are able to engage and disengage practices and systems that are relevant to the achievement of fitness. Learning can only be achieved if organisations understand and manage their experiences (Easterbuy-Smith and Lyles, 2011)

From an evolutionary perspective, a different view of organisational learning theory and its contribution to fitness is suggested by Boxall and Purcell (2011). In this view, organisational learning is routine-based, history-dependent, and target-oriented. This notion advances the need of organisational memory to be taken into account as a reference point in the creation of organisational fitness (Sujan and Furniss, 2015). Current research agrees that organisational memory resides mostly in the human resources of an organisation (Verma and Tiwari, 2009). It has been found that organisational memory is also regulated by organisational structure (Sujan and Furniss, 2015). Strategies such as downsizing are a direct threat to organisational memory, and thus to organisationalfitness. Organisational learning in the fitness discourse is thought to be a continuous process that seeks to engage, disengage, and align organisational levers, capabilities and strategies in making organisations fit (Ghaznavi, Toulson, Perry and Logan, 2013).

2.7.1 Relationship between Organisational Learning and Organisational Structure

What is known about the relationship between organisational structure and organisational learning is largely an academic caution about the lack of empirical evidence (Zheng, Yang and McLeod, 2010). Most of the propositions are drawn from the role and function of organisational structure in an organisation (Sujan and Furniss, 2015). Two critical conclusions have dominated the inquiry into how organisational learning relates to

organisational structure. Firstly, organisational structure influences organisational learning (Fiol and Lyles, 1985; Bapuji and Crosson, 2004; Zhang, 2008; Martinez-León and Martinez-Garcia, 2011). This conclusion is largely based on the downstream benefits of the relationship between organisational structure and communication, which includes high levels of motivation among employees that translates into organisational learning (Zheng *et al.,* 2010). Secondly, organisational learning shapes organisational structure (Curado, 2008). Such a view recognises organisational structure as an outcome of a learning process.

Treating organisational structure as a predictor of organisational learning, Martinez-León and Martinez-Garcia (2011) concluded from their empirical research using Spanish firms that firms with low specialisation, low centralisation, and low complexity learn better than when the opposite of these three structural variables is true. This conclusion is consistent with the earlier propositions of Burns and Stalker (1961) that firms with organic structures learn better. In a theoretical paper, Rasouli, Valipour and Moradi (2014) conclude that for managers to design a learning organisation, they have to design an organic structure. Such conclusions were confirmed by the work of Joubert and Roodt (2011), whose findings concluded that a modestly formalised organisation allows its members to be innovative, and thus learning is promoted. Fewer rules and procedures were found to promote organisational learning. Organisations with low levels of complexity were also found to learn better (Joubert and Roodt, 2011). Low levels of complexity were found to stimulate organisational learning, as employee interaction enhances the sharing of ideas and thusy organisational learning (Rasouli *et al*., 2014).

Mehrabi, Soltani, Alemzadeh and Jadidi (2013, p. 124) concluded that "there is a significant and negative relationship between organisational structure and fulfillment degree of learning organisations". Their study was limited to educational institutions whose organisational structures were mechanistic in nature. This approach is line with the mechanistic approach to organisational design that found highly centralised, formalised and complex organisations to hinder learning (Mehrabi *et al*., 2013; Mariano and Casey, 2015). There is, however, a sizable amount of research that concludes that centralisation is conducive to organisational learning (King, 2009). A centralised structure was found to enable organisational control and quick reactions to situations. Such a scenario was found to be a promoter of organisational learning (King, 2009).

Organisational learning was discussed by Curado (2008) as a predictor of organisational structure. From acquired knowledge through organisational experience, organisations are able to reconfigure their structural designs (Beer, 2009). The studies that have considered organisational learning as a predictor of organisational structure were motivated by the organisational experience concept rather than by individual experience (Mariano and Casey, 2015). Collective experience from organisational learning was found to result in organisations collectively re-organising. Such re-organisation is captured by organisational structure; hence the conclusion that organisational learning is the predictor of organisational structure (Marino and Casey, 2015). The relationship between organisational structure and organisational learning is dominated by the ongoing controversy about which of the two is a predictor of the other. To address this controversy, Duffield and Whitty (2015) suggested that the issue is contextual. In highly volatile circumstances, organisational learning has to be up to speed to configure and redesign organisational structure so as to promote organisational alignment as the organisation faces a highly dynamic environment (Duffield and Whitty, 2015). In a stable environment, it is easy to trace the regulating effect of organisational learning because all the parameters are fairly stable and remain defined, unlike in a volatile environment. Given the existence of the relationship between organisational structure and organisational learning, compounded by the fact that the combination and integration of knowledge influences a learning organisational structure, it is concluded that organisational learning yields to capabilities. From experience acquired through learning, organisations reconstruct their organisational structures, capabilities and levers. It is therefore hypothesized that:

Hypothesis 2: Organisational Learning is significantly associated with Organisational Structure.

The previous section described and defined an ‘organisation’. It considered organisational structure and structural variables of complexity, formalisation, and centralisation. Organisational size was noted to be a structuring variable that is responsible for shaping other variables of the organisational structure; hence its treatment in this research as a first level predictor variable. Organisational learning is seen in the literature as a regulating variable that aligns organisational levers, capabilities and strategies in making an organisation fit. This is the reason for its treatment in this research as a predictor variable. Two propositions are made is this section: firstly, organisational size has a positive effect on organisational structure; and secondly, organisational learning is positively related to organisational structure.

2.8 ORGANISATIONAL LEVERS

The work of Beer (2000 and 2009) and Davenport *et al*. (2006) concluded that organisational levers regulate and mold organisational capabilities in an organisation. This section will define, describe, and conceptualise organisational levers as they have been considered in the organisational and management literature. The discussion will show how organisational levers regulate and model organisational capabilities in the formation of organisational fitness.

2.8.1 Conceptualisation of Organisational Levers

There term 'organisational levers' is widely used in the organisational literature, and 'managerial levers' is similarly used in the management literature. The terms are used interchangeably across the management and organisational fields. No conceptualised meaning or definition of the terms is provided in either the organisational or the management literature.

Scholars who have discussed levers have only identified them without defining them. Beer (2000; 2003; 2009) lists organisational levers as: leadership team, work systems, management processes, human resources system, principles, and culture and corporate context. The meaning that can be assigned to levers is therefore circumstantial and arbitrary. It is guided by the everyday English usage of the term, as well as by its application in the world of physics. This conceptualisation of levers in the organisational and management literature, however, limits its meaning to tautological levels. The *Oxford English Dictionary* defines a lever as a control tool that enables a movement of a heavy object. It gives an operator an advantage in performing a task). In physics, a lever is a simple mechanism that amplifies an input force to provide a greater output. Leverage is gained in the process. A lever makes a workload easier to handle (Harper, 2015).

When applied in the organisational and management disciplines, levers are related to what gives managers or organisations the leverage to control, move, handle, coordinate and amplify their work plans into organisational success (Beer, 2009). This is compatible with the use of levers by Beer and Nohria (2000), Anderson and Anderson (2001), and Young (2009). This study adopts a meaning of the word 'levers' that fuses its everyday English usage with the physics application in an attempt to provide a working definition of the term. This study

will consider the following levers: leadership team, organisational culture, work systems, management processes, and human resources systems.

2.8.2 Leadership Team

Kotter (2006) defines 'leadership' as a process of influence that involves articulating the shared vision of the organisation's future, aligning resources to the vision, motivating and inspiring organisational members to accomplish organisational goals. This leads to the mutual benefit of both organisation and employee. Such a definition of leadership makes it a process that seeks to deliver organisational change. As a lever, leadership enables organisations readily to handle change. This observation has led to the conclusion that "producing change is 80% leadership and 20% management" (Kotter, 2006.p, 14).

Fuda (2012) describes 'leadership' as the accelerator or hand-brake of everything in an organisation. It represents the epicentre of the organisation. It is a critical leadership role to understand which levers an organisation can call on, and to what effect (Moynihan and Pandey, 2007). Such a description of organisational leadership makes it a lever that controls every kind of action in an organisation. Leadership as a lever of control is responsible for the appropriation, cooperation, and coordination of all organisational resources (Nootebroom, 1999).

There is general agreement among management and organisational scholars that leaders are responsible for motivating organisational members and providing direction and vision in an attempt to achieve organisational objectives (Parker and Wright, 2001). Of all the leadership styles, the transformational leadership approach has been considered in organisational levers research (Moynihan, Pandey and Wright, 2012). Transformational leadership centres on transforming followers' attitudes into organisational commitment (Fuda, 2012); thus it is regarded as an organisational lever ahead of other leadership perspectives. This, however, does not dismiss other leadership perspectives as organisational levers.

The argument for transformational leadership as an organisational lever is advanced by Moynihan *et al*. (2012). Transformational leadership is said indirectly to affect mission valance – that is, the ability to satisfy employee expectations and motivate them to identify with organisational goals and objectives (Moynihan *et al*., 2012). Basing his argument on empirical evidence from public enterprises, Wright (2007) found that transformational leadership as a behavioural theory contributes as a lever by affecting employee efforts. It

raises the awareness of the importance of organisational values and outcomes. It motivates employees to go beyond personal interest in pursuit of the organisational mission (Bass and Riggio, 2006).

Transformational leadership increases motivation by raising awareness of organisational mission, aims and objectives (Dixon and Alakeson, 2010). Leaders who offer a vision and set positive examples encourage organisational pride and cultivate organisational citizenship, which are pivotal in attaining goals (Ainscow and Sandill, 2010). This gives leverage over competitors (Moynihan *et al.,* 2012). The present study was limited, however, to public sector management, which differs considerably from private sector management. One of the major differences relates to corporate objectives. Private sector leadership is centred on making profit, which is why performance measurement is influenced by economic motives. On the other hand, public sector leadership is concerned more about service provision. Transformational leadership conceptualised in the context of the public sector is not the same as the private sector's conceptualisation. Although it has limitations, the research of Moynihan *et al*. (2012) gives valuable insight into how leadership is an organisational lever in general, and how transformational leadership in particular can influence goal clarity in an organisation. Research into how other leadership paradigms are levers is still at the generic and theoretical stage (Dixon and Alakeson, 2010).

2.8.3 Organisational Culture as a Lever

Organisational culture has been defined as shared basic assumptions learned by an organisation over time (Tessier and Otley, 2012). It is a way of doing things and a way of thinking (Schein, 1992). Three levels of organisational culture are presented by Schein (1992), and later discussed by Scott and Davis (2015), as artifacts, shared values, and basic assumptions. Culture becomes a lever for the organisation if it is in line with organisational goals, and promotes and supports organisational growth such that it turns into competitive advantage (Anthony and Young, 1999).

Artifacts are the physical symbols that are visible and audible in an organization, and are associated with organisational behaviour in the way that things are done. These artifacts mirror a certain attribute of an organisation. Uniforms, company logos, and corporate colours are some of the artifacts identified by Young (2000). These create a culture that defines organisational identity and cultivates a culture that is peculiar to the organisation.

Shared values are norms and rules denoting how things are done in an organisation. These are embodied in company mission statements, codes of conduct, and codes of values (Scott and Davis, 2015). Mission statements have been criticised for being of limited use in formulating and directing strategy. They are often not used, or are ignored completely. In some instances, mission statements are seen as nothing but part of a public relations exercise to pay lip service to customers (Scott and Davis, 2015). Mission statements do bring about a shared meaning in an organisation, however. They become a reference point for everyone when carrying out their work (Scott and Davis, 2015).

Basic assumptions are what ground the beliefs of organisational members, based on their historical knowledge of how things have always been done in an organisation (Tessier and Otley, 2012). In some cases these assumptions are based on members' expectations. Research has shown that such assumptions are harboured by organisational memory (Walsh and Ungson, 1991). These assumptions are the perspectives that form organisational culture, and it is the task of leadership constantly to nurture it and transform it into a lever.The theoretical work of Young (2000) discuss the mechanism of how culture interacts with other facets of the organisation to produce cultural levers. Six organisational culture levers are identified as useful for managers to modify an existing culture or to create a new one. These include: strategic formulation, motivation, management control, conflict management, customer management, and influence (Young, 2000). The organisational culture levers are discussed in the next section.

Strategic formulation

The strategic formulation process is concerned with giving direction and with planning and setting aims and objectives (Strickland, Thompson and Gamble, 2001). The strategic formulation culture has to promote organisational commitment. Two schools of thought on how to form a strategy are suggested, and are practised by most firms. These are the coalition approach, which gives and allows participation by all members of the organization, and the top-down approach, which makes strategic formulation a top management task (Kotter, 2002). The strategic formulation culture becomes a lever when it addresses organisational commitment. This is in line with the conclusion of Strickland *et al*. (2001) that the way a strategy is formed has a bearing on its success. The challenge here is to adopt a strategic formulation culture that is not a stumbling block to organisational success. Should such a

culture fail at the strategic formulation process, an organisation is likely to fail to produce capabilities, and will eventually become unfit (Beer, 2003).

Power and influence flow through an organisation's hierarchy, and collegiality flows through an organisation. Organisational structure, as captured by the organogram, represents the flow of power and influence (Blau, 1971). The organogram only represent formal power and influence. Informal power is never represented – but is ever present. The establishment of responsibility centres through departments and divisions controls the flow of power and influence (Ribeiro-Soriano and Urbano, 2010). This leads, however, to inter-departmental conflict, making organisational cohesion difficult (Scurtu and Neamtu, 2013). The long-standing argument about centralisation and decentralisation has dominated the power and influence arena in both organisational and management fields. Contingency theories have provided a logical conclusion in the matter by advocating that each circumstance determines the most appropriate approach to use to control power and influence (Nagel, 2009).

Motivation

The ability of an organisational culture to motivate employees plays a critical role in collaborating with other cultural levers (Hofstetter and Harpaz, 2015). Motivation in the strategic formulation stage breeds the much-needed organisational commitment. Empowerment and the possession of influence are likely to contribute to motivation (Gustafsson, Johnson and Roos, 2005). The motivation process has to be designed as a cultural lever. Through a well-designed motivation culture, an organisation is likely to promote an innovation culture and entrepreneurial behaviour (Parker and Owen, 2001).

Management control

The management control process forms the foundation of the cultural lever (Young, 2000). The four aspects of managerial control are identified by Young (2000) as: programming, budgeting, measurement, and control. Programming involves decision-making about new products and investment appraisal. The programming process has to link with the strategic formulation lever to enable the alignment of the two.

The budget process represents financial plans of an organisation. The organisational culture of top-to-bottom budgeting is likely to have an excluding effect on employees that leads to lower motivation and a lack of organisational commitment. On the other hand, an inclusive budgetary culture is thought to evoke organisational commitment (Cameron and Quinn,

2011). The reporting and measurement process comes in the form of performance appraisal at the individual and organisation levels, and it takes financial and non-financial forms. This process links with the motivation, power and influence levers to produce a culture that results in either firm leverage over or disadvantage in the face of competitors. A culture of fairness and transparency is thought to promote motivation in an organisation (Ryan, 2007).

Conflict management

Organisational conflict brings about a new dispensation that can either benefit or destroy an organisation. New and different ideas are tabled, and the better and stronger ideas emerge after the discussion (Hofstetter and Harpaz, 2015). The challenge faced by managers is to manage the conflict in such a way that the end result is positive to the firm. A conflict management mechanism and culture that is accommodative yet decisive and firm needs to be mooted to ensure that the benefits of conflict are reaped (Kotter and Cohen, 2002).

Customer management and influence

The identification and managing of customers is a combined effort of the operations and marketing departments. It is said to be a visible external indicator of the organisational culture of a firm (Young, 2000). This calls for mechanisms that ensure that customers are attracted to the organisation. Research has confirmed that customers relate well to the service and treatment offered them at the points of sale and after-sales for repeated purchases of a product or a service from the same seller (Kotter, 2006). The six cultural levers presented by Young (2000) relate to each other and complement each other in creating organisational culture levers. They are interdependent, and influence each other in creating a cooperative culture that yields competitive advantage. Given that culture is not static (Sulkowicz, 2007), this theoretical model does not equip managers with a culture change mechanism in the face of a changing business environment.

2.8.4 Work Systems

Simon (1995; 2000) defines work systems as the formal routines and procedures that managers use to maintain or alter patterns in organisational activities. The formal routines include plans, budgets, and market-share monitoring systems. The work system is an information-based system, and managers use information for the following purposes: to identify opportunities for their subordinates; to communicate plans; and to monitor the achieving of plans (Simon, 1995; 2000). According to Simon (1995; 2000), organisational

levers work systems functions simultaneously, but for different purposes. Their collective power lies in the tension they generate in an organisation. Henri (2006) tested this proposition empirically, and concluded that managers use performance measures in both diagnostic and interactive roles, resulting in a dynamic conflict that produces organisational capabilities that are positively related to performance.

The control levers allow managers to transmit and process information in an organisation. Information can be used in an organisation to provide opportunities for subordinates to communicate plans and monitor the achieving of those plans. Control is informative, and provides a platform for decision-making (Merchant and Otley, 2006). The theoretical work of Simon (1995; 2000) name four categories of control work system levers: the belief system, the boundary system, the interactive control system, and the diagnostic control system. Beliefs systems are the core values of the organisation that inspire the search for new opportunities. In their investigation of manufacturing firms, Analoui and Karami (2002) found that belief systems are important in high performing organisations. Boundary systems are interested in tracking the risks to be avoided in an organisation. Interactive control systems focus on organisational learning and the emergence of new ideas and strategies. Diagnostic control systems monitor and reward the achieving of specific goals (Simon, 1995; 2000).

Based on the empirical evidence on the four levers of work systems suggested by Simon (1995; 2000), Widener (2007) and Massaro, Brady and Pitts (2012) explored the antecedents of control system levers and the strategic drivers of control. Their work also investigated the relationship among system control levers, and their costs and benefits, and found a strong relationship among them. Although the research was based in accounting management, its findings are applicable to management in general.

Expanding on the contingency theorists' view that the environment influences work system levers (Chenhall, 2003), Widener (2007) concludes that strategic uncertainties and strategic risks are the drivers of the importance and role of work system levers. The belief system and diagnostic levers promote and influence organisational learning and attention. The two – organisational learning and attention – are benefits of work systems levers, as they positively affect performance (Swift and Hwang, 2013). This conclusion is consistent with the earlier findings of Hurley and Hult (1998). The work systems levers are all related through the belief systems that influence the diagnostic, boundary, and interactive system levers.

Despite criticism of this approach as vague and ambiguous by Ferreira and Otley (2009) and Ahrens and Chapman (2004), the work of Simon (1995; 2000) still provides a valuable framework for work system levers. In response to the criticism, Tessier and Otley (2012a) conceptualised a revised framework for system levers that identifies two players in the organisation: managers and employees. It proposed three levels of managerial intervention: the type of control, the objectives of control, and the choices available. This new conceptualisation of work system levers is still to be subjected to empirical testing.

2.8.5 Human Resources as Organisational Levers

The human resources function in an organisation is mandated to perform duties that include staffing, training, performance appraisal, and compensation. The relationship between these duties and organisational performance, effectiveness and efficiency determines the extent to which the human resources function can be an organisational lever (Heneman and Milanowski, 2011). This confirms the strategic importance of the human resources function for the organisation as a whole.

Since Peters and Waterman's (1982) description of an excellent organisation, human resources practices and their contribution to organisation performance have caught the attention of researchers in the fields of organisational behaviour, organisational and industrial psychology, and human resources. Two challenges, however, have made it difficult for research in this direction to reach agreement. The first challenge is the arbitrary conceptualisation of organisational performance. One stream of research regarded performance in terms of financial returns (Delaney and Huselid, 1996), while another stream considered non-financial measurements of performance such as market share (Talukdar, 2011). The second challenge was the variety of theoretical approaches. The theoretical grounding of these research approaches spread across and beyond the scope of the organisational and management fields. They include general systems theory; role behaviour theory; institutional theory; resource dependence theory; human capital theory; transaction cost economics; agency theory; and the resource-based theory of the firm (Jackson and Schuler, 1995).

Although the results on the relationship between human resources practices and organisational performance are inconclusive as a result of the two challenges referred to above, they are strongly related, and agree that there is a positive relationship between the two constructs (Wright and McMahan, 1992; Delaney and Huselid, 1996; Talukdar, 2011).

Offering empirical evidence about how each of the human resources functions is related to performance and how they can affect organisational leverage, Talukdar (2011) concludes that organisational staffing positively affects organisational performance and outcomes. This relationship is based on an effective, fair and sound job-related approach to staffing. This is in agreement with the theoretical conclusion of Hogg (2001) that staffing provides a foundation for organisational planning. Acquiring and retaining good and able employees contributes to organisational success (Heneman and Milanowski, 2011). Training regulates effectiveness and efficiency through sharpening employees' skills and giving them confidence to perform in line with new industrial trends (Talukdar, 2011). This is a conclusion confirmed earlier by Wright and McMahan (1992).

For the human resources function to be an organisational lever, two conditions have to be met, according to Talukdar (2011). Firstly, human resources practices have to be linked to organisational competencies. Secondly, the human resources functions have to be aligned to each other as guided by organisational strategies for compatibility with organisational objectives and aims. These conditions dominate the strategic perspective of a firm in both the organisational and the management literature (Rumelt and Teece, 1994).

2.8.6 Organisational Levers as they relate to Organisational Structure

The literatures on management and organisations agree that organisational levers are a function of organisational structure (Kakabadse, Bank and Vinnicombe, 2004; Janićijević, 2013). Organisational structure influences organisational culture (Martins and Terblanche, 2003). The work of Talukdar (2011) suggests that organisational structure is closely linked to the human resources function of an organisation. Heneman and Milanowski (2011) conclude that leadership styles and systems of an organisation are linked to organisational structure. In his research, Simon (2000) implied that work systems are also related to organisational structure.

Janićijević (2012) concluded that organisational structure and culture have a mutual relationship. Organisational structure influences the culture by institutionalising it, while on the other hand culture creates a context in which structure can be designed. This makes the relationship between the two reciprocal. This was supported by the earlier work of Armstrong (1985), who found a cyclical relationship between organisational levers and structure. A great deal of literature has discussed how different structural variables create and support different types of cultures. Highly-centralised structures are believed to promote a power culture

(Armstrong, 1985). In the innovation literature, centralisation has been proved to be a hindrance to both organisational and individual innovation culture (Gold *et al*., 2001). On the other hand, decentralised structures are believed to champion the team working culture that promotes innovation (Tsai, 2002). The discussion in the aforementioned literature leads to the hypothesis that organisational structure positively affects organisational levers.

Hypothesis 3: Organisational Structure is significantly associated with Organisational Levers.

2.8.7 Organisational Levers and Organisational Learning

The relationship between organisational learning and organisational levers is overwhelmingly supported in both organisational and management literature. Among the leading predictors of organisational learning are leadership (Bhat, Verma, Rangnekar and Barua, 2012), organisational culture (Martins and Terblanche, 2003; Joseph and Dai, 2009), human resources functions (Kang, Morris and Snell, 2007) and work systems (Engeström, 2001).

From studying Indian manufacturing firms, Bhat *et al.* (2012) concluded that the overall leadership style – and transformational leadership in particular – had a significant positive impact on organisational learning. Their findings are in line with earlier empirical findings by Rijal (2010) that transformational leadership has a significant positive influence on building a learning organisation. Senge (2014) also alludes to the leadership role in the creation of a learning organisation. Through their motivation role, their inclusive approach to workers, and their participatory work with teams, leaders promote a learning environment (Senge, 2014). It is not surprising that only leadership paradigms that allow team work and broader employee participation have been linked to promoting organisational learning (Franco and Almeida, 2011; Argia and Ismail, 2013).

Organisational culture is said to initiate change, and acts as a vehicle of flexibility and adaptation for survival in a changing environment (Hershey and Walsh, 2000). These theoretical observations were supported by the empirical work of Argia and Ismail (2013), who expanded the scholarship of Hershey and Walsh (2000) by adding that culture develops a learning organisation by integrating experience, experiment, enquiry, mistakes, engagement, and disengagement. Kang *et al*. (2007), basing their research on theories of knowledge-based competition, concluded that learning is a source of competitive advantage, and added that value-creation and people-embodied knowledge are the firm's source of core

capabilities. Although the work of Kang *et al*. (2007) was limited to manufacturing firms in England, it offers insight into how learning is related to competitive advantage, as levers interact with learning.

The human resources function provides the fundamental requirements for an organisation to learn (Boxall and Purcell, 2011). The human resources function drives the accumulation of skills, and is the custodian of knowledge levels stocks. It is these stocks that provide the foundation for competitive advantage (Collings and Mellahi, 2009; Chen and Huang, 2009).

From the above discussion, it is proposed that:

Hypothesis 4: Organisational Learning is significantly associated with Organisational Levers.

The previous section defined and located organisational levers in both organisational and management literature. The conceptualisation and definition of the term is something of a 'desert' in the literature. What exists is an implied meaning associated with its everyday use in physics and in the English language. The four levers discussed above show associations with organisational competitiveness and efficiency. The literature seems to assume that organisational levers play a role in the production of organisational capabilities (Beer, 2000; 2003); their mediating role in the production of organisational fitness is largely unknown. This is a research gap of interest to this enquiry.

2.9 ORGANISATIONAL CAPABILITIES

Scholars agree that building on organisational capabilities helps an organisation to be fit. This section will familiarise the reader with the definition of 'organisational capabilities', the controversies surrounding it, the different types of capabilities, their nature and characteristics, and how capabilities are created. This section will also discuss how organisations capabilities contribute to organisational fitness.

2.9.1 Organisational Capabilities: Meaning and Concepts

The concept of organisational capabilities can be traced to the traditions of evolutionary economics (Selznick, 1957; Nelson and Winter, 2009), strategic management (Ansoff, 1965), and the resource-based view of a firm as discussed by Collis (1994). The majority of works that have attempted to define this concept have given it a tautological and theoretical description, with only a handful attempting to substantiate its meaning through empirical

evidence. This limits what is known about organisational capabilities to deductive logic. This is a gap in the literature that is of interest to the present research.

Amit and Shoemaker (1993) and Bratton and Gold (2012) define 'capabilities' as a firm's ability to organise and deploy resources through processes. This is a resource-based view of capabilities that gives human resources responsibility for coordinating other resources to achieve competitive advantage. In this vein, Ulrich and Lake (1991) conclude that organisational capabilities can be achieved through human capital development. On the other hand, Chandler (1992) is of the opinion that human capital cannot be the custodian of capabilities, as "the individuals come and go, the organisations remain" (p.87). This view takes organisational capabilities beyond human capital, giving the organisation a life of its own and custody for capabilities beyond human coordination.

Organisational capabilities, according to Schienstock (2009), are a process-oriented concept "that understands organisational change as a continuous and open ended process of organisational development" (p.3). As a process, capabilities are not static: they change in line with environmental changes. As part of organisational development, they are peculiar and valuable to an organization, leading to the conclusion by Schienstock (2009, p.4) that "… they are of a tacit nature and therefore difficult to transfer or imitate". Different organisations develop different capabilities in line with their internal and external circumstances.

Winter (2000) and Ambrosini and Bowman (2009) define organisational capabilities in the light of organisational routine. In as much as they have routine implications, organisational capabilities distinguish themselves, according to Winter (2000, p.981), from routines by being a "high level routine or a collection of routines". In Winter's formulation, a routine is a learned behaviour by an organisation that is carried out repeatedly. The clear roles of organisational capabilities are to "confer on management a set of decision options for producing significant outputs of a particular type" (Winter, 2000, p.982).

From the above definition of organisational capabilities, three strands of the concept emerge that are encountered in the literature that preceded or followed the work of Winter (2000). The first is the routine-based view of organisational capabilities advanced by Nelson and Winter (1982). The second is the knowledge-based view of organisational capabilities advanced by Kogut and Zander (1992), Winter (1987), Grant (1996), and more recently Wang and Noe (2010). Given that the routines have to be learnt, organisational learning is important in the production of capabilities, as it allows the selection and retention of routines

that give competitive advantage. The third strand is that organisational capabilities have to be based on the resources of organisations' human resources tangible or intangible. This brings into the fold the resource-based view of organisational capabilities advanced by Wernerfelt (1984), Rumelt (1984), Gottschalg and Zollo (2007) and, of late, Ployhart and Moliterno (2011).

These three strands of organisational capabilities – routine-based, knowledge–based, and resources-based – are brought together to provide a comprehensive meaning of organisational capabilities by Helfat and Peteraf (2003, p.999), who describe organisational capabilities as "the ability of an organisation to perform a coordinated set of tasks, utilizing organisational resources, for the purpose of achieving a particular end result". This description brings together all the strands of the definition of organisational capabilities and unites them. It also goes beyond a mere description of the concept by clearly stating its organisational roles, which are to coordinate tasks and regulate performance.

Two views seem to suggest different actions that give rise to organisational capabilities. First is the view of evolutionary economists and institutional sociologists that capabilities are emergent by nature (Selznick, 1957; Nelson and Winter, 1982; Bratton and Gold, 2012). In this view, the interactions within the organisation and with the external environment are responsible for giving rise to capabilities. This view limits organisational capabilities to a function of coincidence without a deliberate intention to achieve them through the agency of a human element. Apart from the theoretical assumptions made by this view, no empirical evidence supports it.

Contrary to this view, the case study work of Kim (1998), Rosenbloom (2000), Raff (2001) and Ambrosini and Bowman (2012) have proved that organisational capabilities are a function of managers' intentions as they undertake their managerial roles of resource allocation, controlling, and planning scheming organisational processes. The work of Zollo and Winter (2002) conclude from a complexity perspective that capabilities are a function of both emergence and intentionality. Micro- and macro-level studies of organisational routines by Gavetti (2005) concur with the emergence and intentionality nature of capabilities.

In conclusion, the three concepts that constitute organisational capabilities are: routines, knowledge, and resources. Two major tasks of organisational capabilities are to coordinate tasks and regulate performance. Even though the descriptions are theoretical constructs and

are tautological in nature, they provide a solid background to directing any empirical research on the subject.

2.9.2 Types of Organisational Capabilities

Two broad categories of organisational capabilities are evident from the literature. Based on organisational hierarchy, core capabilities are also referred to as 'operational capabilities' or 'zero level' (Chandler, 1991; Coad, 2009; Dosi and Nelson, 2010; Felin, Foss, Heimeriks and Madsen, 2012). Dynamic capabilities are the second and special type of organisational capabilities that are associated more with the external environment and with competitive advantage (Winter, 2003; Helfat and Peteraf, 2003; Liu, Grant, McKinnon and Feng, 2010; Schienstock, 2009).

2.9.2.1 Core Capabilities

Two different views on what core capabilities are emerge from the literature. The first is the evolutionary theory's view, which is based on the economic evolution of a firm and its environment; and the second is the strategic management view, based on the competitive edge of a firm. These two views locate core capabilities differently, assign them different organisational roles, and reach different conclusions about their formation.

The economic evolutionary theorists (Teece, Pisano and Shuen, 1997; Cantwell, Dunning and Lundan, 2010), drawing from the history of enterprises presented by Chandler (1992, p.86), view core capabilities as "a hierarchy of practiced organisational routines, which define lower order skills required at the lower levels of the hierarchy". Given that these capabilities are found at the lower levels of an organisation, they are elementary in nature. They form the foundation of the things organisations do well. Chandler (1992) concludes that at this level an organisation builds what it is capable of doing confidently.

From a strategic paradigm perspective, core capabilities are the firm's endeavours to differentiate itsself from its competitors by pursuing a peculiar behaviour that is difficult for competitors to imitate (Leonard-Barton, 1995; Andrea and Ciborra, 1996; Agarwal and Selen, 2009). This approach views core capabilities as higher-level capabilities that have to be attained through the strategic loop. Such a conceptualisation of core capabilities, however, has inspired skepticism about the difference between core competencies and capabilities as different concepts, casting doubt on the existence of the capability concept altogether (Felin and Foss, 2004; Keneley, 2009).

Strategic management theorists see core capabilities developing through a transformation process (Agarwal and Selen, 2009). The process, according to Andrea and Ciborra (1996) and Agarwal and Selen (2009), involves fusing common resources in the market (resources that are available to all firms) and those resources that are peculiar to the firm. Through organisational learning, and with the aid of routines, core capabilities are formed (Grant, 1996; Ambrosini and Bowman, 2009). However, such a process was dismissed by Felin and Foss (2012) and Keneley (2009) as collective-level theorising that lacks micro-level attention to different organisational systems in different industries. The components of core capabilities, according to Cantwell and Dunning (2010), are human capital skills, physical systems, managerial systems, and organisational models. These elements go through a process and are transformed into core capabilities. The different conceptualisations of core capabilities are summarised in Table 2.4.

Table 2.4: A comparison of the conceptualisation of core capabilities: Evolutionary economist and strategic management views

CHARACTERISTIC	EVOLUTIONARY ECONOMIST	STRATEGIC MANAGEMENT
Location	Lower levels of the hierarchy	Apex of the organisation
Creation	Through managerial foundation building	Through strategic loop
Role	Platform for creating higher level capabilities (dynamic)	Giving competitive advantage

.

From Table 2.4 one can conclude that the conceptualisation of core capabilities depends on the perspectives and theoretical lenses that are used to view the concept. To evolutionary economists, a higher level of capabilities – referred to as dynamic capabilities – is the equivalent of the core capabilities of the strategic management lens. Capabilities in the strategic management lens are what are referred to as ‘core capabilities’ in the evolutionary lens. This fragments the concept of core capabilities in both the management and the organisational literature.

2.9.2.2 Dynamic Capabilities

Of all the organisational capabilities, dynamic capabilities have received greater attention from scholars. The debate on them includes their conceptualisation and meaning, their organisational roles, their construction, and their life cycle. The evolutionary lens has dominated the conceptualisation of dynamic capabilities (Teece, 2014). The conceptualisation and meaning of dynamic capabilities hinges on their roles, characteristics, and creation (Li, Chen, Iiu and Peng, 2014). According to Ambrosini, Bowman and Collier (2009), dynamic capabilities are those activities that enable an organisation to adjust to endogenous changes occurring daily in its operations.

From this view, dynamic capabilities enable the reconfiguration of core capabilities and other resources in pursuit of competitive advantage. They govern the rate of change in other capabilities and resources (Pohjola and Stenholm, 2012). Organisational change is driven by dynamic capabilities. Their dynamic nature enables firms to create other capabilities that are in line with environmental trends. It is from this notion that different organisations in the same industry react differently to the same environment (Helfat *et al.,* 2009; Winter, 2003; Eriksson, 2014). This suggests, therefore, that firms with a high level of dynamic capabilities are likely to handle environmental changes better.

A handful of studies, however, have attempted to link dynamic capabilities to organisational environment. The work of Wilden, Gudergan, Nielson and Lings (2013) only provided a conceptual framework and propositions on the relationship between dynamic capabilities and environment. The following are the propositions of Wilden *et al*. (2013, p.575) on how dynamic capabilities relate to the environment.

1. The more that complementary capabilities are controlled by an organisation, the lower the transaction cost for dynamic capabilities when facing environmental turbulence.

2. The more that complementary capabilities are controlled by an organisation, the higher the governance costs of dynamic capabilities when facing environmental turbulence.

The propositions were a theoretical construction, and no empirical research to sustain them has yet been undertaken. The propositions also shed light on how dynamic capabilities can

configure the core capabilities (referred to in the propositions as 'complementary') in an attempt to control resources (referred to as 'costs').

Conceptualised from their characteristics, dynamic capabilities are said to be hierarchical in nature (Dosi and Nelson, 2010; Teece, 2014). The hierarchical concept of dynamic capabilities was mooted by Collis (1994) and simplified in a seminal paper by Winter (2003). Two levels of dynamic capabilities emerge: at the base of the hierarchy are the first-order capabilities, and at the top are the higher-order capabilities (Winter, 2003). This demarcation of dynamic capabilities is based on their functions of regulating change in a firm (Ambrosini *et al*., 2009; Helfat *et al*., 2009). The task of first-order dynamic capabilities is to change the resource base of a firm (Winter, 2003; Eisenhardt and Martin, 2000; Teece *et al*., 1997). Ambrosini (2009), following the work of Winter (2003), referred to these capabilities as incremental in nature. Their fundamental role is incrementally to modify and align core capabilities in a repeatable fashion, putting them in direct contact with the resource base of a firm (Ambrosini, 2009).

Higher-order capabilities are categorised into regenerative and renewing capabilities by Ambrosini (2009) and Pohjola and Stenholm (2012). The main role of regenerative capabilities is to provide a platform to renew core capabilities. Viewed from this perspective, they are the source of long-term investment and commitment to change in a firm (Winter, 2000). This capability allows the learning process that results in the creation of new capabilities. It also gives a firm the ability to redeploy a resource in a new situation (Bowman and Ambrosini, 2003).

Through renewing dynamic capabilities, firms are able to be innovative in ever-changing environments (Danneels, 2012; Schilke, 2014). Firms can position themselves through knowledge-creation for novel processes and products (Makkonen, Pohjola, Olkkenen and Koponen, 2014). Table 2.5 – adapted from Pohjola and Stenholm (2012, p.30) – describes the dimensions of the two higher-order dynamic capabilities.

Table 2.5: A summary and description of the higher-order dynamic capabilities hierarchy.

