UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Gordon Institute of Business Science
University of Pretoria

TRANSITIONAL ECONOMY SURVIVAL CHAMPIONS: THE EXPERIENCE OF SOUTH AFRICAN FIRMS

Amy van Schoor
1537787

A research project submitted to the Gordon Institute of Business Science, University of Pretoria, in partial fulfilment of the requirement for the degree of Master of Business Administration.

07 November 2016

ABSTRACT

The profound institutional change inherent in transitional economies creates a challenging climate for firms to survive. Although a significant amount of empirical research has been conducted on the subject of organisational longevity in developed economies, limited research had been conducted in emerging markets. This paper addresses this shortcoming by looking at firm survival and institutional change during South Africa's political transition spanning the period 1991 to 2013.

Using perspectives from population ecology theory and institutional theory, a cluster of absorption variables is developed and empirically tested to identify the characteristics of those firms that were able to endure shifts in the operating environment. Findings resulting from the Kaplan-Meier survival function and the Cox proportional hazard model suggest that so-called 'survival champions' develop a shared set of characteristics that take the form of bulk and heft in a transitional economy, which better equips them to absorb and negotiate change. In addition, the research shows that the sensitivity of survival to the cluster of absorption variables is significantly higher during the post-transition period of 1999 to 2013 compared to the period during which the transition takes place.

This research paper contributes to the survival literature by adding a more nuanced voice to the understanding of corporate longevity in emerging markets. Findings offer key lessons for managers and stakeholders not only in South Africa, but also for those economies which have undergone – or may still undergo – similar institutional transition.

KEYWORDS

Firm survival, transitional economy, emerging markets, institutional change, South Africa

DECLARATION

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

Signature: _____

Name: Amy van Schoor

Date: 07 November 2016

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ACRONYMS AND ABBREVIATIONS

AIDS: Acquired Immunodeficiency Syndrome

ANC: African National Congress

BRIC: Brazil, Russia, India and China

CPI: Consumer Price Inflation

DMI: Dynamic Market Index

G20: Group of 20

JSE: Johannesburg Stock Exchange

MINT: Mexico, Indonesia, Nigeria and Turkey

SENS: Stock Exchange News Service

USD: United States Dollars

ZAR: South African Ran

CHAPTER 1: DEFINITION OF PROBLEM AND PURPOSE

1.1 Introduction

The rapid and profound institutional change inherent in transitional economies creates a challenging climate for firms to survive. Yet, despite the perennial interest in corporate longevity (Amankwah-Amoah, 2016), the phenomenon of firm survival in shifting environments is not well understood (Iwasaki, 2014). Examining how firms navigate structural and institutional transformation contributes unique insights to the understanding of corporate survival at a global level.

Need for the research

While the phenomenon of longevity has been studied in a variety of developed markets, limited longitudinal research has been conducted in emerging economies undergoing institutional transition (Napolitano, Marino & Ojala, 2015; Dunne & Masenyetse, 2015; Iwasaki, 2014; Makura, 2012). Yet, as emerging market scholars point out, understanding the drivers of firm survival in developing economies contributes unique insights to the phenomenon of longevity at the global level (Marquis & Raynard, 2014). According to Jullens (2014), Marquis & Raynard (2014) and Khanna & Palepu (1997), thriving in a diverse setting is a result of nuanced and tailored strategies which fit the particular institutional context of the operating market. This is true not only for firms in South Africa but for those firms operating in similarly diverse and transitional economies such as Brazil, Iran, Egypt and Libya.

Determinants of firm survival have been widely examined by scholars of business history and management because of the material implications that corporate death has for organisations themselves, as well as the institutional, social, economic and political systems in which those organisations emerge and die (Riviezzo, Skippari & Garofano, 2015; Mas-Verdú, Ribeiro-Soriano & Roig-Tierno, 2015; Dunne & Masenyetse, 2015; Hannah, 1999; Bonn, 2000). Scholars remain fascinated by the topic of longevity as survival lies at the core of economic evolution. Moreover, distinguishing *ex-ante* how firms beat the normal form and achieve longevity can change the balance of economic evolution (Hannah, 1999). However, despite the burgeoning stream of research focusing on the storytelling of success, a sure recipe for corporate longevity remains elusive. This research contributes to understanding the survival experience of firms in transitional economies in order to add a more nuanced and mature voice to the subject of longevity.

For economies in transition such as South Africa, these questions are particularly relevant, as a healthy and sustainable corporate structure underpinned by long-living firms is vital to policy objectives, economic growth and employment (National Planning Commission, 2013). Companies in South Africa, alongside those in countries such as Brazil, Russia, India and China (BRIC) as well as Mexico, Indonesia, Nigeria and Turkey (MINT) operate in what is referred to as dynamic markets (Makura, 2012). The associated dynamic economies "exhibit exciting economic growth prospects, have undergone significant political, social and cultural change and show encouraging signs of innovation along with policy and institutional developments to address the voids and complexities prevalent in these markets" (Makura, 2012, p. 11). The insights gained from studying the common features of surviving South African companies therefore, has implications not only for South Africa but for other countries included in the dynamic market definition based on similar economic, political and social transitions.

The remainder of the research refers to survivors as transitional economy Survival Champions; those firms which have adapted to and evolved with the structural, socio-political and economic challenges particular to South Africa during the period 1991 to 2013. Not only have Survival Champions continued to be listed on the Johannesburg Stock Exchange (JSE) for the full period reviewed; they remain viable organisations which have not needed recapitalisation as a result of distress. Following Napolitano et al., (2015) the study uses the terms survival and longevity interchangeably to describe firms which are extraordinarily resilient and able to maintain their vitality for decades.

Despite the voluminous body of research focusing on corporate survival in stable institutional environments typical of developed markets, little is known about how organisations survive institutional transition in more volatile environments (Peng, 2003). A clear research gap exists. South Africa's transition from an exclusionary system of apartheid to one of an inclusive democracy presents an ideal setting to examine the relationship between corporate survival and political change.

Previous survival work

Scholars stress that survival is a minority activity (Riviezzo at al., 2015). As evidence of this, Schror (2009) shows that only half of newly formed European firms that were started in the early 2000s survived more than five years. Equally alarming is the evidence presented by de Geus (1997) which confirms that only two-thirds of Fortune 500 firms in 1970 were still alive 13 years later. What emerges from the research is that destruction is

a common feature in both modern and emerging economies, which experience an average annual extinction rate of ten per cent (Ferguson, 2008). Indeed, most companies experience death at a relatively young age or, at best, middle age (Napolitano et al., 2015).

Although determinants of survival have been well documented in developing countries, empirical studies in transitional economies have been largely limited to examining firm exit in post-socialist economies such as Russia (e.g. Iwasaki, 2014), Asia (e.g. Spaliara & Tsoukas, 2013), Czech Republic (e.g. Kosova, 2010) and Poland (e.g. Kolasa, Rubaszek & Taglioni, 2010).

Only one South African study exists which has conducted a review of the determinants of firm survival. The study is limited. Its research focus spans only ten years, from 2000 to 2010 (excluding the political change), and it uses a narrow view of variables to determine longevity (Dunne & Masenyetse, 2015). Furthermore, the study has not been peer-reviewed or submitted in academic journal form.

Context

The institutional context – a country's product, labour, capital markets, regulatory system and its mechanisms for enforcing contracts (Khanna, Palepu & Sinha, 2005) – offers a unique way to study corporate survival. South Africa's post-apartheid institutional environment, in particular, represents an unusual landscape to study the common characteristics which define a transitional economy Survival Champion.

International pressure on the South African government begun in 1950 when the United Nations passed a resolution condemning the apartheid system (Vietor & Sheldahl-Thomason, 2016). Over the next few decades, a combination of external pressures, in the form of sanctions, embargoes and internal pressures through social movements for change forced the apartheid government to act. The ban on the African National Congress (ANC) was lifted, capital punishment suspended and political prisoners freed. On February 11, 1990, Nelson Mandela was released from 27 years of imprisonment and went on to win a peaceful and democratic election in 1994.

Since 1990, South African firms have emerged from a distinct period of international isolation. Before the first democratic elections held in 1994, apartheid sanctions reduced international trade opportunities open to South African firms (Lipton, 2014). In a short

space of time South African organisations that were once shunned from participation in international trade found themselves operating in a unique environment. On the one hand, the country fares low in basic requirements including employment, provision of basic education and infrastructure. Unskilled labour, government corruption and crime further weigh down South Africa's competitiveness (Makura, 2012). On the other hand, South Africa has a strong and rising corporate sector and sophisticated financial markets. Indeed, the country has advanced politically and has seen relatively elevated economic growth since 1994.

The adversity experienced during the transitional change to and after democracy presents a fertile ground in which to explore the determinants of firm longevity. While the change opened South Africa to international trade, resulting in reinstatement of foreign investment (Vietor & Sheldahl-Thomason, 2016), organisations and industries were left vulnerable to a number of adverse events and risks (Bamiatzi, Bozos, Cavusgil & Hult, 2016). This research thus focuses on the common characteristics of those firms that were able to survive the full 23-year period from 1991 to 2013 in this unique context.

Theoretical background

Although several key contributions which seek to explain business survival have emerged from the strategy, organisational theory and business history literature, theoretical research on the antecedents of survival tend to be polarised between two key perspectives.

The first perspective is what can be termed the voluntaristic view, which holds that longevity is determined internally by the firm. Scholars in this line of research use a resource-based view of the firm as a theoretical perspective to emphasise the role that internal firm agility plays in determining longevity (Coleman, Cotei & Farhat, 2013; Napolitano et al., 2015). Advocates of this perspective stress that organisational internal characteristics – such as structure, culture, strategy, innovation, resource management, founder characteristics and leadership – are responsible for enabling adaptability in times of change. At the core of the resource-based view of the firm is the championing of the role of firm-specific assets as determinants of survival (Coleman et al., 2013).