Dynamic capability	Dimensions	Definition	Reference
Regenerative capabilities	Reconfiguration	The capability to reconfigure the existing capability base by enabling the firm to transform and exploit its existing knowledge in changing organisational contexts.	Bowman and Ambrosini (2003), Eisenhardt and Martin (2000), Teece and Pisano (1994), Teece *et al*. (1997).
	Leveraging	The capability to use and deploy an existing resource in a new situation, allowing the firm to replicate an operational capability in a new market.	Bowman and Ambrosini (2009), Eisenhardt and Martin (2000), Pavlou and El Sawy (2011), Teece *et al*. (1997)
	Learning	The capability that allows the firm to adopt, acquire and create new capabilities through the learning processes of the organisation.	Bowman and Ambrosini (2003); Romme, Zollo and Berends (2010); Teece and Pisano (1994); Zollo and Winter (2002), Zott (2003)
Renewing capabilities	Sensing and seizing	The capability to position oneself	Danneels (2012), Pandza and Thorpe

		favourably in an environment and to explore new opportunities.	(2009), Teece *et al*. (1997)
	Knowledge creation	The capability continuously to create and absorb new knowledge, to develop new products or processes.	Eisenhardt and Martin (2000), Danneels (2012), McKelvie and Davidsson (2009), Pisano (1994), Verona and Ravasi (2003), Zahra and George (2002)
	Knowledge integration	The capability to acquire and integrate new knowledge through external sources such as networks, also referring to the use of social capital.	Ambrosini *et al.* (2009), Eisenhardt and Martin (2000), Zollo and Winter (2002)

Source: **Adapted from Pohjola and Stenholm (2012, p.30).**

Regenerative capabilities consist of reconfiguration, leveraging and learning. Renewing capabilities include sensing and seizing, knowledge creation and knowledge integration. The two groups of dynamic capabilities seem to be accepted by most scholars. All of these dynamic capabilities are based on organisational learning. However, only a limited literature has considered organisational learning as a predictor variable in the formation of organisational fitness a gap of interest to this research.

2.9.3 Development of Organisational Capabilities

The focus on organisational capabilities has largely been on how firms can use them to obtain competitive advantage and on how they can be used as mitigating tools in a changing

environment. Not until the observation by Kazanjian and Rao (1999), that most of the literature assumed that capabilities already exist, did a number of works (both theoretical and empirical) emerge to address how capabilities are produced within a firm. Winter (2000), Teece (2014), and Winter and Zollo (2002) put organisational learning at the centre of capacity building and development. To Helfat and Peteraf (2003) and Sirmon, Hitt and Ireland (2007), resource combination is critical in the creation of capabilities. The role of managerial cognition creates capabilities (Gavetti, 2005).

2.9.3.1 Organisational Learning and Development of Organisational Capabilities

Capabilities are created by way of the co-evolution of knowledge articulation, experience accumulation and knowledge codification (Zollo and Winter, 2002; Teece *et al.*, 1997). A dynamic learning mechanism developed in a theory-building paper by Zollo and Winter (2002) is a learning and systematic routine by which organisational knowledge articulation allows managers to learn to master problem-solving, innovation, improved and improvised decision-making, and driving organisational objectives effectively.

The knowledge articulation view takes into account the notion that organisational learning as collective learning takes place when individuals in an organisation express their beliefs and engage in constructive conflict, bringing about a new learning order (Argyris and Schon, 1978; Fowler, 2013). It is when organisational members link their action to the performance of the organisation that learning through knowledge articulation is achieved and translates through transformation into capabilities (Zollo and Winter, 2002; O'Reilly and Tashman, 2013).

Collective competence achieved through group discussions, performance evaluation processes and sharing opinions and experiences is thought to increase the appreciation of the linkage between actions and organisational output. This enables organisations to articulate knowledge and increase competence in the mechanism of capabilities creation (Zollo and Winter, 2002; Teece, 2014). This suggests that organisational commitment has a part in organisational learning and indirectly affects the creation of organisational capabilities. As far as the researcher knows, however, no work has considered organisational commitment in the creation of organisational capabilities.

Knowledge codification is thought to be at a higher level, beyond knowledge articulation, in the mechanism of organisational learning (Zollo and Winter, 2002; Alegre and Chiva, 2013).

Knowledge codification and articulation combined link actions and outcomes. Codification takes place when individuals categorise their understanding of the performance implications of formal written routines such as manuals, worksheets, and software such as Pastel. This is a theoretical assumption made by Zollo and Winter (2002). The assumption is silent, however, on the need to codify non-formal routines that develop in organisations. On the role of codification, Winter (1987), Zander and Kogut (1995), and Alegre and Chiva (2013) conclude that it allows the circulation of existing knowledge, organisation and execution of activities. Not only does codification act as a transfer agent in the creation of knowledge and capabilities, it is also a supporting mechanism (Levinthal, 2000; Alegre and Chiva, 2013).

Experience accumulation is a central learning mechanism that is thought to be responsible for creating organisational operating capabilities (Fowler, 2013). As an organisation evolves and lives through different organisational development circles, it accumulates experience; and this bank of knowledge becomes a learning experience for future reference.

The Capability Development Process: A Learning Model

In an attempt to relate capability development to the transformation process through organisational learning, Andreu and Cibbora (1996) presented a theoretically-constructed model, shown in Figure 2.4.

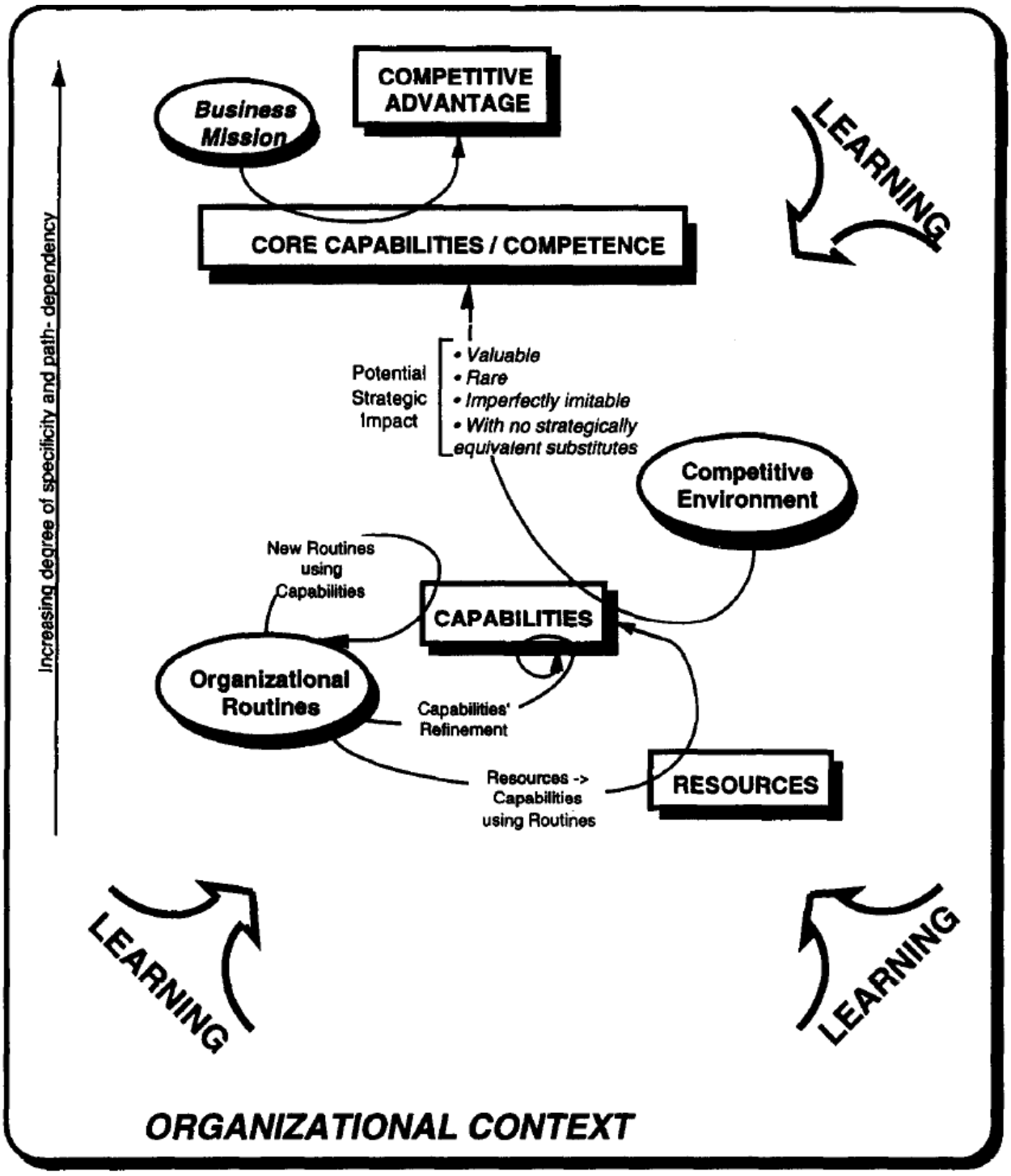

Figure 2.4: The Capability Development Process: A Learning Model

Source: Adopted from Andreu and Cibbora (1996, p.312).

According to the model, organisational learning at the basic stage of the firm develops capabilities through transformation. Learning at this stage is mastering the use of resources to produce efficient work practices. Organisational members learn how to use resources.

Learning is contextual and peculiar to the firm. What is learnt becomes part of the new environment, increasing the firm's knowledge base. A new environment motivates further learning. Work practices internalise the firm's resources. Having created work practices, capabilities are then produced by combining the created work practices with organisational routines.

Core capabilities are then produced at the top level of the organisation. The learning driving forces at this high level is a competitive environment and a business mission. The model views core capabilities from a strategic management view as what "differentiates a company strategically and it fosters beneficial behavior not observed from competitors" (Andreu and Ciborra, 1996, p.312). Production of core capabilities through transformation from capabilities is path-dependent (Fowler, 2013). Learning ensures its path dependency. It is said to be path-dependent because the way an organisation earns an asset depends on how it is created (Cummings and Worley, 2014).

2.9.3.2 Resource Combination and Development of Capabilities

With the wide recognition and acceptance among scholars that organisational resources go beyond assets to include organisational capabilities (Henderson and Cockburn, 1994), a combination of the two assets and capabilities is thought to be very pertinent in the creation and development of the latter (Helfat and Peteraf, 2003; Sirmon, Hitt and Ireland, 2007). Other than the suggestion that the two – i.e., assets and capabilities – have to be coordinated to develop capabilities (Helfat and Peteraf, 2003), the literature on how the two relate to each other is very thin. Other than the work of Makadoc (2001), no other works have discussed how capabilities are created through combining resources.

In his theory building on how capabilities are created, Makadoc (2001) adopts the view of Amit and Shoemaker (1993, p. 35) of capabilities as a "…firm's capacity to deploy resources, usually in combination, using organizational processes". By combining capabilities and other resources through organisational processes, a firm benefits from economic returns. From this theoretical work, Makadoc (2001) proposes that the value of a firm's capability advantage is increased by anything that increases its likelihood of acquiring resources. From this proposition, the proportional increase in capabilities in a firm translates to a proportional increase in its resources. The drivers that increase a firm's capabilities also result in increased resources. However, this proposition lacks empirical backing. The question about how

combining resources results in the creation of organisational capabilities is still not attended to in most academic work.

2.9.3.3 Managerial Cognition and Development of Capabilities

The effect that managerial cognition has on the creation and development of capabilities captured the interest of Tripsas and Gavetti (2000), who observed that, until 2000, no attention had been paid to the possible effects of managerial cognition on capabilities. Until then organisational inertia, learning and resource combination had been singled out as the major factors influencing capabilities development (Trispas and Gavetti, 2000).

Cognition management has been conceptualised as the human ability to perceive, interpret and reason about the internal and external environment of a business (O'Reilly and Tashman, 2014). Most studies over the past six decades have focused on cognition at the level of the senior management team, given the critical influence of top management teams on strategic decision-making, as recommended by Mintzberg (1979) and Fowler (2013).

Senior management's ability to perceive, interpret and reason about work systems has been found by Tripsas and Gavetti (2000) to influence the regulation and formation of organisational studies. Using a case study, Tripsas and Gavetti (2000) concluded that management cognition is responsible for organisational learning through codification that results in the creation of capabilities. Although it is not wise to generalise from a single case study, the findings lay foundations for further empirical evidence.

2.9.4 Organisational Capabilities, Organisational Structure and Organisational Fitness

From the discussion of the definitions of conceptualisation, different types, and development of organisational capabilities, two issues emerge. Firstly, organisational capabilities are a function of organisational structure (i.e. coordination, communication, competence and commitment), as suggested by Beer (2000; 2003; 2013). Secondly, capabilities link organisational fitness and organisational structure through their mediating role. Hence the hypothesis:

Hypothesis 5: Organisational structure is significantly associated with organisational fitness through the mediating effect of organisational capabilities.

2.8.5 Organisational Capabilities, Organisational Levers and Organisational Fitness

By considering the nature and characteristics of organisational capabilities in its meanings – conceptualisation and development – it is apparent that organisational levers such as managerial input (employee's skills ability, their recruitment and selection), culture through learning, and work systems are connected to organisational fitness through the mediating effects of organisational capabilities. In this vein, it is proposed:

Hypothesis 6: Organisational levers are significantly associated with organisational fitness through the mediating effect of organisational capabilities.

Hypothesis 7: Organisational capabilities are significantly associated with organisational fitness.

2.9.6 Organisational Capabilities as they relate to Organisational Fitness

Slow progress in research on the relationship between organisational fitness and capabilities is noticeable in both the organisational and the management literature. This slow pace can be attributed largely to the treatment of organisational performance and fitness as the same because they share the same domain.

Most of the work in evolutionary economics and strategic management has focused on organisational fitness and competitive advantage. How capabilities relate to performance or fitness is a by-product of searching for competitive advantage and how to deal with dynamic, ever-changing business environments.

The theoretical work of Wilden *et al*. (2011) proposed how capabilities relate to performance in general: that dynamic capabilities have both direct and indirect effects on organisational performance: directly via dynamic capability costs, and indirectly via the organisational resource base. Five years later, no known empirical evidence had tested this conceptual proposition.

Conceptualising organisational fitness from an evolutioniary perspective on measurement (evolution fitness: growth of the firm in relationship to competitors), Pohjola and Stenholm (2012), drawing data from 532 Finnish firms, concluded that "the higher order capabilities enable the firm to increase its evolutionary fitness when aligned with lower level incremental capabilities" (p.23). Although this conclusion is consistent with the earlier findings of Winter (2003) and Ambrosini and Bowman (2009), it does not take into account different industrial

kinds of firms: it was limited to food, shipbuilding, and media-related firms. Such findings can only be qualified in the context of developed economies where the rate of environmental change is not the same as it is globally. Their work focused only on dynamic capabilities, and ignored core capabilities by-and-large.

The discussion above leads to the hypothesis:

Hypothesis 7: Organisational structure is significantly associated with organisational fitness through the combined mediating effects of organisational levers and capabilities

2.10 Conceptual model of the study

This section concludes the literature review by presenting the conceptual model of the study drawn from the literature review and the propositions derived from it. The model provided linear linkages with the constructs of the study – i.e., organisational learning (OL) and organisational size (OS) – as first-level predictor variables. Other constructs are organisational structure (OS) as the second-level predictor variable, with organisational levers (OLE) and organisational capabilities (OC) as mediating variables on organisational fitness (OF).

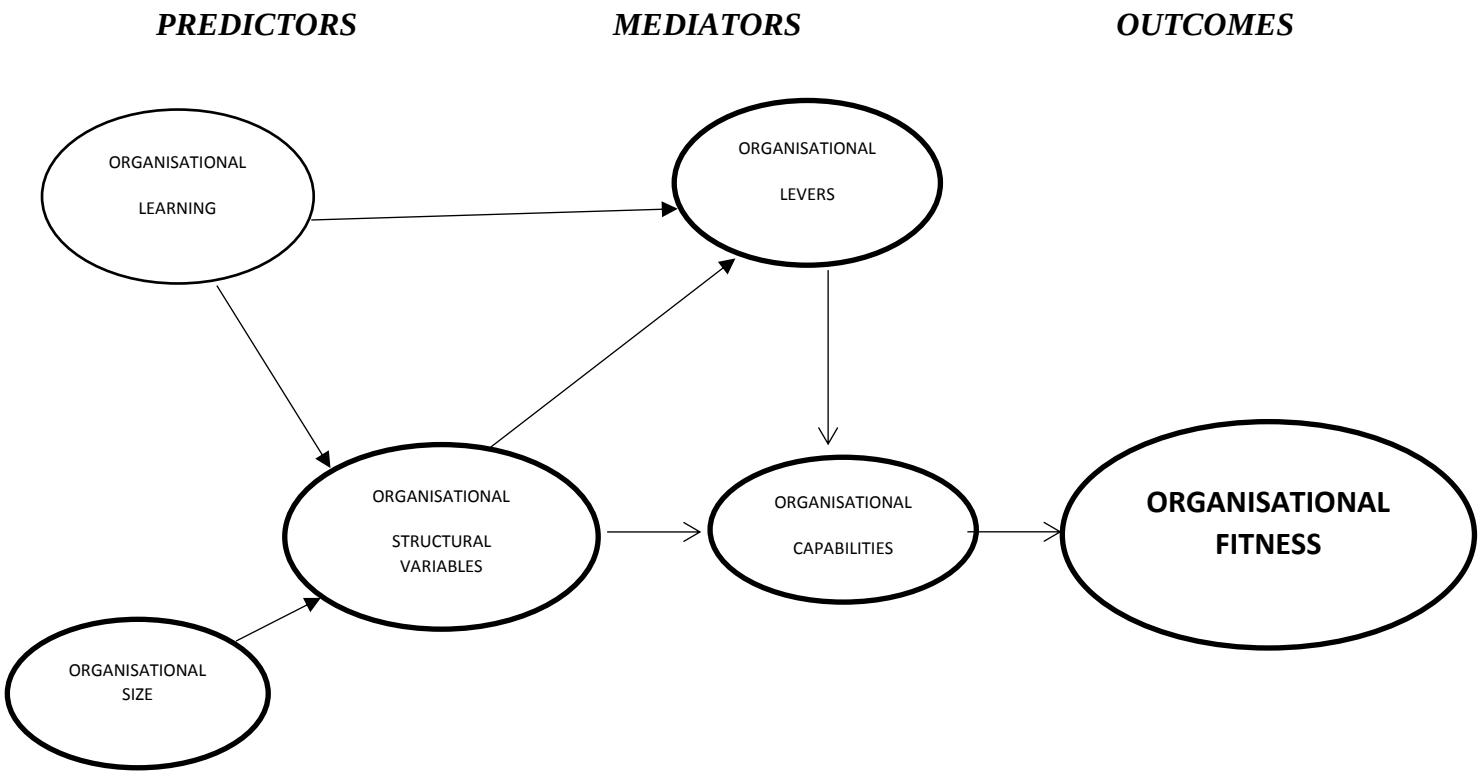

Figure 2.5: The theoretical model of the study

The model represents organisational structure, environment, organisational size, and organisational learning as predictor variables. Organisational size and organisational learning are first-order predictor variables that relate directly to organisational structure. Organisational structure is a second-order predictor variable that is responsible for shaping the mediator variables – i.e., organisational levers and capabilities. Organisational fitness relates directly to organisational capabilities. Thus the independent variables of the study consist of organisational structural variables (i.e., organisational learning and organisational size) and the mediating variables (i.e., organisational levers and organisational capabilities) while organisational fitness represents the dependent outcome.

2.11 Chapter Summary

This chapter has presented an overview of earlier models of organisational fitness. This was done in order to demonstrate the existence of different perspectives on the study of organisational fitness. This chapter has also provided a conceptualisation and theoretical composition of each of the selected constructs. This was followed by an evaluation of the relationships that exist between the selected constructs and organisational fitness on the one hand, and the mediating influences of other constructs on the other hand. Based on the theoretical and empirical evaluation of the constructs documented in the literature, the following propositions have been formulated to give this study solid direction:

Hypothesis: 1: Organisational Size is significantly associated with Organisational Structure.

Hypothesis: 2: Organisational Learning is significantly associated with Organisational Structure.

Hypothesis: 3: Organisational Structure is significantly associated with Organisational Levers.

Hypothesis: 4: Organisational Learning is significantly associated with Organisational Levers.

Hypothesis: 5: Organisational Structure is significantly associated with Organisational Fitness through the mediating effect of Organisational Capabilities.

Hypothesis: 6: Organisational Levers are significantly associated to Organisational Fitness through the mediating effect of Organisational Capabilities.

Hypothesis: 7: Organisational Capabilities are significantly associated with Organisational Fitness.

Hypothesis: 8: Organisational Structure is significantly associated with Organisational Fitness through the combined mediating effects of Organisational Capabilities.

Finally, this chapter presented the conceptual structural model of predictors of organisational fitness, and provided an explanation of the conceptual model. The next chapter presents and discusses the methodology that was used to conduct the empirical component of this study.

CHAPTER 3

RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

The previous section of this study provided the literature review and theory that grounded the conceptual research model. The purpose of this study is to provide the research design and methodology together with its philosophical grounding. The chapter discusses the population and sample of the study. Data collection procedures, ethical considerations, the research instrument, and the statistical analysis were also considered by this chapter.

3.2 RESEARCH METHODOLOGY

A research methodology is an organised and systematic way of solving the research problem (Creswell, 2014). According to Babbie, Mouton, Vorster and Prozesky (2001), this organised and systematic way should include the logic behind the selection of a research design, the research's philosophical assumptions, and the procedures, processes and research tools. In line with the above characteristics of a research methodology, Kumar and Phrommathed (2005, p.8) argue that the following questions should be answered by a good research methodology: "Why a research study has been undertaken, how the research problem has been defined, in what way and why the hypothesis has been formulated, what data have been collected and what particular method has been adopted, why a particular technique of analyzing data has been used".

The next section presents the following aspects of the research methodology: the research's philosophical assumption, the research design and its justification, research population, sampling procedures, and sample size.

3.2.1 Research Philosophy

Philosophical ideas are general concealed in research, yet they influence research practices (Willig, 2013). Hence the growing need to identify them. A research archetype or paradigm is a framework that relates theory to methodology and enables a researcher to make logical and comprehensive findings (Willig, 2013). Weaver and Olson (2006, p. 76) conceptualise a research paradigm as "patterns of beliefs and practices that regulate inquiry within a discipline by providing lenses, frames and processes through which investigation is accomplished". From this conceptualisation, it is clear that the role of a paradigm is to a lay a

foundation for the research procedures. It informs a researcher's structure of investigesting and the selection of methodology (Kumar, 2005).

Weaver and Olson (2006) identify four philosophical ideas that influence research thoughts in the social sciences. These include positivist, post-positivist, interpretive, and critical social theory. This research has based its inquiry protocol on the positivist paradigm. According to Crowther and Lancaster (2012), positivist theorists hold the view that only knowledge gained through observation, including measurement, is trustworthy. The nature of knowing and of reality in this paradigm is a realist on tology and a representative epistemology (Angen, 2000). In the realist on tology, real world objects exist independently of the human researcher: objectivity is reality. In representative epistemology, the separation of subjectivity and objectivity is key. The focus is on objective reality (Angen, 1972).

The role of research in the positivist paradigm is to predict and control. The assumption is that there is a general pattern underlining cause and effects, and it is the objective of research to discover it (Crowther and Lancaster, 2008). According to Angen (2000), research in the positivist paradigm has to seek causality and relationships among variables, and empirically verify the findings. Knowledge has to rely on accurate data, and research has to be free from subjective bias if objectivity is to be achieved at all. The research methodology protocol in the positivist approach involves experimental and manipulative methods, the use of quantitative methods, and hypothesis generation and testing (Yin, 2011). The research should also establish a distance between the subjective bias of the researcher and objective reality (Taylor, Kermode and Roberts, 2007).

Validity, reliability and generalisability are the attributes of good research in the positivist view (Creswell, 2014). Validity is the extent to which a correct answer is given by a measurement approach (Sheehan, Sheehan, Shytle, Janavs, Bannon, Rogers, Milo, Stock and Wilkinson, 2010). Reliability is the extent to which a measurement gives the same answer when it is carried out repeatedly (Sheehan *et al.* 2010). Generalisability is the extent to which the findings of a study can be applied externally or more broadly beyond the study (Weaver and Olson, 2006). From the above discussion, a positivist approach makes the research usable, credible and applicable to reality.

The positivist view is appropriate in guiding this research largely because the enquiry hinges on the predictor variables and the mediating effects of organisational capabilities and organisational levers on organisational fitness in Zimbabwe's volatile environment. The positivist approach allows an investigation of causes and effects, and establishes relationships among the research variables: predictor variables (organisational size, learning and structure), mediating variables (organisational capabilities and levers), and outcome (organisational fitness), as discussed above. The research questions presented in Chapter 1 also sought to find causality and relationships among research variables. The use of the quantitative approach will also allow the objectivity of the study as advocated by the positivists (Angen, 2000; Crowther and Lancaster, 2008).

3.2.2 Research Design

Creswell (2014) defines a research design as consisting of plans and the procedures for research that span the decisions from broad assumptions to detailed methods of data collection and analysis. This plan contains numerous decisions. The critical decision involves which design should be used to study a topic. This decision is influenced by the following factors: worldview assumptions that the researcher brings to the study; procedures of inquiry (called strategies); and specific methods of data collection, analysis, and interpretation. The selection of a research design is also influenced by the nature of the research problem or issue being addressed, the researcher's personal experiences, and the audiences for the study.

Yin (2004) provided three essential conditions in determining the type of research design to be used in a particular research. Of importance are the research question; the degree of investigator control possible; and the degree of focus on contemporary events desired, which provides a description of situations that are relevant to different research designs.

Guided by the above description and criteria of selecting a research design, the research resorted to a survey design that resonates well with the research questions (mentioned below). These questions sought to answer the *how*, *what, how much* and *why* questions about the research problem:

1. What are the roles played by organisational structural variables in shaping organisational levers?

2. How do organisational structure variables relate to organisational capabilities?
3. What is the relationship among organisational structure variables, organisational levers, organisational capabilities, and organisational fitness as a dependent variable?
4. What relationship exists between organisational fitness and organisational size as a structuring variable?

The research did not seek control over behavioural events, and it focused on contemporary issues. This cements the selection of the survey design as the appropriate research design in line with the recommendations of Yin (2011) and Creswell (2014). The function of a research design, according to Yin (2011), is to ensure that the evidence obtained enables the researcher to answer the initial questions as clearly as possible. Obtaining relevant evidence entails specifying the type of evidence needed to answer the research question and sub-questions. Yin (2011) concludes that research design deals with a logical problem, not a logistical one.

Identifying a study's research design is important because it communicates information about key features of the study, such as population, sampling, and research variables. Lee (1993) describes four key features to consider in research design: the epistemology that informs the research, the philosophical stance underlying the methodology in question, the methodology itself, and the techniques and procedures used in the research design to collect data. For research to be meaningful, Babbie *et al.* (2001) and Burns and Grove (2001) assert that the design should fit the whole research process, from framing a question to final analysis and reporting data. Data collection methods should be fitted to the research design. A survey design was selected and used in this study as discussed above.

3.2.3 Description and Justification of a Survey Design

A research survey is described as a method of sociological investigation that uses question-based instruments (procedures) or statistical surveys to collect information about how people think and act (Shaughnessy, Zechmeister and Jeanne, 2011). From this definition, a survey involves a brief interview or discussion with individuals about a specific topic, resulting in the collection of information.

According to Isaac and Michael (1997), survey research can be used to find solutions to questions that have been raised, to solve problems that have been posed or observed, to assess

needs and set goals, to determine whether or not specific objectives have been met, to establish baselines against which future comparisons can be made, to analyse trends across time, and generally to describe what exists, in what amount, and in what context.

Kraemer and Dutton (1991) have identified three distinguishing characteristics of survey research. Firstly, survey research is used quantitatively to describe specific aspects of a given population. These aspects often involve examining the relationships among variables. Secondly, the data required for survey research are collected from people and are, therefore, subjective. Finally, survey research uses a selected portion of the population from which the findings can later be generalised back to the population.

Surveys are capable of obtaining information from large samples of the population. They are also well-suited to gathering demographic data that describe the composition of the sample (McIntyre and McIntyre, 1999). Surveys are inclusive in the types and number of variables that can be studied, require minimal investment to develop and administer, and are relatively easy for making generalisations (Bell, 2014). Surveys can also elicit information about attitudes that are otherwise difficult to measure using observational techniques (McIntyre and McIntyre, 1999). It is important to note, however, that surveys only provide estimates for the true population, not exact measurements (Salant, Dillman and Don, 1994).

Surveys that measure both explanatory and dependent variables assume that organisational fitness will continue, or that the measured values of the explanatory variables have not changed in the past few years. Both of these assumptions are problematic. Some disadvantages of survey research include: (a) a possible low response rate to the survey and a chance for significant response bias; (b) the researcher's lack of control over the conditions accompanying questionnaire completion; (c) receiving incomplete questionnaires; and (d) the researcher's lack of observation of how respondents react to questions and to the research setting (Babbie *et al*., 2001; Kerlinger and Lee, 2000).

Pinsonneault and Kraemer (1993) noted that surveys are generally unsuitable where an understanding of the historical context of phenomena is required. Bell (2014) observed that biases may occur, either in the lack of response from intended participants or in the nature and accuracy of the responses that are received. Other sources of error include intentional misreporting of behaviours by respondents to confound the survey results or to hide inappropriate behaviour. Finally, respondents may have difficulty assessing their own behaviour or have poor recall of the circumstances surrounding their behaviour.

The use of the survey design was in line with the quantitative nature of the research propositions that sought to investigate the predictor variables and the mediating effects of organisational capabilities and levers on organisational performance. The following research hypotheses are quantitative in nature, and proved appropriate for investigation using a survey design: Hypothesis: 1: Organisational Size is significantly associated with Organisational Structure.

Hypothesis: 2: Organisational Learning is significantly associated with Organisational Structure.

Hypothesis: 3: Organisational Structure is significantly associated with Organisational Levers.

Hypothesis: 4: Organisational Learning is significantly associated with Organisational Levers.

Hypothesis: 5: Organisational Structure is significantly associated with Organisational Fitness through the mediating effect of Organisational Capabilities.

Hypothesis: 6: Organisational Levers are significantly associated to Organisational Fitness through the mediating effect of Organisational Capabilities.

Hypothesis: 7: Organisational Capabilities are significantly associated with Organisational Fitness.

Hypothesis: 8: Organisational Structure is significantly associated with Organisational Fitness through the combined mediating effects of Organisational Capabilities.

The research hypothesis drawn from the literature review were best assessed by quantitative means, as supported by previous researchers – Young (2009), Barki and Hartwick (2001), and Davidson and Klofsten (2003) – who quantified the research constructs in a bid to establish their relationships. The use of the survey design is suitable for a large population that resonates well with the large target population of this study. The use of a survey design also enabled a quantitative research approach to be used. The quantitative research approach, according to Maxwell (2004), is concerned with the statistical treatment of data that can be verified by observation and experiment. Its main advantage is that it allows for the formulation of hypotheses, safeguards against researcher bias, and permits correlation among

research variables. Furthermore, the approach allows for systematic data collection and analysis (Mason, 2002; Creswell, 2014).

A quantitative research method was adopted for a number of reasons. Firstly, a quantitative approach is aligned with the construction of structural models that explain independent and dependent constructs (Creswell, 2014). The current study is concerned with the causality and relationships that exist among predictor variables of organisational size, environment, learning and structure, mediating variables of organisational capabilities and levers, and the outcome of variable organisational fitness, rather than with the 'how' and 'why' answers that qualitative research might provide (Yin, 2004). Secondly, a quantitative research methodology, as advocated by the positivists alluded to above, embraces empirical studies, as shown by the success of previous studies, including the work of Young (2009), Barki and Hartwick (2001), and Davidson and Klofsten (2003). Thirdly, the quantitative approach will allow data collection, correlation, regression analysis, and structural modelling of organisational structural variables, organisational levers, capabilities and fitness dimensions. Using the quantitative approach will avoid restructuring a complex problem to a limited number of variables. The design will also allow verification of the relationships among research variables (Maxwell, 2004).

In conclusion, the survey approach enabled large population samples to be considered, and the use of quantitative techniques to address to the research questions and research propositions. This approach also enabled the collection of subjective data from people who participated in the survey, and it was easy to manage.

3.3 Research Population

Denscombe (2007) refers to a population as an aggregate or totality of all the objects, subjects or members that conform to a set of specifications. For this study, the population included management employees of all 64 companies listed on the Zimbabwe Stock Exchange. A criterion that specifies the characteristics that the subjects in the population must possess in order to be included in the study should be clarified (Denscombe, 2007). The eligibility criterion in this study was that the participants had to be top, middle level, or first line managers of companies that are listed on the Zimbabwe Stock Exchange. The assumption is that managers are in a position to assess firm-level attributes. This assumption was tested by Gibson and Birkinshaw (2004) and also used by Young (2009).

The population of the study was difficult to quantify, since the list of companies obtained did not include the names and positions of their management employees. The prevailing downsizing and retrenchment strategies add to the challenge of determining the research population.

3.4 Sampling

It is impossible to include the whole population in the study; hence the need for sampling. According to Burns and Grove (2001), sampling is the selection of a part of the population for the study. The selected elements of the population are the sample (Lim and Ting, 2012). Over time, statistics has come up with probability and non-probability sampling techniques. In probability sampling, each member of the population has a known non-zero probability of being selected (Mason, 2002). Probability methods include random sampling, systematic sampling, and proportional representation.

Sampling for this research was done at three levels. The first level was to select a number of firms in different industries to be represented in the sample. The second level of sampling was to select the firms themselves to be represented in the sample. The third level of sampling was to select the management employees to be represented in the sample.

The research used the proportional representation sampling method to select the firms in different industrial sectors, as shown in Table 3.1 below. The proportional sampling method is a probability sampling technique where the researcher divides the entire population into different subgroups or strata, then randomly selects the final subjects proportionally from the different segments. A sampling frame refers to the subjects of the study and the researched environment (Singh and Masuku, 2014). For this study, a list of organisations was obtained from the Zimbabwe Stock Exchange, and from the list, all the managers made up the sampling frame.

To select the participating firms, the research, guided by the proportional sampling frame, randomly picked the participating firms. To select the managers from the selected firms, the study used the simple random sampling technique. ‘Simple random sampling’ refers to a sampling technique that allows all subjects of the population to be selected (Lim and Ting, 2012). The use of simple random sampling is in line with the fact that the population of the study is homogeneous (i.e. they are all managers), as recommended by Lim and Ting (2012). Simple random sampling also allowed a statistical treatment of the data (Mason, 2002). The

method gave a chance to all different types of firms across all sectors to be represented in the study. Managers were randomly selected in the organisations to participate in the study.

3.4.1 Sample Size

A sample size is the number of observable variables that form a sample in research (Saunders, Lewis and Thornhill, 2009). A sample size determines to a large extent the credibility and accuracy of research results. A larger sample can yield more accurate results, but an excessive number responses can be expensive. A small size is inadequate to lead to credible conclusions. Denscombe (2007, p. 28) prescribed seven factors to consider in the determination of a sample size, as presented below. These steps are also echoed by Saunders *et al.* (2009), Mason (2002), and Singh and Masuku (2014).

1. The precision of results: To achieve greater precision, the researcher might need to increase the size of the sample. Statistical procedures can be used to calculate what specific sample size will be necessary in order to increase the precision of the results. Such statistical procedures were suggested by statisticians such as Kish (1965).

2. The number of different segments likely to be created in the data: When calculating the number of respondents to include in the sample, the researcher needs to take into consideration the intricacy of the data that is likely to arise. This guideline is also suggested by Sozu (2010), who adds that every given research population has complexities that need to be taken into consideration when determining the sample size. These might include different strata in the population (Sozu, Sugimoto and Hamasaki, 2010).

3. The probable response rate: The researcher should note the discrepancy between the number in the original sample and the number of responses that are finally obtained and used in the research. The response rate needs to be predicted by the researcher, based on the type of survey conducted. An allowance for non-responses should be factored in.

4. Availability of resources: Given that resources and time are not limitless in the social sciences, a sample size is restricted by the availability of resources. A large sample needs more time and resources to access it. A manageable sample that is within the means of the resources is achievable in practice.

5. The research population that houses the sample: In practice, large populations require large samples, while small populations require small samples for results to be credible.

Furthermore, the universal assumption is that an increase in the sample size, in proportion to the size of the research population, diminishes the standard error.

6. Inconsistency of the population characteristic under investigation: When inconsistent characteristics of the population are noticeable, the sample size should be larger.

7. Units of analysis: The number of units of analysis from which the researcher eventually obtains usable data may be much smaller than the ones drawn originally. It may not be possible to trace some individuals; others may refuse to participate in the research; while still others may not provide all the necessary information, or may not complete their questionnaire, so that their information will be discarded.

For this study the population is assumed to be large and unknown. To estimate a sample size for this unknown population, the research followed the recommendations of Saunders *et al.* (2003) that a sample size is acquired by computing the minimum required for accuracy in estimating proportions by considering the standard normal deviation set at a 95 per cent confidence level (1.96), or by percentage picking a choice or response (50 per cent = 0.5) and the confidence interval (0.05 = ±5). The formula is:

$$n = \frac{z^2 (p)(1-p)}{c^2}$$

Where:

z = standard normal deviation set at 95 per cent confidence level

p = percentage picking a choice or response

c = confidence interval

Using this formula, a sample size of 350 was sufficient for the study. To factor in a non-response of 30 per cent as recommended by Hair, Wolfinbarger, Ortinau and Bush (2008) and Denscombe (2007), a sample size of 410 participants was settled on. The sample proportion is presented in Table 3.1.

Table 3.1: Proportional Representation Sampling Frame of all 64 firms Listed in the Zimbabwe Stock Exchange.

SECTOR	INDUSTRIAL POPULATION OF FIRMS	% POPULATION OF LISTED FIRMS	SAMPLE PROPORTION
Wholesale/Retail	6	9.3	37
Manufacturing industrial	12	18.75	75
Manufacturing consumer	14	21.8	87
Finance/Insurance/Property	4	6.5	26
Construction	7	10.9	44
Education/Health/Community	4	6.5	26
Agriculture/Forestry/Fishing	9	14	56
Personal Services	3	4.6	18
Transport/Storage	2	3.12	13

Other	3	4.6	18
Total	64	100	400

The manufacturing (industrial and consumer) sector has the highest representation with 162 subjects (40.5%), given that this sector has the the largest number of firms. Transport and storage is the least represented with 13 subjects, given that those sectors had the lowest number of firms.

3.5 RESPONSE RATE

Using the list from the Zimbabwe Stock Exchange, the listed companies were arranged into 10 industrial sectors. Five hundred questionnaires were distributed between 10 and 31 March 2016. Table 3.2 shows questionnaire distribution by industrial sector, as guided by the sampling frame in Table 3.2.

Table 3.2: Distribution of the Questionnaires by Industrial Sector

Industrial Sector	Number of Questionnaires Distributed	Percentage %
Wholesale/Retail	50	10
Manufacturing industrial	100	20
Manufacturing consumer	140	28
Finance/Insurance/Property	30	6

Construction	70	14
Education/Health/Community	30	6
Agriculture/Forestry/Fishing	120	24
Personal Services	20	4
Transport/Storage	15	3
Other	25	5
Total	500	100

The distribution was done in proportion to the industrial sector representation in the Zimbabwe Stock Exchange. All the industries were represented in the distribution of questionnaires, with the manufacturing sectors (industrial and consumer) getting the highest combined total of 48 per cent. This can be attributed to the fact that most listed firms fall into this category. Transport and storage got the fewest questionnaires at 3 per cent, because the smallest number of firms in this category are listed on the stock exchange.

The data were collected over three months from April to June 2016. Table 3.2 indicates the number of responses collected over the three-month period.

Table 3.3: Number of Responses per Month over Three-Month Collection Period

Industrial Sector	1st Month April	2nd Month May	3rd Month June	Total	Percentage of response rate
Wholesale/Retail	16	4	9	29	5.8
Manufacturing industrial	21	15	14	49	9.6
Manufacturing consumer	39	11	26	66	13.2
Finance/Insurance/Property	9	0	4	13	2.6
Construction	18	6	8	32	6.4
Education/Health/Community	3	0	3	6	1.2
Agriculture/Forestry/Fishing	43	7	10	60	12
Personal Services	6	2	1	9	1.8
Transport/Storage	0	0	0	0	0
Other	6	3	3	13	2.4
Totals	161	48	76	277	55.2

Table 3.3 shows that the majority of the responses (161, or 58 per cent of the total collected) were collected during the month of April. This was because the researcher took advantage of the Zimbabwe International Trade Fair event that took place in April. The event brings together great number of firms for a week in Bulawayo. The third month yielded the second-highest responses (77, or 27.5 per cent of the total collected) due to the researcher's follow-up in person and by telephone and email.

At the end of the collection period a total of 277 questionnaires had been collected. Given that the sample size was 500, Table 3.3 shows that the response rate was 55.2 per cent. The level of an acceptable response rate has received considerable attention from research scholars. Babbie *et al*. (2001) concluded that a 50 per cent response rate in the social sciences is good, 60 per cent very good, and 70 per cent excellent. Saunders *et al.* (2003) also consider a response rate of above 50 per cent in the social sciences to be adequate for data analysis. Given that a response rate of 55.2 per cent was recorded in this research, it was considered adequate for analysis of the results.

3.6 FIRMS' PROFILES

Characteristics of the firms were important to the research. Three characteristics – type of industry, number of employees, and age of firms – were recorded as shown in Tables 3.4, 3.5, and 3.6.

Table 3.4 : Distribution by Industrial Type (n=277)

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	1	29	10.5	10.5	10.5
	2	49	17.7	17.7	28.2
	3	66	23.8	23.8	52.0
	4	13	4.7	4.7	56.7
	5	32	11.6	11.6	68.2
	6	6	2.2	2.2	70.4
	7	63	22.7	22.7	93.1
	8	9	3.2	3.2	96.4
	10	10	3.6	3.6	100.0
	Total	277	100.0	100.0	

Key: 1. Wholesale/Retail; 2. Manufacturing industrial; 3. Manufacturing consumer;
4. Finance/Insurance/Property; 5. Construction; 6. Education/Health/Community;
7. Agriculture/Forestry/Fishing; 8. Personal Services; 9. Transport/Storage; 10. Other.

The manufacturing sector (industrial) had the highest number of respondents (66, or 23.8 per cent) followed by Agriculture/Forestry/Fishing (63, or 22.7 per cent). Education/Health/

Community contributed the fewest respondents (six, or 2.2 per cent) followed by Personal Services (nine, or 3.2 per cent).

Table 3.5: Frequency Distribution by number of employees (n=277)

Employees(000)		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	below1	3	1.1	1.1	1.1
	1 -5	47	17.0	17.0	18.1
	5-10	62	22.4	22.4	40.4
	10-50	140	50.5	50.5	91.0
	50+	25	9.0	9.0	100.0
	Total	277	100.0	100.0	

The majority of the firms represented had between 1,000 and 5,000 employees. According to Pugh *et al.* (1968) this indicates large firms. The higher the number of employees, the larger the firm is said to be. Given the different nature of the industries, there is no consensus on what constitutes a large number or a small number of employees to determine the size of a firm (Amah, Daminabo-Weje and Dosunmu, 2013). With the growth of the digital economy, the number of employees as a measure of firm size has lost ground among researchers (Beer, 2000). The measurement is, however, still valued in the third world, since most firms still use traditional organisational structures (Amah *et al*., 2013).

Table 3.6 Frequency Distribution by Firm's Age (n=227)

Age in Years		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	6-10	31	11.2	11.2	11.2
	11-15	35	12.6	12.6	23.8
	16-20	72	26.0	26.0	49.8
	21-	139	50.2	50.2	100.0
	Total	277	100.0	100.0	

From Table 3.6, most firms are more than 21years old (139, or 50.2 per cent). Organisational age is an indicator of organisational size (Carroll and Hannan, 1989). The older an organisation becomes, the larger it is thought to be (Rhoades and Eisenberger, 2002). Only 31 (11.2 per cent) of the firms in the research sample are between six and 10 years old. This means that there is a large chance that most of the firms are large.

3.7 MISSING DATA

The data analysis progressed with the scrutiny of data entry and handling of missing data. According to Hair, Sarstedt, Hopkins and Kuppelwieser (2014), handling and checking missing data increases the level of accuracy in the data entry and subsequently in the research results. To check for missing data, all entries were confirmed case by case, and then followed by conducting descriptive statistics, including frequency distribution, and mean and standard deviation. The frequency distribution statistics pointed to six mistakes in the data entry that were more than the data range.

On investigating the completeness of the returned questionnaires, it was noticed that 13 were incomplete and had missing data. All 13 cases had completed less than 20 per cent of the questionnaire. This, according to Hair *et al.* (2014), warranted their inclusion in the data analysis. A maximum likelihood function using SPSS software was used to replace those missing values, as recommended by Enders and Bandalos (2001). A total of 277 cases were finally found to be fit for inclusion in the research.

3.8 RESEARCH INSTRUMENT

Measuring the identified variables requires the use of standardised measuring instruments to measure each variable. A detailed discussion of each questionnaire's psychometric properties is presented in the next section. The discussion of the measuring instruments is guided by the suggested sequence in the proposed conceptual model (see Chapter 2). The research adopted and contextualised psychometrically-tested instruments to measure research variables that had shown reliability and validity, as recommended by Streiner and Norman (1995).

3.8.1 Organisational Size

Organisational size was measured using the instrument developed in the seminal work of Pugh, Hickson, Hinings and Turner (1968), also known as the Aston Group. The instrument has been used by most organisational researchers in the past 50 years (Pfeffer, 1972; Kimberly and Evanisko, 1981; Ettlie, Bridges and O'Keefe, 1984; Hitt, Keats and DeMarie,

1998; Goode and Gregor, 2009; Damanpour, 2010). The reliability of this instrument was reported at .87 by Pugh *et al.* (1968) at its inception.

3.8.2 Organisational Structure

Organisational structure variables of formalisation, centralisation and complexity were measured using Robbins's (1987) Measures of Organisational Structure which were also used by Salgado (2005). Centralisation was measured on a five-point Likert scale with 10 items, formalisation on a five-point Likert scale with seven items, and complexity on a five-point scale with seven items. The reliability of Robbins's Measures of Organisational Structure questionnaire on Cronbach's alpha scores 0.9.

3.8.3 Organisational Levers

For organisational levers, the research used the Organisational Diagnosis Questionnaire (ODQ) developed by Preziosi (1980) with a reliability of .89 on Cronbach's alpha scale and combined with the six-scale questionnaire used by Young (2009). The Organisational Diagnosis Questionnaire was previously used by Beer (2003) in his construction of the organisational fitness model. Given that the instruments were customised for this research, exploratory factor analysis – especially principal component analysis (PCA) – was used to determine how well the items actually measure the latent variables they are designed to measure.

3.8.4 Organisational Capabilities

Organisational capabilities were measured using the Organisational Fitness Navigator and Systematic Score Card developed by Voelpel, Leibold and Mahmoud (2004). The measurement tool was used to update the Balanced Score Card developed by Kaplan and Norton (2005). This instrument was previously used by Young (2009). Its reliability is .81 on Cronbach's scale.

3.8.5 Organisational Fitness

Organisational fitness was measured by adopting the instrument originated by Beer (1966). The instrument has influenced the cybernetics field of management ever since. It was further developed by Schwaninger (2000). In its current state, Young (2009) reported a reliability of .91 on Cronbach's scale.

3.8.6 Organisational Learning

Organisational learning was measured using the tool created by Jyothibabu, Farooq and Bhushan, (2010). It has been also used by Beer (2000) in his development of the organisational fitness model. The instrument was also used to determine the role of learning in building organisational capabilities by Pohjola and Stenholm (2012). Its reliability was reported to be .90 on Cronbach's scale.

3.8.7 Predictor Variables

Three variables have been identified as first order predictor variables: organisational size, organisational learning, and organisational environment. Organisational structure is a second level predictor variable.

The discussion that follows considers the measurements of these variables in the study.

3.8.7.1 Organisational Size

Given that the population of the study was the companies listed on the Zimbabwe Stock Exchange, their organisational sizes were well-known. The following features point to their being large organisations: publicly-listed companies have a fairly large capital base, their assets are substantial, and their market share is also substantial. Their sales turnover is also significant.

In view of the above features of the organisational size of the research population, the instrument consolidated this variable by treating the number of employees as a measurement of organisational size. Pugh *et al.* (1968) used the total number of employees as a size measurement. Hall (1972) argued that the use of the total number of employees was the best measure of size because it correlates well with other measures, and weighting indexes of size can mitigate the weaknesses of using this method. Other authors also support the use of the

number of employees as a dependable criterion to determine organisational size (Goode and Gregor, 2009). Some of the weaknesses of this method include the engagement of part-timers as part of the work force.

The research instrument has a five-item question in the organisational profile section of the questionnaire, as shown below.

How many employees are employed by your organisation?

Below 100 [ ]

100- 500 [ ]

500- 1000 [ ]

1000- 5000 [ ]

Above 5000 [ ]

The organisational profile section also surveys organisational age in a five-item question, as shown below.

Please indicate the age of your organisation below

0- 5 years [ ]
6- 10 years [ ]
11- 15 years [ ]
16 - 20 [ ]
21 and above [ ]

Earlier research has confirmed that organisational age serves as an associate variable in determining many organisational researches constructs such as size (Hui, Radzi, Jenatabadi, Kasim and Radu, 2013).

3.8.7.2 Organisational Learning

Organisational learning was measured using the scale developed by Jyothibabu, Farooq and Bhushan (2010) with a reliability value of .90 on Cronbach's scale. The scales developed by this instrument are a result of the integration of standard instruments tested in different contexts (Jyothibabu *et al.,* 2010). The instrument comprises nine items measured on six-point Likert scales, with '1' being 'strongly disagree' and '6' being 'strongly agree'. Examples of items measuring organisational learning are shown in Table 3.7.

Table 3.7 Items measuring Organisational Learning

ITEM	EXAMPLE
C22	We are encouraged to take risks in the organisation.
23	All employees are expected to systematically record new knowledge for future reference.
24	In the past, the organisation has adjusted well to changes in practice
25	The organisation will not change unless forced to do so by some crisis.
26	In my organisation, leaders continually look for opportunities to learn
27	The company is slow to react to technological change.
28	Employees resist changing to new ways of doing things.
29	Employees retrieve archived information when making decisions.
30	When employees need specific information, they know who will have it.

3.8.7.3 Organisational Structure

The instrument adopted and contextualised Robbins's Measures of Organisational Structure (1987), which were also used in Salgado (2005). Three structural variables were measured by the instrument. These are centralisation, complexity, and formalisation. Other structural variables, such as span of control and chain of command, are associate variables that are captured by the three major variables of centralisation, formalisation, and complexity (Robbins, 1987). Thus the research considered the three structural variables.

3.8.7.3.1 Complexity

Complexity was measured on a five-point Likert Scale of seven items. The reliability of this instrument is .9 on Cronbach's alpha. Respondents were asked to tick their responses to each of the items as they applied to their own organisation, scoring for all items: a=1, b=2, c=3,

d=4, e=5. The sum of the item scores is the degree of complexity (out of a possible 35). Complexity is defined by the degree of horizontal, vertical, and spatial differentiation. Scores under 15 represent relatively low complexity; scores above 22 indicate relatively high complexity; and scores of 15 to 22 make up the moderate range (Robbins, 1987; Salgado, 2005). Examples of items measuring complexity are shown in Table 3.8.

Table 3.8: Items Measuring Complexity

ITEM	EXAMPLE
B 1	How many different job titles are there?
2	What proportion of employees hold advanced degrees or have many years of specialised training?
3	How many vertical levels separate the chief executive from those employees working on output in the deepest single division?
4	What is the mean number of levels for the organisation as a whole?
5	Of the non-managerial employees given written instructions or procedures, to what extent are they followed?
6	To what extent are supervisors and middle managers free from rules, procedures, and policies when they make decisions?
7	What percentage of all rules and procedures that exist within the organisation are in writing?

3.8.7.3.2 Formalisation

Formalisation was measured on a five-point Likert Scale of seven items.The reliability of this instrument is .79 on Cronbach's alpha scale. Respondents were asked to tick their responses to each of the items as they applied to their own organisation. The sum of the item scores is the degree of formalisation (out of a possible 35). Formalisation indicates the degree to which jobs within the organisation are standardised. Scores under 18 represent relatively low formalisation, scores above 25 indicate relatively high formalisation, and scores of 18 to 25 show relatively moderate formalisation (Robbins, 1987; Salgado, 2005). Examples of items measuring formalisation are shown in Table 3.9.

Table 3.9 Items measuring formalisation

ITEM	EXAMPLE
8	Written job descriptions are available in your department
9	Where written job descriptions exist, how closely are employees supervised to ensure compliance with standards set in the job description?
10	How much latitude are employees allowed with the standards?
11	What percentage of non-managerial employees are given written operating instructions or procedures for their jobs?
12	Of those non-managerial employees given written instructions or procedures, to what extent are they followed?
13	To what extent are supervisors and middle managers free from rules, procedures, and policies when they make decisions?
14	What percentage of all rules and procedures that exist within the organisation are in writing?

3.8.7.7.3 Centralisation

Centralisation was measured on a five-point Likert Scale of 10 items. The reliability of this instrument is .9 on Cronbach's alpha. Respondents were asked to tick their responses to each of the items as they applied to their own organisation. The sum of the item scores is the degree of centralisation (out of a possible 50). Centralisation indicates the degree to which formal authority to make discretionary choices is concentrated in an individual, unit, or level (Dalton *et al*., 1980). Approximate guides for translating scores into categories are as follows: 40 points and above represent high centralisation, 21 to 39 is moderate, and 20 or less indicate low centralisation (or decentralisation) (Robbins, 1987; Salgado, 2005). Examples of items measuring centralisation are shown in Table 3.10.

Table 3.10 Items Measuring Centralisation

ITEM	EXAMPLE
B15	How much direct involvement does top management have in gathering the information they will use in making decisions?
16	To what degree does top management participate in the interpretation of the information input?
17	To what degree does top management directly control execution of the decision?

18	How much discretion does the typical first-line supervisor have over establishing his or her unit's budget?
19	How much discretion does the typical first-line supervisor have in determining how his or her unit's performance will be evaluated?
20	How much discretion does the typical first-line supervisor have over hiring and firing personnel?
21	How much discretion does the typical first-line supervisor have over personnel rewards (e.g., salary increases, promotions)?
22	How much discretion does the typical first-line supervisor have over purchasing of equipment and supplies?
23	How much discretion does the typical first-line supervisor have over establishing a new project or programme?
24	How much discretion does the typical first-line supervisor have over how work exceptions are to be handled?

3.8.7.4 Mediating Variables

The two mediating variables discussed in Chapter 2 are organisational levers and organisational capabilities. The discussion below will present the measurement of these two variables by the research instrument.

3.8.7.4.1 Organisational Levers

As conceptualised in organisational and management circles, levers are related to what gives managers or organisations leverage to control, move, handle, coordinate and amplify their work plans into organisational success. This is comparable with the use of levers by Beer and Nohria (2000), Anderson and Ackerman (2000), and Young (2000). To measure this variable, the research used the Organisational Diagnosis Questionnaire (ODQ) developed by Preziosi (1980) with a reliability of .89 on Cronbach's alpha scale, and fused with the six-scale questionnaire used by Young (2009). The instrument has 12 items on six-point Likert scales, with '1' being 'strongly disagree' and '6' being 'strongly agree'. Examples of items measuring organisational levers are shown in Table 3.10.

Table 3.11: Items measuring Organisational Levers

ITEM	EXAMPLE
C 1	We have regular meetings to consider how market demands may be affecting our business.
2	People in our organisation are quick to recognise when external knowledge may be useful.
3	People in our organisation freely share practical experience with each other.
4	Our management meets regularly to discuss market trends and new product development.
5	Our people can work to together to come up with fresh combinations of our services and products.
6	Management allows employees to come up with fresh combinations of our service product.
7	Management allows employees to take part in decisions to adopt new programmes.
8	Management encourages employees to take action without approval.
9	Employees make extensive use of information systems to support their work.
10	Management works as a team to support the overall objectives of the organisation.
11	Management sometimes causes people to waste resources on unproductive activities.
12	Our organisation encourages its people to challenge traditions and current practices.

3.8.7.4.2 Organisational Capabilities

Organisational capabilities as a mediating variable was measured using the Organisational Fitness Navigator and the Systematic Score Card developed by Voelpel, Leibold and Mahmoud (2003) and used by Young (2009). The instrument comprised nine items measured on a six-point Likert Scale with a reliability value of .81 on Cronbach's scale, with '1' being 'strongly disagree' and '6' being 'strongly agree'. Examples of items measuring organisational capabilities are shown in Table 3.11.

Table 3.12: Items measuring Organisational Capabilities

ITEM	EXAMPLE
C13	Employees are encouraged to communicate clearly
14	Communication between people is expected to be routed through proper channels.
15	In the past, the organisation has adjusted well to changes in practices.
16	The development of employees' competencies is an important organisational goal.
17	Coordination of activities is communicated well in the organisation.
18	The organisation has the ability to deal with internal and external changes.
19	Organisational commitment to employee welfare is high.
20	Organisational commitment to customers is high.
21	Organisational commitment to achievement of its goals is high.

3.8.7.5 Outcome Variable: Organisational Fitness

The outcome variable (dependent) is Organisational Fitness. This variable was measured by adopting the instrument used by Beer (1966) and modified by Young (2009), with a reliability of .91 on Cronbach's scale. The instrument comprised six items measured on six-point Likert Scales, with '1' being 'strongly disagree' and '6' 'being strongly agree'. Examples of items measuring organisational fitness are shown in Table 3.12

Table 3.13: Items measuring Organisational Fitness

ITEM	EXAMPLE
D 1	Our organisation is achieving a high level of customer satisfaction.
2	Our organisation is achieving a high level of employee satisfaction.
3	Our organisation is achieving a high level of shareholder satisfaction.
4	In our organisation we are continually creating new opportunities.
5	Our organisation has the capacity to increase its net worth in the next two years.
6	Our organisation is a dynamic and creative team of people with a strong focus.

3.9 Pre-testing the Questionnaire

Babbie (2015), and Saunders *et al.* (2003) all recommend that a questionnaire be pilot tested before it can be used in research. To pilot the questionnaire, the research followed the guidelines described below, as proposed by Babbie (2015, p.257).

- Ask an expert or a group of experts to comment on the representativeness and suitability of your questions;
- Pretesting using the preferred administration methods will reveal issues pertaining to the administration of the questionnaire;
- Pilot testing should be conducted on a small group as similar as possible to the final population in your sample;
- The researcher's colleagues can also be used for pre-testing since they are likely to view it more critically than will survey respondents.

Guided by the above, the researcher piloted the questionnaire by getting it reviewed by a panel of experts at the Department of Management and Human Resources Management, University of the Witwatersrand, during the proposal presentation. The feedback from these academic expects was used to improve the measurement instrument. It was then sent to three managers at three different firms listed on Zimbabwean stock exchange for comment. Their input was considered, and the instrument was further refined before it was sent back to the same managers for piloting with 15 participants (five per firm). Feedback from the pilot study included the time taken to complete the questionnaire, and the clarity of the instrument items and instructions. These inputs were used finally to improve the measurement instrument before it was administered to the respondents.

3.10 Data Collection Procedures

Using a self-administered questionnaire as a measuring instrument, the researcher used the human resources departments of the selected companies to collect the data. The researcher visited the participating companies in Bulawayo to distribute the questionnaires in person, using employees in the Human Resources Departments as contact guides. The completed questionnaires were also collected with the assistance of the HR guides. The physical distribution and collection of questionnaires in a survey helps to achieve a high response rate (Yin, 2004).

For companies outside Bulawayo, the researcher sent copies of the questionnaire via a courier (postal) company in a return-actioned package after communicating with the respective contact employees in the HR departments. The contact employees also assisted with the collection and returning of completed questionnaires through the courier service company. The main advantages of postal surveys are that large numbers of questionnaires can be sent out at a fairly low cost (Yin, 2004). However, one of the disadvantages of postal surveys is the low response rates (Babbie *et al.*, 2001). To mitigate this problem the researcher followed up with email reminders and telephone calls.

3.11 Ethical Considerations

In research, ethical considerations involve the consideration of the rights of the participants, the integrity of the research process, and the accountability of the researcher to the moral conduct of the research process (Kvale, 1996). In considering research ethics, the researcher adhered to the ethical principles of autonomy, justice, and beneficence proposed by Dresser (1998).

'Autonomy' considers the recognition of participants' rights, including the right to be informed about the study, the right to decide freely whether to participate in the study, and the right to withdraw at any time without penalty. In this study, this principle was honoured by informed consent, which means finding a reasonable balance between over-informing and under-informing (Kvale, 1996; Babbie *et al*., 2001) (see Appendix 2). A participant's letter also accompanied the consent form (see Appendix 1). This meant that participants exercised their rights as autonomous persons voluntarily to accept or refuse to participate in the study. Consent has been referred to as a 'negotiation of trust', and it requires continuous renegotiation (Eysenbach and Till, 2001). Confidentiality was maintained throughout the course of the research to consider the rights of the participating individuals and institutions.

The researcher also assured the participants that the information collected was for academic research only. An ethics clearance certificate was obtained from the Ethics Committee of the University of the Witwatersrand before data collection began (see Appendix 4).

3.12 Data analysis Techniques

According to Schutt and O'Neil (2013), data analysis involves processing, cleaning, validating, and modelling data with the objective of obtaining useful information. The next section discusses data analysis techniques that were employed in testing the research propositions. These include validity analysis, reliability analysis, confirmatory factor analysis, determining the degree of relationship between variables through Pearson product-moment correlation analysis, multiple regression analysis, and structural equation modelling.

3.12.1 Validity

The objective of this study is to make valid generalisations by relating predictor variables (organisational size, structure, environment and learning) to outcome variables (organisational fitness) through the mediating effects of mediation variables (organisational levers and capabilities). Validity is thus the ultimate verdict on the degree of certainty contained in this extrapolation (Messick, 1995).

Cook and Campbell (2001) suggested a systematic classification of validity that distinguishes four related components of validity: construct validity, external validity, internal validity, and statistical conclusion validity. The classification is also used by Scandura and Williams (2000). Construct and external validity accentuate the generalisability of research inferences. Internal and statistical conclusion validity support inferences about variation and causality (Young, 2009).

The four aspects of validity were examined and evaluated in this study. Guided by Shadish, Cook and Campbell (2002), four fundamental validity issues were identified as relevant to this research.

1. Which constructs are involved? (Construct validity)

2. How generalisable is the experiential relationship (if any) among organisational size, environment, size structure, capabilities levers, and fitness over varied conditions? (External validity)

3. Is the covariation among organisational size, environment, size structure, capabilities levers, and fitness over varied conditions causal? (Internal validity)

4. How large and reliable is the covariation (if any)? (Statistical conclusion validity)

The analytical procedures employed for testing the research propositions attended to these validity issues to varied degrees. Construct validity explores how well the measured variables represent the theorised constructs (Hair *et al.*, 2008). Constructs are critical in connecting theory to practice (Shadish *et al*., 2002).

3.12.1.2 Construct Validity

Instituting construct validity is an important part of model development (Bagozzi, Yi and Phillips, 1991). In this research, construct validity was improved by giving clear preliminary explanations of respondents, research variables, setting, and outcomes of interest. To ensure the construct validity of the measured variables responses, confidentiality was guaranteed, since accurate responses are produced only if nothing is at stake for the respondent, as observed by Campbell (1994).

It was important for the research to ensure that the research instrument contained appropriate content for each construct. Scandura and Williams (2000) and Straub, Boudreau and Gefen (2004) identified two threats to construct validity: under-representation and irrelevance. To mitigate these threats, evidence of construct relevance was sought in the measuring instrument (Messick, 1995).

3.12. 1. 3 Internal Validity

Internal validity assesses whether the covariation between independent and dependent variables resulted from a causal relationship (Shadish *et al.*, 2002). According to Young (2009), internal validity is made vulnerable by improper inferences of a causal relationship that may arise for a variety of reasons. For instance, causal relations are difficult to establish in non-experimental and cross-sectional studies, because of the difficulty of establishing temporal precedence. The cause of causal inference in correlational studies such as in this research relies on acceptability and theory. Ambiguity about which variable occurred first may result in confusion about cause and effect (Scandura and Williams, 2000).

To ensure internal validity, this research relied on an appropriate modelling strategy to show that alternative explanations for the relationship were less credible (Shadish *et al.*, 2002). For internal validity, causal conclusions are limited to the context of the particular respondents and settings studied.

3.12.1.4 External Validity

On the other hand, external validity refers to whether a causal relationship holds in different settings (Straub *et al.*, 2004). Invariant relationships across a different setting for units and across different units in the same setting were both observed in this research. External validity concerned with scenerios outside this study was not assessed.

3.12.1.5 Statistical Validity

Statistical validity refers to the ability to draw conclusions on the basis of the statistical evidence presented (Shadish *et al*,. 2002; Milligan and McFillen, 1984; Straub *et al*., 2004). It is an assessment of the degree to which the analytical procedure might incorrectly conclude that predictor variables and mediating variables of Organisational Capabilities and Levers have an effect on Organisational Fitness (Type I error), or incorrectly conclude that they do not (Type II error). The statistical procedure was proven to have strength to conclude on the relationship of the constructs. Statistical validity prevents the over-estimation or under-estimation of the size of covariation, and provides a degree of confidence in the estimate (Milligan and McFillen, 1984). This study enhanced statistical validity by integrating the evaluation of statistical power, significance testing, sample size, and data analysis as suggested by Shadish *et al*. (2002). Power analysis was done before the research started, to ensure that an adequate sample size was analysed. The use of multiple-item measurement decreased error variability. Type I errors were abridged by means of functional theory to guide tests, and by minimising the number of significance tests. Confidence intervals were used to guide the assessment of model significance (Straub *et al*., 2004).

3.12.2 Confirmatory Factor Analysis

To evaluate the quality of the measurements in terms of the data obtained (i.e., measurement models), confirmatory factor analysis (CFA) was conducted. CFA is a statistical technique used to verify the factor structure of a set of observed variables (Albright and Park, 2009). It enables a researcher to test the hypothesis that there is a relationship between observed variables and their underlying latent constructs (Doyle, Pecukonis and Harrington, 2010). CFA is a good technique to use before conducting structural equation modelling (Kinicki, Prussia, Wu, and McKee-Ryan, 2004).

The CFA process for this research followed these steps: reviewing the relevant theory and research literature to support model specification; specification of a model (the research model presented at the end of Chapter 2); determination of model identification; data collection; conducting a preliminary descriptive statistical analysis (e.g., scaling, missing data, and outlier detection); estimating parameters in the model; and assessing a model fit. These steps are proposed by Doll (1995). LISREL 9.1 was used to conduct the CFA; the results are discussed in Chapter 4.

3.12. 3 Determining the Degree of Relationship Between Variables

In Chapter 2, eight propositions were identified, suggesting that statistical analysis techniques were needed to determine the relationships among the measured constructs. The relationship between a theory and a testing scheme is strengthened when there is a good relationship between a concept and its statistical formulation (Young, 2009). Venkatraman (1989) summarised the perspectives of the relationships among variables and the analytical scheme to measure them in Table 3.14.

Table 3. 14: Six Perspectives of Relationships between Variables

Characteristics of the conceptualisation	Typical verbalization	Analytical schemes for testing relationship
1. Moderation Interaction	The effect of survival fitness on business performance is moderated by firm size	• ANOVA • Regression analysis • Subgroup analysis
2. Mediation Intervention	Survival performance is an intervening variable between growth fitness and growth performance	• Path analysis
3. Matching	The match between variables SF and GF differs for performance	• Deviation scores

Matching	level	• Residual analysis
4. Gestalts Internal congruence	Internal coherence among a set of variables differs for High/Low firms	• Cluster analysis
5. Profile Deviation Adherence	The level of adherence to a specified profile affects performance	• Multi-dimensional scaling
6. Covariation Internal consistency	The degree of internal consistency for a set of variables is high. This set of variables affects performance.	• Structural Equation Modelling

Source: Adapted from Venkatraman (1989, p. 201)

The focus of this study was to examine the predictor variables and mediating effects of organisational capabilities and levers on organisational fitness**.** This involves an examination of latent variables. The relationships among the research variables are about mediation, covariation, and moderation, as shown in Table 3.15.

Table 3.15 Relations among Research Variables

COVARIATION	MEDIATION
Organisational size has a positive effect on Organisational Structure. Organisational Learning is positively related to Organisational Structure. Organisational structure positively affects Organisational Levers. Organisational Learning positively affects Organisational Levers.	Organisational Structure is positively related to Organisational Fitness through the mediating effect of Organisational Capabilities. Organisational Levers are positively related to Organisational Fitness through the mediating effect of Organisational Capabilities.
MODERATION	

Organisational size has a regulating positive effect on Organisational Structure.	

The relations of covariation, mediation and moderation among the variables are best measured and examined by means of structural equation modelling (SEM) (Venkatraman, 1989); thus the research used SEM as a primary analytical technique for data analysis. SEM combines multiple regressions with factor analysis (Tabachnick and Fidell, 2001). Structural Equation Modelling is discussed in the next section.

3.13 Structural Equation Modelling

This study used structural equation modelling (SEM) to analyse the relationship between variables. An important justification for the use of SEM is that it allows for easy analysis of the relationships between latent variables (Marsh, Wen and Hau, 2004). SEM also allows for accurate analysis of the dependencies of constructs without measurement errors. As a statistical tool, current SEM software integrates many standard methods such as correlation and multiple regressions.

SEM consists of a collection of models that have been developed as an essential tool for managerial, academic and non-experimental research (Hair *et al*., 2014). After studying publications for two decades, Hershberger (2003) concluded that SEM is the pre-eminent method of multivariate data analysis. SEM is used in research studies that attempt to use correlational data to model hypothesised causal processes (Young, 2009). Byrne (1998) supported the notion that structural equation modelling has two statistical hinges. Firstly, the causal processes are represented by a series of structural relations. Secondly, these equations can be modelled in order to conceptualise the theory under study (Davčik, 2013).

Two strands of SEM have emerged in management and organisational research. The first is the traditional covariance structure analysis and latent variable analysis. This strand uses software such as LISREL or AMOS (Hair *et al.,* 2014). Davčik (2013) refers to this stream as ‘covariance-based SEM’ (CBSEM). The second strand is identified from the literature as ‘partial least squares’ (PLS) or ‘component-based SEM’ (Swift and Hwang, 2013). This type is named ‘variance-based SEM’ (VBSEM) by Davčik (2013).

The two strands (covariance-based and variance-based SEM) have a similar specification for their structural models. Their approaches diverge, however, in their model development procedure, model specification, theoretical background, estimation, and interpretation, as noted by Hair *et al.* (2008). Variance-based SEM aims to explain variance (Hair *et al*., 2008; Hair *et al*., 2014). On the other hand, covariance-based SEM inclines to amplifying the relationships between indicators and constructs, and to endorse the theoretical rationale that was stated by a model (Davčik, 2013).

This study was focused on investigating the predictor variables and mediating effects of organisational capabilities and levers on organisational fitness in Zimbabwe's volatile operating environment. A theoretical model based on a literature review was developed. In line with this, the research used covariance SEM that sought to explain the relationships between indicators and constructs, and to confirm the theoretical rationale that was specified by a model in Chapters 1 and 2.

A SEM model has two sub-models: the measurement model, which defines relations between the measured variables and the constructs; and the structural model, which shows how the constructs are related to each other (Bechger, 1997). In the measurement model, latent factors are related to measured variables with a dependence relationship. For this research, measured variables are assumed to be dependent on the construct, and are believed to be indicators of the construct. Factors directly linked to measured variables are termed 'first-order factors'. If the measurement theory calls for some higher level factor that accounts for the first order factors, the model is termed a 'second-order model'. Thus the measurement model provides a theoretically-justified link between scores on a measuring instrument and the underlying constructs they are hypothesised to measure.

On the other hand, the structural model specifies structural relationships between latent constructs. These relationships reflect a substantive hypothesis based on theoretical consideration (Byrne, 2001). The relationship may not exist; it may be a dependence relationship, or it may be a correlational relationship between exogenous constructs (Chin and Newsted, 1999). The analysis is predominantly confirmative in nature. It seeks to determine the extent to which the proposed structure is compatible to the empirical evidence at hand.

The measurement model describes how each latent variable is operationalised through the manifest variable and provides information about the validities and reliabilities of the latter.

To enhance construct validity, Anderson and Gerbing (1988) suggested that detached estimation of the measurement model take place prior to the simultaneous estimation of the measurement and structural sub-models.

Structural equation modelling has to encompass four elements: the theory, the model specifications, the sample, and goodness-of-fit (Martínez-López, Gázquez-Abad and Sousa, 2013). The next sections discuss the basic concepts of SEM, the path diagram, model estimates, and the assessment of goodness-of-fit.

3.13.1 Basic Concepts

Hair *et al*. (2008, p. 711) concluded that "SEM estimates a series of separate, but interdependent, multiple regression equations simultaneously by specifying the structural models used by the statistical program". SEM takes a confirmatory rather than exploratory approach to data analysis. The analysis has a theoretical basis that allows inferences and hypothesis testing to occur. It allows assessment and correction for measurement error in the variables. SEM procedures can deal with both observed variables and latent variables (Wetzels *et al.*, 2009. Using latent constructs rather than single measured items enables a more complete representation of the theoretical concepts and an improved estimation of measurement error, as observed by Hair *et al*. (2014).

3.13.2 The Path Diagram

Structural equation models are portrayed visually by using four symbols (Bechger, 1997). Constructs and unobserved variables are represented by ovals; measured variables are represented by rectangles; single-headed arrows represent dependence relationships; and double-headed arrows represent covariance or correlations between pairs of variables. Exogenous constructs are determined by factors outside the model, and are analogous to independent variables; they have no single-headed arrows pointing toward them (Bechger, 1997). Endogenous constructs are the latent, multi-item equivalent of dependent variables – that is, endogenous constructs are hypothesised to be determined by factors within the model, and have single-headed arrows pointing toward them. Relationships that are presumed to exist between variables are represented visually by a path diagram, which is a pictorial description of the underlying structural (regression) equations.