An opposing, deterministic view (Amankwah-Amoah, 2016) argues that firms are part of a larger ecology and that their survival is determined – or at least shaped by – the external environment (Salimath & Jones, 2011). Drawing on insights from evolutionary

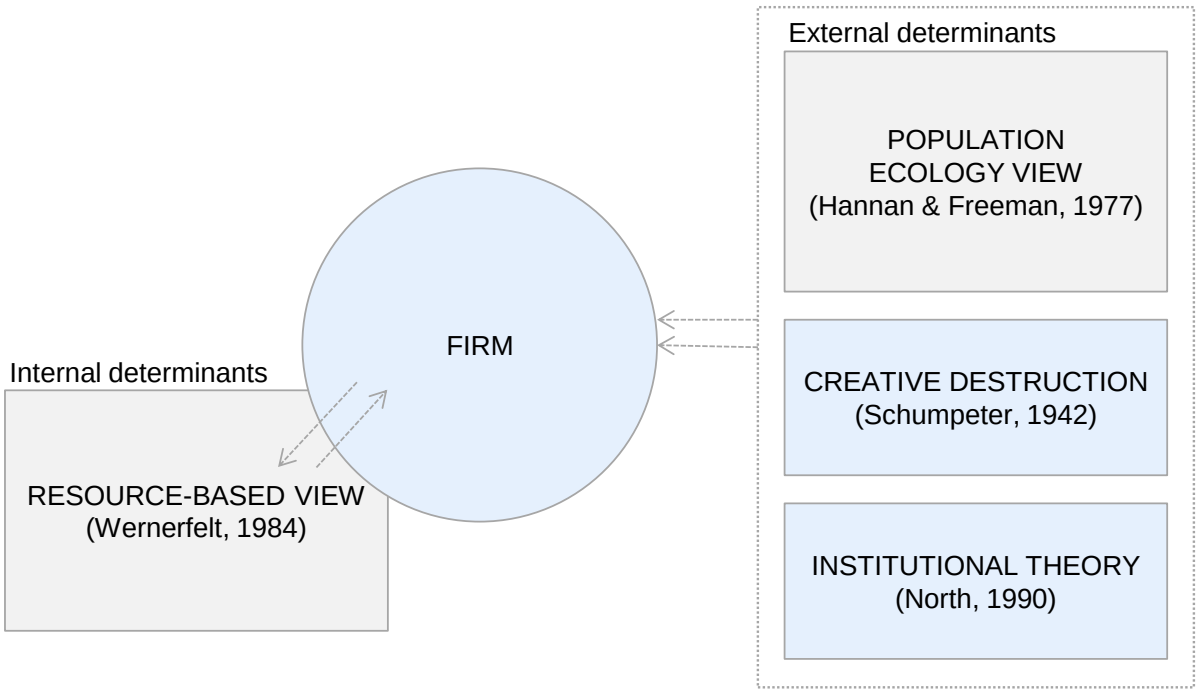
biology, population ecology contends that successful firms are selected by the environment in which they operate (Ehrhardt & Nowak, 2011; Ormerod, 2005; Hannan & Freeman, 1977). Scholars in this line of research show that those firms which have developed bulk and heft through characteristics such as size and age are better able to absorb vagaries in the changing environment.

One of the main streams of research within the deterministic approach to organisation survival is anchored in Joseph Schumpeter's thesis of creative destruction (Schumpeter, 1942). As shown by Schumpeter (1942), jolts in the external environment generate waves of organisational destruction. Those firms which can absorb such jolts will be selected for by the changing environment. This is consistent with Sull (2009) who argues that firm survival is predicated on the ability to absorb change.

An alternative institutional perspective fits into the deterministic approach based on changes to the environmental "rules of the game" (North, 1990, p. 3). Institutional theory has been picked up by management scholars studying the institutional angle of transitions (Bruton, Lau & Obloj, 2014). Khanna & Palepu (2010) stress especially the effects that institutional weaknesses and voids can have on survival strategy in transitional economies. Institutional theory is relevant to analysing firm survival in transitional economies based on the differing strategies firms employ to navigate such shifts. Because of the uniqueness of transitional change to each nation, differing sets of institutions are created (Bruton et al., 2014). As a result, firms navigating institutionally diverse contexts adapt differently to shifts in the environment (Marquis & Raynard, 2014).

Drawing on three theoretical pillars documented in the strategy and survival literature – the resource-based view of the firm, population ecology theory and institutional theory – hypotheses are developed and tested to determine the impact that institutional transition had on firm survival prospects in South Africa between the years 1991 and 2013. Figure 1 illustrates the interrelations between the firm and the theories reviewed. The key scholars in each field are highlighted.

Figure 1: Interrelation between firm and theoretical views



Determinants of survival

The literature reviewed suggests that firm survival is predicated on a number of factors. Borrowing terminology from Sull (2009), these factors are categorised into two groups; 'absorption' and 'agility'. The absorption category includes those factors shown to help the firm withstand the vagaries of a challenging and changing environment (Sull, 2009; Saville, 2015). The absorption group includes dynamics such as firm age, business size, balance sheet health, financial performance and operating industry (Khan, 2015; Spaliara & Tsoukas, 2013; Ehrhardt & Nowak, 2011; Iwasaki, 2014).

The agility category includes factors which enable the organisation to renew itself, adapt quickly and succeed in turbulent and fast-changing environments (Sull, 2009; Saville, 2015; Aghina, De Smet & Weerda, 2015). The agility group includes dynamics which are less easily quantifiable such as innovation ability, lean structure, efficient governance and process; which together allow for on-going experimentation and rapid adjustment to a new environment (de Geus, 1997; Sull, 2009; Whittington, 2011; McGrath, 2012; Khan, 2015).

Following a review of a raft of longevity studies, it is clear that absorptive characteristics enhance survival prospects in developed market contexts. However, what is yet to be

established is whether weight and bulk work for or against firms operating in rapidly changing environments.

The remainder of this research therefore, focuses on absorption factors as determinants of firm survival. The deterministic – or population ecology – perspective of survival is used in conjunction with the Sull (2009) thesis of absorption to quantitatively measure firm dynamics which correspond with, and potentially influence firm survival during the South African transition to democracy.

1.2 Purpose of the research

Theoretical contribution

As Mellahi & Wilkinson (2010) point out, while the subject of firm survival has led to a voluminous body of knowledge, the majority of studies have focused on organisations operating in developed economies. Yet, despite an accumulation of empirical evidence on organisational longevity, the field is "getting bigger without necessarily maturing" (Mellahi & Wilkinson, 2010, p. 532.) This study contributes to the literature on firm survival by investigating survival in a developing economy undergoing political change.

Management implications

The findings of the study advances knowledge in three distinct ways. First, the testimony offered by those firms able to survive the dramatic environmental change is central to knowing how to manage organisations (Bonn, 2000; Napolitano et al., 2015), and how to influence better decision making (Ehrhardt & Nowak, 2011; Mellahi & Wilkinson, 2010). Second, findings will have key implications for key stakeholders affected by the decisions and on-going operations of the firm (Crane & Matten, 2010), as for well as the economic, political and social systems in which those organisations function (Napolitano et al., 2015). Finally, lessons offered by the Survival Champions can be adopted and applied not only in South Africa, but in other economies undergoing – or which have already undergone – similar transition (Collins & Porras, 2005).

Research objectives

The study will empirically test a cluster of absorption factors – age, size, balance sheet health, financial performance and operating sector – to determine which characteristics in

the cluster are significant determinants of survival of industrial firms listed on the JSE over the 23-year transition to democracy.

The specific objectives of the research are threefold. First, the study aims to perform a survival analysis on all firms listed on the JSE in 1991 in order to determine which of those firms survived the 23 year period to 2013. Next, using the parametric function of the Kaplan-Meier survival function (Kaplan & Meier, 1958) and the semi-parametric nature of the Cox proportional hazard model (Cox, 1972) the study investigates which of the absorption variables identified are significant predictors of the firm survival. Finally, the period analysed is divided into two specific periods based on the presidential terms of the post-apartheid presidents in order to test for variable sensitivity.

1.3 Research organisation

The research proceeds as follows. Chapter 2 provides an overview of the theoretical base and empirical literature used to explain firm survival. The literature is then condensed into a set of testable hypotheses in Chapter 3. Chapter 4 details the reasons for the design of quantitative research and further defines the statistical methods used to study the data collected. Chapter 5 presents the quantitative results of the statistical tests conducted. Chapter 6 discusses the findings in terms of the hypotheses developed. Finally, Chapter 7 highlights the main findings of the research and concludes with recommendations and areas for future research.

CHAPTER 2: THEORY AND LITERATURE REVIEW

2.1 Introduction

Firm survival is an aberrant feature in capitalist economies (Baker & Kennedy, 2002). This is consistent with the business history literature which shows that few firms are built to last and that most are bound to fail (Collins & Porras, 2005). Scholarly debate abounds over whether large and old firms are more efficient in exploiting scale and scope or whether more agile firms, skilled at adapting to environmental changes, are better able to survive (Riviezo et al., 2015). Due to its far-reaching consequences for business and society, the issue of business longevity has been widely examined by business historians and management researchers (Napolitano et al., 2015).

Despite the on-going interest in the subject of longevity however, studies have been largely limited to those focusing on survival in developed economies, while limited longitudinal research has been conducted in transitional economies (Amankwah-Amoah, 2016). The South African transition to democracy during the period 1991 to 2013 presents an ideal setting to study firm survival in a transitioning economy.

The literature reviewed on firm survival proceeds as follows. First, influential scholars together with their most prominent work in the survival literature are identified. Second, the differences between dynamic, emerging and developing economic definitions are discussed. Third, theoretical perspectives on the antecedents of organisational survival are reported. Finally, specific absorption factors as evidenced from the literature which explain firm survival are documented.

2.2 Scholarly influence

A number of influential scholars have added to the growing body of business longevity research through multidisciplinary lenses. As far back as 1890, Alfred Marshall proposed that firms in an economy are like trees in a forest but that “sooner or later age tells on them all” (Hannah, 1999, p.253). Schumpeter (1942) later argued the importance of institutions, innovation and technology to firm growth and survival. Schumpeter proposed capitalist evolution to be an open process, underscored primarily by innovation, and that firms who succeeded in the introduction of new, more efficient technology would be rewarded with competitive advantage positions (Fagerberg, 2003). The Schumpeterian

thesis of creative destruction has since become a key anchor in a dominant body of research focusing on the impact that external factors have on firm survival (Amankwah-Amoah, 2016). Academics agree that until his death, Joseph Schumpeter was the most prominent academic protagonist in the evolutionary tale of long-run capitalist development (Fagerberg, 2003).