3.13. 3 Model Estimates

A frequently-used covariance-based approach uses software such as LISREL and AMOS to minimise the difference between the sample covariance and those projected by the theoretical model using a maximum-likelihood (ML) function. A covariance-based estimation approach was employed in this study, using LISREL version 9.1 for analysis. The focus of this approach is on two covariance matrices. Firstly, the observed sample covariance matrix S contains empirical data. Secondly, the model with its specified relationships produces an estimated population covariance matrix, Σ. Model parameters are estimated prior to the estimated covariance matrix Σ. Estimates of parameters are fundamental to SEM analysis, and allow the researcher to assess the practical and statistical significance of the impact of one construct on another and the relative importance of various paths, and to examine both direct and indirect effects.

According to Tabachnick and Fidell (2007), the important question about SEM is whether the model produces an estimated population covariance matrix that is consistent with the sample (observed) covariance matrix. This raises the need to assess the overall fit of SEM by considering the differences between the observed and the estimated covariance matrices, S - Σ.

3.13. 4 Assessment of Goodness-of-fit

The goodness-of-fit of a statistical model describes how well it fits a set of observations. Measures of goodness-of-fit summarise the discrepancy between observed values and the values expected from the model in question (Gefen, Straub and Boudreau, 2004). A number of academic works in the past two decades have given guidelines for evaluating goodness-of-fit using SEM (Bentler and Bonett, 1980; Gefen *et al.*, 2004, Hooper *et al*., 2008). Measures of fitness are categorised as follows by Hooper *et al*. (2008): absolute fit indices, incremental fit indices, parsimony fit indices, and reporting fit indices.

The absolute fit indices measure how well a prior model fits the sample data, and show which proposed model has the superior fit (McDonald and Ho, 2002). The fit indices measure how well the model fits compared with no model at all. This is contrary to the incremental fit indices, which seek a comparison with a baseline model (Jöreskog and Sörbom, 1996). Included in this class are the chi-squared test, the root mean-square error of approximation

(RMSEA), goodness of fit (GFI), the adjusted goodness-of-fit statistic (AGFI), the root mean square residual (RMR), and the standardised root mean square residual (SRMSR).

The chi-square statistic enumerates the variance between sample and fitted covariance matrices $S - \Sigma$. Customarily, the null hypothesis of SEM is that $S - \Sigma = 0$, implying that the model fits perfectly (Barret, 2007). With SEM, a statistically significant chi-square value is not desired, since this indicates clear differences between S and Σ. Rather, a small chi-square value indicates no statistically significant differences are inferred between S and Σ (Kline, 2005; Bollen, 1990).

The chi-square statistic has limitations. It assumes multivariate regularity, and severe deviations from normality can occur in model rejections, even when the model is properly specified (Protzner and McIntosh, 2006). It reacts to sample size. When sample size is large, it always rejects the model (Hooper *et al*., 2008).

As a result of the limitations of the chi-square, researchers have pursued another index to assess model fit. The relative/normed chi-square ($\chi 2$/df) of Wheaton, Muthen, Alwin and Summers (1977) minimises the influence of sample size on the model chi-square. Even though there is no agreement about a suitable ratio for this statistic, recommendations range from as high as 5.0 (Wheaton *et al.*, 1977) to as low as 2.0 (Tabachnick and Fidell, 2007).

Root mean-square error of approximation (RMSEA) is a fit statistic reported in the LISREL program. The RMSEA reports how well the model with unidentified but ideally-chosen parameter estimates would fit the population's covariance matrix (Byrne, 1998). Diamantopoulos and Siguaw (2000) regard it as one of the most formative fit indices. RMSEA favours parsimony in that it will choose the model with the smaller number of parameters (Gefen and Straub, 2005).

The cut-off points for RMSEA have fluctuated greatly in recent years, as shown in Table 3.16.

Table 3.16: Cut-off points for RMSEA

Cut-off point for RMSEA	Description	Researcher
0.05 to 0.10	fair fit	MacCallum *et al.*, 1996
above 0.10	poor fit	MacCallum *et al.*, 1996
0.08 to 0.10	mediocre fit	MacCallum *et al.*, 1996
below 0.08	good fit	MacCallum *et al.*, 1996
0.06	good fit	Hu and Bentler, 1999
0.07	good fit	Steiger, 2007

One of the advantages of the RMSEA is that it allows a confidence interval to be calculated around its value (MacCallum *et al.*, 1996). This is possible as a result of the known distribution values of the statistic, and so it allows the null hypothesis (poor fit) to be tested more accurately (McQuitty, 2004). It is traditionally reported in unison with the RMSEA, and in a well-fitting model the lower limit is close to 0 while the upper limit should be less than 0.08 (Kenny, 2012).

Motivated by the weaknesses of the chi-square tests, Jöreskog and Sörbom (1996) proposed the goodness-of-fit statistic (GFI) test, which calculates the proportion of variance that is accounted for by the estimated population covariance (Tabachnick and Fidell, 2007). By considering the variance and covariance accounted for by the model, it shows how closely the model comes to replicating the observed covariance matrix (Diamantopoulos and Siguaw, 2000). This statistic ranges between 0 and 1, with the larger samples increasing its value all the time (Hooper *et al*., 2008). Sharma, Mukherjee, Kumar and Dillon (2005) report that when there is a large number of degrees of freedom compared with sample size, the GFI has a descending bias. Furthermore, MacCallum and Hong (1997) found that the GFI increases as the number of parameters increases, and also has an upward bias with large samples. Traditionally an omnibus cut-off point of 0.90 has been recommended for the GFI. However, simulation studies have shown that, when factor loadings and sample sizes are low, a higher

cut-off of 0.95 is more appropriate (Shevlin and Miles, 1998). Given the sensitivity of this index, it has become less popular in recent years, and it has even been recommended that it should not be used (Sharma *et al.,* 2005).

Related to the GFI is the AGFI, which adjusts the GFI based upon degrees of freedom, with more saturated models reducing fit (Tabachnick and Fidell, 2007; Sharma *et al.*, 2005). In addition to this, AGFI tends to increase with sample size. As with the GFI, values for the AGFI also range between 0 and 1, and it is generally accepted that values of 0.90 or greater indicate well-fitting models (Sharma *et al*., 2005). As a result of the negative effect of sample size on these two fit indices, they are not dependent as stand-alone indices; but given their historical importance, they are often reported in covariance structure analyses (Enders and Tofighi, 2007).

The RMR and the SRMR are the square root of the difference between the residuals of the sample covariance matrix and the hypothesised covariance model (Enders and Tofighi, 2007). The range of the RMR is calculated based upon the scales of each indicator; therefore, if a questionnaire contains items with varying levels (some items may range from 1 to 5, while others range from 1 to 7), the RMR becomes difficult to interpret (Kline, 2005).

The standardised RMR (SRMR) resolves this problem, and so is much more meaningful to interpret (Hooper, Coughlan and Mullen, 2008). Values for the SRMR range from zero to 1.0, with well-fitting models obtaining values less than .05 (Diamantopoulos and Siguaw, 2000). However, values as high as 0.08 are deemed acceptable (Hu and Bentler, 1999). An SRMR of 0 indicates perfect fit, but it must be noted that the SRMR will be lower when there is a high number of parameters in the model and in models based on large sample sizes.

Incremental fit indices, also known as 'comparative' (Miles and Shevlin, 2007) or 'relative fit' indices (McDonald and Ho, 2002), are a group of indices that do not use the chi-square in its raw form, but compare the chi-square value with a baseline model. For these models the null hypothesis is that all variables are uncorrelated (McDonald and Ho, 2002; Hooper, Coughlan and Mullen, 2008).

The Normed Fit Index (NFI) (Bentler and Bonnett, 1980) was among the first of these indices to appear in LISREL output. This statistic assesses the model by comparing the $\chi 2$ value of the model with the $\chi 2$ of the null model. Values for this statistic range between 0 and 1, with Bentler and Bonnett (1980) endorsing values greater than 0.90 as indicating a good fit. Close

to ten years later, Hu and Bentler (1999) suggested that the cut-off criterion should be NFI ≥ .95. A major limitation of this index is that it responds to sample size. More often than not, it misjudges fit samples of less than 200 (Mulaik, James, Van Alstine, Bennett, Lind and Stilwell 1989; Bentler, 1990), and it is not recommended that it be depended on exclusively (Kline, 2005). To mediate the limitations of the NFI, the Non-Normed Fit Index (NNFI) was crafted (Tabachnick and Fidell, 2001). This index favors simpler models. Nonetheless, in circumstances where small samples are used, the value of the NNFI can indicate poor fit even when other statistics point to a good fit (Kline, 2005; Tabachnick and Fidell, 2007). Another notable deficiency of the NNFI is that values can go beyond 1.0 as a result of its non-normed nature, making it problematic to understand. Commendations as low as 0.80 as a limit have been extended; however, Hu and Bentler (1999) have advocated NNFI ≥ 0.95 as the threshold.

The Comparative Fit Index (CFI) is a result of a review of the NFI, which considers sample size (Bentler, 1990). This index is reported by Tabachnick and Fidell (2007) to perform well even when sample size is small. This index assumes that all latent variables are uncorrelated, and compares the sample covariance matrix with this null model (Bentler, 1990). As with the NFI, values for this statistic range between 0.0 and 1.0, with values closer to 1.0 indicating good fit (Hooper *et al.*, 2008). A cut-off criterion of CFI ≥ 0.90 (Wheaton *et al.*, 1977) was originally advanced. Recent studies, however, have advanced a cut-off criterion greater than 0.90 (Tabachnick and Fidell, 2007). Ever since its inclusion in SEM, this index has been the most popular reported fit index. This is because it is one of the few indices not affected by sample size (Fan, Thompson and Wang, 1999).

The Parsimony Goodness-of-Fit Index (PGFI) and the Parsimonious Normed Fit Index (PNFI) were developed by Mulaik *et al.* (1989) and Crowley and Fan (1997). According to Hooper, Coughlan and Mullen (2008), these indices were developed to address the challenge presented by saturated, complex models whose estimation depended on the sample data. The PGFI is based on the GFI by adjusting for loss of degrees of freedom (Crowley and Fan, 1997). The PNFI also adjusts for degrees of freedom, but it is based on the NFI (Mulaik *et al.,* 1989). Complex models suffer lower fit index values under PGFI and PNFI than other goodness-of-fit indices. While no cut-off points have been suggested for these indices, Mulaik *et al.* (1989) are convinced that it is possible to obtain parsimony fit indices within the region of .50, while other goodness-of-fit indices achieve values of more than .90. Mulaik *et al.* (1989) strongly advocate for the use of parsimony fit indices in association with other

measures of goodness-of-fit. Nonetheless, because no cut-off points for these statistics have been suggested, it has made them more difficult to understand.

Secondary forms of the parsimony fit index are those that are also known as 'information criteria' indices (Hooper *et al*, 2008). The best-known of these indices is the Akaike Information Criterion (AIC) or the Consistent Version of AIC (CAIC), which adjusts for sample size (Akaike, 1974). These statistics are generally used when relating non-nested or non-hierarchical models are estimated, with the same data and specifications, to show the researcher which of the models is the most parsimonious (Hooper *et al*, 2008). Smaller values indicate a good-fitting parsimonious model; but because these indices are not normed to a 0-1 scale, it is difficult to suggest a cut-off other than that the model that produces the lowest value is superior. It is also worth noting that these statistics need a sample size of 200 to make their use reliable (Diamantopoulos and Siguaw, 2000).

Hooper *et al*. (2008) advise that, with regard to which indices should be reported, it is not necessary or realistic to include every index in the program's output, as it will burden both the reader and the reviewer. In a review by McDonald and Ho (2002), it was found that the most commonly reported fit indices are the CFI, GFI, NFI and NNFI. When deciding what indices to report, going by what is most frequently used is not necessarily good practice, as some of these statistics (such as the GFI discussed above) are often relied on purely for historical reasons, rather than for their sophistication. While there are no golden rules for the assessment of model fit, reporting a variety of indices is necessary (Crowley and Fan, 1997) because different indices reflect different aspects of model fit.

Although the model chi-square has many problems associated with it, it is still essential that this statistic, along with its degrees of freedom and associated p value, should at all times be reported (Kline, 2005; Hayduk *et al.*, 2007). Threshold levels were recently assessed by Hu and Bentler (1999), who suggested a two-index presentation format. This always includes the SRMR with the NNFI (TLI), RMSEA, or CFI. Boomsma (2000) makes similar recommendations, but also advises that the squared multiple correlations of each equation be reported. Based on these authors' guidelines and the above review, it was advisable to include in this research the chi-square statistic, its degrees of freedom and p value, the RMSEA and its associated confidence interval, the SRMR, the CFI, and one parsimony fit index such as the PNFI. These have been chosen over other indices, as they have been found to be the most insensitive to sample size, model misspecification, and parameter estimates.

3. 14 RESEARCH HYPOTHESIS

In order to answer the research questions developed for this study, eight hypotheses were formulated and tested. In line with the aim of the study and the literature review, the proposed relationships between the constructs (as discussed in Chapter 2) are believed to exist.

A hypothesis is a testable proposition that speculates about a relationship between two or more variables (Bailey, 1978). Grinnell (1988) insists that a hypothesis should be proven or disproven by a valid and reliable set of data. From these sentiments, it is clear that a hypothesis is based on an uncertain position that has to be validated.

The four functions of hypothesis in research are summarised by Kumar (2005) as enhancing the objectivity and purpose of a research work, providing research with focus and telling a researcher the specific scope of a research problem to be investigated, assisting a researcher in arranging data collection, thus giving the study focus and enabling the formulation of a theory for a researcher specifically to conclude what is true and what is not.

The two qualities of a good hypothesis are stated by Kerlinger and Lee (2000) as a clear proposition, and clear implications for testing the stated relationships.
The following are the hypotheses of this study:
Hypothesis: 1: Organisational Size is significantly associated with Organisational Structure.
Hypothesis: 2: Organisational Learning is significantly associated with Organisational Structure.
Hypothesis: 3: Organisational Structure is significantly associated with Organisational Levers.
Hypothesis: 4: Organisational Learning is significantly associated with Organisational Levers.
Hypothesis: 5: Organisational Structure is significantly associated with Organisational Fitness through the mediating effect of Organisational Capabilities.
Hypothesis: 6: Organisational Levers are significantly associated to Organisational Fitness through the mediating effect of Organisational Capabilities.
Hypothesis: 7: Organisational Structure is significantly associated with Organisational Fitness through the combined mediating effects of Organisational Capabilities.
Hypothesis: 8: Organisational Capabilities are directly associated with Organisational Fitness.

3.15 CHAPTER SUMMARY

In this chapter, an overview of the methodology used for this study was provided. The methodology included quantitative, survey and statistical modelling research. The measuring instruments and their psychometric properties were discussed. The chapter also discussed structural equation modelling using Lisrel and path modelling. The latter is used in evaluating the theoretical model that depicts the relationships between the constructs that are investigated in this study. The results of the current study will be presented in Chapter 4. Emphasis will be placed on evaluating the factor structure of each of the measured constructs, statistically describing the correlations between the measured constructs, and statistically exploring and confirming the conceptual model of relationships between the constructs using structural equation modelling.

CHAPTER 4

DATA PRESENTATION AND ANALYSIS

4.1 INTRODUCTION

This chapter presents the results of the data analysis described in the previous chapter. The theoretical model drawn from the interrogation of the literature review on organisational size (OS), organisational structure (OS), organisational capabilities (OC), organisational levers (OLE), organisational learning (OL), and organisational fitness (OF) provided the background to the empirical results presented in this chapter. The theoretical model proposed how the predictor variables – organisational structure, organisational sizes and organisational learning – through the mediating effects of organisational levers and capabilities affect organisational fitness. This chapter also presents the results of the relationship between organisational size and organisational structure. Organisational size could not be included in the model due to the fact that the variable was measured using discreet data; and Lisrel, the software used for result analysis, only works with continuous data. This chapter starts by presenting discussions on data screening, followed by an item analysis with presentation of the results of multivariate normality. Factor analyses of the research variables are presented. The measurement and structural models are discussed together with the proposed relationships among the variables.

4.2 DATA SCREENING

The process of data screening includes identification of entry errors, missing data and handling insufficient sample variables (Osborne and Overbay, 2008). It is conducted before data analysis can be conducted. It increases the accuracy of the research results (Osborne and Overbay, 2008). In as much as data screening has been recommended to increase research quality, it has been warned that conducting it should not compromise the integrity of the research (Osborne and Overbay, 2008). Procedures like data transformation have been viewed with suspicion as manipulating the data (Van den Broeck *et al.*, 2005). To avoid being caught in the controversy that surrounds data screening, the present study only screened data for erroneously-entered data and missing data. To complement the data screening, this study also reported on factor analysis tests that are necessary to meet the assumptions of structural equation modelling.

4.2.1 Missing Data

The data analysis progressed with the scrutiny of data entry and handling of missing data. According to Hair *et al.* (2014), handling and checking missing data increases the level of accuracy in the data entry and subsequently in the research results. To check for missing data, all entries were confirmed case by case, followed by conducting descriptive statistics, including frequency distribution and mean and standard deviation (Enders and Bandalos, 2001). The frequency distribution statistics pointed to six mistakes in the data entry that were greater than the data range. The mistakes were traced back to the original data sources and rectified, as recommended by Peugh and Enders (2004).

On investigating the completeness of the returned questionnaires, it was noticed that 13 questionnaires were incomplete and had missing data. All 13 cases had less than 20 per cent of the questionnaire unanswered. This, according to Hair *et al*. (2014), warranted their inclusion in the data analysis. A maximum likelihood function using SPSS software was used to replace the missing values, as advised by Enders and Bandalos (2001). A total of 277 cases were fit to be included finally in the research.

4. 3 ITEM ANALYSIS

Item analysis was conducted using SPSS (IBM 21). Reliability was performed on the scales to check the internal consistency of the scales used to measure the latent variables. The other purpose of conducting a reliability test was to eliminate items not contributing to the latent variable. Item analysis also allows the evaluation of the quality of the instruments used to measure the constructs (Tredoux and Durrheim, 2002). The variables were measured using Cronbach's alpha correlation coefficient.

4.3.1 Realiability Results: Organisational Size

A Cronbach alpha of .761 was recorded for the organisational size subscale. According to DeVellis (1991) and DeVo, Block, Moyle-Wright, Ernst, Hayden and Lazzara (2007), this can be interpreted as good in the social sciences, and for a new instrument the acceptable level is .70. It is clear from Table 4.1 that none of the items would increase overall reliability if they were deleted. The scale mean and scale variance of each item, if deleted, does not

have significant effect on the Cronbach scale. This, according to Tredoux and Durrheim, (2002), is an indication that a significant relationship exists between the items.

The corrected item-total correlation values presented in Table 4.1 indicate the degree to which each item correlates with the total score. According to Pallant (2010), for items to be considered to be measuring the same thing as the whole scale, they should have a corrected item total correlation value of more than .30. All of the items for this variable measured above the cut-off point of .30.

Table 4.1 Item-Total Statistics: Organisational Size (n=277)

Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
.761	.768	2

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
V1	4.387	85.369	.614	.377	.759
V2	5.021	84.749	.614	.377	.763

4.3.2 Realiability Results Organisational Learning

Organisational learning was measured using 10 items. Table 4.2 shows the reliability scales and item total statistics. A Cronbach alpha of .960 was recorded for the organisational size subscale. According to DeVellis (1991) and DeVo *et al.* (2007), this can be interpreted as good in the social sciences, and for a new instrument the acceptable level is .70. It is clear from Table 4.2 that none of the items would increase the overall reliability if they were deleted. The scale mean and scale variance of each item, if deleted, does not have much

effect on the Cronbach scale. This, according to Tredoux and Durrheim (2002), is an indication that a significant relationship exists between the items.

The corrected item-total correlation values presented in Table 4.2 indicate the degree to which each item correlates with the total score. According to Pallant (2010), for an item to be considered to be measuring the same thing as the whole scale, it should have a corrected item-total correlation value of more than .30. The corrected item correlation is moderately high, however, with the highest value at .889. The literature on reliability advocates for an inter-item correlation coefficient that is not over 0.85, because this could reflect the problem of multicollinearity, which can lead to fallacious parameter estimates and even induce the statistical non-significance of parameter estimates (Grewal, Cote and Baumgartner, 2004), leading to a misguided interpretation or elimination of important predictors from the model. There is, however, no consensus on the minimum or maximum cut-off point for the corrected item correlation. Pallant (2010) and Cristobal, Flavian and Guinaliu (2007) suggested a minimum of .30 and a maximum of .85.

Table 4. 2 Item-Total Statistics: Organisational Learning (n=277)

Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
.960	.960	10

Item-Total Statistics

	Scale mean if item deleted	Scale variance if item deleted	Corrected item-total correlation	Squared multiple correlation	Cronbach's alpha if item deleted
OL2	31.10	180.168	.757	.682	.958
OL3	31.14	181.691	.730	.589	.959
OL4	31.73	177.742	.882	.841	.954
OL5	30.79	178.012	.757	.695	.958
OL6	31.01	179.283	.786	.656	.957
OL7	31.31	173.708	.889	.840	.953
OL8	31.31	174.115	.862	.797	.954
OL9	31.18	174.182	.861	.783	.954
OL10	31.33	173.701	.864	.801	.954
OL11	31.18	175.965	.830	.742	.955

	Mean	Std. Deviation	N
OL2	3.58	1.689	277
OL3	3.54	1.671	277
OL4	2.95	1.579	277
OL5	3.88	1.791	277
OL6	3.67	1.676	277
OL7	3.36	1.734	277
OL8	3.36	1.765	277
OL9	3.50	1.764	277
OL10	3.34	1.778	277
OL11	3.50	1.742	277

4.3.3 Realiability Results: Organisational Structure

The three items measuring organisational structure have an overall reliability coefficient of .945. According to DeVellis (1991) and DeVo *et al*. (2007), this can be interpreted as very good in the social sciences, and for a new instrument the acceptable level is .70. It is clear from Table 4.3 that none of the items would increase the overall reliability if they were deleted.

The scale mean and scale variance of each item, if deleted, do not have much effect on the Cronbach scale. This, according to Guildford (as cited in Tredoux and Durrheim, 2002), is an indication that a significant relationship exists among the items. The corrected item-total correlation values presented in Table 4.3 indicate the degree to which each item correlates with the total score. According to Pallant (2010), for items to be considered to be measuring the same thing as the whole scale. they should have a corrected item-total correlation value of more than .30. The literature on reliability advocates for an inter-item correlation coefficient that is not over 0.85 because this could reflect the problem of multicollinearity (Grewal *et al*., 2004). Given that the corrected inter-item correlations suggested multicollinearity, the extent of multicollinearity for this variable was assessed, and the outcomes are discussed and presented in Section 4.3.

Table 4. 3 Item-Total Statistics: Organisational Structure (n=277)

Reliability Statistics

Cronbach's alpha	Cronbach's alpha based on standardised items	N of items
.945	.947	3

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
Complexi	4.73	2.256	.859	.737	.945
Formalis	4.88	1.970	.906	.829	.904
Centrali	4.86	1.807	.910	.836	.906

Item Statistics

	Mean	Std. Deviation	N
Complexi	2.51	.663	277
Formalis	2.36	.741	277
Centrali	2.37	.800	277

4.3.4 Realiability Results: Organisational Levers

The five items measuring organisational levers have an overall reliability coefficient of .998. According to DeVellis (1991) and DeVo *et al.* (2007), this can be interpreted as excellent to good in the social sciences, and for a new instrument the acceptable level is .70. It is clear from the above table that none of the items would increase the overall reliability if they were deleted. The scale mean and scale variance of each item, if deleted, do not have much effect on the Cronbach scale. This, according to Guildford (as cited in Tredoux and Durrheim, 2002), is an indication that a significant relationship exists among the items.

The corrected item-total correlation values presented in Table 4.4 indicate the degree to which each item correlates with the total score. According to Pallant (2010), for items to be considered to be measuring the same thing as the whole scale, they should have a corrected item total correlation value of more than .30. All the items for this variable measured above the cut-off point of .30. The corrected item correlation is moderately high, however, with the highest value being .999. The literature on reliability advocates for an inter-item correlation coefficient that is not over 0.85 because this can point to the problem of multicollinearity (Grewal *et al.*, 2004). Given that the corrected inter-item correlations suggested multicollinearity (above 0.85, using the highest possible maximum suggested in the literature), the extent of multicollinearity for this variable was assessed, and its outcome and discussion are presented in section 4.3.

Table 4.4 Item-Total Statistics: Organisational Levers (n=277)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.998	.998	5

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OLE2	15.09	45.811	.999	.	.997
OLE4	15.09	46.300	.978	.	.999
OLE6	15.09	45.897	.995	.	.997
OLE7	15.08	45.779	.998	.	.997
OLE9	15.08	45.779	.998	.	.997

Inter-Item Correlation Matrix

	OLE2	OLE4	OLE6	OLE7	OLE9
OLE2	1.000	.978	.998	.999	.999
OLE4	.978	1.000	.975	.977	.977
OLE6	.998	.975	1.000	.994	.994
OLE7	.999	.977	.994	1.000	1.000
OLE9	.999	.977	.994	1.000	1.000

The inter-item correlation matrix shows that the items are highly correlated.

4.3.5 Realiability Results: Organisational Capabilities

The six items measuring organisational capabilities have an overall reliability coefficient of .75. According to DeVellis (1991) and DeVo *et al.* (2007), this can be interpreted as excellent to good in the social sciences, and for a new instrument the acceptable level is .70. It is clear from the above table that none of the items would increase the overall reliability if they were deleted. The scale mean and scale variance of each item, if deleted, do not have much effect

on the Cronbach scale. This, according to Guildford (as cited in Tredoux and Durrheim, 2002), is an indication that a significant relationship exists among the items.

The corrected item-total correlation values presented in Table 4.5 indicate the degree to which each item correlates with the total score. According to Pallant (2010), for items to be considered to be measuring the same thing as the whole scale, they should have a corrected item total correlation value of more than .30. All of the items for this variable measured above the cut-off point of .30.

Table 4. 5: Item-Total Statistics: Organisational Capabilities (n=277)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.746	.750	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OC1	16.12	33.453	.311	.816	.757
OC2	17.28	32.238	.521	.765	.704
OC4	17.00	28.279	.655	.823	.661
OC5	16.30	32.582	.347	.817	.749
OC6	16.43	29.051	.541	.427	.693
OC8	16.49	28.932	.569	.520	.685

Item Statistics

	Mean	Std. Deviation	N
OC1	3.81	1.657	277
OC2	2.65	1.361	277
OC4	2.93	1.616	277
OC5	3.62	1.693	277
OC6	3.49	1.731	277
OC8	3.43	1.692	277

4. 3. 6 Realiability Results: Organisational Fitness

The six items measuring organisational fitness have an overall reliability coefficient of .896 on Cronbach's alpha scale. According to DeVellis (1991) and DeVo *et al*. (2007), this can be interpreted as excellent to good in the social sciences, and for a new instrument the acceptable level is .70. It is clear from Table 4.6 that none of the items would increase the overall reliability if they were deleted. The scale mean and scale variance of each item, if deleted, do not have much effect on the Cronbach scale. This, according to Guildford (as cited in Tredoux and Durrheim, 2002), is an indication that a significant relationship exists among the items.

The corrected item-total correlation values presented in Table 4.6 below indicate the degree to which each item correlates with the total score. According to Pallant (2010), for items to be considered to be measuring the same thing as the whole scale, they should have a corrected item total correlation value of more than .30. All of the items for this variable measured well above the cut-off point .30. The literature on reliability advocates for an inter-item correlation coefficient that is not over 0.85 because this can point to the problem of multicollinearity (Grewal *et al*., 2004). Given that the corrected inter-item correlations suggested multicollinearity (above 0.85, using the highest possible maximum suggested in the literature), the extent of multicollinearity for this variable was assessed, and its outcome and discussion are presented in Section 4.3.

Table 4.6 Item-Total Statistics: Organisational Fitness (n=277)

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardised Items	N of Items
.896	.898	6

Item-Total Statistics

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Squared Multiple Correlation	Cronbach's Alpha if Item Deleted
OF1	18.86	43.612	.915	.	.846
OF2	18.90	46.204	.798	.	.865
OF3	18.86	43.612	.915	.	.846
OF4	18.89	46.380	.807	.	.864
OF5	18.99	60.866	.121	.	.963
OF6	19.03	44.970	.892	.	.851

Item Statistics

	Mean	Std. Deviation	N
OF1	3.84	1.707	277
OF2	3.81	1.674	277
OF3	3.84	1.707	277
OF4	3.82	1.644	277
OF5	3.72	1.738	277
OF6	3.68	1.631	277

4.3.7 Summary of the Item Analysis

The results of the item analysis performed on the various scales are summarised in Table 4.7. After examination of all of the scales, it was concluded that all of the Cronbach's alpha values exceeded the required 0.70 cut-off. The corrected item-total correlation of the variables (organisational structure, organisational levers and organisational fitness, highlighted in Table 4.7) suggest multicollinearity among these variables. A multicollinearity analysis was performed, and is reported in the next section (4.3).

Table 4.7: Summary of the Item Analysis

Variable	Cronbach's alpha scale	Lowest Corrected Item Correlation	Highest Corrected Item Correlation
Organisational Size	0.761	0.614	0.614
Organisational Learning	0.967	0.730	0.889
Organisational Levers	0.998	0.978	0.999
Organisational Structure	0.947	0.859	0.90
Organisational Capabilities	0.750	0.311	0.655
Organisational Fitness	.898	0.121	0.915

4. 4 MULTICOLLINEARITY DIAGNOSTICS

Tables 4.8, 4.9 and 4.10 present multicollinearity diagnostic tests for organisational structure, levers, and fitness respectively.

Table 4.8: Multicollinearity Diagnostics Tests: Organisational Structure

Coefficients[a]

Model		Collinearity Statistics	
		Tolerance	VIF
1	Complexity	.289	3.455
	Formalisation	.198	5.054
	Centralisation	.184	5.422

Values of the Variance Inflation Factor (VIF) that exceed 10 are often regarded as indicating multicollinearity (Freund, Littell and Creighton, 2003; Belsley, Kuh and Welsch, 1980). From the coefficients shown in Table 4.8, the VIF levels are all below 10, and the tolerance level is acceptable.

Table 4.9: Multicollinearity Diagnostics Tests: Organisational Levers

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	4.007	.275		14.573	.000		
	OL	.015	.039	.026	.388	.698	.936	1.068
	OL	-.080	.073	-.126	-1.100	.272	.328	3.051
	OL	-.091	.065	-.141	-1.391	.166	.418	2.395
	OL	-.143	.106	-.210	-1.342	.181	.175	5.701
	OL	.048	.070	.081	.690	.491	.312	3.205
	OL	.088	.070	.138	1.262	.208	.358	2.794
	OL	.098	.097	.158	1.009	.314	.176	5.687
	OL	.098	.084	.164	1.156	.249	.214	4.671
	OL	.003	.084	.005	.034	.973	.229	4.371
	OL	.011	.087	.018	.125	.900	.211	4.739
	OL	-.030	.074	-.050	-.405	.686	.285	3.503
	OL	.001	.041	.001	.014	.989	.941	1.063

Values of the Variance Inflation Factor (VIF) that exceed 10 are often regarded as indicating multicollinearity (Freund *et al*., 2003; Belsley *et al*., 1980). From the coefficients shown in Table 4.9, the VIF levels are all below 10, and the tolerance level is acceptable.

Table 4.10: Multicollinearity Diagnostics Tests: Organisational Fitness

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.	Collinearity Statistics	
		B	Std. Error	Beta			Tolerance	VIF
1	(Constant)	3.856	.383		10.068	.000		
	OF	.007	.151	.007	.045	.965	.196	5.093
	OF	.045	.149	.041	.305	.761	.230	4.341
	OF	.009	.121	.008	.078	.938	.361	2.773
	OF	-.099	.138	-.096	-.719	.473	.235	4.247
	OF	.067	.065	.068	1.035	.302	.967	1.034
	OF	-.048	.146	-.048	-.331	.741	.202	4.953

Values of the Variance Inflation Factor (VIF) that exceed 10 are often regarded as indicating multicollinearity (Freund *et al.*, 2003; Belsley *et al.*, 1980). From the coefficients shown in Table 4.10, the VIF levels are all below 10, and the tolerance level is acceptable.

The common practice is to exclude variables that report multicollinearity in a study (James, 1979). In the current research, the verdict was to keep the variables for the following reasons. Firstly, the multicollinearity diagnostics tests presented in Tables 4.8, 4.9 and 4.10 show that the VIF values of all of the variables are below 10, and thus show an acceptable degree of tolerance (Freund *et al.*, 2003; Belsley *et al.*, 1980). Secondly, the solution of 'doing nothing', as advocated by Voss (2005), seems appropriate for this research, as multicollinearity appears for a theoretically meaningful reason. Furthermore, doing nothing has "the virtue of retaining both the scale and the independent variation of the source data" (Voss, 2005, p.765). Voss (2005) also concludes that multicollinearity does no real harm to a regression model, aside from making some of the variables less precise; and the standard errors properly report this imprecision. Lastly, the variables are of interest to the research – hence the need to keep them.

4.5 FACTOR ANALYSIS

Factor analysis as a multivariate procedure is concerned with the identification of underlying factors that are responsible for co-variation among research variables (Kline, 2012). Factor analysis shows a relationship among variables and, in some instances, it determines which variable shows a relationship (Brown, 2015). Two types of factor analysis are used in

research: the confirmatory factor analysis and the exploratory factor analysis. Confirmatory factor analysis (CFA) confirms a previous theory and hypothesis. Exploratory factor analysis (EFA) explores the loadings of variables just to determine the best model (Kline, 2012). The present research used CFA to confirm a previously hypothesised theory. The tests below were conducted in respect of CFA, and are reported in the next sections: normality analysis, preliminary analysis, and diagnostic tests and factor extraction.

4.5.1 Normality

Normality tests determine how data are normally modelled around normal distribution (Razali and Wah, 2011). A normality test is essential in research because it forms the basic assumptions of parametric tests such as those performed by structural equation modelling (Bai and Ng, 2005). According to Székely and Rizzo (2005), data distribution with either a highly-skewed nature or with high kurtosis is indicative of non-normality, which has random effects on specification or estimation.

Twelve of the 42 variable items were moderately negatively skewed, with skewness < -1, although none of these had skewness < -3. The standard error of skewness was 0.175, so these twelve variables were statistically significantly skewed at the p=0.005. The result showed lack of normality in the variables, and these are likely to affect the overall findings of the study. An additional effort was made to identify the specific cases with extreme values and that were very different from the rest. This was done by identifying univariate outliers by judging standardised z scores of ± 3.29 and multivariate outliers evaluating a Mahalanobis distance greater than χ (9) = 27.877 (p<.001) respectively, as advised by Tabachnick and Fidell (2001).

The Mahalanobis procedure showed that six cases were extremely univariate and multivariate outliers. These cases were assessed to find out why they were outliers, and how their exclusion affected the findings. One explanation could be related to the respondents' strong beliefs about organisational leadership and employee involvement in the fitness variable. For instance, on closer examination, some of the cases indicated that they trust their management but doubt that their action leads to organisational fitness. Given that only six cases were found to have an insignificant number in terms of the ratio of the variables (Hair *et al.*, 2014), their inclusion was not likely to upset the results when they were not eliminated from the data analysis (Tabachnick and Fidell, 2001).

4.5.2 Preliminary Analysis and Diagnostic Tests

Kaiser Meyer-Olkin (KMO) was used to test for sampling adequacy. Table 4.11 summarises the KMO scores of the research variables. KMO compares the observed correlation coefficient to the partial correlation coefficient. Low values of KMO indicate problems with sampling (Hair *et al.*, 2014). A KMO value of .90 is best; below .50 is inadequate. A KMO of .762 was recorded for the organisational structure variable, .934 for organisational levers, .577 for organisational learning, .934 for organisational capabilities, and .755 for organisational fitness. Kaiser (1974) recommends anything above .50 as adequate sampling. The results confirm the sampling adequacy, as all of the variables recorded a KMO of above .50.

Bartlett's test of sphericity was used to determine whether the correlation matrix in the factor analysis is an identity matrix. The Barlett's test results are recorded as follows: organisational structure: chi-square 819.752, df 3 sig p (0.000). Organisational levers: chi-square 2913.754, df 66 and sig p (0.000). Organisational capabilities: chi-square 1756.120, df 36 and sig p (0.000). Organisational fitness: chi-square 1160.409, df 15 and sig p (0.000).

These results confirmed that the confirmatory factor analysis was suitable for these data.

The identity matrix is a correlation matrix in which the diagonals are all 0 and the off diagonals are (Kaiser, 1974). This would mean that none of the variables are correlated to each other. Bartlett's test was highly significant at $p \leq 0.005$; thus the data were fit to be subjected to factor analysis.

Table 4.11: Summary of Kaiser Meyer-Olkin (KMO)

Variable	Kaiser Meyer-Olkin (KMO)
Organisational Structure	0.762
Organisational Levers	0.577
Organisational Learning	0.84
Organisational Capabilities	0.934
Organisational Fitness	0.755

The anti- image correlation matrix was also conducted. The results show that there is a low degree of correlation between the variables when the other variables are constant. An anti-image means that the low correlation values will produce large numbers (Brown, 2015). This confirms the suitability of using factor analysis.