Chandler (1990) went on to bridge the gap left by Schumpeter by studying the relationship between innovation, productivity and large industrial firms, concluding that higher productivity – made possible through large-scale technological investment – is responsible for survival. Specifically, Chandler (1990) studied the impact of scale, scope and organisational capabilities in American, British and German firms. Subsequently, Hannah (1999) extended existing knowledge on what defines a global industrial giant, concluding that large firms experience longevity over their smaller counterparts. More recently, McGrath (2012) conducted a study on American listed firms with a market value in excess of USD1 billion in order to determine the vital ingredients of consistent firm growth and ultimate survival. Collectively, the academic contributions from Marshall, Schumpeter, Chandler, Hannah and McGrath lay the foundation for the on-going debate on the subject of firm survival.

2.3 Dynamic, emerging or developing

Although a limited number of survival studies have been conducted in emerging markets such as Russia (Iwasaki, 2014), Asia (Spaliara & Tsoukas, 2013) and India (Dzhumashev, Mishra & Smyth, 2016), a generic emerging market strategy for survival will not suffice; proved as such by contradictory research findings. Empirical results from such studies were in some cases similar and in others inconsistent. Moreover, grouping economies together using labels such as BRICs, MINTs, ‘emerging markets’ or ‘developing countries’ to apply a blanket business survival strategy is antiquated and has outlived its usefulness (Olopade, 2014).

The BRIC collective provides a useful example. The BRIC acronym was originally coined based on the similar growth trends, opportunities and demographics the four countries represented. Accordingly, business strategies in these markets were lumped together into a one-approach-fits-all package. Yet with the exception of China, the BRIC countries have performed poorly and not lived up the high expectations set. As evidence of this, the GIBS Dynamic Market Index (2016) (DMI) shows that China was the only country in

the BRIC collective to feature as a dynamic market, meaning it had a high base of institutional sophistication which was improved during the period analysed.

Instead, what is required is that firms navigate institutionally diverse settings using survival strategies which go beyond the collective approach and are in its place contextually relevant. South Africa, as with other economies which have undergone recent institutional change, is characterised by a strong capital market and regulatory systems, but weak infrastructure and labour regulation. Under these challenging conditions, strategies tailored to the institutional environment are especially critical to an organisation's long-term survival (Marquis & Raynard, 2014).

2.4 Scope of theory base

Although several key contributions which seek to explain business survival have emerged from the strategy, organisational theory and business history literature (Khan, 2015; Baker & Kennedy, 2002; Ehrhardt & Nowak, 2011; Coleman et al., 2013), a review of the literature demonstrates that theoretical research on the antecedents of firm survival is polarised between two key perspectives (Amankwah-Amoah, 2016). These two perspectives are anchored in deterministic and voluntaristic approaches to organisational longevity.

Polarising approaches

The resource-based-view of the firm is rooted in endogenous influences while the organisation ecology thesis advocates that survival is predicated on exogenous factors (Amankwah-Amoah, 2016). A third perspective – the institutional angle – is reviewed within the context of the second deterministic environmental approach. Institutional theory is employed by scholars to show that in developing economies, differing institutional contexts drive survival strategies.

The first line of literature emphasised a voluntaristic perspective where firm internal characteristics such as structure, culture, strategy, innovation, resource management, founder characteristics and leadership are the fundamental causes of firm survival. Scholars in this line of research used the resource-based view of the firm as a theoretical perspective to emphasise the role that internal firm resources play in determining longevity (Coleman et al., 2013; Napolitano et al., 2015). The second perspective

advocated a deterministic approach, using population ecology theory to suggest that managers are at the mercy of exogenous environmental factors over which they have no control (Amankwah-Amoah, 2016). Deterministic scholars borrowed models from biology, using population ecology theory to show that firm survival is determined by the environmental selection of those organisations which are best fit to their environment (Hannan & Freeman, 1977; Ormerod, 2005; Ferguson, 2008; Salimath & Jones, 2011; Rivezzo et al., 2015). Rivezzo et al., (2015) observed that other, less direct theoretical frameworks are also used to enrich survival research, such as corporate stewardship, organisational change, industrial organisation, agency theory, stewardship theory and dynamic capabilities.

Based on their relevance for survival research, the resource-based view of the firm; population ecology theory and institutional theory are discussed in further detail. Table 1 summarises the key theories and most relevant scholars.

Table 1: Key theory base references

Theory	Referenced in
Resource based view of firm	Wernerfelt (1984); Barney (1991); Aragon-Correa & Sharma (2003); Lockett, Thompson & Morgenstern (2009); Coleman, Cotei & Farhat, (2013); Tsvetkova, Thill & Strumsky, (2014); Bharadwaj, Varadarajan & Fahy (2015); Enriquez de la (2015); Napolitano, Marino & Ojala (2015).
Population ecology theory	Schumpeter (1942); Hannan & Freemen (1977); Carroll (1988); Baker & Kennedy (2002); Ferguson (2008); Salimath & Jones (2011); Ehrhardt & Nowak (2011); Makkonen, Pohjola, Olkkonen & Kopone, (2014); Riviezzo, Skippari & Garofano (2015); Khan (2015); Amankwah-Amoah (2016).
Institutional theory	North (1990); Khanna & Palepu (2010); Bruton, Lau & Obloj (2014); Marquis & Raynard (2014).

Resource-based view of the firm: a voluntaristic approach

Much of the strategy literature on firm survival is rooted in the resource-based view of the firm (Coleman et al., 2013; Wernerfelt, 1984; Barney; 1991). Scholars in this field have advocated that the resource-based view of the firm is indispensable when investigating the internal tangible and intangible factors which explain long-run success (Napolitano et al., 2015). This is based on the premise that firm-specific assets and resources are the fundamental cause of survival (Amankwah-Amoah, 2016).

Enriquez de la (2015) stated that firm-specific assets include human resources, organisational processes, knowledge and information and that these resources can be either static or dynamic. According to this field of research, longevity is achieved when the organisation demonstrates capability in developing and exploiting these internal resources. Conversely, longevity is constrained when the organisation is incapable of being sensitive to changes in the environment (Aragón-Correa & Sharma, 2003).

The resource-based view of the firm advocates that organisations are made up of a heterogeneous bundle of both tangible and intangible resources which the manager is tasked with handling (Coleman et al., 2013). At the outset, the manager is tasked with developing, acquiring and assembling these resources in a way that creates competitive advantage which improves the chances of firm survival (Barney, 1991; Wernerfelt, 1984). Following from this, the manager is to configure existing resources so that the organisation may adapt to a changing environment which is constantly in flux (Coleman et al., 2013).

Barney (1991) emphasised that resources need to be valuable and rare so that they are difficult to imitate in order to be a source of competitive advantage. Although the relationship between competitive advantage, resource value and resource rarity are widely accepted in the literature, Enriquez de la (2015) identified that tautology is present as value and rarity depend on the specific usage of the resource within the organisation.

Initial investigations into the resource-based view of the firm focused on the relationship between resources and firm profitability. Wernerfelt (1984) concluded that a resource is any strength or weakness which, at any given time, could be tangible or intangible. Coleman et al., (2013) extended the boundaries of the resource-based view of the field of entrepreneurship, revealing that the entrepreneur's specific set of skills and knowledge, relevant to directing the business, are a prerequisite for performance and success. More recently, Enriquez de la (2015) focused on the role that internal routines and processes have on the sustained competitive advantage.

Enriquez de la (2015) highlighted that resource-specific advantages are either exogenous or endogenous and that it is the manager's role to leverage these advantages. Using the analogy of the manager as a card player, Lockett, Thompson & Morgenstern (2009) demonstrated that the players' cards are determined exogenously by the external environment, but that success in the game depends on how the card player takes advantage of those cards and any subsequently acquired cards.

The resource-based view of the firm continues to be a dominant paradigm in the strategy literature due to its explanation of how firm resources can provide a sustained competitive advantage. The sustained competitive advantage is shown to increase firm performance, which in turn is a driver of organisational survival (Bharadwaj, Varadarajan & Fahy, 2015; Dunne & Masenyetse, 2015). Firm characteristics that affect chances of survival – such as size and age – are inherently related to resource access (Tsvetkova, Thill & Strumsky, 2014).

Population ecology theory: a deterministic approach

Population ecology theory, which derives its roots from a Darwinian perspective, stands out as the most suitable rationale for studying firm survival based on its sustainability insights and its potential to contribute to the longevity research (Salimath & Jones, 2011; Ehrhardt & Nowak, 2011; Riviezzo et al., 2015). The notion that finance and the economy have a Darwinian quality is not new (Ferguson, 2008). As far back as 1898, Veblen (1898) posed the question: “Why is Economics not an Evolutionary Science?” (p. 373).

Hannan & Freeman (1977) conducted pioneering research into population ecology theory with their proposition that natural selection occurs within the environment in which organisations compete. Central to their thesis was the analogy comparing corporations with biological organisms – both subject to a one-sided environmental process which separates maladapted species and firms from those which are best fit to their environment (Makkonen, Pohjola, Olkkonen & Kopone, 2014). Khan (2015) expanded on this understanding, arguing that if organisations are like living organisms, then organisations should be able to identify characteristics that will enable environmental fit, allowing for survival and ensuring longevity. Salimath & Jones (2011) agreed that organisational change is possible and does occur, but that transformation can at times be detrimental to survival. Ehrhardt & Nowak (2011) however differed in this stance, arguing that organisations are incapable of conceiving and implementing changes to improve survival likelihood.

Population ecology theory has several key assumptions (Salimath & Jones, 2011). First, organisational birth and death determine population change (Hannan & Freeman, 1977). To prevent death, organisations can and do change. However, environmental adaptation through institutionalisation eventually creates inertia, rendering further adaptation ineffective (Salimath & Jones, 2011). This leads to the second major assumption which is that inertia eventually results, leading to organisational death. Hannan & Freeman (1977)

explained that inertia is created by high levels of reliability and reproducibility which are favoured by the selection process. As pointed out by population ecologists, inertia can be necessary for routine, repeatable operations which increase with organisational age, but inertia can also impede survival prospects by making firms less agile and flexible (Makkonen et al., 2014).

Salimath & Jones (2011) further explored the idea that changes in the population level occur as result of the organisation selection and replacement. However, a number of scholars challenged the assumption that organisations without consequence adapt to the environment. For example, Freeman & Hannan (1977) argued that such adaptive change is possible but infrequent and rare due to inertia developed within the organisation.

Despite its frequent use in the survival literature, Hannan & Freeman (1977) stressed that borrowing evolutionary models from biology poses a number of challenges. These challenges are driven primarily by the difficulty in reconciling biological organisms with corporate organisations. Biological organisms can adapt though transmission of genetic information and thus adaptation is easily quantified through net production rates. In contrast, organisations require a greater degree of learning to adapt, and adaptation is less easily measured (Hannan & Freeman, 1977).

Baker & Kennedy (2002) explored the implication of organisational selection, arguing that the concept of firm turnover is “central to economic change and progress because it leads to the reallocation of productive resources from non-surviving firms to surviving firms” (p. 325). Used as the title of their study, the scholars termed the process of disappearance the “economic grim reaper” (Baker & Kennedy, 2002, p. 324). This is consistent with the Schumpeterian view that death of maladapted firms is central to creative destruction in capitalist economies (Schumpeter, 1942; Baker & Kennedy, 2002).

Despite some differences, a voluminous stream of research used population ecology theory to determine whether factors such as a size, age and density are determinants of survival (Amankwah-Amoah, 2016). Because of the strong link between the organisation and the environment, population ecology theory remains an influential perspective from which to view organisational longevity.

Institutional theory

Economic history can only be made intelligible when told as a story of institutional evolution (North, 1990). This is consistent with Scott's (1987) institutional approach, which emphasised that the history and evolution of living forms which are adaptively changing over time. The South Africa evolution to democracy was characterised by dramatic institutional change through which firms either adapted or died and therefore institutional theory is integrated into an understanding of South Africa's economic history.

Following the first fully democratically held elections in 1994, not only was a new political party appointed, but institutions including banking, legal, social, financial and economic establishments transformed too. This had a direct impact on the future prospects of South African organisations. An illustration of this institutional change was the approval of a new Constitution in 1996 (Vietor & Sheldahl-Thomson, 2016) together with the reintegration of South African companies into a global community, allowing for capital raising, the inflow of foreign direct capital and the investment in foreign markets (Makura, 2012). The integration of institutional understanding into economic history and economic theory is a critical step to improving such theory and history (North, 1990) and thus a brief review of the literature of institutional theory with an emerging market angle is conducted.

According to North (1990), institutions are "the rules of the game" which affect and shape firm behaviour in an economy (p. 3). Over the past decades, scholars have articulated the influence that institutions have on organisations (Marquis & Raynard, 2014). In emerging markets in particular, institutions, or a lack thereof, can both threaten and fuel survival prospects (Bruton et al., 2014). More specifically, institutional voids, as well as newly developing institutions, have a direct impact on firm choices in transitional economies (Khanna & Palepu, 2010).

Although initial debates on transitional economies were dominated by an economic approach, recent research has identified an institutional angle to transitions (Bruton at al., 2014). According to Marquis & Raynard (2014), such transitional economies are those economies characterised by fast-paced and turbulent change, with particular emphasis on political regime change. Under these challenging conditions, Marquis & Raynard (2014) stated that "strategies aimed at shaping the institutional environment may be especially critical to an organisation's performance and long-term survival" (p. 2).

The institutional environment in which firms operate provides legitimacy to companies, where decision makers embed themselves in institutional arrangements. Drawing on institutional theory for the purpose of this study is valuable given that theoretical perspectives explain how institutional change impacted the behaviour of South African organisations during the transition to democracy.

2.5 Agility versus absorption

Debate abounds over whether firms which have developed mass and size are better able to absorb environmental changes, or whether smaller, more agile and flexible firms adapt better to change. Sull (2009) illustrated the principles of absorption and agility by comparing fighters George Foreman and Muhammad Al in the infamous 1974 'Rumble in the Jungle'. Foreman epitomised absorption through his ability to weather punishment through his size, strength and physicality. In turn, Ali conferred agility through his ability to spot opportunities and exploit these ahead of his opponent. However, as noted by Sull (2009), "absorption and agility are not mutually exclusive" but are instead complementary attributes (p. 219). In the end, Muhammad Ali won the fight by combining absorption with agility. As in sport said Sull (2009), firms which "build an agile culture on an absorptive asset base" can survive environmental blows and grow through flexibility (p. 230).

Sulls' (2009) concept of agile absorption was later expounded by McGrath (2012). In a study of publicly traded American companies, McGrath (2012) concluded that firms that are simultaneously champions of stability and rapid adapters are better able to achieve growth and ultimate survival.

The remainder of the literature review uses the absorption and agility principles as championed by Sull (2009) and expanded by McGrath (2012) to critically review the determinants of survival.

2.6 Absorption factors

The liability of newness

Firm age, calculated as current year less year of establishment, is together with size, one of the most important factors considered by empirical studies in business survival (Tsvetkova et al., 2014). Scholars reported a 'liability of newness', showing a decrease in the hazard rate as firms age, suggesting that younger organisations are more vulnerable

to the vagaries of the changing environment than their older counterparts (Fackler, Schnabel & Wagner, 2013; Saville, 2015). That newness appears to be liability was confirmed in a number of empirical studies which concluded that younger firms experience the highest level of exit risk (Fackler et al., 2013; Spaliara & Tsoukas, 2013).

Amankwah-Amoah (2016) advanced an alternative explanation to the liability of newness, arguing instead that firms suffer from the 'liability of adolescence'. This alternative perspective contended that new firms are endowed with founding stocks of assets and resources which act as cushions against minor environmental shocks, thus creating an initial 'honeymoon period' for adolescent firms (Fackler et al., 2013). Over time, these initial resources are depleted, which leads to the inability of the firm to cope with environmental shocks.

The second strand of research contradicted both the liability of newness and the liability of adolescence. According to the 'liability of obsolescence', the hazard of organisational failure is as a result of firm obsolescence, resulting instead in an increase in failure as firms age (Le Mens, Hannan & Pólos, 2014). This contrasting perspective is supported by scholars who reason that ageing firms are highly inertial and do not adapt well to transitional changes (Fackler et al., 2013; Salimath & Jones, 2011). Firm exit is precipitated by the breeding of bureaucracy and complexity in ageing firms, which stifles progress and lowers the ability to change (Amankwah-Amoah, 2016). Hannan & Freeman (1977) argued conversely that inertia is linked to reliability and routine, which can instead favour firm survival.

Inconclusive debate abounds as to the average age achieved by surviving companies. Hannah (1999) argued that the time taken for a quarter of the world's largest companies to disappear is 33 years, defining this as a firm's "quarter-life" (p. 260). Using a dataset of Fortune 500 companies in the period 1970 to 1983, Schror (2009) suggested that the life expectancy of large companies is between 40 years and 50 years. Through a study of survival attributes of seven million European firms, Stadler (2011) concluded that the average age of all companies is 12.3 years. This corresponded with the view of Khan (2015) who noted that most large companies survive for an average of 12.5 years.

Despite the death of most companies at either a young or middle age, an unusual group of companies have managed to achieve the apex of longevity by existing for 100 years or more (Napolitano et al., 2015). These companies are honoured by societies to mark their exception. For example, the French fraternity Les Hénokiens comprises member

companies that are 200 years old or more, whereas the British Tercentenarians Club includes members organisations of at least 300 years of age (Stadler, 2011). In turn, the Japanese Shinise Society honours firms over 100 years old (Sasaki & Sone, 2015).

Although the impact of firm age on survival prospects has been studied over time, what remains unknown is how age impacts firms undergoing institutional transition. Age, therefore, forms the first variable in the cluster of absorption variables to be tested. From this, it is hypothesised that there is an association between company age and survival probability of firms operating in a transitional economies. Accordingly, the following hypothesis is tested:

$H_{A+}1$: There is an association between age and survival probability of the firm.

The liability of smallness

The impact of firm size on survival probability is arguably one of the most studied determinants of business longevity in developed economies (Sönmez, 2013; Tsvetkova et al., 2014; Mas-Verdú et al., 2015). A dominant strand of research reported a 'liability of smallness', showing that exit probability increases with firm size (Fackler et al., 2013; Tsvetkova et al., 2014). Most studies argued that the susceptibility of younger firms to economic and political fluctuations, resulting in lower hazard rates for larger firms and confirming the liability of newness (Fackler et al., 2013; Spaliara & Tsoukas, 2013).

Scholars such as Bonn (2000) claimed that the reasons that larger companies have a better chance of survival than small companies are due to size advantages which include experience effects, economies of scale, greater bargaining influence and enhanced marked power in general. Fackler et al., (2013) showed that smaller firms face higher financial constraints and have more difficulty attracting talented workers, resulting in higher exit probability. Fackler et al., (2013) further argued that firm size may approximate managerial talent.

Expansion in size was considered to "enhance survival probability by strengthening the resilience of the business organisation based on the scale merit and the higher trust from investors, financial institutions and customers" (Iwasaki, 2014, p. 189). However, size can create concomitant disadvantages. As with the liability of obsolescence, larger companies can breed structural inertia which may result in complacency, resulting in eventual firm exit. Despite some contrasting views, most empirical studies agreed that

the advantages of size outweigh the disadvantages of bureaucracy and inflexibility (Bonn, 2000).

Initial investigations into the impact that firm size has on survival showed that large companies in America, Germany and Britain have a higher likelihood of surviving longer periods due to the availability of additional resources (Hannah, 1999). Since then, further research has expanded the understanding of the relationship between firm size and survival probability to the study of how larger firms take full advantage of the scale effects of size (Bonn, 2000). For example, Bonn (2000) examined the significance of firm size on large Australian manufacturing firms between 1982 and 1993, concluding that size is a key determinant of firm longevity. Baker & Kennedy (2002) agreed that disappearance rates vary with firm size, showing that American listed firms with smaller market capitalisation disappear at significantly higher rates than firms with larger market capitalisation. This is consistent with Spaliara & Tsoukas (2013) who concluded that large firms may be less vulnerable to failure than their smaller counterparts due to shock absorptive ability. Dunne & Masenyetse (2015) showed that in South Africa, firm size also matters. Using a ten-year longitudinal study, the authors suggested that larger firms are better positioned to handle negative economic shocks (Dunne & Masenyetse, 2015).