4.5.3 Factor Extraction

Factors were extracted using the maximum principal component developed by Hotelling (1933). The extraction of factors was used to determine how well the factors explained the variations. Factor extraction identifies the linear combination of variables that account for the greatest amount of common variance (Byrne, 2001).

4.5.3.1 Factor Extraction: Organisational Structure

For the organisational structure variable, the first factor accounts for the greatest amount of common variance (90.509 per cent), representing an eigenvalue of 2.715. Each subsequent factor explains a portion of the remaining variance to a point where the eigenvalue is 1. This is the point at which the other factors are not contributing to the model. The extraction of organisational structure is presented in Table 4.12 and Figure 4.1 (scree plot).

Table 4.12: Factor Extraction : Organisational Structure

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.715	90.509	90.509	2.577	85.893	85.893
2	.184	6.139	96.648			
3	.101	3.352	100.000			

Extraction Method: Principal Component

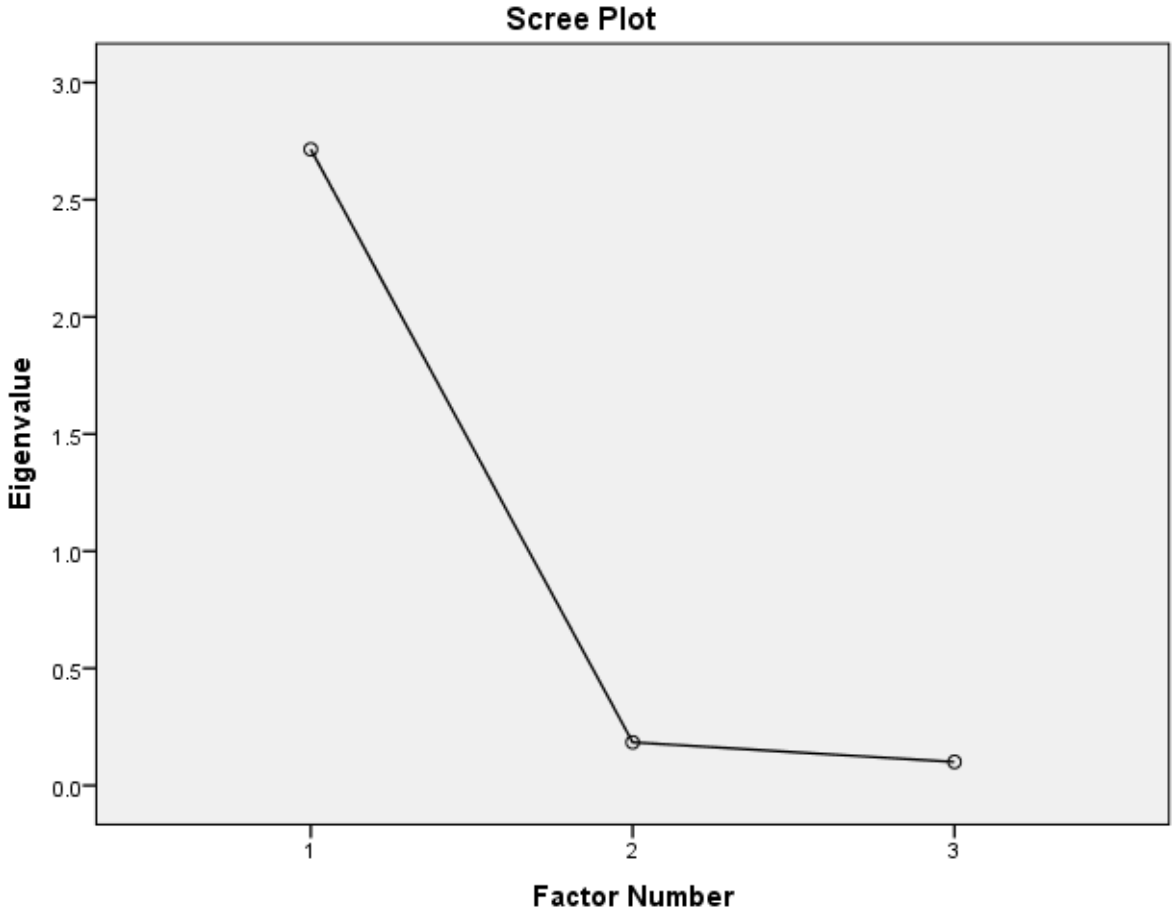

Figure 4.1: Scree Plot: Organisational Structure

Table 4.12 and Figure 4.1 show that the factors with an eigenvalue of more than 1 represent the number of factors. In this case, factor one is the cut-off factor with an eigenvalue of 2.751 and an explained variance of 90.509 per cent. All of the other factors that come after factor one do not contribute enough to be included in the model.

4.5.3.2 Factor Extraction: Organisational Levers

For the organisational levers variable, the first factor accounts for the greatest amount of common variance (61.779 per cent), representing an eigenvalue of 7.413. Each subsequent factor explains a portion of the remaining variance to a point where the eigenvalue is 1. This is the point at which the other factors are not contributing to the model. The extraction of organisational levers is presented in Table 4.9 and Figure 4.2 (scree plot).

Table 4.13 : Factor Extraction: Organisational Levers

Factor	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	7.413	61.779	61.779	6.257	52.140	52.140
2	1.206	10.052	71.831	1.492	12.437	64.577
3	.814	6.787	78.618			
4	.670	5.581	84.199			
5	.399	3.324	87.524			
6	.365	3.045	90.568			
7	.284	2.366	92.935			
8	.260	2.170	95.105			
9	.205	1.706	96.811			
10	.156	1.300	98.112			
11	.117	.973	99.084			
12	.110	.916	100.000			

Extraction Method: Principal Component

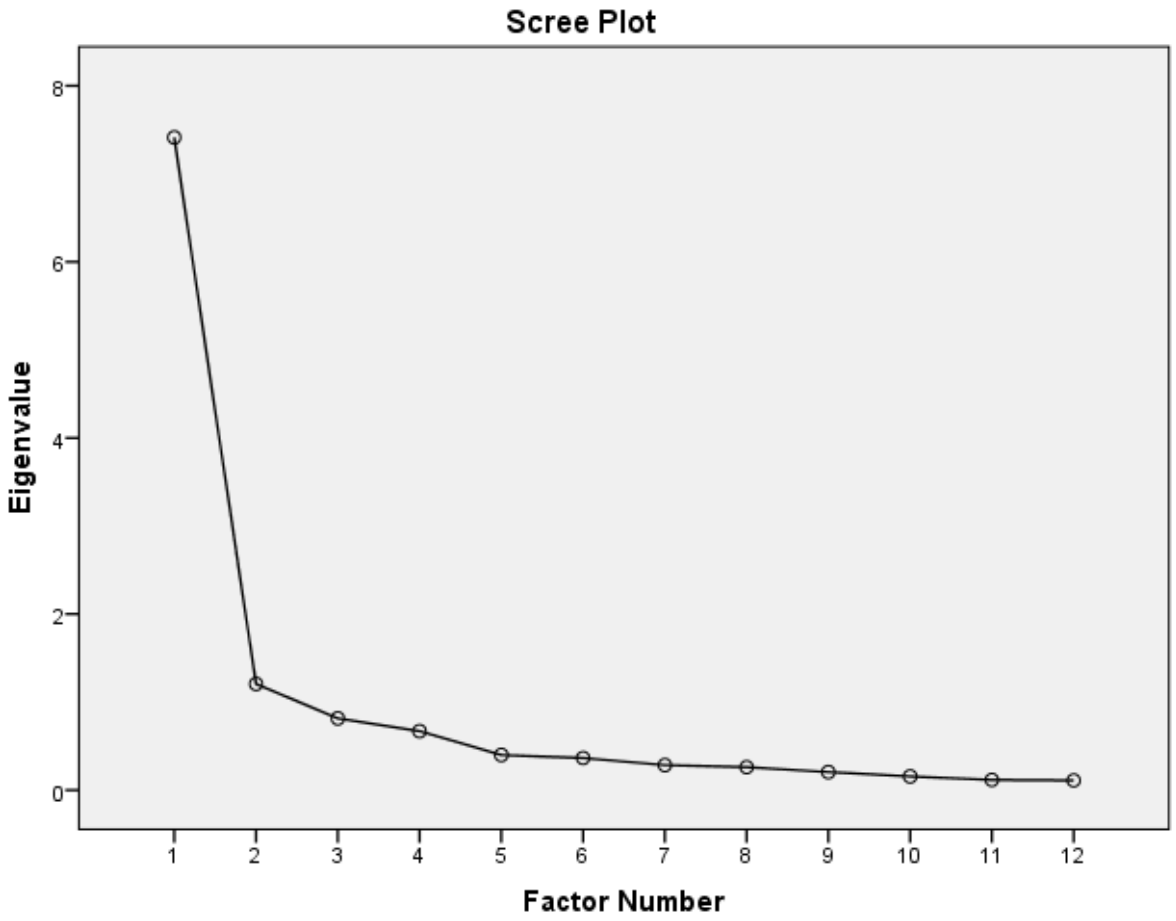

Figure 4.2: Scree Plot: Organisational Levers

Table 4.13 and Figure 4.2 show that the factors with an eigenvalue of more than 1 represent the number of factors. In this case, factor two is the cut-off factor with an eigenvalue of 1.2 and an explained variance of 10.052 per cent. All of the other factors that come after factor two do not contribute enough to be included in the model.

4.5.3.3 Factor Extraction: Organisational Capabilities

For the organisational capabilities variable, the first factor accounts for the greatest amount of common variance (30.736 per cent), representing an eigenvalue of 2.766. Each subsequent factor explains a portion of the remaining variance to a point where the eigenvalue is 1. This is the point at which the other factors are not contributing to the model. The extraction of organisational capabilities is presented in Table 4.14 and Figure 4.3 (scree plot).

Table 4.14: Factor Extraction: Organisational Capabilities

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2.766	30.736	30.736	2.766	30.736	30.736
2	2.320	25.781	56.516	2.320	25.781	56.516
3	1.498	16.639	73.155	1.498	16.639	73.155
4	1.380	15.337	88.493	1.380	15.337	88.493
5	.523	5.813	94.306			
6	.196	2.177	96.482			
7	.116	1.293	97.775			
8	.108	1.197	98.972			
9	.093	1.028	100.000			

Extraction Method: Principal Component Analysis.

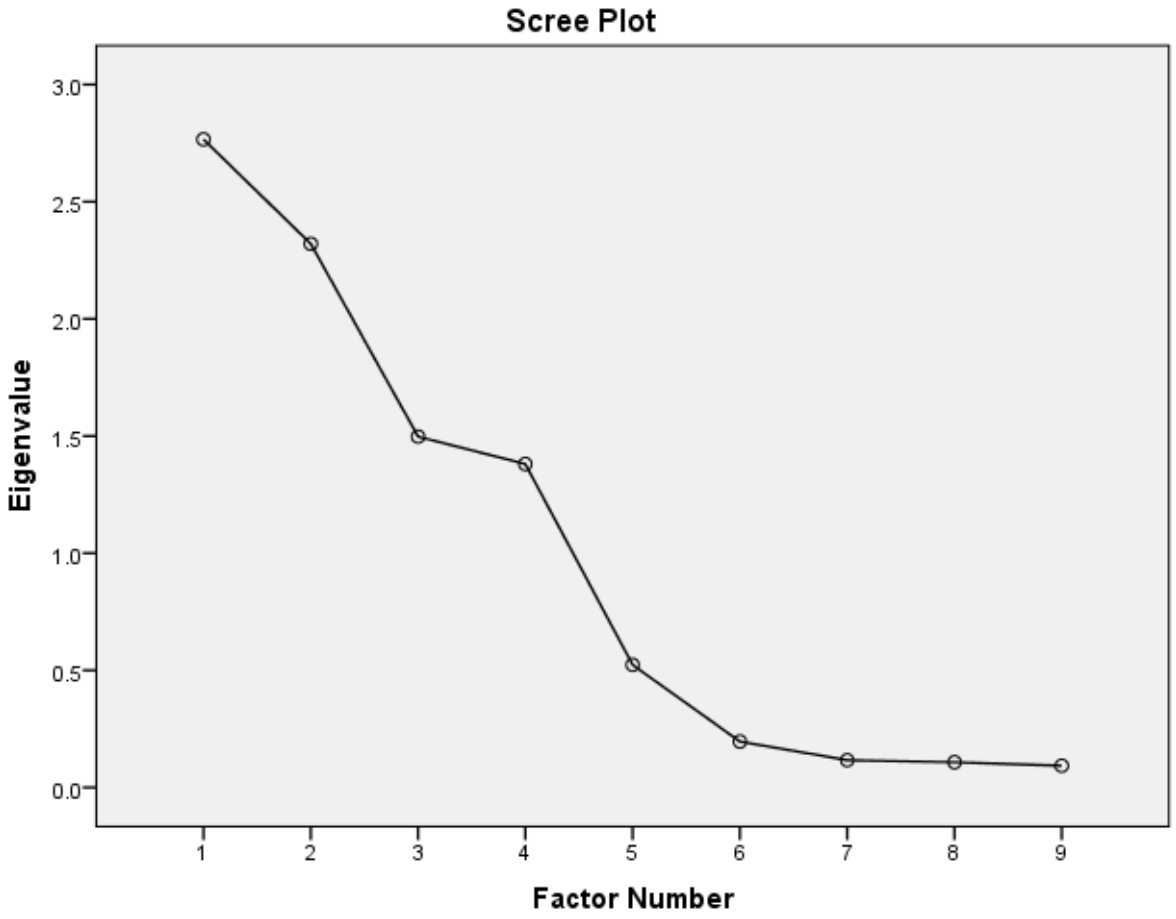

Figure 4.3: Scree Plot: Organisational Capabilities

Table 4.14 and Figure 4.3 show that the factors with an eigenvalue of more than 1 represent the number of factors. In this case factor four is the cut-off factor with an eigenvalue of 1.380 and an explained variance of 15.33 per cent. All of the other factors that come after this factor do not contribute enough to be included in the model.

4.5.3.4 Factor Extraction: Organisational Learning

For the organisational learning variable, the first factor accounts for the greatest amount of common variance (55.192 per cent), representing an eigenvalue of 4.967. Each subsequent factor explains a portion of the remaining variance to a point where the eigenvalue is 1. This is the point at which the other factors are not contributing to the model. The extractions of organisational learning are presented in Table 4.8 and Figure 4.4 (scree plot).

Table 4.15: Factor Extraction: Organisational Learning

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.967	55.192	55.192	4.967	55.192	55.192
2	2.045	22.718	77.910	2.045	22.718	77.910
3	1.065	11.838	89.748	1.065	11.838	89.748
4	.856	9.511	99.259			
5	.035	.388	99.647			
6	.024	.271	99.918			
7	.007	.082	100.000			
8	1.022E-013	1.247E-013	100.000			
9	1.001E-013	1.013E-013	100.000			

Extraction Method: Principal Component Analysis.

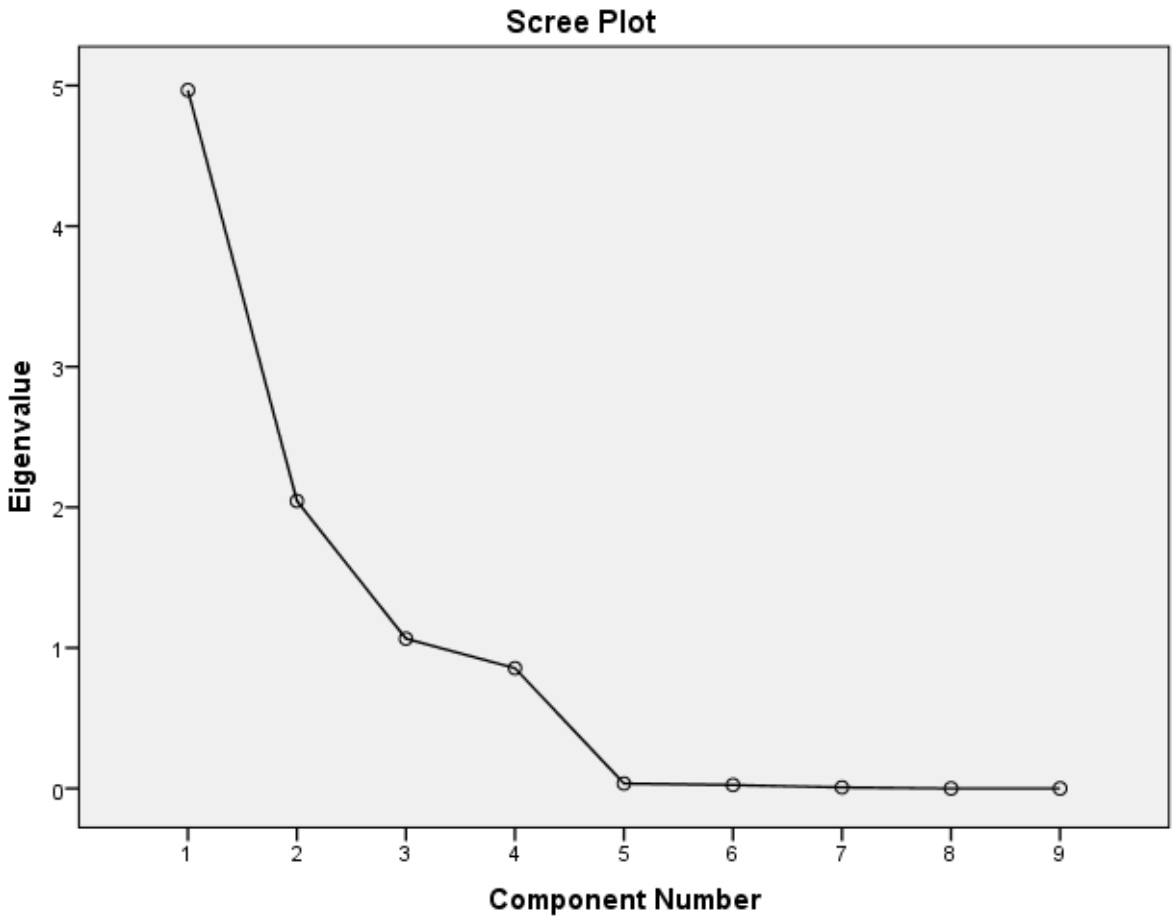

Figure 4. 4: Scree Plot: Organisational Learning

Table 4.15 and Figure 4.4 show that the factors with an eigenvalue of more than 1 represent the number of factors. In this case factor three is the cut-off factor with an eigenvalue of 1.065 and an explained variance of 11.383 per cent. All of the other factors that come after this factor do not contribute enough to be included in the model.

4.5.3.5 Factor Extraction: Organisational Fitness

For the organisational fitness variable, the first factor accounts for the greatest amount of common variance (61.016 per cent), representing an eigenvalue of 3.661. Each subsequent factor explains a portion of the remaining variance to a point where the eigenvalue is 1. This is the point at which all of the other factors are not contributing to the model. The extraction of organisational fitness is presented in Table 4.15 and Figure 4.5 (scree plot).

Table 4.16: Factor Extraction: Organisational Fitness

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3.661	61.016	61.016	3.661	61.016	61.016
2	.988	16.460	77.476			
3	.735	12.248	89.724			
4	.371	6.187	95.911			
5	.146	2.437	98.348			
6	.099	1.652	100.000			

Extraction Method: Principal Component Analysis.

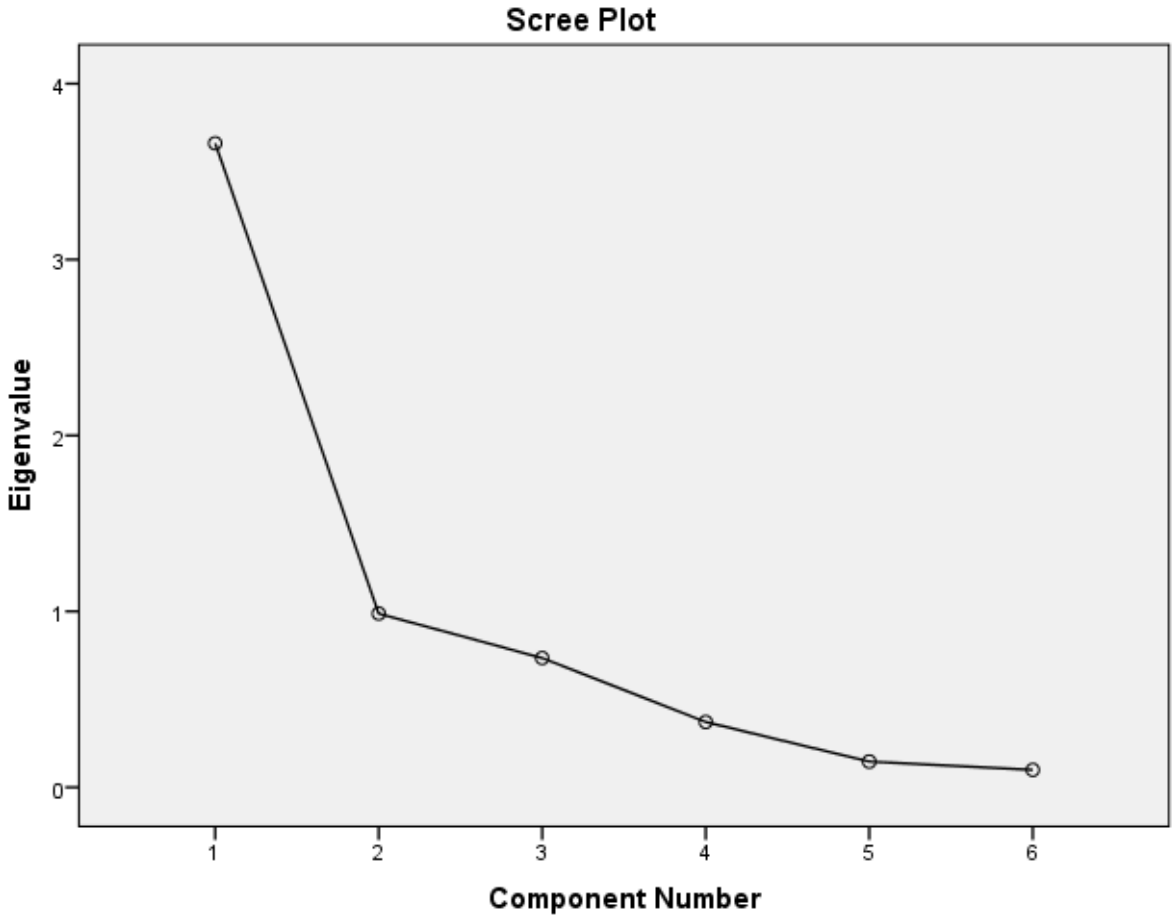

Figure 4.5: Scree Plot: Organisational Fitness

Table 4.16 and Figure 4.5 show that the factors with an eigenvalue of more than 1 represent the number of factors. In this case factor one is the cut-off factor with an eigenvalue of 3.661. and an explained variance of 61.016 perecent. All of the other factors that come after factor one do not contribute enough to be included in the model.

4. 6 MEASUREMENT MODEL

The measurement model represents the relationship between the latent variable and its manifest indicators (Kline, 2005; 2012). According to Kenny (2012), the measurement model is done to map measures on to theoretical constructs. The model consists of the following: loading the measures on the theoretical constructs; error variance; error covariance; specification; standardised solutions; analysis of residuals; and model fitness measures. The path diagram of the model is also presented.

4.6.1 Loading of Exogenous Variables Lambda-x

The three organisational structure indicators of complexity, formalisation and centralisation load correctly on to the organisational structure latent variable (parameters 1-3). The five indicators of organisational levers correctly load on to the organisational structure latent variable (parameters 21-25). The eleven indicators of organisational learning load correctly on to the organisational learning latent variable (parameters 4-11). The six indicators of organisational capabilities load correctly on to the organisational capabilities latent variable (parameters 14-19). The four variables of organisational fitness load correctly on to the organisational fitness latent variable (parameters 25-28). This makes a total of 28 factor loadings. The loadings are presented in Table 4.17

Table 4. 17: Loadings for Exogenous Variables (Lambda-x)

	STRUCTUR	LEVERS	FITNESS	CAPABILI	LEARNING
Complexi	1	0	0	0	0
Formalis	2	0	0	0	0
Centrali	3	0	0	0	0
OL2	0	0	0	0	4
OL3	0	0	0	0	5
OL4	0	0	0	0	6
OL5	0	0	0	0	7
OL6	0	0	0	0	8
OL7	0	0	0	0	9

OL8	0	0	0	0	10
OL9	0	0	0	0	11
OL10	0	0	0	0	12
OL11	0	0	0	0	13
OC1	0	0	0	14	0
OC2	0	0	0	15	0
OC4	0	0	0	16	0
OC5	0	0	0	17	0
OC6	0	0	0	18	0
OC8	0	0	0	19	0
OLE2	0	20	0	0	0
OLE4	0	21	0	0	0
OLE6	0	22	0	0	0
OLE7	0	23	0	0	0
OLE9	0	24	0	0	0
OF1	0	0	25	0	0
OF3	0	0	26	0	0
OF4	0	0	27	0	0
OF6	0	0	28	0	0

4.6.2 Estimated Loadings of Exogenous Variables (Lambda-x)

From the matrix, the estimated loading for the complexity indicator is .59, which has a standard error of .039 and a Wald statistic of 18.17. This loading is considered significant because its associated Wald statistic is greater than the 1.96 cut-off at $\alpha = .05$ – an acceptable cut-off set advocated by Brown (2015). Formalisation has an estimated loading of .695 with a standard error of 0.033 and Wald statistic of 21.89; and the loading is beyond the cut-off point. Centralisation has an estimated loading of 0.76 with a standard error of .029 and a Wald statistic of 26.8. All of the organisational structure indicators have an estimated loading with a Wald statistic greater than the cut-off of 1.96 at $\alpha = .05$.

The organisational learning indicators have estimated loadings of between 1.2 and 1.6, with standard errors ranging from 0.056 to 0.089. All of the organisational learning's Wald statistics (T value) were greater than the cut-off of 1.96 at α = .05. Of the six organisational capabilities indicators, two fall marginally below the Wald cut-off point (1.57 and 1.44) and one falls well below it (0.05). According to Brown (2015), the one isolated indicator can be ignored, as it has little impact on the overall outcome of the model. The rest of the capabilities estimated are far beyond the cut-off point. All of the indicator variables of organisational fitness and levers have estimates that are greater than the cut-off point of 1.96 at α = .05. Of the 28 indicators, 25 have an estimated parameter loading with a Wald statistic beyond the accepted cut-off of 1.96 at α = .05. This gives an acceptable estimated parameter loading for the fitness of the model. The results do not indicate any misspecifications in the measurement model of the variables.

Table 4. 18: Estimated Loadings of Exogenous Variables (Lambda-x)

	STRUCTUR	LEVERS	FITNESS	CAPABILI	LEARNING
Complexi	0.595	- -	- -	- -	- -
	(0.033)				
	18.170				
Formaliz	0.695	- -	- -	- -	- -
	(0.032)				
	21.897				
Centrali	0.769	- -	- -	- -	- -
	(0.029)				
	26.841				
OL2	- -	- -	- -	- -	1.235
					(0.089)
					13.816
OL3	- -	- -	- -	- -	1.223
					(0.086)
					14.172
OL4	- -	- -	- -	- -	1.454
					(0.060)
					24.310
OL5	- -	- -	- -	- -	1.273
					(0.091)
					13.929

OL6	- -	- -	- -	- -	1.368
					(0.073)
					18.823
OL7	- -	- -	- -	- -	1.606
					(0.058)
					27.680
OL8	- -	- -	- -	- -	1.599
					(0.059)
					27.223
OL9	- -	- -	- -	- -	1.589
					(0.060)
					26.409
OL10	- -	- -	- -	- -	1.613
					(0.056)
					28.616
OL11	- -	- -	- -	- -	1.544
					(0.062)
					25.041
OC1	- -	- -	- -	1.494	- -
				(0.123)	
				12.173	
OC2	- -	- -	- -	0.002	- -
				(0.075)	
				0.025	
OC4	- -	- -	- -	0.155	- -
				(0.098)	
				1.578	
OC5	- -	- -	- -	1.678	- -
				(0.118)	
				14.174	
OC6	- -	- -	- -	0.225	- -
				(0.100)	
				2.242	
OC8	- -	- -	- -	0.148	- -
				(0.102)	
				1.447	
OLE2	- -	1.699	- -	- -	- -
		(0.052)			

		32.961			
OLE4	- -	1.652	- -	- -	- -
		(0.059)			
		28.196			
OLE6	- -	1.690	- -	- -	- -
		(0.053)			
		31.902			
OLE7	- -	1.705	- -	- -	- -
		(0.051)			
		33.215			
OLE9	- -	1.705	- -	- -	- -
		(0.051)			
		33.215			
OF1	- -	- -	1.707	- -	- -
			(0.052)		
			32.903		
OF3	- -	- -	1.707	- -	- -
			(0.052)		
			32.903		
OF4	- -	- -	1.197	- -	- -
			(0.087)		
			13.750		
OF6	- -	- -	1.571	- -	- -
			(0.057)		
			27.535		

The Lambda-x matrix confirms the validity of the loadings shown in Table 4.18. (All of the loadings have a Wald statistic beyond the cut-off point of 1.96 at $\alpha = .05$.) In as much as the Lambda-x matrix is an indicator of validity, Diamantopoulos and Siguaw (2000) caution users against a sole reliance on it. Its flaws are in the difficulties of comparing different indicators that measure the same variable. Indicators are not always on the same scale. In this research, the organisational structure scales are different from the other variables scales. Furthermore, the latent variables are only interpretable relative to the unit of the reference indicator. It is also thought that, if a dissimilar indicator is used as the locus variable, the scales of the loadings will be affected. According to Brown (2015), this calls for

consideration of the completely standardised loadings. The completely standardised solutions are presented and discussed in Section 4.5.3.

4.6.3 Completely Standardised Solutions of Exogenous Variables (Lambda-x)

The completely standardised solution consists of the estimates of the Lambda-x matrix. These estimates may also be obtained if the model is fitted correctly to the sample correlation rather than to the sample covariance matrix (Diamantopoulos and Siguaw, 2000)**.**

The standardised solution metrics shown in Table 4.19 reveal that all of the organisational structure, organisational learning and organisational indicators are well beyond .30 – the threshold recommended by Hair *et al*. (2014). Two of the organisational fitness indicators have a unitary standardised solution, and three of the organisational capabilities have very low standardised solutions. The conclusion that a standardised solution should be less than one and more than .30 to be considered useful to a model has been dismissed by Joreskog (1999) as a misunderstanding. Jöreskog (1999, p.1) points out that "a common misunderstanding is that coefficients in the completely standardized solution must be smaller than one in magnitude and if they are not, something must be wrong. However, this need not to be so". Jöreskog (1999) clarifies that factor loadings are regression coefficients and not correlations, and as such they can be larger than one in magnitude. In the same way, a small coefficient does not indicate a problem.

Table 4.19: Completely Standardised Solutions of Exogenous Variables (Lambda-x)

	STRUCTUR	LEVERS	FITNESS	CAPABILI	LEARNING
Complexi	**0.897**	- -	- -	- -	- -
Formaliz	**0.937**	- -	- -	- -	- -
Centrali	**0.960**	- -	- -	- -	- -
OL2	- -	- -	- -	- -	**0.731**
OL3	- -	- -	- -	- -	**0.731**

OL4	**- -**	**- -**	**- -**	**- -**	**0.920**
OL5	**- -**	**- -**	**- -**	**- -**	**0.711**
OL6	**- -**	**- -**	**- -**	**- -**	**0.816**
OL7	**- -**	**- -**	**- -**	**- -**	**0.925**
OL8	**- -**	**- -**	**- -**	**- -**	**0.905**
OL9	**- -**	**- -**	**- -**	**- -**	**0.900**
OL10	**- -**	**- -**	**- -**	**- -**	**0.907**
OL11	**- -**	**- -**	**- -**	**- -**	**0.886**
OC1	**- -**	**- -**	**- -**	**0.901**	**- -**
OC2	**- -**	**- -**	**- -**	**0.001**	**- -**
OC4	**- -**	**- -**	**- -**	**0.096**	**- -**
OC5	**- -**	**- -**	**- -**	**0.990**	**- -**
OC6	**- -**	**- -**	**- -**	**0.130**	**- -**
OC8	**- -**	**- -**	**- -**	**0.088**	**- -**
OLE2	**- -**	**0.998**	**- -**	**- -**	**- -**
OLE4	**- -**	**0.975**	**- -**	**- -**	**- -**
OLE6	**- -**	**0.994**	**- -**	**- -**	**- -**

OLE7	**- -**	**0.999**	**- -**	**- -**	**- -**
OLE9	**- -**	**0.999**	**- -**	**- -**	**- -**
OF1	**- -**	**- -**	**1.000**	**- -**	**- -**
OF3	**- -**	**- -**	**1.000**	**- -**	**- -**
OF4	**- -**	**- -**	**0.728**	**- -**	**- -**
OF6	**- -**	**- -**	**0.962**	**- -**	**- -**

4.6.4 Estimated Variance and Covariances of Exogenous Latent Variables (Phi)

All of the estimated covariances between all of the variables show a linear association among the variables. The phi matrix shows that none of the items correlate above .90, as shown in Table 4.20. The highest variance estimate is between organisational levers and organisational fitness at 0.144, with a standard error of 0.061 and a Wald statistic of 2.381. A linear association among the variables suggests the possibilities of a model that fits the data (Browne and Cudeck, 1993).

Table 4:20: Estimated Variance and Covariances of Exogenous Latent Variables (Phi)

	STRUCTUR	LEVERS	FITNESS	CAPABILI	LEARNING
STRUCTUR	1.000				
LEVERS	0.027	1.000			
	(0.060)				
	0.443				
FITNESS	0.074	0.144	1.000		
	(0.062)	(0.061)			
	1.192	2.381			

CAPABILI	-0.034	-0.015	-0.030	1.000	
	(0.059)	(0.057)	(0.057)		
	-0.580	-0.264	-0.528		
LEARNING	0.097	0.066	-0.088	0.029	1.000
	(0.060)	(0.062)	(0.062)	(0.066)	
	1.617	1.072	-1.416	0.441	

The results in Table 4.20 indicate that all of the factor correlations are statistically significant if a significance level of 1 per cent is used. In other words, there is sufficient evidence that the five variables are correlated. The results also indicate that all of the measurement error variances are statistically significant if a significance level of 1 per cent is used.

4.6.5 Theta-Delta Matrix

The Theta-Delta matrix gives the measurement errors for exogenous variables (Grewal *et al*., 2004). The total variance in the indicator variable could be decomposed into variance due to variance in the latent variable if the indicator variable was meant to reflect exogenous latent variables (Brown, 2015). As a result of variance in other systematic latent effects, the indicator variable was not designed to reflect a random error (Browne and Cudeck, 1993). The latter are reflected in the measurement errors for exogenous variables terms. Table 4.21 reports on the Theta-Delta matrix.

Table 4.21: The Theta-Delta Matrix

Complexi	Formaliz	Centrali	OL2	OL3	OL4
0.196	0.121	0.078	0.466	0.465	0.153

Theta-Delta (continued)

OL5	OL6	OL7	OL8	OL9	OL10
0.495	0.335	0.144	0.180	0.190	0.178

Theta-Delta (continued)

OL11	OC1	OC2	OC4	OC5	OC6
0.215	0.187	1.000	0.991	0.019	0.983

Theta-Delta (continued)

OC8	OLE2	OLE4	OLE6	OLE7	OLE9
0.992	0.003	0.049	0.012	0.001	0.001

Theta-Delta (continued)

OF1	OF3	OF4	OF6
0.001	0.001	0.470	0.074

The measuremt errors of the exogenous variables represented by the Theta-Delta matrix (Table 4.21) are at acceptable levels, as recommended by Browne and Cudeck (1993), who advocated a value of 0.3 for the indicated measurement error. Two items measuring organisational learning have a slighty high value of just below 0.4. Organisational levers also have two items with a slighty high value of just above 0.4. Organisational capabilities have four items with a very high measurement error; only one measurement error for organisational fitness is more than 0.4. The overall measurement errors of the exogenous variables are well within the acceptable levels; hence the acceptance of the Theta-Delta matrix results and the high reliability status of the measurement model.

4.6.6 Squared Multiple Correlations

The squared multiple correlations (R2) of the indicators depict the extent to which the measurement model is adequately represented by the observed variables (Schumacker and Lomax, 2004). A high R2 value indicates that variance in the indicator under discussion reflects variance to a large degree in the latent variable to which it has been linked. The R2 values range from 0.00 to 1.00, and also serve as reliability indicators (Schumacker and Lomax, 2004). The R2 values shown in Table 4.22 indicate very high correlations, except for variables OC 2, OC4, OC6, AND 0C8 (Organisational Capabilities), which are very low.