Studies do exist which show conflicting results to the liability of newness (Fackler et al., 2013). For example, Wagner (1994) did not detect a relationship between size and survival probability. Hannah (1999) also showed that small companies that operate locally may still have good chances of survival if they are not internationally diversified.

Researchers have used various measures to approximate firm size (Tsvetkova et al., 2014). Measures include the number of employees, asset base size, market capitalisation or sales volume (Iwasaki 2014; Tsvetkova et al., 2014).

While the liability of smallness is generally confirmed in the extant literature, it has not been tested in a context of institutional transition either locally in South Africa or elsewhere globally. The second hypothesis thus examines the link between firm survival and organisation size, measured as market capitalisation, forming the second variable in the cluster of absorption variables to be tested. From this, it is hypothesised that there is an association between company size and survival probability of firms operating in transitional economies. Accordingly, the following hypothesis is tested:

$H_{S+}1$: There is an association between size and survival probability of the firm.

Financial health: profitability

Financial health incorporates two key measures, profitability and financial leverage, the former which is addressed in this section and the latter in the next section. Profitability as a measure of financial health was shown by Modigliani & Miller (1958) to be the most important determinant of firm survival. The notion of profitability is central to survival economics as it conveys continuous feedback on how well the firm is adapting to changes in environmental pressures (Delmar, McKelvie & Wennberg, 2013). Survival is more probable in profitable firms as they are better able to produce positive cash flows whilst accumulating needed resources (Delmar et al., 2013).

Scholars agreed that firms with higher profitability compared to those with lower profitability are better equipped for survival (Iwasaki, 2014; Tsvetkova et al., 2014). This is based on the notion that poor performance adds high financial pressure due to the inability of the firm to generate sufficient cash flows to sustain operations and pay obligations (Delmar et al., 2013). Thus firms with higher profitability are less likely to exit due to financial pressures.

Hannah (1999) elaborated that the surest key to sustained success is the ability to operate profitably, anywhere. Empirical results on the relationship between survival and profitability support this thesis. For example, in a study of firms listed on the New York Stock Exchange, between 1963 and 1995, Baker & Kennedy (2002) concluded that “the economic Grim Reaper kills poorly performing firms” (p. 324). Similar results were reported in Iwasaki's’ (2014) study of Russian firms between 2005 and 2009 which measured financial performance and concluded that profitability was a key characteristic of firms that survived the economic shocks spurred by the global financial crises of 2008. Further studies reported comparable results, such as the Tsvetkova et al., (2014) study of German corporations during the years 1986 to 1995 and the Delmar et al., (2013) study of Swedish knowledge intensive firms that were at least five years old. Taken together, these studies provided consistent empirical results regarding the nature of the relationship between profitability and survival.

Although scholars have used different measures of profitability, most agreed that profitability is a measure of performance of the firm (Ehrhardt & Nowak, 2011). Dunne & Masenyetse (2015) measured profitability as the ratio of net profit before interest and tax to total assets, whereas Ehrhardt & Nowak (2011) used alternatively net earnings after interest and tax as a percentage of total assets. Both these ratios measure the firms’

ability to utilise its assets to generate profit for existing and future operations (Spaliara & Tsoukas, 2013).

The third hypothesis examines the link between firm survival and profitability as reflected in two profitability ratios. The first of these is return on assets, *ROA*, which indicates how profitable a firm is relative to its total asset base and how efficient a firm is in using such assets to generate returns. The second of these is return on equity, *ROE*, which measures total profit generated as a percentage of equity invested in the firm. Profitability forms the third variable in the cluster of absorption variables to be tested. From this, it is hypothesised that there is an association between company profitability and survival probability of firms operating in a transitional economies. Accordingly, the following hypothesis is tested:

$H_{P+}1$: There is an association between profitability and survival probability of the firm.

Sunrise and Sunset industries

After identifying that industries in which 1912 giant firms were concentrated exhibited consistent patterns of performance, Hannah (1999) posed the question as to whether Sunrise and Sunset industries existed. This is based on the idea that rapidly expanding industries provide favourable conditions for firms to build competitive advantage which increases their chance of survival (Hannah, 1999; Tsvetkova et al., 2014; Mas-Verdu et al., 2015). This corresponds with the view of Sönmez (2013), who argued that firms operating in industries with low competition and more predictable demand have a higher chance of survival.

A number of studies agreed that operating sector matters for firm survival. For example, Dunne & Masenyetse (2015) found that the probability of survival is higher for firms in primary sectors in South Africa such as the resources sector. In Germany, Ehrhardt & Nowak (2011) reported that companies in automotive, machinery and electro industries have a greater survival function compared to those in other industries. Sönmez (2013) pointed out similar results, arguing that industry type is especially important where economies of scale and start-up capital are relevant. Sönmez (2013) showed that in the United States and Portugal, survival probability is lower in industries where economies of scale play a role. For instance, industries which require a significant amount of upfront capital – such as natural resources – experience lower rates of entry and exit (Sönmez, 2013).

Interestingly, although Iwasaki (2014) agreed that industry matters, results from a study of Russian firms operating in the energy, chemical and fuel sectors showed a significantly lower survival probability than firms operating in other sectors. Iwasaki (2014) suggested that this is a result of these sectors being subject to austere regulations and policy interference by the Russian federal government.

Bonn (2000) however argued that industry type, with particular reference to the competitive environment and structural features, may materially influence firm performance, but might not be accountable for actual firm survival. In a study of large Australian manufacturing organisations between 1982 and 1993, Bonn (2000) reported that no significant differences emerged in the industry variable between survivors and non-survivors.

The fourth hypothesis examines the link between firm survival and industry, reflected by two measures. The first of these is a sub-industry breakdown and the second of these is a categorisation of firms into Sunrise and Sunset industries (Hannah, 1999). From this, it is hypothesised that there is an association between operating industry and survival probability of firms operating in a transitional economies. Accordingly, the following hypothesis is tested:

$H_{I+}1$: There is an association between industry and survival probability of the firm.

Financial health: leverage

The second measure of financial health is found in the balance sheet leverage ratio. Empirical studies highlighted the role that financial healthiness has in influencing firm survival (Spaliara & Tsoukas, 2013; Byrne, Spaliara & Tsoukas, 2016). Organisational financial health, echoed in the quality of its balance sheet position, has been shown by scholars to matter for firm survival (Spaliara & Tsoukas, 2013). Whilst there is a growing literature on the effects that financial health and capital structure have on firm performance (e.g. Sabin & Miras; 2015), less attention has been dedicated to integrating firm survival, balance sheet health and emerging markets (Spaliara & Tsoukas, 2013).

To finance current operations and future growth, firms use a mixture of equity and debt instruments, each which attract different costs (Firer, Ross, Westerfield & Jordan, 2012). The unique combination of these instruments is known as the capital structure of the firm and is reflected in the balance sheet position (Chung, Na & Smith, 2013; Sabin & Miras,

2015). Selecting the optimal level of debt in the capital structuring decision is one of the most difficult and challenging decisions currently facing firms due to the costs and obligations associated with each instrument (Sabin & Miras, 2015). Although there has been an emergence of research which considers the relationship between capital structure, firm performance and survival, studies reveal contradictory results.

Pioneering research into the theory of capital structure was conducted through the seminal work of Modigliani & Miller in 1958 (Ahmad, Abdullah & Roslan, 2012). The authors concluded that there is no difference between equity and debt, and as such capital structure decisions add no value to the firm (Modigliani & Miller; 1958). Their theory of Capital Structure Irreverence is based on the assumption that firms operate under perfect market conditions (Modigliani & Miller, 1958), which assumes no transaction costs, no taxes and homogeneous expectations (Sabin & Miras, 2015). Modigliani & Miller (1958) argued that in its place, firm profitability is the most important determinant of firm performance. Evidence found by Audretsch, Houweling & Thurik (2000), showing that high leverage in the capital structure does not increase the probability of firm failure in the Netherlands, supported this proposition. More recently, Chung et al., (2013) also confirmed the Modigliani & Miller thesis, proposing that capital structure policy does not matter to the survival probability of American firms operating in the oil industry.

However, the Modigliani & Miller (1958) theory of Capital Structure Irreverence has been criticised by some scholars based on the notion that in the real world, perfect market conditions do not exist. Contrasting investigations into the role of capital structure on performance and survival have revealed that in some cases, a significant relationship does exist between the survival and capital structure decisions. For example, Ehrhardt & Nowak (2011) demonstrated that a healthy capital structure has a positive impact on survival probability in industrial German firms during the period 1940 to 2007. Dunne & Masenyetse (2015) later argued that highly leveraged South African firms have a better chance of survival due to increased oversight and monitoring of financial institutions, which impedes the ability that managers have to participate in non-productive activities. However, this study limited the period of investigation to ten years, which Hannah (1999) shows to be insufficient for measuring firm survival.

Evidence suggests that a sound liability position is positively correlated to firm survival (Iwasaki, 2013; Tsvetkova et al., 2014). This is based on the premise that firms with healthy balance sheets are better able to absorb adverse economic or political shocks

when compared to firms which exhibit poorer quality balance sheet positions (Spaliara & Tsoukas, 2013; Byrne et al., 2016). Byrne et al., (2016) concluded that although leverage may not have an on-going impact on economic activity, the consequences of high leverage directly affects firm survival by impinging the ability of the firm to recover from economic shocks. This proposition is in line with the population ecology literature, which showed that surviving firms are best fit to their environmental conditions (Ehrhardt & Nowak, 2011; Ormerod, 2005).

Capital structure measures varied across studies (Chung et al., 2013). A number of studies measured the ratio of interest-bearing debt to total assets, emphasising the potential tax advantage of interest debt financing (e.g. Chung et al., 2013). Other studies used intermediate measures such as the ratio of net equity to total liabilities. For the purpose of this study, financial leverage (*Leverage*) is measured as the ratio of total debt to total assets based on the literature which showed that higher debt is associated with a lower quality balance sheet, which ultimately leads to higher failure probability (Spaliara & Tsoukas, 2013; Dunne & Masenyetse, 2015). Furthermore, the ratio *Leverage* captures the capital structure decision made by firms, illustrating access to external finance sources of both debt and equity (Dunne & Masenyetse, 2015).