Table 4. 22: Squared Multiple Correlations for X-Variables

Complexi	Formaliz	Centrali	OL2	OL3	OL4
0.804	0.879	0.922	0.534	0.535	0.847

Squared Multiple Correlations for X-Variables (continued)

OL5	OL6	OL7	OL8	OL9	OL10
0.505	0.665	0.856	0.820	0.810	0.822

Squared Multiple Correlations for X-Variables (continued)

OL11	OC1	OC2	OC4	OC5	OC6
0.785	0.813	0.000	0.009	0.981	0.017

Squared Multiple Correlations for X-Variables (continued)

OC8	OLE2	OLE4	OLE6	OLE7	OLE9
0.008	0.997	0.951	0.988	0.999	0.999

Squared Multiple Correlations for X-Variables (continued)

OF1	OF3	OF4	OF6
0.999	0.999	0.530	0.926

4.6.7 Examination of Measurement Model Residuals

Standardised residuals are considered large when they exceed +2.58 or -2.58 (Diamantopoulos and Siguaw, 2000). Large positive residuals indicate that the model underestimates the co-variance between two variables; a negative residual shows that the model overestimates the covariance between variables (Jöreskog and Sörbom, 1993). Figure 4.6 shows the stem and leaf plot of the standardised residuals. In the study, the measurement model standardised residuals comprised nine negative and 14 positive residuals. Forteen large positive standardised residuals and nine large negative standardised residuals indicate that 23 out of 310 (seven per cent) observed variance and covariance terms in the observed sample

covariance matrix being poorly estimated by the derived model parameter estimates. This small percentage indicated a good model fit.

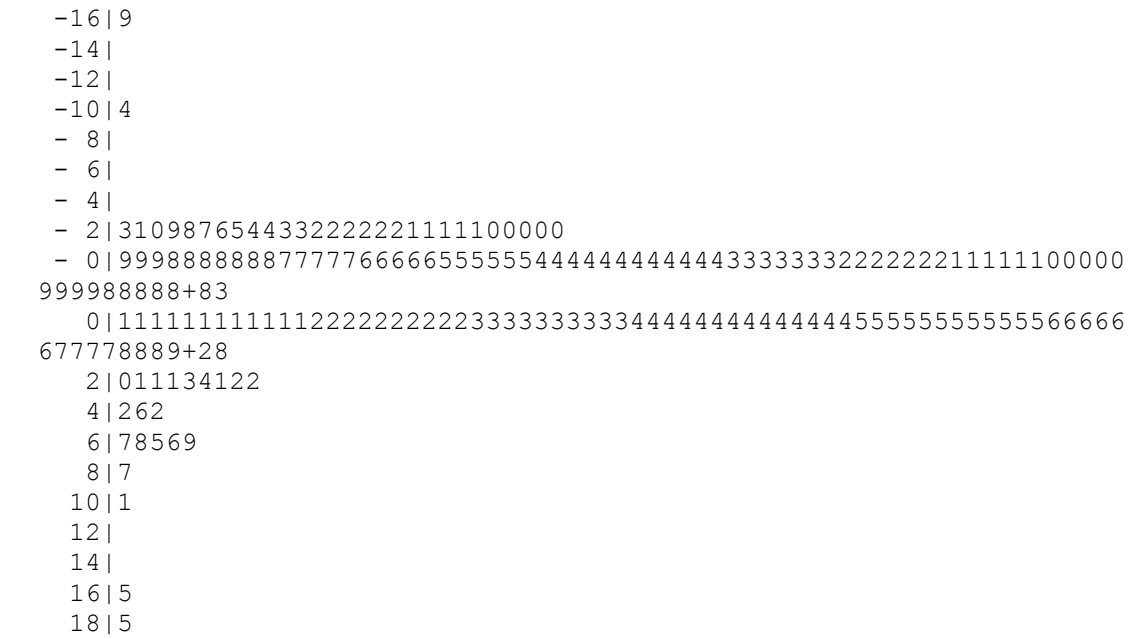

Figure 4.6 Stem and Leaf Plot of Standardised Residuals

The distribution of the residuals in the stem and leaf plot in Figure 4.6 is neither positively nor negatively skewed – an indication that the model is balanced in estimating the observed variance and covariance terms. This suggests that the model includes vital paths. A consideration of the Q-plot in Figure 4.7 reveals a close conformity to the dotted line, giving evidence of a useful and acceptable specification of the model.

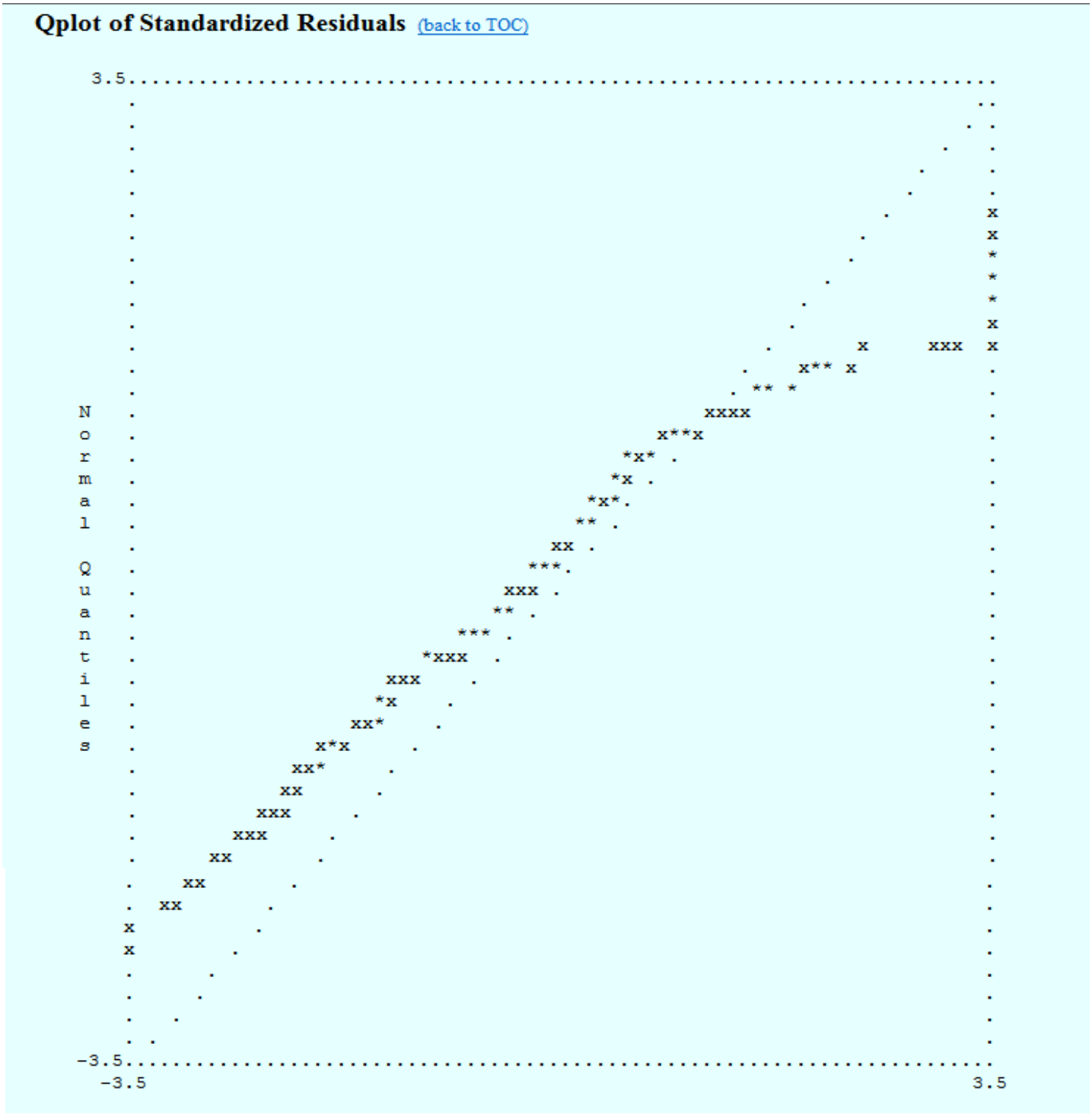

Figure 4.7: Q-plot of Standardised Residuals Measurement Model

In the previous section, the estimated loadings of exogenous variables (Lambda-x), estimated variances and covariances of exogenous latent variables (PHI) and estimated measurement error variance (Theta-Delta), standardised solutions of exogenous variables (Lambda-x), and

standardised model residuals were presented; and they do not indicate any mis-specifications in the measurement model of the variables.

4.6.8 Goodness-of-fit Statistics

The next section discusses the goodness-of-fit statistics results for the measurement model, as discussed in Chapter 3. Table 4.23 presents the goodness-of-fit statistics of the measurement model.

Table 4. 23: Goodness-of-fit Statistics for the Measurement model

Fit index	Value
Degrees of Freedom	340
Minimum Fit Function Chi-Square	1606.840 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square	1526.317 (P = 0.0)
Satorra-Bentler Scaled Chi-Square	917.342 (P = 0.0)
Estimated Non-centrality Parameter (NCP)	577.342
90 Percent Confidence Interval for NCP	(491.198 ; 671.133)
Population Discrepancy Function Value (F0)	2.092
90 Percent Confidence Interval for F0	(1.780 ; 2.432)
Root Mean Square Error of Approximation (RMSEA)	0.0784
90 Percent Confidence Interval for RMSEA	(0.0723 ; 0.0846)
P-Value for Test of Close Fit (RMSEA S 0.05)	0.000
90 Percent Confidence Interval for ECVI	(3.490 ; 4.142)
ECVI for Saturated Model	2.942
ECVI for Independence Model	45.093
Independence AIC	12445.607
Model AIC	1049.342
Saturated AIC	812.000
Independence CAIC	12575.080
Model CAIC	1354.527
Saturated CAIC	2689.351
Non-Normed Fit Index (NNFI)	0.947

Parsimony	Normed Fit Index (PNFI)	0.833
Comparative Fit Index (CFI)		0.952
Incremental Fit Index (IFI)		0.952
Relative Fit Index (RFI)		0.918
Root Mean Square Residual (RMR)		0.231
Standardised RMR		0.0885
Goodness-of-fit Index (GFI)		0.717
Adjusted Goodness-of-fit Index (AGFI)		0.662
Parsimony Goodness-of-fit Index (PGFI)		0.600

The degrees of freedom were recorded at 340. The minimum fit function chi-square is at 1606.840 (p=0.0), the Normal Theory Weighted Least Square Chi Square is at 1526.317 (p=0.0). The Satorra-Bentler scaled chi-square was recorded at 917.342 (p=0.0). The estimated Non-Centrality Parameter (NCP) was recorded at 577.342 with a 90 per cent confidence interval of 491.198; 671.133. The population Discrepancy Function Value was recorded at 2.092 with a 90 per cent confidence interval at 1.780, 2.432. The entire statistic reported on the chi-square index was acceptable, in agreement with the guidelines of the ranges being as high as 5.0 (Wheaton *et al.*, 1977) to as low as 2.0 (Tabachnick and Fidell, 2007).

The root mean square error of approximation (RMSEA) was recorded at 0.078. The adjusted goodness-of-fit index is at 0.662. It has been argued that an RMSEA of between 0.08 and 0.10 provides a mediocre fit and that below 0.08 shows a good fit (MacCallum *et al.*, 1996). Therefore, the recorded RMSEA of 0.078 is acceptable. The goodness-of-fit statistic (GFI) was recorded at 0.717. Previously a cut-off point of 0.90 had been recommended for the GFI; however, simulation studies have shown that when factor loadings and sample sizes are low, a higher cut-off of 0.95 is more appropriate (Miles and Shevlin, 2007). In light of this, the goodness-of-fit statistic was acceptable.

The root mean square residual (RMR) and standardised root mean square residual (SRMR) of 0.231 and 0.0885 respectively were recorded. Values for the SRMR range from zero to 1.0, with well-fitting models obtaining values less than .05 (Byrne, 1998; Diamantopoulos and Siguaw, 2000); however, values as high as 0.08 are deemed acceptable (Hu and Bentler, 1999). Thus the SRMR value of 0.885 is fairly acceptable.

The Non-Normed-Fit Index (NNFI) was recorded at 0.947. Values for this statistic range between 0 and 1, with Bentler and Bonnett (1980) recommending values greater than 0.90 as indicating a good fit. In the past two decades suggestions have been made that the cut-off criterion be NNFI ≥.95 (Hu and Bentler, 1999).

The comparative fit index (CFI) was recorded at 0.952. This is one of the most popularly used fit indices, as it is one of the measures least affected by sample size (Fan *et al*., 1999). For this, a value of CFI ≥0.95 is presently recognised as indicative of good fit (Hu and Bentler, 1999). In this vein, the CFI was acceptable. Table 4.24 summarises the goodness-of-fit statistics.

Table 4.24: Summary of Measurement Model Fit Statistics

Measure	Result	Cut-off	Comment
RMSEA	0.078	Below 0.080	Good fit
GFI/ AGFI	0.717	0.90	Good fit
RMR	0.231	0 to 1	Fairly good fit
SRMR	0.0888	0.80	Fairly good fit
NNFI	0.947	≥.95	Good fit
CFI	0.952	≥0.95	Fairly good fit
D/F =340 Chi-Square $\chi 2$ Weighted Least Square Satorra Bentler Scaled Non-Centrality Parameter (NCP)	1606.840(p=0.0) 1526.317 (p=0.0) 917.342 (p=0.0) 577.342,	≥.95	Good

All seven of the goodness-of-fit measures are at acceptable levels, as shown in Table 4.24. The consideration of these measures of fit was based on the following reasons. The root mean square error of approximation (RMSEA) was reported because of its ability to calculate the confidence interval around its value (MacCallum *et al.*, 1996). This is possible due to the known distribution values of the statistic, which subsequently allow for the null hypothesis (poor fit) to be tested more precisely, as reported by McQuitty (2004) in Hooper *et al*. (2008). The goodness-of-fit statistic (GFI) and the adjusted goodness-of-fit statistic (AGFI) were used to counter the many weaknesses of the chi-square statistic by Hooper *et al*. (2008). (The chi-square statistic was not reported in this research, largely due to its shortcomings in reporting large samples.)

According to Hooper *et al.* (2008), the range of the root mean square residual (RMR) is calculated based upon the scales of each indicator; therefore, if a questionnaire contains items with varying levels (some items may range from 1 to 5, while others range from 1 to 7), the RMR becomes difficult to interpret (Kline, 2005). Given this challenge in using the RMR statistic, the standardised root mean square residual (SRMR) was considered to resolve this problem, as it is much more meaningful to interpret, in line with the recommendations of Byrne (1998) and Diamantopoulos and Siguaw (2000). The Comparative Fit Index (CFI; Bentler, 1990) is a revised form of the NFI, and takes sample size into account (Byrne, 1998). It is highly relevant to all sample sizes when included in the study. This index was first introduced by Bentler (1990), and subsequently included as part of the fit indices in his EQS program (Kline, 2005).

Hooper *et al.* (2008) warn that it is impossible – and unnecessary – to report every fit index reported by the Lisrel program. While there are no golden rules for assessing model fit, reporting a variety of indices is necessary (Crowley and Fan, 1997) because different indices reflect different aspects of model fit. Although the chi-square model has many problems associated with it, it is still essential to report this statistic, along with its degree. Kline (2005) in Hooper *et al*. (2008) expresses a strong conviction about the inclusion of the following indices: the chi-square test, the RMSEA, the CFI, and the SRMR. Boomsma (2000) has made similar recommendations. Based on these authors' guidelines and the above review, the research reported the chi-square statistic and its degrees of freedom and p value, the RMSEA and its associated confidence interval, the SRMR, the CFI, and one parsimony fit index such as the PNFI.

The full range of the fitness measures statistics confirm that the model achieved a good fit. This indicates that the measurement model was able to reproduce data. The model is consistent with the data, hence it was not necessary for its specification. Kenny (2015) concludes that a good-fitting measurement model is required before interpreting the causal paths of the structural model. In this case, the model is considered an adequate fit, paving the way for the structural model. The fitted path diagram of the measurement model is presented in Figure 4.8.

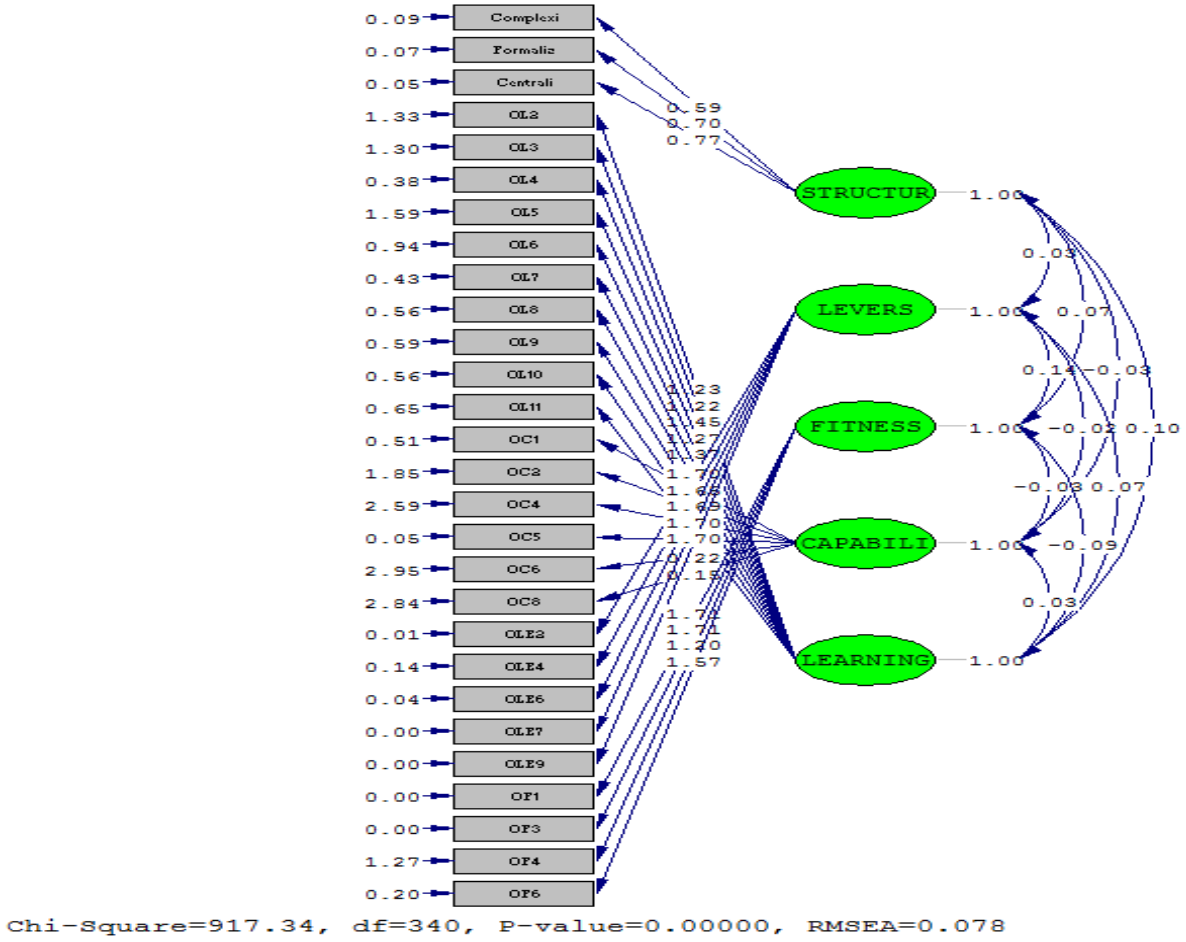

Figure 4.8: Path Diagram of the Measurement Model

The path diagram of the measurement model confirms the fitness statistics discussed above.

4. 7 Structural Model

The structural model relates latent variables to one another. In this case, the following latent variables are reported: organisational structure, levers, fitness, capabilities, and learning. The

model relations are as follows: structure=learning, levers=learning, capabilities=levers, fitness=capabilities, complexity=structure, formalisation=structure, and centralisation=structure. The sample size is 277 (n=277).

The purpose of evaluating the structural model is to determine whether the theoretical relationships specified at the conceptualisation stage are validated by the data. The evaluation focuses on the structural relationship and association between the various endogenous and exogenous latent variables, and between the various endogenous latent variables. Hu and Bentler (1999) and Brown (2015) sum up four critical issues that are at the core of evaluating the structural model.

Firstly, it is important to evaluate the indicators of the parameters representing the paths between the latent variables to establish the degree of consistency with the nature of the causal effect proposed to exist among the latent variables.

Secondly, it is essential to determine whether the parameter estimates are significant ($p < .05$), as indicated by t-values (Wald statistic) greater than (1.96).

Thirdly, it is important to assess the degrees of the estimated parameters that indicate the strength of the proposed relationships.

Finally, the structural model should include an analysis of the Beta and Gamma matrices.

4.7.1 Parameter Specifications of the Structural Model

The next section presents and discusses the parameter specifications of the structural model. This includes the loadings of the endogenous variables (Lambda-y) and the exogenous variables (Lambda-x), the path coefficients/causal paths β (beta matrix) (independent, mediating and dependent variables), and causal path from exogenous to endogenous (the gamma matrix)**.**

4.7.1.1 Loading of Endogenous Variables (Lambda-y) and Exogenous Variables (Lambda-x)

Formalisation and centralisation load correctly on to the organisational structure variable (parameters 1-2). Five organisational capabilities indicators load correctly on to the organisational capabilities variable (parameters 3-7). Four organisational levers indicators loaded correctly on to the organisational levers variable (parameters 8-11). Three organisational fitness indicators load correctly on to the organisational fitness variable (parameters 12-13). Ten organisational learning indicators load correctly on to the organisational learning variable. Table 4.25 presents the loadings of Lambda-y.

Table 4.25: Loading of Lambda-y

	STRUCTUR	LEVERS	FITNESS	CAPABILI
Complexi	0	0	0	0
Formalis	1	0	0	0
Centrali	2	0	0	0
OC1	0	0	0	0
OC2	0	0	0	3
OC4	0	0	0	4
OC5	0	0	0	5
OC6	0	0	0	6
OC8	0	0	0	7

OLE2	0	0	0	0
OLE4	0	8	0	0
OLE6	0	9	0	0
OLE7	0	10	0	0
OLE9	0	11	0	0
OF1	0	0	0	0
OF3	0	0	12	0
OF4	0	0	13	0
OF6	0	0	14	0

Loading of Lambda-y (continued)

	LEARNING
OL2	15
OL3	16
OL4	17
OL5	18

OL6	19
OL7	20
OL8	21
OL9	22
OL10	23
OL11	24

4.7.1.2 Path Coefficients/Causal Paths β (Beta) (Independent, Mediating and Dependent Variables).

Table 4.26 represents causal paths between variables. The table shows that causal paths exist between organisational structure and organisational levers. Causal paths between organisational levers and organisational capabilities are also evident from the model. Causal paths between organisational capabilities and organisational fitness are present as well.

Table 4.26: Path Coefficients/Causal Paths β (BETA) (Independent, Mediating and Dependent Variables)

	STRUCTUR	**LEVERS**	**FITNESS**	**CAPABILI**
STRUCTUR	0	0	0	0
LEVERS	25	0	0	0
FITNESS	0	0	0	26
CAPABILI	0	27	0	0

4.7.1.3 Causal Path from Exogenous to Endogenous (GAMMA*)*

Table 4.27 shows that a causal path exists between organisational learning and organisational structure. A causal path can also be traced between organisational learning and organisational levers. No causal paths are present between organisational learning and organisational fitness, and none can be traced between organisational learning and organisational fitness.

Table 4.27: Causal Path from Exogenous to Endogenous (GAMMA*)*

	LEARNING
STRUCTUR	*28*
LEVERS	*29*
FITNESS	*0*
CAPABILI	*0*

4.7.2 Parameter Estimates of the Structural Model

The next section presents and discusses the estimates of the structural model. This includes the estimates of the endogenous variables (Lambda-y), the exogenous variables (Lambda-x), the beta matrix (β), and the gamma matrix.

4.7.2.1 Estimates of Endogenous Variables (Lambda-y) and Exogenous Variables (Lambda-x)

The structural model has 27 iterations. According to Bollen (1989), Bullock *et al*. (1994) and Hair *et al*. (2014), the minimum number of iterations should be three times the estimated variations. From the matrix, the estimated loading for the complexity indicator is .59, which has a standard error of .033 and a Wald statistic of 20.82. This loading is considered significant because its associated Wald statistic is greater than the 1.96 cut-off at $\alpha = .05$. Formalisation has an estimated loading of .695 with a standard error of 0.033 and a Wald

statistic of 21.89, and the loading is beyond the cut-off point. Centralisation has an estimated loading of 0.76 with a standard error of .032 with a Wald statistic (T-Value) of 23.73. All of the organisational structure indicators have an estimated loading with a Wald statistic greater than the cut-off of 1.96 at $\alpha = .05$.

The organisational learning indicators have estimated loadings of between 1.6 and 1.7, with standard errors ranging from 0.007 to 0.032. All of the organisational learning Wald statistics (t-values) are greater than the cut-off of 1.96 at $\alpha = .05$. Of the six organisational capabilities indicators, two fall marginally below the Wald cut-off point (1.47 and 1.44), and one falls well below (0.03). According to Brown (2015), the one isolated indicator can be ignored, as it has little impact on the overall outcome of the model. The rest of the estimated capabilities are above the cut-off point. All of the indicator variables of organisational fitness and levers have estimates that are greater than the cut-off point of 1.96 at $\alpha = .05$. Of the 28 indicators, 25 have an estimated parameter loading with a Wald statistic beyond the accepted cut-off of 1.96 at $\alpha = .05$. This gives an acceptable estimated parameter loading for the fitness of the model.

Table 4.28: Estimates of Endogenous Variables (Lambda-y*)*

	STRUCTUR	LEVERS	FITNESS	CAPABILI
Complexi	0.595	- -	- -	- -
Formalis	0.695	- -	- -	- -
	(0.033)			
	20.823			
Centrali	0.769	- -	- -	- -
	(0.032)			
	23.733			
OC1	- -	- -	- -	1.489
OC2	- -	- -	- -	0.003
				(0.075)
				0.034
OC4	- -	- -	- -	0.156
				(0.097)
				1.605

OC5	- -	- -	- -	1.684
				(0.261)
				6.457
OC6	- -	- -	- -	0.223
				(0.098)
				2.283
OC8	- -	- -	- -	0.147
				(0.099)
				1.476
OLE2	- -	1.699	- -	- -
OLE4	- -	1.652	- -	- -
		(0.032)		
		51.692		
OLE6	- -	1.690	- -	- -
		(0.008)		
		205.253		
OLE7	- -	1.705	- -	- -
		(0.007)		
		241.307		
OLE9	- -	1.705	- -	- -
		(0.007)		
		241.307		
OF1	- -	- -	1.707	- -
OF3	- -	- -	1.707	- -
			(0.000)	
			**********	
OF4	- -	- -	1.197	- -
			(0.080)	
			15.016	
OF6	- -	- -	1.571	- -
			(0.032)	

			48.815	

Table 4.29: Estimates of Lambda-x

	LEARNING
OL2	1.235
	(0.089)
	13.807
OL3	1.223
	(0.086)
	14.175
OL4	1.454
	(0.060)
	24.315
OL5	1.273
	(0.091)
	13.921
OL6	1.367
	(0.073)
	18.809
OL7	1.606
	(0.058)
	27.676
OL8	1.599
	(0.059)
	27.231
OL9	1.589
	(0.060)
	26.411
OL10	1.613
	(0.056)
	28.606

OL11	1.544
	(0.062)
	25.040

4.7.2.2 The Beta Matrix (β)

The unstandardised β (beta matrix) is used to assess the significance of the estimated path coefficients of the data structure. It expresses the degree of influence that variables have on each other (Brown, 2006). According to Hu and Bentler (1999), the beta parameters are significant if $t > \left|1.96\right|$ ($p < 0.05$). A significant β estimate implies that the corresponding null hypothesis is rejected in favour of the alternative hypothesis (Diamantopoulos and Siguaw, 2000). Table 4.30 presents the coefficients of the causal paths of the structural model.

Table 4.30: Coefficients of Causal Paths β (Beta Matrix)

	STRUCTUR	LEVERS	FITNESS	CAPABILI
STRUCTUR	- -	- -	- -	- -
LEVERS	0.020	- -	- -	- -
	(0.061)			
	0.334			
FITNESS	- -	- -	- -	-0.030
				(0.057)
				-0.527
CAPABILI	- -	0.014	- -	- -
		(0.057)		
		0.244		

The T-value (Wald statistic) of the causal path between organisational structure and organisational levers is 0.334 with a standard error of 0.020. The T-value is below the cut-off point of T ≥ 1.96 P (0.05) recommended by Hu and Bentler (1999) and Diamantopoulos and Siguaw (2000). The T-value (Wald statistic) of the causal path between organisational levers

and organisational capabilities is 0.244 with a standard error of 0.057. The t-value is below the cut-off point of T ≥ 1.96 P (0.05) recommended by Hu and Bentler (1999) and Diamantopoulos and Siguaw (2000). The t-value (Wald statistic) of the causal path between organisational fitness and organisational capabilities is 0.527 with a standard error of 0.057. The t-value is below the cut-off point of T ≥ 1.96 P (0.05) recommended by Hu and Bentler (2009) and Diamantopoulos and Siguaw (2000). This suggests that there might be no relationship between organisational structure and organisational levers, between organisational levers and organisational capabilities, and between organisational finess and organisational capabilities.

4.7.2.3 The Gamma Matrix

The unstandardised matrix is used to assess the significance of the estimated path coefficients γij, expressing the strength of the influence of ξj (exogenous latent variables) on ηi (endogenous latent variables). The gamma parameters are significant if $t > |1.96|$ ($p < .05$) (Diamantopoulos and Siguaw, 2000). A significant γ estimate implies that the corresponding null hypothesis is rejected in favour of the alternative hypothesis. It is important to note that a significant gamma path coefficient estimate does not imply a causal effect. When using correlational data obtained via an *ex post facto* research design, it is not possible to isolate the empirical system sufficiently to label the relationship among the variables as strictly causal (Cliff, 1988). Therefore, an *ex post facto* design of this nature precludes the drawing of causal inferences from significant paths coefficients (Henning, Theron and Spangenberg, 2004). The gamma matrix is presented in Table 4.31.

Table 4.31: The Gamma Matrix

	LEARNING
STRUCTUR	0.097
	(0.061)
	1.602
LEVERS	0.065
	(0.063)
	1.25

The t-value (Wald statistic) of the causal path between organisational structure and organisational learning is 1.602 with a standard error of 0.061. The t-value is below the cut-off point of T ≥ 1.96 P (0.05) recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). The t-value (Wald statistic) of the causal path between organisational learning and organisational levers is 1.25 with a standard error of 0.063. The t-value is below the cut-off point of T ≥ 1.96 P (0.05) recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). All of the t-values of the causal relations are below the cut-off point of T ≥ 1.96 P (0.05).This suggests that there might be no relationship between organisational learning and organisational structure or between organisational learning and organisational levers.

4. 8 RELATIONSHIPS BETWEEN LATENT VARIABLES

In this section, the hypotheses about the relationships between variables assumed in the form of a theoretical model in Chapters two and three are presented. The assessments of the relationships are based on the t-values presented in the previous section concerning the beta and gamma matrices.

Hypothesis 2: Organisational Learning is significantly associated with Organisational Structure.

From the gamma matrix, the causal path between organisational learning ξ (exogenous latent variable) and organisational structure η (endogenous latent variable) is linked by the t-value of 1.602 with a standard error of 0.061 (see Table 4.31). The t-value is below the cut-off point of T ≥ 1.96 P (0.05) recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). This indicates that there is no significant relationship between organisational learning and organisational structure. The proposed relationship between the two variables could not be supported.

Hypothesis 3: Organisational Structure is significantly associated with Organisational Levers

From the beta matrix, the causal path between organisational structure η (endogenous latent variable) and organisational levers η (endogenous latent variable) is linked by the t-value of 0.334 with a standard error of 0.020 (see Table 4.30). The t-value is below the cut-off point of T ≥ 1.96 P (0.05) recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). This indicates that there is no significant relationship between organisational structure and organisational levers. The proposed relationship between the two variables

could not be supported.

Hypothesis 4: Organisational Learning is significantly associated with Organisational Levers.

From the gamma matrix, the causal path between organisational learning ξ (exogenous latent variable) and organisational levers η (endogenous latent variable) is linked by the t-value of 1.25 with a standard error of 0.063. The t-value is below the cut-off point of $T \geq 1.96$ P (0.05) recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). This indicates that there is no significant relationship between organisational learning and organisational levers. The proposed relationship between the two variables could not be supported.

Hypothesis 5: Organisational Structure is significantly associated with Organisational Fitness through the mediating effect of Organisational Capabilities.

The mediating effect of organisational capabilities on the relationship between organisational structure and fitness was not supported. The t-value associated with the structural path running from the organisational structure and organisational capabilities interaction effect on organisational fitness is less than the 1.96 recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). It is therefore evident that organisational capabilities are not a significant mediator of the relationship between organisational structure and organisational fitness. The proposed mediating effect of capabilities in the relationship between organisational structure and organisational fitness was not supported.

Hypothesis 6: Organisational Levers are significantly associated to Organisational Fitness through the mediating effect of Organisational Capabilities.

The mediating effect of organisational capabilities on the relationship between organisational levers and fitness was not supported. The t-value associated with the structural path running from the organisational levers and organisational capabilities interaction effect to organisational fitness is less than the 1.96 recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). It is therefore evident that organisational capabilities are not a significant mediator of the relationship between organisational levers and organisational fitness. The proposed mediating effect of organisational levers was not supported.

Hypothesis 7: Organisational Capabilities are significantly associated with Organisational Fitness.

From the beta matrix, the causal path between organisational capabilities and organisational fitness is linked by the t-value of -0.527 with a standard error of 0.057. The t-value is below the cut-off point of T ≥ 1.96 P (0.05) recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). This indicates that there is no significant relationship between organisational capabilities and organisational fitness, suggesting that the proposed relationship between the two variables could not be supported.

Hypothesis 8: Organisational Structure is significantly associated with Organisational Fitness through the mediating effects of Organisational Levers and Organisational Capabilities.

The mediating effect of organisational capabilities and organisational levers on the relationship between organisational structure and fitness was supported. The t-value associated with the structural path running from the organisational structure and organisational levers and organisational capabilities and organisational structure interaction effect to organisational fitness is more than the 1.96 recommended by Hu and Bentler (1998) and Diamantopoulos and Siguaw (2000). It is therefore evident that organisational capabilities and levers are a significant mediator of the relationship between organisational structure and organisational fitness. This suggests that the proposed mediating effect was supported.

4.9 GOODNESS-OF-FIT STATISTICS OF THE STRUCTURAL MODEL

The next section discusses the goodness-of-fit statistics results for the measurement model, as discussed in Chapter 3. Table 4.32 presents the goodness-of-fit statistics of the measurement model.

Table 4.32: Goodness-of-fit Statistics of the Structural Model.

Fit index	Value
Degrees of Freedom	345
Minimum Fit Function Chi-Square	1617.460 (P = 0.0)
Normal Theory Weighted Least Squares Chi-Square	1538.905 (P = 0.0)
Satorra-Bentler Scaled Chi-Square	929.697 (P = 0.0)
Estimated Non-centrality Parameter (NCP)	584.697
90 Percent Confidence Interval for NCP	(497.964 ; 679.080)
Population Discrepancy Function Value (F0)	2.118
90 Percent Confidence Interval for F0	(1.804 ; 2.460)
Root Mean Square Error of Approximation (RMSEA)	0.0784
90 Percent Confidence Interval for RMSEA	(0.0723 ; 0.0844)
P-Value for Test of Close Fit (RMSEA S 0.05)	0.000
90 Percent Confidence Interval for ECVI	(3.496 ; 4.152)
ECVI for Saturated Model	2.942
ECVI for Independence Model	45.093
Independence AIC	12445.607
Model AIC	1051.697
Saturated AIC	812.000
Independence CAIC	12575.080
Model CAIC	1333.762
Saturated CAIC	2689.351
Non-Normed Fit Index (NNFI)	0.947
Parsimony Normed Fit Index (PNFI)	0.844
Comparative Fit Index (CFI)	0.951
Incremental Fit Index (IFI)	0.951
Relative Fit Index (RFI)	0.918
Root Mean Square Residual (RMR)	0.256
Standardised RMR	0.0971
Goodness-of-fit Index (GFI)	0.715

Adjusted Goodness-of-fit Index (AGFI)	0.665
Parsimony Goodness-of-fit Index (PGFI)	0.608

The degrees of freedom were recorded at 340. The minimum fit function chi-square is at 1606.840 (p=0.00), and the Normal Theory Weighted Least Square Chi Square is at 1526.317 (p=0.00). The Satorra-Bentler scaled Chi- Square was recorded at 917.342 (p=0.00). The estimated Non-Centrality Parameter (NCP) was recorded at 577.342 with a 90 per cent confidence interval of 491.198, 671.133. The population Discrepancy Function Value was recorded at 2.092 with a 90 per cent confidence interval at 1.780, 2.432. The entire statistic reported on the chi-square index was acceptable and in agreement with the guidelines of the ranges (as high as 5.0 (Wheaton *et al*., 1977) to as low as 2.0 (Tabachnick and Fidell, 2007)).

The root mean square error of approximation (RMSEA) was recorded at 0.0784. The adjusted goodness-of-fit index is at 0.662. It has been argued that an RMSEA of between 0.08 and 0.10 reflects a mediocre fit and that below 0.08 shows a good fit (MacCallum *et al.*, 1996).