The fifth hypothesis examines the relationship between financial health and firm survival, as reflected in the leverage ratio. *Leverage* forms the fifth variable in the cluster of absorption variables to be tested. From this, it is hypothesised that there is an association between company leverage and survival probability of firms operating in a transitional economies. Accordingly, the following hypothesis is tested:

$H_{L+}1$: There is an association between leverage and survival probability of the firm.

2.7 Period analysis

According to the post-socialist and Asian studies, firm variables are more sensitive to survival probability during times of dramatic change (Iwasaki, 2014; Spaliara & Tsouka, 2013). Specifically, Spaliara & Tsoukas (2013) analysed the relationship between a set of financial indicators and survival prospects of Asian firms, differentiating between the Asian economic crisis which occurred between 1997 and 1998 and contrasting non-crisis periods. The authors found that survival prospects of Asian firms are more sensitive to a specific set of financial variables during the Asian economic crisis compared to more

economically tranquil periods. This suggests that the link between a set of balance sheet variables and survival probability is stronger during times of economic downturn (Spaliara & Tsoukas, 2013).

To test the idea that "good financial shape" is a more important determinant of survival during an environmental shock, the 1991 to 2013 period of analysis is divided in two (Spaliara & Tsoukas, 2013, p. 89). The first period includes the actual political shift and the second period does not include the political shift. Following Spaliara & Tsouka, (2013), it is hypothesised that the first period of political transition will result in firm indicators which are more sensitive to survival probability than in the more stable period following the implementation of the transition. Therefore, not only is the cluster of absorption variables tested against the entire period of transition, but also during Transition, which period includes the year 1991 to 1999 as well as Post-transition, which period which includes the years 2000 to 2013.

The final hypothesis examines the sensitivity of the relationship between the cluster of absorption variables and survival probability during Transition and Post-transition. Accordingly, the following hypothesis is tested:

$H_{T+}1$: The cluster of absorption variables has a more significant impact on survival during Transition compared to Post-transition.

2.8 Agility rhymes with stability

A number of factors which enhance organisational stability such as age, size, balance sheet structure and industry have been described in the literature review on absorption. However, in an environment of political change and uncertainty such as in South Africa pre and post 1994, organisations which include agility in their armoury further their chances of survival. Agility is achieved by identifying and seizing opportunities whilst simultaneously "retaining the structural characteristics needed to weather changes" (Sull, 2009). In an article entitled "Agility: it rhymes with Stability", Aghina et al., (2015) demonstrated that true agile absorption occurs when organisations are simultaneously stable and dynamic.

Organisational agility encompasses dynamic capabilities such as speed, nimbleness, responsiveness, adaptability and the ability to spot and take advantage of opportunities

quickly (Sull, 2009; Saville, 2015). Butler & Surace (2015) argued that in order to survive in a turbulent and unpredictable environment, it is essential for companies to intensify the speed of response and efficiency of knowledge management. To harness the benefits that agility brings, it should be embedded into every function and process of the business (Butler & Surace, 2015). Accordingly, more qualitative – though equally as important – agility traits are reported based on four identified core organisational areas. These areas include innovation ability; structure; governance and process.

Innovation

Successful innovation plays a pivotal role in firm survival by enhancing organisational agility through on-going adaptation, improvement and product and process iteration. Creating marketable solutions through innovation ability leads to better productivity, turnover and profit, which together drive firm longevity (Tsvetkova et al., 2014). As per the Schumpeter definition of innovation, the creation of new products, services and processes stimulate growth and creates enduring capability in a constantly changing environment (Boyer & Blazy, 2014).

Considerable empirical evidence suggested a positive relationship between innovation – measured by research and development expenditure – and firm longevity. For example, in Australia, Bonn (2000) showed that companies that incur above average amounts (1 per cent or more) in research and development as a percentage of revenue had more chance of survival that those companies with less than 1 per cent expenditures. This supported findings from a study of Russian firms from 2005 to 2009 (Iwasaki, 2014) and an American study from 1992 to 2008 (Tsvetkova et al., 2014), both which suggested a positive correlation between innovation and lifespan of the firm.

Despite the lauded success that innovation can bring, organisations should be aware of the risks associated with innovation activities, which include cash flow constraints, poor intellectual property protection and inability to execute on innovation projects (Tsvetkova et al., 2014). Although scholars agreed that innovation plays a critical role in firm survival, firms should continuously monitor the level, quality and integration of innovation activities. McGrath (2012) illustrated the concept of innovation integration in her study of American firms, concluding that those organisations which integrate innovation into their everyday operations achieve steady and predictable growth which is necessary for survival. In turn, Boyer & Blazy (2014) stressed that innovation expenditure beyond the firms' means can ultimately be responsible for failure through bankruptcy. Boyer & Blazy

(2014) used this idea to justify their contradictory results which found innovation to be an unfavourable determinant of firm survival in French firms surveyed between 1998 and 2003.

Although innovation ability – represented by the ratio of research and development expenditure to sales – was shown by a number of scholars to increase survival probability, this study does not use innovation as a measurable independent variable due to the difficulty in obtaining detailed research and development expenditure data over the period analysed.

Structure

Agility is influenced by the structure arrangement of the organisation (Butler & Surace, 2015). This is based on the idea that organisations which embed simple structures which are flat and decentralised are better equipped for agile decision making. In particular, a flat organisational structure allows agility to flourish by avoiding formal processes which can slow response rates (Butler & Surace, 2015). In turn, when decentralised decision making is present, flexibility and rapid action flourishes. This allows information to be quickly shared across business units; admission of management mistakes to be tolerated and swift exit of unsuccessful ventures to be decided upon (Sull, 2009).

Aghina et al., (2015) expanded on how decentralisation can be achieved. First, the agile organisation must select a 'primary' structure to anchor where daily work will be performed. Here, employees should find a functional and stable home for training, process, infrastructure and coaching (Aghina et al., 2015). Next, a firm should establish a 'secondary', independent function, which makes decisions autonomously such as how to invest resources, is accountable for profit and loss and owns cross-unit collaboration (Aghina et al., 2015).

Whilst agile structure is an important tenet of firm performance and survival, structure is challenging to measure quantitatively using the secondary data obtained. Structure is therefore not used as a measurable independent variable due to the difficulty in obtaining detailed qualitative structure dynamics over the period analysed.

Governance

Internal firm governance refers to how policies are established, how decisions are made and how activities are monitored. Agile firm governance incorporates adaptation to a

changing environment through speedy decisions which are underpinned by steady and stable decision making (Aghina et al., 2015).

Where agile governance is present, organisations are able to maintain the sense of urgency required for start-up ventures (Sull, 2009). McGrath (2012) refers to such firms as “rapid adapters” (p. 4). Such companies take an “options-oriented approach to new markets”, making small moves into new markets sooner than their competitors and testing the market with small initial investments (McGrath, 2012, p. 4).

Process

To achieve agility through company process, signature processes should be identified and habitualised so that they are standardised yet still difficult for competitors to copy (Aghina et al., 2015). Where all functions and employees in the organisation understand and perform these key tasks quickly, organisations can rapidly respond to new opportunities by redeploying teams and resources across divisions, countries and whole businesses (Aghina, et al., 2015). Where processes are both fast and flexible, firms are able to respond more rapidly to environmental changes compared to those forms with rigid and inflexible processes (McGrath, 2012).

Both agile process and governance are challenging dynamics to quantitatively measure from the secondary data obtained. For this reason, neither organisational governance nor organisational process are used as measurable independent variables due to the difficulty in obtaining detailed qualitative dynamics over the period analysed.

2.9 Conclusion

The reason why some firms survive and others fail remains unclear in both management and business science (Napolitano et al., 2015). Although influencing factors such as age, size, leverage, profitability and industry have been proposed, a consensus is yet to be reached and little research has been conducted in emerging markets such as South Africa.

To bridge this gap, this research paper examines the 23-year survival journey of 304 listed South African firms during a transitional period characterised by rapid and profound structural and political change. Using perspectives from population ecology and institutional theory, a cluster of absorption variables is developed and empirically tested

to determine whether firms use heft and bulk to navigate change, or whether inertia prevails, instead rewarding more agile, flexible and nimble firms.

CHAPTER 3: RESEARCH HYPOTHESES

3.1 Introduction

The purpose of this research is to examine the number of South African firms which exited the market during the transitional period to democracy and the absorptive characteristics of those organisations which survived this period of historic change. More specifically, based on a database of firms listed on the JSE in 1991, this study clarifies the 23 year survival status of South African industrial firms and empirically investigates the determinants of survival (Iwasaki, 2014). The research questions whether in a context of rapid and structural change, the cluster of variables selected enables firms to absorb change, or whether inertia prevails and prevents longevity.

This chapter articulates hypotheses developed through the literature reviewed based on the intention to use statistical methods of testing. Hypotheses follow the order of the literature reviewed.

3.2 Research hypotheses

For inferential studies, research questions are answerable through hypothesis testing (Nenty, 2009). Using the theory espoused in the literature reviewed, hypotheses are derived from such theories that can be "validated, revised or invalidated through research" (Nenty, 2009, p. 23). Next, the absorption variables which influence firm survival in transitional economies as reported in the literature reviewed – age, size, profitability and leverage – are synthesised into testable hypotheses.

3.3 Specific hypotheses

Hypothesis 1: AGE

It is expected that a positive relationship exists between survival probability and firm age (*Age*). Firm age is measured as the year of listing less the year of current review.

$H_{A+}0$: There is no association between age and survival probability of the firm.

$H_{A+}1$: There is an association between age and survival probability of the firm.

Hypothesis 2: SIZE

The study employs market capitalisation as a proxy for firm size (*Size*). Market capitalisation is measured in ZAR to distinguish small, medium and large firms. This measure is used based on market capitalisation having the least subjectivity and application of accounting interpretations. Market capitalisation is measured as the number of outstanding shares of the firm multiplied by the publicly traded share price of each firm and is adjusted for inflationary effects to ensure comparability to the baseline year.

$H_{S+}0$: There is no association between age and survival probability of the firm.

$H_{S+}1$: There is an association between size and survival probability of the firm.

Hypothesis 3: PROFITABILITY

The variable profitability (*Profitability*) is measured using two ratios. The first is the ratio of profit before interest and tax to total assets and the second is the ratio of profit before tax to total equity. Profitability is used to measures the firm's ability to generate profits and absorb unexpected political or economic shocks, thus reducing the likelihood of failure (Spaliara & Tsoukas, 2013).

$H_{P+}0$: There is no association between profitability and survival probability of the firm.

$H_{P+}1$: There is an association between profitability and survival probability of the firm.

Hypothesis 4: INDUSTRY

The variable sector (*Sector*) is determined based on the relevant operating industry in which the firm is based. In line with Iwasaki (2014), industry is shown to matter for firm survival in transitional economies.

$H_{I+}0$: There is no association between industry and survival probability of the firm.

$H_{I+}1$: There is an association between industry and survival probability of the firm.

Hypothesis 5: LEVERAGE

The final variable leverage (*Leverage)* is measured as the ratio of total liabilities to total assets. Survival studies note that during transitional periods, firms with higher leverage positions have an increased moral hazard which leads to the inability of firms to raise further debt for continuing operations, resulting in adverse selection (Spaliara & Tsoukas, 2013; Iwasaki, 2014).

$H_{L+}0$: There is no association between leverage and survival probability of the firm.

$H_{L+}1$: There is an association between leverage and survival probability of the firm.

Hypothesis 6: DURING VERSUS POST-TRANSITION

Following results from Spaliara & Tsoukas (2013), it is hypothesised that during a period of fluctuation and transition, firm survival will be more sensitive to the absorption variables measures compared to immediately after the transition in the so-called more stable period.

$H_{T+}0$: The cluster of absorption variables does not have a more significant impact on survival during Transition compared to Post-transition.

$H_{T+}1$: The cluster of absorption variables has a more significant impact on survival during Transition compared to Post-transition.

CHAPTER 4: RESEARCH METHODOLOGY

4.1 Introduction

This chapter discusses in detail the chosen methodology for the survival study. The literature reviewed in Chapter 2 together with the hypotheses formulated in Chapter 3 form the foundation for the design of the research. This chapter proceeds as follows. First, the quantitative methodology used is justified and discussed to ensure internal consistency among the research elements. Second, the population of JSE firms used in the study is described; following which the selected sample is discussed. Third, the data type together with various sources used to obtain data is reported. Fourth, in-depth data analysis, specific tests selected and detailed transformations conducted are reported. Finally, limitations of the methodology used are highlighted.

4.2 Methodology

Methodological fit

Edmondson & Mcmanus (2007) define research methodological fit as the "internal consistency among elements of a research project" (p. 1155). In order to promote methodological fit and make a compelling contribution to the survival literature, "congruence amoung the state of prior theory, the research question and the research design" is necessary (Edmondson & Mcmanus, 2007, p. 1167).

To achieve congruence, the state of prior knowledge is first ascertained. The field of survival has been widely explored by multidisciplinary scholars making it both long in standing and mature in nature (Riviezzo et al., 2015). Well-developed models and constructs have been studied through multidisciplinary lenses in a myriad of developed market contexts. As a result, and following Edmondson & Mcman (2007) "mature theory spawns precise, quantitative research designs" (p. 1167).

To build on the prior literature, research questions focussed on clarifying aspects of population ecology theory in a new transitional context. Building on the survival literature, a hypothesis testing approach was used to test critical associations between independent and dependent variables to explain the phenomenon of firm survival (Edmondson & Mcmanus, 2007).

Research type and design

Both descriptive and casual research strategies support the research design selected. Descriptive research describes the characteristics of groups, organisations or environments (Zikmund, 2000). This type of research was used to narrate the story of the 23-year survival journey of South African firms operating in an economy transitioning from a centrally planned system to a market-based economy.

The descriptive research laid the foundation for the subsequent explanatory research, shown by Zikmund (2000) to allow casual inferences to be made to identify cause-and-effect relationships. The research was designed through correlation analysis using causal inferences which are logically developed and rely on statistical analysis to support propositions (Edmondson & Mcmanus, 2007).

A longitudinal research design was used based on its ability to track events over time and note change (Saunders & Lewis, 2012). To support this, a deductive research approach was used which involved “the testing of a theoretical proposition by using research strategy specifically designed for the purposes of its testing” (Saunders & Lewis, 2012, p. 108).

Drawing the above together, the research design selected was quantitative in nature in order to empirically test relevant hypotheses. Zikmund (2000) describes quantitative research as “research that addresses objectives through empirical assessments which involve numerical measurement and analysis” (p. 134). Both Zikmund (2000) and Saunders & Lewis (2012) highlight the need for quantitative research when relationships between variables need to be measured numerically. Finally, due to the large sample size of JSE listed companies and the considerable volume of data points, quantitative research was appropriate.

4.3 Population

Saunders & Lewis (2012) define a population as “the complete set of group or numbers” from which the sample is selected in order to enable specific research questions to be answered (p. 132). The complete population set comprised all JSE listed firms listed in the year 1991.

4.4 Sample

Sample sector

The target sample comprised all firms listed in the industrial sector of the JSE in the year 1991. The sample excluded both financial and resource firms due to measurement challenges as well as difficulties experienced in obtaining secondary data. However, the decision to exclude these two sectors was justified on the basis of the selection criteria applied by Dittberner (2016) in a quantitative study of JSE listed firms, which examined momentum in company fundamentals over time. The sample of industrial firms remained robust and sufficiently large for analysis.

Financial companies were excluded since they are subject to special accounting conventions, making comparisons of financial data challenging. This supports Fama & French (1992) who argue that financial firms should be excluded from comparative analysis based on their unique capital structure. For example, a high degree of financial leverage indicates that a non-financial firm may be under financial distress. However, this is not always true for financial firms due to the way in which these firms are structured.

Resource companies were excluded for three reasons. First, many of these companies are not operational and remain in the exploratory phase, making profit comparisons challenging. Second, resource-based firms tend to have a high degree of capital expenditure, making asset-based comparisons problematic. Finally, resource firm performance is largely linked to commodity cycles and commodity prices, the analysis of which is not incorporated into this study.

Sample period

The environment in which firms operated during the transition to democracy was characterised by rapid, structural and profound change. To integrate such change into the study, volatile periods both before, during and after the 1994 elections were included.

In 1990, Nelson Mandela was released from 27 years of imprisonment and together with the ANC began preparations to take on the presidency of South Africa. In 1994, democratic elections were held, resulting in the appointment of Mandela as the new president of South Africa. In 1999, Thabo Mbeki was appointed as the second democratically elected president of South Africa. Following in party political disputes, Mbeki was recalled by the ANC and Jacob Zuma was appointed as the president of the

party in 2008. Zuma was formally appointed as the president of the country following national elections held in 2009. Zuma remained in power for his first term and in 2014 was re-elected for a second term. The period investigated included these changes and is summarised in Table 2.

Table 2: Definition of periods analysed

DEFINITION	PERIOD	YEARS ANALYSED	DESCRIPTION
Transition	1991 to 1999	9	Up to and including Mandela's presidential term which includes the transition to democracy, the first free and fair elections and the founding of the South African Constitution
Post-transition	2000 to 2013	14	Mbeki's first presidential term, the removal of Mbeki in 2008, the appointment of Zuma in 2009 and Zuma's first full presidential term
Full period	1991 to 2013	23	Both Transitional and Post-transitional periods

Data was collected and analysed for the full period of analysis, 1991 to 2013, as well as separately for the Transition and Post-transition periods.

4.5 Data type

Panel data

Following methodology applied by Dittberner (2016), a panel data set was used to empirically examine the dynamics of firm survival over the specified time periods. Panel data was suitable to use as it follows a particular sample of observations over time (Hsiao, 2014). Gujarati (2003) notes the advantages of using panel data. These include using a dataset that is more detailed and informative, more variable, less collinear and more efficient based on the times series approach.

Data type

Zikmund (2000) describes secondary data as data which is "gathered and recorded by someone else prior to and for purposes other than, the current project" (p. 160). Secondary data including financial, statutory and market data was selected for use based

on its ease of availability, the speed of collection and because the researcher cannot duplicate such information in the given time (Zikmund, 2000).

4.6 Data source

Four specific types of secondary data were collected. These include fundamental, listing, delisting and industry data. These are described in the sections below.

Fundamental data

Fundamental data was sourced from the INET BFA database (INET BFA, 2016). Established in 1965, INET BFA is the leading market and financial data provider in South Africa. INET BFA provides all market and financial data for both listed and unlisted companies from 1972 to date. Financial data included both public and preliminary financial statements, together with interim financial statements. A unique database was compiled using the raw fundamental data extracted directly from INET BFA following Dittberner (2016). Raw data included the name and share code of all industrial firms listed in 1991 together with associated fundamental sources, being total assets, total liabilities, long-term interest bearing debt, long-term non-interest bearing debt, short term debt and profit before tax.

Industry data

Once a list was compiled of all industrial firms listed in 1991, industry data pertaining to the sub-sector of each industrial firm was sourced from the JSE Limited Market Data Services Department for all shares in the sample.

Listing data

For each firm in the sample, it was necessary to ascertain the age of the firm. Following Iwasaki (2013), the variable *Age* was measured using the number of years the firm has been listed on the particular stock exchange. To obtain date of listing as a proxy for firm-year of birth, the following sources were used:

i. **JSE MARKET DATA SERVICES:** information pertaining to the year of company listing was sourced from the JSE Limited Market Data Services Department in a specifically compiled database relating to all firms listed on the JSE in 1991. However, of the 304 sample firms analysed, the listing date given for 192 firms

was 01 January 1960. This seemed inaccurate and therefore in these instances, other data sources such as ShareData, BFA Fact Sheets and CIPC were used to build a more complete and accurate age database.

ii. **SHAREDATA:** where firms remained listed, detailed fact sheets found in ShareData (ShareData, 2016) were used to ascertain the specific date of listing. ShareData provides financial, market, performance and fact information about JSE listed companies.

iii. **INET BFA FACT SHEET:** where firms were no longer listed, INET BFA was used to source specific company fact sheet history. Files were downloaded on a case by case basis. From each firm database and where available, the first year of public data recorded was noted together with the first year of public dividend declared. The earlier of these was used to approximate listing date.

iv. **INET BFA CIPC:** in the remaining few instances where the listing date could not be found using the JSE, ShareData or BFA fact Sheet databases, the CIPC module in INET BFA was used to determine the year the firm was founded. A total of five firms' birth dates were derived using this source.