Thus the recorded RMSEA of 0.078 is acceptable. The goodness-of-fit statistic (GFI) was recorded at 0.717. Previously a cut-off point of 0.90 has been recommended for the GFI; but simulation studies have shown that when factor loadings and sample sizes are low, a higher cut-off of 0.95 is more appropriate (Shevlin and Miles, 1998). In the light of this, the goodness-of-fit statistic was acceptable. The root mean square residual (RMR) and the standardised root mean square residual (SRMR) of 0.231 and 0.0885 respectively were recorded. Values for the SRMR range from zero to 1.0, with well-fitting models obtaining values less than .05 (Byrne, 1998; Diamantopoulos and Siguaw, 2000). However, values as high as 0.08 are deemed acceptable (Hu and Bentler, 1999). Thus the SRMR value of 0.885 is fairly acceptable.

The Non-Normed-fit Index (NNFI) was recorded at 0.947. Values for this statistic range between 0 and 1, with Bentler and Bonnett (1980) recommending values greater than 0.90 as indicating a good fit. In the past two decades, suggestions have been made that the cut-off criterion should be NNFI ≥.95 (Hu and Bentler, 1999). The comparative fit index (CFI) was recorded at 0.952. This is one of the most popularly reported fit indices, as it is one of the measures least affected by sample size (Fan *et al.*, 1999). From this, a value of CFI ≥0.95 is

presently recognised as indicative of good fit (Hu and Bentler, 1999). Thus the CFI was acceptable.

All six goodness-of-fit measures are at acceptable levels, as shown in Table 4.31. The consideration of these measures of fit was based on the following reasons. The Root Mean Square Error of Approximation (RMSEA) reported because of its ability to calculate a confidence interval around its value (MacCallum *et al*., 1996). This is possible due to the known distribution values of the statistic, thus allowing for the null hypothesis (poor fit) to be tested more precisely, as reported by McQuitty (2004) in Hooper *et al*. (2008). The goodness-of-fit statistic (GFI) and the adjusted goodness-of-fit statistic (AGFI) were used to counter the many weaknesses of the chi-square statistic (although the chi-square statistic was not reported in this research, largely due to its shortcoming in reporting large samples).

According to Hooper *et al.* (2008), the range of the Root Mean Square Residual (RMR) is calculated based on the scales of each indicator; therefore, if a questionnaire contains items with varying levels (some items may range from 1 to 5, while others range from 1 to 7), the RMR becomes difficult to interpret (Kline, 2005). Given this challenge posed by the RMR statistic, the standardised root mean square residual (SRMR) was considered to resolve this problem, and is therefore much more meaningful in interpreting it, in line with the recommendations of Byrne (1998) and Diamantopoulos and Siguaw (2000).

Table 4.33: The Goodness-of-fit Statistics Summary of the Structural Model

Measure	Result	Cut-off	Comment
RMSEA	0.078	Below 0.080	Good fit
GFI/AGFI	0.717	0.90	Good fit
RMR	0.231	0 to 1	Fairly good fit
SRMR	0.0888	0.80	Fairly good fit
NNFI	0.947	≥.95	Good fit
CFI	0.952	≥0.95	Fairly good fit
D/F =340	1606.840 (p=0.0)	≥.95	Good

Chi-Square $\chi 2$ Weighted Least Square Satorra-Bentler Scaled	1526.317 (p=0.0) 917.342 (p=0.0) 577.342		

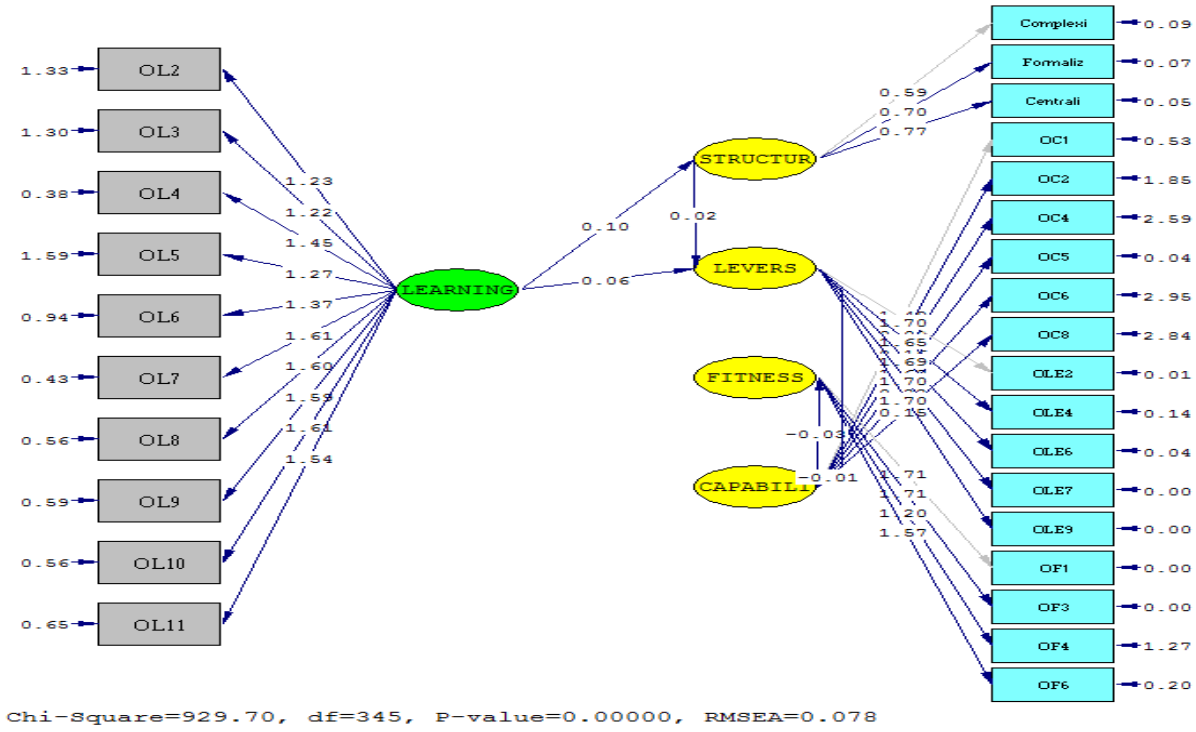

Figure 4.9: Path Diagram of the Structural Model

The path diagram confirms the fitness statistics discussed in the previous section.

4.10 COMPLETELY STANDARDISED SOLUTIONS

The Completely Standardised Solution consists of the estimates of the LISREL. These estimates may also be obtained if the model is fitted correctly to the sample correlation, rather than to the sample covariance matrix (Diamantopoulos and Siguaw, 2000). The standardised solution metrics shown in Tables 4.35 and 3.35 reveal that all of the organisational structure,

organisational learning, and organisational indicators are well above .30, the threshold recommended by Hair *et al.* (2014). Two of the organisational fitness indicators have a unitary standardised solution, and three of the organisational capabilities have very low standardised solutions. The conclusion that a standardised solution should be less than one and more than .30 to be considered useful to the model has been dismissed by Jöreskog (1999) as a misunderstanding. Jöreskog (1999) clarifies that factor loadings are regression coefficients and not correlations, and as such they can be larger than one. In the same way, a small coefficient does not indicate a problem.

Table 4.34: Completely Standardised Solutions for Lambda-y

	STRUCTUR	LEVERS	FITNESS	CAPABILI
Complexi	0.897	- -	- -	- -
Formalis	0.937	- -	- -	- -
Centrali	0.960	- -	- -	- -
OC1	- -	- -	- -	0.898
OC2	- -	- -	- -	0.002
OC4	- -	- -	- -	0.096
OC5	- -	- -	- -	0.994
OC6	- -	- -	- -	0.129
OC8	- -	- -	- -	0.087
OLE2	- -	0.998	- -	- -
OLE4	- -	0.975	- -	- -
OLE6	- -	0.994	- -	- -
OLE7	- -	0.999	- -	- -
OLE9	- -	0.999	- -	- -
OF1	- -	- -	1.000	- -
OF3	- -	- -	1.000	- -
OF4	- -	- -	0.728	- -
OF6	- -	- -	0.962	- -

Table 4.35: Completely Standardised Solutions for Lambda-x

	LEARNING
OL2	0.731
OL3	0.731
OL4	0.920
OL5	0.711
OL6	0.815
OL7	0.925
OL8	0.906
OL9	0.900
OL10	0.907
OL11	0.886

4.11 EXAMINATION OF MEASUREMENT MODEL RESIDUALS

Standardised residuals are considered large when they exceed +2.58 or -2.58 (Diamantopoulos and Siguaw, 2000). Large positive residuals indicate that the model underestimates the co-variance between two variables, and negative residuals show that the model overestimates the covariance between variables (Jöreskog and Sörbom, 1993). Figure 4.10 shows the stem and leaf plot of the standardised residuals. In this study, the measurement model standardised residuals comprised nine negative and 14 positive residuals. Fourteen large positive standardised residuals and nine large negative standardised residuals indicate 23 out of 310 (seven per cent) observed variance and covariance terms in the observed sample covariance matrix being poorly estimated by the derived model parameter estimates. This small percentage indicated a good model fit.

```
- 5|64
 - 4|9877322100
 - 3|998877765433321000
 - 2|998887666644444333333221111111110000000
 - 1|99998777666655444444322221111111000000
 - 0|99988888877777777776666666655555555444444444444433333333333332222222222222+89
  0|11111111111111111112222222223333333333333344444444444445555555555556666777+09
  1|00111222222233344555677789
  2|03569
  3|45
  4|22222222222223337
  5|
  6|
  7|6
  8|
  9|9
 10|
 11|4
 12|
 13|
 14|
 15|2
 16|6
 17|3
 18|
 19|0
```

Figure 4.10: Stem and Leaf Plot of Standardised Residuals of the Structural Model

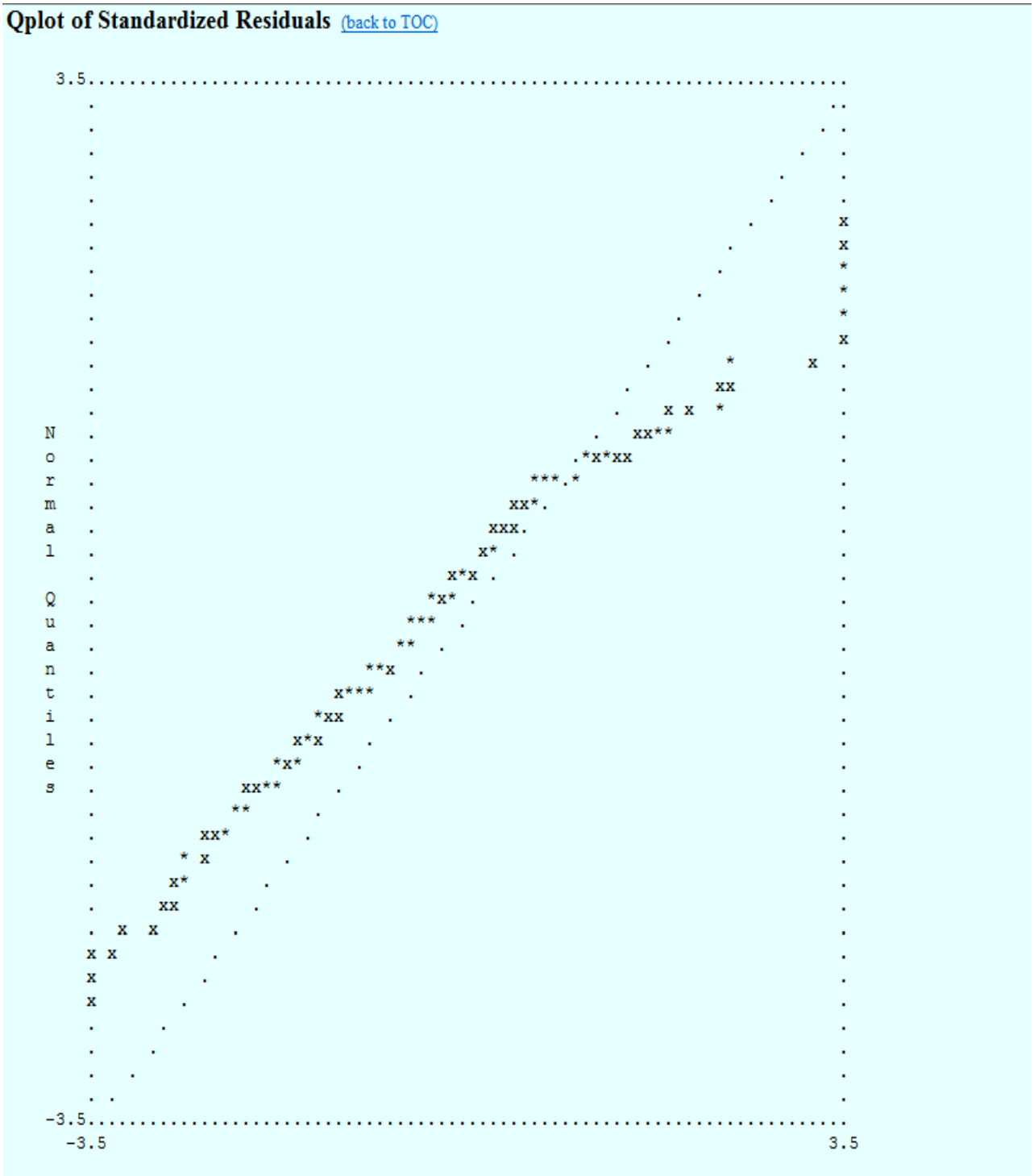

Figure 4.11: Qplots of Standardised Residuals of the Structural Model

4. 12 Modification Indices for Beta Matrix

Table 4.36 presents the modification index for the beta matrix. The beta modification indices disclose currently fixed paths that, if freed, would statistically significantly ($p < .01$) improve the fit of the comprehensive model (Jöreskog and Sörbom, 1993). Critical when considering

the freeing of fixed parameters are the theoretical standpoints of the relationship between variables.

Table 4.36: Modification Index Values for Beta

Variable	Structure	Levers	Fitness	Capabilities
Structure	----	---	1.812	0.338
Levers	----	---		0.003
Fitness	1.402	5.694	---	---
Capabilities	0.280	---	0.010	---

Modification indices are said to be large when a value is greater than 6.6349 at a significance level of 0.01) ($p < 0.01$) (Diamantopoulos and Siguaw, 2000; Jöreskog and Sörbom, 1993). None of the values in the matrix in Table 4.36 is greater than 6.6349 at a significance level of 0.01 ($p < 0.01$). The modification index between Organisational Fitness and Organisational Levers suggests a significant path. This empirical relationship is supported by the theory.

4.13 Modification Indices for Gamma Matrix

Table 4.37 presents the modification index for the gamma matrix. The beta modification indices disclose currently fixed paths that, if freed, would statistically significantly ($p < .01$) improve the fit of the comprehensive model (Jöreskog and Sörbom, 1993). Critical when considering the freeing of fixed parameters are the theoretical standpoints of the relationship between variables.

Table 4.37: Modification Index Values for Gamma Matrix

Variable	Learning
Structure	---
Levers	----
Fitness	2.003
Capabilities	0.248

Modification indices are said to be large when a value that is greater than 6.6349 at a significance level of 0.01) ($p < 0.01$) is recorded (Diamantopoulos and Siguaw, 2000; Jöreskog and Sörbom, 1993). None of the values in the matrix in the table is greater than 6.6349 at significance level of 0.01 ($p < 0.01$). Even though the modification index between Organisational Learning and Organisational Fitness is not greater than 6.6349 at a significance level of 0.01) ($p < 0.01$) to warrant a modification of the model, the modification index suggests a significant path between the two variables. This empirical relationship is supported by the theory.

4.14 ORGANISATIONAL SIZE: RELATIONSHIP WITH ORGANISATIONAL STRUCTURAL VARIABLES

The next section will present a discussion on the relationship between organisational size and organisational structural variables (centralisation, complexity and formalisation). The results are aimed at addressing research Hypothesis 1: ***Organisational Size is significantly associated with Organisational Structure.*** Organisational Size was not included in the structural equation model (SEM), since Lisrel (the software used for statistical analyses) only deals with continuous data.

Organisational size was measured by two items: the number of employees, and organisational age. The three organisational structure variables of complexity, formalisation, and centralisation denoted organisational structure. The following relations and association tests using SPSS (21) were performed: the Pearson chi-square test, correlation analysis, and regression analysis.

4.14. 1 Pearson Chi-square Tests

Number of Employees and Organisational Structural Variables

The Pearson chi-square test is used to test whether there is a statistically-significant relationship between two categorical variables. The Pearson chi-square results between organisational size (number of employees) and formalisation, number of employees and centralisation, and number of employees and complexity are presented in Tables 4.38, 4.39 and 4.40 respectively.

Number of Employees and Formalisation

Table 4.38: Chi-Square Tests: Number of Employees and Formalisation

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	15.663[a]	12	.207
Likelihood Ratio	17.420	12	.134
Linear-by-Linear Association	.128	1	.720
N of Valid Cases	277		

a. 9 cells (45.0 per cent) have expected count less than 5. The minimum expected count is .02.

A Pearson chi-square test was conducted to examine whether there was a relationship between the number of employees and formalisation. The results revealed that there is no statically-significant relationship between the two variables (chi-square value = 15.663, df = 12 and p = .207).

Number of Employees and Complexity

Table 4.39: Chi-Square Tests: Number of Employees and Complexity

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	18.969[a]	12	.089
Likelihood Ratio	20.273	12	.062
Linear-by-Linear Association	.006	1	.940
N of Valid Cases	277		

a. 10 cells (50.0 per cent) have expected count less than 5. The minimum expected count is .02.

A Pearson chi-square test was conducted to examine whether there was a relationship between the number of employees and complexity. The results revealed that there is no statically-significant relationship between the two variables (chi-square value = 15.663, df = 12 and p = .089)

Number of Employees and Centralisation

Table 4.40: Chi-Square Tests: Number of Employees and Centralisation

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	11.094[a]	12	.521
Likelihood Ratio	12.699	12	.391
Linear-by-Linear Association	.173	1	.678
N of Valid Cases	277		

a. 9 cells (45.0 per cent) have expected count less than 5. The minimum expected count is .02.

A Pearson chi-square test was conducted to examine whether there was a relationship between the number of employee and centralisation. The results revealed that there is no statically-significant relationship between the two variables (chi-square value = 11.094, df = 12 and p = .521).

Organisational Age and Organisational Structural Variables

The chi-square tests between organisational age and formalisation, organisational age and complexity, and organisational age and centralisation are presented in Tables 4.41, 4.42 and 4.43 respectively.

Age and formalisation

Table 4.41: Chi-Square Tests: Organisational Age and Formalisation

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	7.588[a]	9	.576
Likelihood Ratio	7.483	9	.587
Linear-by-Linear Association	.401	1	.527
N of Valid Cases	277		

a. 5 cells (31.3 per cent) have expected count less than 5. The minimum expected count is .22.

A Pearson chi-square test was conducted to examine whether there was a relationship between organisational age and formalisation. The results revealed that there is no statically-significant relationship between the two variables (Chi square value = 7.588, df =,9 and p = .576).

Age and complexity

Table 4.42: Chi-Square Tests: Organisational Age and Complexity

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	10.238[a]	9	.332
Likelihood Ratio	12.698	9	.177
Linear-by-Linear Association	1.810	1	.179
N of Valid Cases	277		

a. 6 cells (37.5 per cent) have expected count less than 5. The minimum expected count is .22.

A Pearson chi-square test was conducted to examine whether there was a relationship between organisational age and complexity. The results revealed that there is no statically-significant relationship between the two variables (chi-square value = 10.238, df = 9 and p = .332).

Age and centralisation

Table 4.43: Chi-Square Tests: Organisational Age and Centralisation

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	9.727[a]	9	.373
Likelihood Ratio	9.924	9	.357
Linear-by-Linear Association	1.662	1	.197
N of Valid Cases	277		

a. 4 cells (25.0 per cent) have expected count less than 5. The minimum expected count is .22.

A Pearson chi-square test was conducted to examine whether there was a relationship between organisational age and centralisation. The results revealed that there is no statically-significant relationship between the two variables (chi-square value = 9.727, df = 9 and p = .373).

From the Pearson chi-square tests, no statistically-significant relationship was recorded between organisational size (number of employees) and organisational size and organisational structure as represented by complexity, centralisation and formalisation.

4.14.2 Correlations Analysis: Organisational Size and Organisational Structure

The Pearson correlation shows the strength and direction of a relationship between two quantitative/numerical variables (Brown, 2015). It ranges from negative (-1) to positive (+1) coefficient values. Table 4.44 presents the correlations between organisational size and organisational structure.

Table 4.44: Correlations: Organisational Size and Organisational Structure

		Age	Employee	Complexity	Formalisation	Centralisation
Age	Pearson Correlation	1	.020	-.081	-.038	-.078
	Sig. (2-tailed)		.739	.179	.528	.198
	N	277	277	277	277	277
Employee	Pearson Correlation	.020	1	.005	.022	.025
	Sig. (2-tailed)	.739		.940	.721	.678
	N	277	277	277	277	277
Complexity	Pearson Correlation	-.081	.005	1	.833**	.840**
	Sig. (2-tailed)	.179	.940		.000	.000
	N	277	277	277	277	277
Formalisation	Pearson Correlation	-.038	.022	.833**	1	.899**
	Sig. (2-tailed)	.528	.721	.000		.000
	N	277	277	277	277	277
Centralisation	Pearson Correlation	-.078	.025	.840**	.899**	1
	Sig. (2-tailed)	.198	.678	.000	.000	
	N	277	277	277	277	277

**. Correlation is significant at the 0.01 level (2-tailed).

The results show a negative relationship between organisational age and complexity of -0.081. Organisational age and formalisation have a negative relationship of -0.038. A negative relationship between organisational age and centralisation is also recorded at -.078. A weak positive relationship between the number of employees and complexity is recorded at 0.005. The number of employees and formalisation has a positive relationship of 0.022, while the number of employees and centralisation has a positive strong relationship of 0.025. The aim of this section was to correlate organisational size (as represented by the number of employees and age in Table 4.44) and organisational structure (as represented by complexity, formalisation and centralisation in Table 4.44). The correlations among the structural variables themselves are not interpreted, even though they are shown in Table 4.44.

4.14. 3 Regression Analysis: Organisational Size and Organisational Structure

Linear regression analysis estimates the coefficients of a linear equation, involving one or more independent variables that best predict the value of the dependent variable. Regression analysis of organisational size (independent variable; age and number of employees) and

organisational structure (complexity, centralisation and formalisation) are presented in Tables 4.45, and 4.46 respectively.

Table 4.45: Regression Analyis: Number of Employees and Organisational structural Variables

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.040[a]	.002	-.009	.920

a. Predictors: (Constant), Centralisation, Complexity, Formalisation

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	.374	3	.125	.147	.931[b]
	Residual	230.868	273	.846		
	Total	231.242	276			

a. Dependent Variable: Employee

b. Predictors: (Constant), Centralisation, Complexity, Formalisation

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	3.490	.219		15.954	.000
	Complexity	-.085	.163	-.061	-.519	.604
	Formalisation	.025	.181	.020	.137	.891
	Centralisation	.067	.171	.059	.392	.695

a. Dependent Variable: Employee

From the model summary, the goodness-of-fit as reflected by the R Square value is 0.002 which means the number of employees variable can be explained by only 2 per cent by the independent variables (centralisation, formalisation and complexity). This is a weak goodness-of-fit. The ANOVA regression value is .374 with df at 3 and the significant is p =

0.91. This suggests there is no relationship between number of employees and organisational structural variables of centralisation, formalisation and complexity.

The unstandardised coefficient of the constant 3.490 with p= .000. This suggests a relationship between number of employees and the structural variables of centralisation, complexity and formalisation. All the significant levels of the unstandardised values of complexity, formalisation and centralisation point to the acceptance of the null hypothesis since all of them are greater than 0.05.

Table 4.46: Regression Analysis: Organisational Age and Organisational Structural Variables

Model Summary

Model	R	R Square	Adjusted R Square	Std Error of the Estimate
1	.120[a]	.014	.004	1.026

a. Predictors: (Constant), Centralisation, Complexity, Formalisation

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.200	3	1.400	1.330	.265[b]
	Residual	287.431	273	1.053		
	Total	291.632	276			

a. Dependent Variable: Age

b. Predictors: (Constant), Centralisation, Complexity, Formalisation

Coefficients[a]

Model		Unstandardised Coefficients		Standardised Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	4.422	.244		18.118	.000
	Complexity	-.169	.182	-.109	-.931	.352
	Formalisation	.291	.202	.210	1.445	.150
	Centralisation	-.225	.190	-.175	-1.180	.239

a. Dependent Variable: Age

From the model summary, the goodness-of-fit as reflected by the R Square value is 0.004, which means that the organisational age variable can be explained by only four per cent of the independent variables (centralisation, formalisation and complexity). This is a weak goodness-of-fit. The ANOVA regression value is .374 with df = 3 and the significance is p = 0.265. This suggests that there is no relationship between the number of employees and the organisational structural variables of centralisation, formalisation and complexity.

The unstandardised coefficient of the constant 3.490 with p = .000 this supports the relationship between the number of employees and the structural variables of centralisation, complexity and formalisation. All the significant levels of the unstandardised values of complexity, formalisation and centralisation point to the acceptance of the null hypothesis, since all of them are greater than 0.05.

The Pearson chi-square test, and the correlation and regression analysis results presented in this section suggest that Hypothesis 1 – ***Organisational size is significantly associated with Organisational Structure*** – is partially supported by the data.

4.15 Chapter Summary

This chapter has discussed the psychometric properties of the instruments used to measure the concepts under investigation. Item analyses, confirmatory factor analysis, and factor extraction were conducted to determine the psychometric properties of the measures. The measurement and structural models were presented and discussed. The goodness-of-fit results mirror a good fit of both the measurement and the structural LISREL models. The null hypothesis of close fit was not rejected in either the measurement or the structural LISREL models. Almost all of the fit statistics indicate good fit. Two variables – organisational levers and organisational fitness – have an excessively high correlation. The RMSEA value indicates good model fit. Thus the conclusion is that the restrictions constituting the measurement and structural model are meaningful and interpretable.

The next chapter includes a discussion of the results obtained from the data analysis in relation to the existing literature; a summary of and conclusions from the study; and an identification of the managerial implications of the research findings. Recommendations for future research studies are also presented, and finally the limitations of the study are stated.

CHAPTER 5

DISCUSSION, CONCLUSIONS, CONTRIBUTIONS, RECOMMENDATIONS FOR FUTURE RESEARCH, AND LIMITATIONS

5.1 INTRODUCTION

Chapter 2 of this study presented a detailed discussion of the relationships between organisational fitness and the following variables: organisational size, organisational structure, organisational learning, organisational capabilities, and organisational levers. Chapter 3 presented the methodology that was employed in conducting this research. This was followed in Chapter 4 by the presentation of the data analysis and the research results. The current chapter includes a discussion of the results obtained from the data analysis in relation to the existing literature; a summary of and conclusions from the study; and the managerial implications of the research findings. Recommendations for future research studies are then presented, and finally the limitations of the study are stated.

5.2 AIMS OF THE STUDY

The main aim of this study was to determine the influence of predictor variables and mediating constructs on organisational fitness. This had become necessary because of the limited approaches adopted in previous studies. In order to address these limitations, the study considered the relationship of the previously-omitted variables in the construction of organisational fitness in a volatile environment. It is important for managers to understand the factors that predict and mediate the formation of organisational fitness. This study therefore identified and related some important concepts (organisational size, learning, levers, capabilities, and structure) that impact on the formation of organisational fitness in a volatile business operating environment.

In view of this broad aim of the study, relationships were proposed between the selected individual variables and the extent of the impact they exert on organisational fitness as a dependent variable. In order to achieve this broad aim, the following specific objectives – primary and secondary – were stated to provide direction in conducting the study.

Primary objectives:

1) To distinguish between organisational fitness and organisational performance;
2) To identify and evaluate the relationships that exist between variables that are predictors and mediators of organisational fitness;
3) To conceptualise these predictor and mediating variables within the framework of a structural model; and
4) To conduct an empirical study in order to establish the relationships between the predictor and mediating variables and organisational fitness.

Secondary objectives:

The primary objectives were to be achieved through the following secondary objectives:

1) To review the existing literature on organisational fitness and performance in order to establish the difference and the relationship between the two constructs;
2) To review the existing literature on predictor and mediating variables and organisational fitness in order to achieve the first primary objective;
3) To validate the conceptualised structural model of predictors and mediators of organisational fitness using structural equation modelling to achieve the third primary objective in a volatile environment; and
4) To design a research methodology that could be followed in the conduct of the empirical study.

5.3 SUMMARY OF FINDINGS

Eight functional propositions were derived from the literature study presented in Chapter 2, in order empirically to evaluate the assumed relationships. The results of investigating these propositions are discussed in the light of the findings obtained through the data analysis process discussed in Chapter 4.

To realise the objectives of this study, it was important to ensure, first, that the measurement scales utilised to assess the relationships in this study were construct-valid and internally reliable. It was necessary to establish the validity and reliability of the measurement scales to ensure that sound statistical results would be attained when further analyses were performed. The statistical analysis process is discussed in detail in Chapter 3, while the results it produced are reported in Chapter 4.

The research findings are discussed in the next section.

5.3.1 Conclusions on the Psychometric Properties of the Instruments

The reliability coefficients of all the scales were determined to confirm that each of the items from the various instruments succeeded in contributing to an internally-consistent description of the specific scale in question. According to Nunnally (1978), only instruments with modest reliability can be used to gather information to test hypotheses. A Cronbach's alpha (which is the indicator of the reliability of the scale) of above 0.70 was considered acceptable, and reliability values below 0.70 qualified for elimination (Kerlinger and Lee, 2000; Pallant, 2010). Item-total correlations of above 0.20 were also considered as indicators of internal consistency (Nunnally, 1978). The results obtained in the present study indicated that the reliability analyses produced satisfactory results according to the above-mentioned guidelines. Table 5.1 summarises the final reliability results for each of the measuring scales. All of the scales reached reliability scores that exceeded the recommended value of 0.70.

Table 5.1: Measurement scale reliability results

Scale	**Number of Items**	**Cronbach's Alpha**
Size	2	.768
Structure	3	.947
Levers	5	.998
Capabilities	6	.750
Learning	10	.960
Fitness	6	.898

5.3.2 Conclusions about Factor Analysis

The purpose of factor extraction is to analyse and confirm the uni-dimensionality of each scale and subscale. To examine this uni-dimensionality assumption, factor extraction was performed on all of the measurement scales. The results showed that all of the measurement scales used in this study satisfied the uni-dimensionality assumptions. Furthermore, it was found that all of the items comprising the measurement scales demonstrated highly satisfactory factor loadings on the first factor. Factor loadings of items on the factor that they are designed to reflect are considered satisfactory if they are greater than 0.50 (Kinnear and Gray, 2004). In this study, all (other than a few) of the factor loadings for each item comprising the measurement model achieved the > 0.50 level. This is an indication that each item successfully explained the total variance scores on the respective variables.

5.4 INTERPRETATION OF EMPIRICAL RESULTS

This section provides information that assists in determining whether the theoretical relationships indicated at the conceptualisation stage were in fact supported by the empirical evidence (data). The next section discusses and interprets the results on the basis of the structural model and the statistical analysis of the relationship between organisational size and organisational structure that was performed outside the model.

5.4.1 The relationship between organisational structure and organisational size

Hypothesis 1: *Organisational Size is significantly associated with Organisational Structure*

The chi-square test and the correlation and regression analysis results presented in this study indicated the statistical values (see Tables 4.38 to 4.46) and so suggest that Hypothesis 1 (***Organisational Size is significantly associated with Organisational Structure***) is partially supported by the data. Ever since the seminal work of the Pugh *et al*. (1968) on the relationship between organisational structure and size, the literature has presented abundant empirical evidence that supports the regulating effects that organisational size has on organisational structure (Daft, 2012; Tolbert and Hall, 2015). However, what is inconsistent in the literature is the relationship between organisational size and different organisational structural variables. A good number of studies support the notion that large organisations are

much more formalised, centralised and complex than small organisations (Said *et al*., 2014). This position has, however, been regarded with suspicion by the contingency theorists, who believe that the environment dictates structural variables – hence their conclusion that, in a volatile environment, organisations adopt less formalised, less centralised and less complex structures, regardless of size (Burns and Stalker, 1961; Green, 2007; Sine *et al*., 2006).

The inconsistency in the empirical findings is based on the exclusion and inclusion of the environment as a variable. Pugh *et al*. (1968) did not consider the environment as a variable in determining its relationship with organisational size. On the other hand, the environment as an integral variable is central to the contingency theorists' explanation of the relationship between organisational size and structure. The current research's finding partially support the conclusion that organisational size has a positive effect on structure. The results show a partial relationship between the two in a volatile environment. These findings can be attributed to the fact that when the environment is uncertain, organisational size is uncertain too, making it difficult for the environment to influence the structure. It is concluded, therefore, that the partial influence that organisational size has on organisational structure does not confirm organisational size as a predictor variable of organisational fitness, given the role organisational structure plays in fitness formation.

5.4.2 The relationship between organisational structure and organisational learning

Hypothesis 2: Organisational Learning is significantly associated with Organisational Structure

From the gamma matrix, the causal path between organisational learning ξ (exogenous latent variable) and organisational structure η (endogenous latent variable) is linked by the t-value of 1.602 with a standard error of 0.061 (see Table 4.29). The t-value is below the cut-off point of $T \geq 1.96$ P (0.05) recommended by Hu and Bentler (1999) and Diamantopoulos and Siguaw (2000). This indicates that there is no significant relationship between organisational learning and organisational structure. The hypothesis is rejected, thus suggesting that the proposed relationship between the two variables could not be supported. Hypothesis 2, stating a positive relationship between organisational learning and organisational structure, is not empirically confirmed by this study.

The results are not consistent with earlier findings that organisational learning is positively related to organisational structure: firstly, that organisational structure influences

organisational learning (Fiol, 1994; Bapuji and Crossan, 2004; Zhang, 2008; Martinez-Leon and Martinez-Garcia, 2011); and secondly, that organisational learning shapes organisational structure (Curado, 2008). Such a view recognises organisational structure as an outcome of a learning process. The disagreement in the literature relates to which type of structure promotes organisational learning. Curado (2008) provides strong evidence that, for managers to design learning organisations, an organic structure has to be designed. This conclusion draws on the work of Burns and Stalker (1961) that organic structures are flexible and allow decentralisation and innovation by the employees. On the other hand, Mehrabi *et al*. (2013, p. 124) concluded that "there is a significant and negative relationship between organisational structure and fulfillment degree of learning organisations in mechanistic organisations".

The variance among earlier conclusions about the relationship between organisational structure and organisational learning can be attributed to the volatile environment that has been the focus of the current study. In volatile environments, the current knowledge might struggle to be relevant in the near future (Mehrabi *et al*., 2013). This conclusion is premised on the argument that acquired knowledge is only useful to organisations when a similar situation that helped them to acquire it is encountered again (Martinez-Leon and Martinez-Garcia, 2011). In a highly volatile environment, the earlier experience that formed organisational learning is no longer relevant, as all of the parameters that defined that knowledge would have changed (Bapuji and Crossan, 2004). It is not surprising, therefore, that organisational learning was found not to relate to organisational structure in a volatile environment.

The lack of support for a relationship between organisational learning and structure can also be attributed to the fact that, in a volatile environment, the prevailing mitigation strategy is to downsize. Organisational learning resides in human capital; and any reduction of human capital through downsizing diminishes organisational learning (Bapuji and Crossan, 2004). This argument is associated with the findings that an organisation with a high turnover finds learning impossible (Curado, 2008).

Therefore, in view of the research results – and in conjunction with the literature reviewed – it is concluded that, in a volatile environment, organisational learning and organisational structure are not related. This conclusion casts doubt on organisational learning as a predictor variable of organisational fitness, as previously reported in the literature. As explained

earlier, the variance is entrenched in the difference between the environments. Earlier studies were conducted in a fairly moderate environment, whereas the present research is contextualised in a highly volatile business environment.

5.4.3 The relationship between organisational structure and organisational levers

Hypothesis 3: Organisational Structure is significantly associated with Organisational Levers.

From the beta matrix, the causal path between organisational structure η (endogenous latent variable) and organisational levers η (endogenous latent variable) is linked by the t-value of 0.334 with a standard error of 0.020 (see Table 4.30). The t-value is below the cut-off point of T ≥ 1.96 P (0.05) recommended by Hu and Bentler (1999) and Diamantopoulos and Siguaw (2000). This indicates that there is no significant relationship between organisational structure and organisational levers. The hypothesis is rejected, suggesting therefore that the proposed relationship between the two variables cannot be supported. Hypothesis 3 (***Organisational Structure is significantly associated with Organisational Levers***) is therefore rejected. Organisational levers include organisational culture, leadership, work systems, and human resources systems (Beer, 2000; 2003; 2013).

The results contrast with the prevailing literature in management and organisational studies, which agrees that organisational levers are a function of organisational structure (Kakabadse, Bank and Vinnicombe, 2004; Janićijević, 2012). Organisational structure influences organisational culture (Martins and Terblanche, 2003). The work of Tolbert and Hall (2015) suggested that organisational structure is closely linked to the human resources function of an organisation. Heneman and Milanowski (2011) concluded that the leadership styles and systems of an organisation are linked to organisational structure. In his research, Simon (2000) implied that work systems are also related to organisational structure. Janićijević (2012) concluded that organisational structure and culture have a mutual relationship. Organisational structure influences the culture by institutionalising it, while on the other hand culture creates a context in which structure can be designed. This makes the relationship between the two reciprocal. This finding was supported by the earlier work of Armstrong (1985).

The variance in the findings can again be attributed to the volatile environment in which the present study was constructed. Due to inconsistent measures adopted by organisations operating in a volatile environment, organisational structure is not stable. The prevailing retrenchment and downsizing erodes organisational culture time and again. This notion is supported by Cameron and Quinn (2011). Organisational leadership styles are highly inconsistent in a volatile business environment, and so it is not surprising to find no relationship between organisational structure and leadership styles. Even the versatile transformational leadership style struggles with consistency in a volatile environment (Uhl-Bien *et al*., 2007). Given the above discussion, it is concluded that, in a highly volatile business environment, organisational structure does not relate to organisational levers.

5.4.4 The relationship between organisational learning and organisational levers

Hypothesis 4: Organisational Learning is significantly associated with Organisational Levers.

From the gamma matrix, the causal path between organisational learning ξ (exogenous latent variable) and organisational levers η (endogenous latent variable) is linked by the t-value of 1.25 with a standard error of 0.063 (see Table 4.31). The t-value is below the cut-off point of $T \geq 1.96$ P (0.05) recommended by Hu and Bentler (1999) and Diamantopoulos and Siguaw (2000). This indicates that there is no significant relationship between organisational learning and organisational levers. The hypothesis is rejected, thus suggesting that the proposed relationship between the two variables cannot be supported. ***Hypothesis 4*** (***Organisational Learning is significantly associated with Organisational Levers***) is therefore not supported.

The findings are inconsistent with what was previously found to be the relationship between organisational learning and organisational levers. Among the leading predictors of organisational learning are leadership (Bhat *et al*., 2012), organisational culture (Martins and Terblanche, 2003; Joseph and Dai, 2009), the human resources function (Kang *et al*., 2007), and work systems (Engenström, 2001).

In studying Indian manufacturing firms, Bhat *et al*. (2012) concluded that, overall, leadership style – and transactional leadership in particular – had a significant positive impact on organisational learning. Their findings are in line with earlier empirical findings by Rijal (2010) that transformational leadership has a significant positive influence in building a learning organisation. Senge (1994) also alludes to the leadership role in the creation of a

learning organisation. Through their motivating role, inclusive approach to workers, and team participation, leaders promote a learning environment (Senge, 1994). It is not surprising that only the leadership paradigms that allow for team work and broader employee participation have been linked to promoting organisational learning (Rijal, 2010).

Organisational culture is said to initiate change and to act as a vehicle of flexibility and adaptation for survival in a changing environment (Senge, 1994). These theoretical observations were supported by the empirical work of Hershey and Walsh (2000), who expanded the scholarship of Senge (1994) by adding that culture develops learning organisations through integrating experience, experiment, enquiry, mistakes, engagement and disengagement.

Basing their research on theories of knowledge-based competition, Kang *et al.* (2007) concluded that learning is a source of competitive advantage and value creation, and that people-embodied knowledge is a firm's source of core capabilities. Although their work was limited to manufacturing firms in England, it offers insight into how learning is related to competitive advantage as levers interact with learning. The human resources function provides the fundamental requirements for an organisation to learn (Grant, 2016), drives the accumulation of skills, and is the custodian of knowledge levels stocks. It is these stocks that form the foundation of competitive advantage (Grant, 1996; Leonard-Barton, 1995).

The variance between the findings in the present study and the existing literature can be further attributed to the volatile business environment in which this study was conducted. Because of random and impulsive measures adopted by organisations operating in a volatile environment, organisational learning is not systematic or traceable. The prevailing layoffs erode organisational learning. Organisational leadership styles are inconsistent in a volatile environment, and so it is not surprising to find no relationship between organisational levers and learning styles. Even the versatile transformational leadership style struggles with consistency in a volatile environment (Rijal, 2010). Given the above discussion, it is therefore concluded that, in a highly volatile environment, organisational learning does not regulate organisational levers.

5.4.5 The relationship among organisational structure, organisational capabilities and organisational fitness

Hypothesis 5: Organisational Structure is significantly associated with Organisational Fitness through the mediating effect of Organisational Capabilities.

The mediating effect of organisational capabilities on the relationship between organisational structure and fitness was not supported. The t-value associated with the structural path running from the organisational structure and organisational capabilities interaction effect to organisational fitness is less than the 1.96 recommended by Hu and Bentler (1999) and Diamantopoulos and Siguaw (2000). It is therefore evident that organisational capabilities are not a significant moderator of the relationship between organisational structure and organisational fitness. The hypothesis is rejected, which suggests that the proposed mediating effect was not supported. However, the existing literature supports the conclusion that organisational structure relates to organisational fitness through the mediating effects of capabilities (Teece *et al*., 1997; Collis, 1994; Davis and Bradly, 2000). This relationship is a theoretical one, based on the assumption that organisational capabilities (coordination, communication, competence, and commitment) are a function of organisational structure (Beer, 2000; 2002; 2013; Grant, 1996).

The empirical evidence presented by this research in the context of a highly volatile operating environment indicates that there was no mediating role played by organisational capabilities in the formation of organisational fitness. The findings reflect the challenges of establishing either capabilities or stable structures in a highly volatile operating environment.

5.4.6 The relationship among organisational levers, capabilities and fitness

Hypothesis 6: Organisational Levers are positively associated with Organisational Fitness through the mediating effect of Organisational Capabilities.

The mediating effect of organisational capabilities on the relationship between organisational levers and fitness was not supported. The t-value associated with the structural path running from the organisational levers and organisational capabilities interaction effect to organisational fitness is less than the 1.96 recommended by Hu and Bentler (1999) and Diamantopoulos and Siguaw (2000). It is therefore evident that organisational capabilities are not a significant moderator of the relationship between organisational levers and organisational fitness. The hypothesis is rejected, which suggests that the proposed mediating

effect was not supported. The results are not consistent with the view of the prevailing research, that organisational levers are related to organisational fitness through the mediating effects of capabilities (Helfat and Peteraf, 2003). This relationship was established in a different environment from that of the current study. In the context of a volatile environment, this mediating role of organisational capabilities on the relationship between the organisational levers and fitness cannot be established.

5.4.7 The relationship between organisational capabilities and organisational fitness

Hypothesis 7: Organisational Capabilities are significantly associated with Organisational Fitness.

From the gamma matrix, the causal path between organisational learning ξ (exogenous latent variable) and organisational levers η (endogenous latent variable) is linked by the t-value of 1.025 with a standard error of 0.063. The t-value is below the cut-off point of $T \geq 1.96$ P (0.05) recommended by Hu and Bentler (1999) and Diamantopoulos and Siguaw (2000). This indicates that there is no significant relationship between organisational learning and organisational levers. The hypothesis is rejected, suggesting therefore that the proposed relationship between the two variables cannot be supported.

Conceptualising organisational fitness from an evolutionary perspective on measurement (evolutionary fitness: growth of the firm in relationship to competitors), and drawing data from 532 Finnish firms, Pohjola and Stenholm (2012) concluded that "the higher order capabilities enable the firm to increase its evolutionary fitness when aligned with lower level incremental capabilities" (p.23). Although this conclusion is consistent with the earlier findings of Winter (2003), Ambrosini (2009) and Collis (1994), it does not take into account the different industrial variants of firms: their study was limited to food, shipbuilding and media-related firms. Such findings can only be qualified in the context of developed economies where the rate of environmental change is not universally the same. Their work only focused on dynamic capabilities, and mostly ignored core capabilities. Organisational capabilities are highly erratic in a volatile environment, and it is not unexpected to find no relationship between organisational capabilities and organisational fitness. Given the above discussion, it is concluded that, in a highly volatile environment, organisational capabilities do not relate to organisational fitness.

5.4.8 The relationship among organisational structure, organisational levers and organisational fitness

Hypothesis 8: Organisational Structure is significantly associated with Organisational Fitness through the mediating effects of Organisational Levers and Organisational Capabilities.

The mediating effect of organisational capabilities and organisational levers on the relationship between organisational structure and fitness was supported. The t-value associated with the structural path running from the organisational structure, organisational levers, organisational capabilities and organisational structure interaction effect to organisational fitness is more than the 1.96 recommended by Hu and Bentler (1999) and Diamantopoulos and Siguaw (2000). It is therefore evident that organisational capabilities and levers are a significant moderator of the relationship between organisational structure and organisational fitness. The hypothesis can thus be accepted, which suggests that the proposed mediating effect is supported.

The results support a combined mediation role by organisational capabilities and levers between organisational structure and organisational fitness. Such a finding is consistent with the findings of Voelpel *et al*. (2004). The relationship is premised on the interdependence between the two – organisational levers and capabilities – as presented in the theoretical model of Beer (2003). The findings confirm that, as individual variables (Hypothesis 5), organisational levers cannot mediate the relationship between structure and fitness, since this role is jointly played by the two variables.

5.5 CONTRIBUTION OF THE STUDY

This study has made the following theoretical and empirical contributions to organisational fitness:

Theoretical Contributions

In order to distinguish between performance and fitness, a theoretical model was developed. The novel model, based on the four theoretical lenses, provided a link between the two organisational constructs. Organisational fitness relates to organisational performance through building organisational capabilities that enable performance to be achieved. The organisational fitness process realigns organisational strategies as the environment changes,

resulting in better organisational performance. This makes organisational fitness a precursor of organisational performance. Organisational learning makes the relationship between the two cyclical and reciprocal: organisational performance informs the organisational fitness process, which in turn regulates performance. No previous study has distinguished and related the two concepts, which until now have been used interchangeably, resulting in a sparse literature on organisational fitness.

The research makes the following theoretical contributions:

1. Organisational fitness relates to organisational performance through the mediating effects of organisational capabilities and strategic alignment.

2. The relationship between organisational fitness and organisational performance is cyclical and reciprocal through the effects of organisational learning.

The current study has produced a conceptual model that shows the relationship between organisational performance and organisational fitness. The conceptual model in this study is unique in the sense that it incorporates organisational structure, size and learning as predictor variables and organisational levers and capabilities as mediating variables of organisational fitness. There is no structural model like it in the literature, in either the management or the organisational fields, particularly within the context of a highly volatile business operating environment such as Zimbabwe. It thus presents a new direction for the empirical understanding of the relationships between the constructs investigated.

Empirical Contributions

The results of the empirically-tested conceptual model make the following contributions to both management and organisational literature.

Predictor Variables of Organisational Fitness

In a volatile business operating environment, organisational size, structure and learning cannot be predictors of organisational fitness as previously concluded from the existing literature, which emanates from moderate to stable business environments.

Mediating Variables of Organisational Fitness

It is empirically proven that organisational capabilities and levers, as individual variables, are not mediators of the relationship between organisational structure and organisational fitness,

as previously reported in the literature. It was, however, proven that when the two are combined, they mediate the relationship between organisational fitness and structure.

Overall, the present study will advance our current knowledge in both the management and the organisational fields by testing theory and offering new empirical evidence to explain the relationships among the investigated constructs. It is important to recognise that the empirical evidence from this study is new, and therefore represents an important contribution to the existing body of knowledge and to practical interventions intended to enhance organisational fitness by organisations in a volatile environment.

5.6 IMPLICATIONS FOR PRACTICE

There is consensus among management and organisational scholars, and among practitioners, that organisational fitness plays a significant role in the survival and growth of any organisation in the complex and ever-changing environments that characterise the operations of business entities. Reporting on the survival rate and performance of firms in the United States of America, Foster and Kaplan (2011) note that, of those firms in the original "Forbes 100" list published in 1917, 61 had collapsed by 1987. These firms had survived challenging events such as the 'Great Depression' and World War II, and yet proved to be unfit to handle ever-changing environments. The Zimbabwean Chamber of Commerce reported in 2010 that 45 major firms in the private sector had collapsed between 1995 and 2005.

The above evidence suggests that organisational fitness needs to be achieved. In the context of a volatile environment, as captured in the statement of the problem, the prevailing strategy among organisations operating in Zimbabwe is to downsize. While downsizing produces short-term savings on overheads, in the absence of a wider reorganisation of structure and work systems, it only brings temporary relief and permanent decline in the fitness of organisations. They are left with dysfunctional structures, compromised organisational levers, and unrealised capabilities, and try in vain to increase performance. In line with this prevailing predicament, Beer *et al.* (2003, p.1) believe that strategies like downsizing are "quick superficial change programs; leaders skillfully avoid learning the truth about poor coordination across vital activities in the value chain and the fundamental organization design".

The major challenge of downsizing is its attempt to increase organisational performance without subjecting the organisation to the fitness discourse, which calls attention to

organisational structure, capabilities, and levers. Downsizing compromises the ability of organisational capabilities and levers to construct organisational fitness (Ngirande and Nel, 2012). For any organisation with compromised capabilities, achieving fitness – let alone increasing performance – becomes a very remote goal (Beer, 2003).

After considering the nature and characteristics of the predictor and mediating variables of organisational fitness in a volatile environment through undertaking the current research, and in line with the prevailing strategies in a volatile environment, the current research discusses the implications of its finding in relation to practice.

In strategic management, 'fitness' means the ability of organisations to learn continually about the environment and about themselves, and then to construct and reconstruct their internal systems, strategies, and leadership paradigms in line with the changing environment (Beer, 2013; Beer *et al.*, 2003). This suggests the concept of strategic alignment. Core to organisational alignment is configuring organisational design (organisational structure), culture and people (capabilities and commitment) with continuous changes in the competitive and social environment (Beer and Eisenstat, 2004). Mapping a strategy involves environmental scanning (internal and external) – a stage that builds the platform for fitness. It is further argued that organisational fitness is about the ability of organisations to build on organisational capabilities that drive organisational performance (Voelpel *et al.*, 2004). The dynamic nature of these capabilities affords organisations an opportunity to re-strategise in the face of change.

From the findings of the current research, organisational structure and learning are not aligned, and neither are organisational structure and capabilities. Organisational fitness is therefore not achieved in a volatile business environment. This is consistent with the poor performance that is being recorded and reported by organisations in the Zimbabwean this context. For fitness to be achieved, it is clear that managerial practice should include a deliberate attempt to align structure with learning, capabilities, and levers. The adoption of a hybrid organisational structure that is both mechanical and organic in nature will go a long way in helping an organisation to control the volatile environment and, at the same time, to enable the creation of the much-needed organisational capabilities.

The prevailing literature clearly suggests that organisational capabilities (co-ordination, competitiveness, commitment, and communication) are a function of organisational structure

(Bodewes, 2002). There is the need, therefore, for organisational managers to design for organisational fitness in practice in order to cope with a volatile business operating environment. This can be achieved through designing flexible organisational structures. Structural variables such as centralisation, complexity, and formalisation need a flexible design to allow organisational ambidexterity.

In practice, differentiating performance and fitness will:

1. Enable managers to regulate and create organisational capabilities through the fitness process;

2. Allow managers to align strategy with the environment, both internal and external; and

3. Enhance organisational learning as a controlling and regulating feature of fitness and performance.

The research advocates that clear-cut plans to achieve organisational fitness must be part of strategic planning. Managers should avoid making fitness a by-product of pursuing performance goals, as this inhibits the organisational effort from achieving its goals in an ever-changing business world.

5.7 LIMITATIONS OF THE STUDY, AND SUGGESTIONS FOR FUTURE RESEARCH

In this research, the nature and characteristics of the relationship between selected constructs of organisational fitness were investigated. Although valuable insights were obtained about the relationship between the constructs involved, a number of limitations of the study warrant discussion in order to guide future research. Firstly, the data used for empirical analysis were derived from assessments by managers of public limited companies in Zimbabwe. While several prophylactic steps were taken to limit concerns about single-informant data, the issue of common method bias that results from single-informant design cannot be totally ruled out. Secondly, the empirical conclusions arrived at in this research are mainly limited to descriptive causality rather than to explanatory causality. Descriptive causality considers the whole rather than the parts, whereas explanatory causation considers causes and effects. According to Shadish *et al*. (2002), causal statements are mainly descriptive and lack an explanation of causes and effects.

A third limitation is that the data were collected only from listed companies in Zimbabwe, and the sample that was used in this study was slightly biased towards larger businesses. However, these limitations do not greatly affect generalisability, because the theoretical framework resonates with respondents from across all types of industries. However, the findings cannot be applied to small businesses. A fourth limitation of the study is that it employs a quantitative research design that is correlational and cross-sectional in nature. A weakness in the adopted quantitative method affects the validity of research findings (Sandelowski, 1986). Campbell and Stanley (1963, p. 234) explain why these short-comings of validity associated with quantitative research arise:

> The more tightly controlled the study, the more difficult it becomes to confirm that the research situation is like real life. The very components of scientific research that demand control of variables can therefore be argued as operating against external validity and subsequent generalizability.

Two issues of concern raised by Campbell and Stanley (1963) are validity and generability, which are associated with the quantitative research design used in this study. Measurement and contact are once-off events, and this makes construct validity difficult to infer, as observed by Clark and Watson (1995, p.13): "Construct validity cannot be inferred from a single set of observations, whether these pertain to a measure's factor structure, and correlations with other measures, and differentiation between selected groups, or hypothesized changes over time". This calls for a longitudinal approach that will use both quantitative and qualitative data. A fifth limitation is the exclusion of the relationship between organisational size and organisational structure in the structural and measurement models. This would have affected the possible output of the relationship with other variables, had it been included in the models.

A sixth limitation is that only three organisational structure variables were used in the study (centralisation, complexity, and formalisation). Even though the three are said to be the main structural variables (Mintzberg, 2003), the inclusion of other structural variables might have produced a different view of the research results. Pugh *et al.* (1968) and Daft (2001) suggested up to seven structural variables, while Robbins *et al.* (2011) suggested five. The seventh limitation is that only two determinants of organisational size were used in the study. These were the number of employees (used in the seminal work of the Pugh *et al.*,in 1968) and organisational size (used by Hui *et al.*, 2013). The use of other measures of business size

such as financial measures, although not common in management and organisational studies, might have changed the complexity of the findings.

The study used structural equation modelling (SEM). This technique has some limitations, cited and summarised by Tomarken and Waller (2005). Such limitations include the omission of variables, the importance of lower-order model components, the potential limitations of models judged to be well-fitting, and the inaccuracy of some commonly-used rules of thumb. The final limitation is that only five constructs were used to determine the effects on organisational fitness (organisational learning, size, structure, capabilities, and levers). The inclusion of other variables would have expanded the nature and scope of what constitutes organisational fitness in a volatile environment.

5.8 SUMMARY

This research found no relationship between organisational size and organisational structure, organisational learning and organisational structure, organisational structure and organisational levers, organisational structure and organisational capabilities. The mediating roles of organisational capabilities and levers on the relationship between organisational structure and organisational fitness were not confirmed. The combined mediating effect of organisational capabilities and levers on the relationship between organisational structure and organisational fitness was confirmed. The variation from findings in the earlier literature on the relationship among constructs can be attributed to the different research environments. In a volatile business environment, organisations struggle for fitness, as demonstrated in this research. These results contribute meaningfully to the existing literature by providing insight into the strength and directions of relationships among the studied constructs. In practice, the study offers useful insight into the managerial implications for companies, and the possible interventions to be initiated and developed to promote organisational fitness.

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APPENDIXES

Appendix 1: Participants Letter

Participant Letter

Good Day

My name is Sibindi Ntandoyenkosi and I am a Doctor of Philosophy candidate in the Management division at the University of the Witwatersrand, Johannesburg. Building Organisational Fitness is very important for survival and business growth in a volatile environment. I am carrying out a study that seeks to investigate the predictor variables and the mediating effects of organisational levers and capabilities on organisational fitness in Zimbabwe's volatile operating environment

As a manager you are **invited** to take part in this survey. The main purpose of this survey is to find out how Organisational fitness is affected by the environment, organisational structural variables, levers and capabilities.

Your response is important and there are no right or wrong answers. This survey will take approximately 15-20 minutes to complete and is both confidential and anonymous. Anonymity and confidentiality are guaranteed by not needing to enter your name on the questionnaire. Your participation is completely voluntary and involves no risk, penalty, or loss of benefits whether or not you participate. You may withdraw from the survey at any stage.

Thank you for considering participating. Should you have any questions, or should you wish to obtain a copy of the results of the survey, please contact me on 0773246642 or email me or my supervisor Professor Michael Samuell on 1108453@students.wits.ac.za or Olorunjuwon.Samuel@wits.ac.za respectively.

Kind regards,
Ntandoyenkosi Sibindi
Doctoral Student: Division of Management
School of Economic and Business Sciences
University of the Witwatersrand, Johannesburg

Appendix 2: Consent Form

Appendix 2

CONSENT FORM

Research Title: ***Predictor variables and the mediating effects of organisational levers and capabilities on organisational fitness in Zimbabwe's volatile operating environment***

Ntandoyenkosi Sibindi
Doctoral Student: Division of Management
School of Economic and Business Sciences
University of the Witwatersrand, Johannesburg

Please initial box

1. I confirm that I have read and understood the Participant Letter of the above study and have had the opportunity to ask questions. ☐
2. I understand that my participation is voluntary and I am free to withdraw at any time, without giving reason and with no consequences. ☐
3. I agree to take in the above study. ☐

_____ _____ _____

Name of Participant Signature Date

Appendix 3: Research Instrument

Section A: Organizational Profile (Please tick)

1. Please indicate the age of your organization below

1- 5 years [ ]
7- 10 years [ ]
12- 15 years [ ]
17 – 20 [ ]
22 And above [ ]

2. How many employees are employed by your organization?

Below 100 [ ]

100- 500 [ ]

500- 1000 [ ]

1000- 5000 [ ]

Above 5000 [ ]

What is the main **activity** of the business? (please tick one only)

Wholesale/retail trade			Education/health and community	
Manufacture industrial goods			Agriculture/forestry/fishing	
Manufacture consumer goods			Personal services	
Finance and insurance/property			Transport/storage	
Construction			Other	

Section: B: Organizational Structure

1 Complexity

Please tick your response to each of the following items as they apply to the organization in question. Scoring for all items: a=1, b=2, c=3, d=4, e=5. Add up the score for all seven items. The sum of the item scores is the degree of complexity (out of a possible 35). Complexity is defined by the degree of horizontal, vertical and spatial differentiation. Scores under 15 represent relatively low complexity; scores above 22 indicate relatively high complexity and scores of 15 to 22 make up the moderate range.

1. How many different job titles are there?
A. very few
B. small number
C. moderate number
D. large number
E. great number

2. What proportion of employees hold advanced degrees or have many years of specialized training?
A.0-10%
B.11-20%
C.21-50%
D.51-75%
E.76-100%

3. How many vertical levels separate the chief executive from those employees working on output in the deepest single division?

A.1 or 2
B.3 to 5

C.6 to 8
D.9 to 12
E. more than 12

4. What is the mean number of levels for the organization as a whole?
A.1 or 2
B.3 to 5
C.6 to 8
D.9 to 12
E. more than 12

5. What is the number of separate geographic locations where organization members are employed?
A.1 or 2
B.3 to 5
C.6 to 15
D.16 to 30
E. more than 30

6. What is the average distance of these separate units from the organization's headquarters?
A. Less than 10 km
B.11 to 100 km
C.101 to 500 km
D.501 to 3500 km
E. more than 3500 km

7. What proportion of the organization's total work force is located at these separate units?

A. Less than 10%
B.11 to 25%
C.26 to 60%
D.61 to 90 %
E. more than 90%

2) Formalization

Please tick your response to each of the following items as they apply to the organization in question. Scoring for all items: a=1, b=2, c=3, d=4, e=5. Add up the score for all seven items. The sum of the item scores is the degree of formalization (out of a possible 35). Formalization indicates the degree to which jobs within the organization are standardised. Scores under 18 represent relatively low formalization, scores above 25 indicate relatively high formalization, and scores of 18 to 25 show relative moderate formalization.

1. Written job descriptions are available for:
A. operative employees only
B. operative employees and first-line supervisors only
C. operative, first-line supervisory, and middle management personnel

D. operative, first-line supervisory, middle and upper-middle management personnel
E. all employees, including senior management

2. Where written job descriptions exist, how closely are employees supervised to ensure compliance with standards set in the job description?
A. very loose
B. loose
C. moderately loose
D. close
E. very close

3. How much latitude are employees allowed from the standards?
A. a great deal
B. a large amount
C. a moderate amount
D. very little
E. none

4. What percentage of non-managerial employees is given written operating instructions or procedures for their jobs?
A. 0-20%
B. 21-40%
C. 41-60%
D. 61-80%
E. 81-100%

5. Of those no managerial employees given written instructions or procedures, to what extent are they followed?
A. none
B. little
C. some
D. a great deal
E. a very great deal

6. To what extent are supervisors and middle managers free from rules, procedures, and policies when they make decisions?
A. a very great deal
B. a great deal
C. some
D. little
E. none

7. What percentage of all rules and procedures that exist within the organization are in writing?

A. 1-20%
B. 21-40%
C. 41-60%
D. 61-80%
E. 81-100%

3) Centralization

Please tick your response to each of the following items as they apply to the organization in question. Scoring for all items: a=1, b=2, c=3, d=4, e=5. Add up the score for all ten items. The sum of the item scores is the degree of centralization (out of possible 50). Centralization indicates the degree to which formal authority to make discretionary choices, is concentrated in an individual, unit or level. Approximate guides for translating scores into categories are as follows: 40 points and above represents high centralization, 21 to 39 is moderate, and 20 or less indicates low centralization (or decentralization).

1. How much direct involvement does top management have in gathering the information they will use in making decisions?
A. none
B. little
C. some
D. a great deal
E. a very great deal

2. To what degree does top management participate in the interpretation of the information input?

A. 0-20%
B. 21-40%
C. 41-60%
D. 61-80%
E. 81-100%

3. To what degree does top management directly control execution of the decision?

A. 0-20%
B. 21-40%
C. 41-60%
D. 61-80%
E. 81-100%

4. How much discretion does the typical first-line supervisor have over establishing his or her unit's budget?

A. very great
B. great
C. some
D. little
E. none

5. How much discretion does the typical first-line supervisor have over determining how his or her unit's performance will be evaluated?
A.very great
B.great
C.some
D.little
E.none

6. How much discretion does the typical first-line supervisor have over hiring and firing personnel?
A.very great
B.great
C.some
D.little
E.none

7. How much discretion does the typical first-line supervisor have over personnel rewards (i.e., salary increases, promotions)?
A.very great
B.great
C.some
D.little
E.none

8. How much discretion does the typical first-line supervisor have over purchasing of equipment and supplies?
A.very great
B.great
C.some
D.little
E.none

9. How much discretion does the typical first-line supervisor have over establishing a new project or program?
A.very great

B.great
C.some
D.little
E.none

10. How much discretion does the typical first-line supervisor have over how work exceptions are to be handled?
A.very great
B.great
C.some
D.little
E.none

Section C: Organizational Levers, Learning and capabilities (Please tick)

Levers	Strongly Disagree					Strongly Agree
We have regular meetings to consider how market demands may be affecting our business.	1	2	3	4	5	6
People in our organization are quick to recognise when external knowledge may be useful.						
People in our organization freely share practical experience with each other.						
Our management meets regularly to discuss market trends and new product development.						
Our people can work to together to come up with fresh combinations of our services and products.						
Management allows employees to come up with fresh combinations of our service product.						
Management allows employees to take part in decisions to adopt new programs.						
Management encourages employees to take action without approval						

Employees make extensive use of information systems to support their work						
Management works as a team to support overall objectives of the organization.						
Management sometimes causes people to waste resources on un productive activities.						
Our organization encourages its people to challenge traditions and current practices.						
Capabilities	1	2	3	4	5	6
Employees are encouraged to communicate clearly						
Communication between people is expected to be routed through proper channels.						
In the past, the organization has adjusted well to changes in practices.						
The development of employee's competencies is an important organisational goal.						
Coordination of activities is well communicated in the organisation.						
The Organisation has the ability to deal with changes internal and external.						
Organisational commitment to employee welfare is high.						
Organisational commitment to customers is high.						
Organisational commitment to achievement of its goals is High.						

Learning	1	2	3	4	5	6
We are encouraged to take risks in the organization.						
All employees are expected to systematically record new knowledge for future reference.						
In the past, the organization has adjusted well to changes in practices.						
The organization will not change unless forced to do so by some crisis						
In my organization, leaders continually look for opportunities to learn.						
The company is slow to react to technological change						
Employees resist changing to new ways of doing things.						
Employees retrieve archived information when making decisions.						
When employees need specific information, they know who will have it						

Section D: Organizational Fitness

	Strongly Disagree Strongly Agree					
Our organization is achieving high level of customer satisfaction.	1	2	3	4	5	6
Our organization is achieving a high level of employee satisfaction.						
Our organization is achieving a high level of shareholders satisfaction.						
In our organization we are continually creating new opportunities.						

Our organization has the capacity to increase its net worth in the next two years.						
Our organization is a dynamic and creative team of people with a strong focus.						

Thank you for your time.

Appendix 4: Ethics Clearance Certificate

Research Office

HUMAN RESEARCH ETHICS COMMITTEE (NON-MEDICAL)
R14/49 Sibindi

CLEARANCE CERTIFICATE	**PROTOCOL NUMBER: H16/02/32**
PROJECT TITLE	Predictor variables and the mediating effects of organisational levers and capabilities on organisational fitness in Zimbabwe's volatile operating environment
INVESTIGATOR(S)	Mr N Sibindi
SCHOOL/DEPARTMENT	Economic and Business Science/
DATE CONSIDERED	19 February 2016
DECISION OF THE COMMITTEE	Approved unconditionally
EXPIRY DATE	06 March 2019

DATE 07 March 2016 **CHAIRPERSON** J-Knight
(Professor J Knight)

cc: Supervisor : Professor S Olorunjuwon

DECLARATION OF INVESTIGATOR(S)

To be completed in duplicate and **ONE COPY** returned to the Secretary at Room 10005, 10th Floor, Senate House, University.

I/We fully understand the conditions under which I am/we are authorized to carry out the abovementioned research and I/we guarantee to ensure compliance with these conditions. Should any departure to be contemplated from the research procedure as approved I/we undertake to resubmit the protocol to the Committee. **I agree to completion of a yearly progress report.**

_____ _____/_____/_____
Signature **Date**

PLEASE QUOTE THE PROTOCOL NUMBER ON ALL ENQUIRIES

Appendix 5: Fitted Covariance Matrix of the Structural Model

	Complexi	**Formaliz**	**Centrali**	**OC1**	**OC2**	**OC4**
Complexi	0.440					
Formaliz	0.413	0.550				
Centrali	0.457	0.534	0.641			
OC1	0.000	0.000	0.000	2.747		
OC2	0.000	0.000	0.000	0.004	1.854	
OC4	0.000	0.000	0.000	0.232	0.000	2.613
OC5	0.000	0.000	0.000	2.507	0.004	0.262
OC6	0.000	0.000	0.000	0.332	0.001	0.035
OC8	0.000	0.000	0.000	0.218	0.000	0.023
OLE2	0.027	0.031	0.035	-0.035	0.000	-0.004
OLE4	0.026	0.031	0.034	-0.034	0.000	-0.004
OLE6	0.027	0.031	0.035	-0.035	0.000	-0.004
OLE7	0.027	0.031	0.035	-0.035	0.000	-0.004
OLE9	0.027	0.031	0.035	-0.035	0.000	-0.004
OF1	0.000	0.000	0.000	-0.077	0.000	-0.008
OF3	0.000	0.000	0.000	-0.077	0.000	-0.008
OF4	0.000	0.000	0.000	-0.054	0.000	-0.006
OF6	0.000	0.000	0.000	-0.071	0.000	-0.007
OL2	0.071	0.083	0.092	-0.002	0.000	0.000

OL3	0.071	0.083	0.091	-0.002	0.000	0.000
OL4	0.084	0.098	0.109	-0.002	0.000	0.000
OL5	0.074	0.086	0.095	-0.002	0.000	0.000
OL6	0.079	0.092	0.102	-0.002	0.000	0.000
OL7	0.093	0.108	0.120	-0.002	0.000	0.000
OL8	0.092	0.108	0.119	-0.002	0.000	0.000
OL9	0.092	0.107	0.119	-0.002	0.000	0.000
OL10	0.093	0.109	0.120	-0.002	0.000	0.000
OL11	0.089	0.104	0.115	-0.002	0.000	0.000

	Complexi	**Formaliz**	**Centrali**	**OC1**	**OC2**	**OC4**
Complexi	0.440					
Formaliz	0.413	0.550				
Centrali	0.457	0.534	0.641			
OC1	0.000	0.000	0.000	2.747		
OC2	0.000	0.000	0.000	0.004	1.854	
OC4	0.000	0.000	0.000	0.232	0.000	2.613
OC5	0.000	0.000	0.000	2.507	0.004	0.262
OC6	0.000	0.000	0.000	0.332	0.001	0.035
OC8	0.000	0.000	0.000	0.218	0.000	0.023
OLE2	0.027	0.031	0.035	-0.035	0.000	-0.004

OLE4	0.026	0.031	0.034	-0.034	0.000	-0.004
OLE6	0.027	0.031	0.035	-0.035	0.000	-0.004
OLE7	0.027	0.031	0.035	-0.035	0.000	-0.004
OLE9	0.027	0.031	0.035	-0.035	0.000	-0.004
OF1	0.000	0.000	0.000	-0.077	0.000	-0.008
OF3	0.000	0.000	0.000	-0.077	0.000	-0.008
OF4	0.000	0.000	0.000	-0.054	0.000	-0.006
OF6	0.000	0.000	0.000	-0.071	0.000	-0.007
OL2	0.071	0.083	0.092	-0.002	0.000	0.000
OL3	0.071	0.083	0.091	-0.002	0.000	0.000
OL4	0.084	0.098	0.109	-0.002	0.000	0.000
OL5	0.074	0.086	0.095	-0.002	0.000	0.000
OL6	0.079	0.092	0.102	-0.002	0.000	0.000
OL7	0.093	0.108	0.120	-0.002	0.000	0.000
OL8	0.092	0.108	0.119	-0.002	0.000	0.000
OL9	0.092	0.107	0.119	-0.002	0.000	0.000
OL10	0.093	0.109	0.120	-0.002	0.000	0.000
OL11	0.089	0.104	0.115	-0.002	0.000	0.000

Fitted Covariance Matrix (continued)

	OC5	OC6	OC8	OLE2	OLE4	OLE6
OC5	2.870					
OC6	0.375	3.000				
OC8	0.247	0.033	2.865			
OLE2	-0.040	-0.005	-0.003	2.897		
OLE4	-0.039	-0.005	-0.003	2.807	2.870	
OLE6	-0.040	-0.005	-0.003	2.873	2.792	2.893
OLE7	-0.040	-0.005	-0.003	2.897	2.816	2.881
OLE9	-0.040	-0.005	-0.003	2.897	2.816	2.881
OF1	-0.087	-0.011	-0.008	0.001	0.001	0.001
OF3	-0.087	-0.011	-0.008	0.001	0.001	0.001
OF4	-0.061	-0.008	-0.005	0.001	0.001	0.001
OF6	-0.080	-0.011	-0.007	0.001	0.001	0.001
OL2	-0.002	0.000	0.000	0.140	0.136	0.139
OL3	-0.002	0.000	0.000	0.138	0.134	0.137
OL4	-0.002	0.000	0.000	0.164	0.160	0.163
OL5	-0.002	0.000	0.000	0.144	0.140	0.143
OL6	-0.002	0.000	0.000	0.154	0.150	0.154
OL7	-0.002	0.000	0.000	0.181	0.176	0.181
OL8	-0.002	0.000	0.000	0.181	0.176	0.180

OL9	-0.002	0.000	0.000	0.180	0.175	0.179
OL10	-0.003	0.000	0.000	0.182	0.177	0.181
OL11	-0.002	0.000	0.000	0.175	0.170	0.174

Fitted Covariance Matrix (continued)

	OLE7	**OLE9**	**OF1**	**OF3**	**OF4**	**OF6**
OLE7	2.909					
OLE9	2.906	2.909				
OF1	0.001	0.001	2.917			
OF3	0.001	0.001	2.914	2.917		
OF4	0.001	0.001	2.043	2.043	2.704	
OF6	0.001	0.001	2.682	2.682	1.880	2.664
OL2	0.140	0.140	0.000	0.000	0.000	0.000
OL3	0.139	0.139	0.000	0.000	0.000	0.000
OL4	0.165	0.165	0.000	0.000	0.000	0.000
OL5	0.144	0.144	0.000	0.000	0.000	0.000
OL6	0.155	0.155	0.000	0.000	0.000	0.000
OL7	0.182	0.182	0.000	0.000	0.000	0.000
OL8	0.181	0.181	0.000	0.000	0.000	0.000
OL9	0.180	0.180	0.000	0.000	0.000	0.000
OL10	0.183	0.183	0.000	0.000	0.000	0.000

OL11	0.175	0.175	0.000	0.000	0.000	0.000

Appendix 6: Covariance Matrix of ETA and KSI

	STRUCTUR	LEVERS	FITNESS	CAPABILI	LEARNING
STRUCTUR	1.000				
LEVERS	0.027	1.000			
FITNESS	0.000	0.000	1.000		
CAPABILI	0.000	-0.014	-0.030	1.000	
LEARNING	0.097	0.066	0.000	-0.001	1.000