In summary, a unique and holistic database was built which recorded firm birth and listing date for the sample of industrial firms.

Delisting data

To ascertain the year a firm delisted from the JSE, the following sources were used:

i. **JSE MARKET DATA SERVICES:** delisting data was sourced directly from the JSE Limited Market Data Services Department for all shares in the sample.

ii. **INET BFA:** delisting dates given by the JSE Market Data Services were inspected for consistency with the last year of public reporting data per the INET BFA database compiled. In a few instances, the INET BFA last year of reporting was a year earlier than delisting data and was therefore used as the delisting date.

4.7 Unit of Analysis

The unit of analysis is the major entity being analysed in the study (Saunders & Lewis, 2012). The proposed unit of analysis is the firms within the sample whereas the unit of observation is the various data point's studied for each firm.

4.8 Data Analysis

Quantitative data collected has to be processed and analysed in order to answer the research questions and address the research objectives (Saunders & Lewis, 2012). The data was processed through statistical methods, which offers the best way to achieve analytical rigour and detailed insight. The steps and justification of the methods used are documented in the steps outlined in the following sections.

Step One: Classification and censoring

The evolution of the sample of firms from 1991 to 2013 was first examined to determine which companies were still alive by 2013 (Bonn, 2000). Following Hannan & Freeman (1977), Bonn (2000), Spaliara & Tsoukas (2013) and Iwasaki (2014), firms were classified as *censored* or *event* based on the following criteria:

i. **EVENT**: those firms which experienced the event of 'death' and delisted as a result of financial distress, liquidation or bankruptcy.

ii. **CENSORED:** those firms which did not experience the event of 'death' during the period analysis. Censored cases included the following firm types (Laerd statistics, 2016):

   a. Firms which were acquired or merged with another firm during the period and as a result had delisted. In other words, firms which had naturally withdrawn from the study; and

   b. Firms for which the event of death had not occurred by the end of the study. In other words, the 'Survival Champions' which were still alive and listed on the JSE in 2013.

Step Two: Kaplan-Meier survival curve

Second, the Kaplan-Meier survival function was used to estimate and illustrate time-series changes in the probability of firm survival by incorporating censored cases (Iwasaki, 2014; Ehrhardt & Nowak, 2011). The Kaplan-Meier method is a nonparametric method which estimates the survival experience over a specific period of time (Laerd statistics, 2016; Kaplan & Meier, 1958). This method allows for the survival distribution of two or more groups to be compared for equality. The method was used to test for sub-industry, Sunrise and Sunset industries, and median market capitalisation as an approximation of size (Iwasaki, 2014).

To determine whether any statistically significant differences existed between survival functions, a Log Rank test for equality was used (Iwasaki, 2013). The Kaplan-Meier function results together with tests for equality were reported through descriptive statistics and illustrations of cumulative survival probability curves.

Step Three: Cox proportional hazard model

Finally, following the empirical literature on firm survival, the Cox proportional hazard function was used to model survival time using the independent variables specified (Cox, 1972). The Cox proportional hazard method is a semi-parametric regression function used by scholars to investigate the effects of predictor variables on survival over a specified time period (e.g. Iwasaki, 2014; Tsvetkova et al., 2014; Spaliara & Tsoukas, 2013; Ferrangina, Pittiglio & Reganati, 2012).

The function was used to examine the relationship between the “dependent variable (survival) and the independent variable” specified (Bonn, 2000, p. 36). Only independent variables are specified for survival analysis as the dependent variable (referred to as the hazard rate) is implicitly estimated (Tsvetkova et al., 2014). Widely applied in econometrics, the model enables the performance of survival analysis with the main objective as estimating the survival function (Iwasaki, 2014).

The Cox proportional hazard model examines the “effect of explanatory variables on time-to-event-outcomes” (Austin, 2012, p. 3946). Austin (2012) stresses that the main advantage of this model is that it allows for the analysis of time-varying covariate effects as well as time-varying covariates themselves. This is consistent with Iwasaki (2014) who notes that due to the semi-parametric nature of the model and the ability of covariates to be entered linearly, results obtained are robust regardless of how time is distributed

Time-varying covariate effects measure an unchanging baseline variable which value is static over time. *Industry* is classified as a baseline variable which does not change over the time period analysed. However, while *Industry* remains fixed for the duration of the study, all other variables vary with time. For example, the variables *Age, Size*, *ROA, ROE* and *Leverage* are measured in each successive year and therefore change with time. The Cox regression is designed to cater for these time varying values by using regression to determine the probability "an event occurring on *ex-ante* conditions" (Iwasaki, 2014, p. 190).

The survival function reports the probability of surviving beyond a given time *t*. Following Iwasaki (2014), the survival function is defined as follows:

$$S(t) = \Pr(T > t) = \int_0^\infty f(t)dt,$$

where *t* = time;
T= survival time;
f(t) = density function of T

The hazard (probability of death or failure occurring) within the next interval of time is defined as follows:

$$\lim_{\Delta t \to 0} \Pr \frac{(t \leq T < t + \Delta t | \leq T)}{\Delta t}$$

The relationship between S(t) and h(t) is defined when the function is expressed as h(t) as below. The below two equations indicate that simultaneity applies:

$$S(t) = \exp\left\{ - \int_0^t \Big| h(u)du \right\}, \qquad h(t) = -\frac{S(t)}{S(t)}$$

The hazard function h(t) is assumed in the following equation:

$$h\left(t \,|\, x_{i1}, \ldots, x_{in}\right) = h_o\ (t) exp(\beta_1\, x_{i1} + \cdots + \ (\beta_n x_{in}),\ h_o\ (t) > 0$$

where $x_{i1,}x_{i2}$, $x_{i3},\ldots, x_{in}$ are the covariates specified in Chapter 4;

$\beta_{1,}\beta_{2,}\beta_{3},\ldots, \beta_{n}$ are the respective parameters to be estimated by the Cox model

Finally, using the maximum likelihood method and by taking the logarithm on each side of the above equation, the following linear model is expressed:

$$h\left(t \mid x_{i1}, \ldots, x_{in}\right) = \text{In}\, h_o\ (t) = + \sum_{j=1}^{n} \beta_j X_{ij}.$$

Every hazard ratio reported in the remainder of the research is shown as β, and illustrates how the event probability will be multiplied when any independent variable changes by one unit (Iwasaki, 2014). In summary, if a hazard ratio is greater than one, the associated covariate is considered to be a risk factor which impacts the event of death, whereas if a hazard ratio of less than one, instead it is considered to be a variable which prevents the event from occurring.

4.9 Data validity

Data validity is concerned with the extent to which data collection and methods of analysis "accurately measure what they intended to measure" (Saunders & Lewis, 2012, p. 127). The validity of data collected was achieved through the usage of a high quality and well-reputed database for data collections (INET BFA, 2016), using the JSE data department as well as the JSE bulletins to include other secondary data and relying only on published and audited financial results when using the INET BFA data based.

4.10 Survival status

The 304 firms in the sample were categorised into one of four exhaustive and mutually exclusive categories. These are described below.

Death by distress or liquidation

The final database reported firms as remaining to be listed or as no longer listed. However, it may be possible that some firms have delisted for reasons other than death, such as merger or acquisition (Spaliara & Tsoukas, 2013). To account for this, JSE hard

copy bulletins, which are published annually, were inspected for each year from 1991 to 2003. Bulletins for the years 2004 onwards could not be obtained.

Where a firm delisted between 1991 and 2003, specific reasons for delisting were noted per the JSE Bulletins in order to categorise the listing as a result of financial distress or corporate transaction. Where firms delisted as a result of financial distress, the market capitalisation (adjusted for CPI) at the date of death was compared to the previous maximum market capitalisation for the period analysed. On average, firms which delisted as a result of financial distress between 1991 and 2003 had an average market capitalisation drop of 58%. Therefore, an average hurdle rate of 58% was established as a proxy to indicate a distressed delisting for the 2004 to 2013 period.

The hurdle rate was extrapolated to all firms which delisted post 2004 and before 2013 to determine which of these delisted due to financial distress. To verify the firms estimated to delist as a result of financial distress, SENS announcements were checked for the specific firms to corroborate the estimations and adjust for a small number of firms which had in fact not listed as a result of distress. Together, the firms which actually delisted as a result of financial distress before and including 2003 together with the firms which were estimated to delist as a result of financial distress were categorised as *Death Distress*.

Exit through reorganisation

Firms which delisted from the JSE but not as a result of distress were categorised as *Exit Reorganisation.* This category included those firms which exited the JSE by the end of 2013 but where delisting was as a result of a merger, acquisition or corporate reorganisation. These firms were censored from the sample due to natural withdrawal from the study.

Listed but rehabilitated

The hurdle rate of 58% drop in market capitalisation was further applied to the remaining listed firms to account for firms which remain listed but have been resuscitated or recapitalised, and therefore cannot be classified as true survivors. These firms were categorised as *Listed but Rehabilitated* and formed part of the firms which experienced death. To infer the date of death, the year of the maximum drop of market capitalisation was determined and used as the death date.

Survival Champion

Those firms which remained listed by the end of 2013 and whose maximum market capitalisation by the end of 2013 had not dropped below the 58% hurdle rate were classified as *Survival Champions.* Survival Champions are those firms which adapted to and absorbed the transitional change from 1991 to 2013.

4.11 Data cleaning and transformation

Data transformations, cleaning and sorting processes were conducted to ensure data was in the form and format necessary for statistical testing. Cleaning processes and transformations conducted are described in this section.

Share code

To ensure cross-referencing ability between the INET BFA data set and the JSE data set, a number of share codes had to be manually amended to account for duplicate share codes but where firms had separate names. This occurs when for example a share takes on a name change and an alternative share picks up the original share code. There were 12 of these instances.

Sorting and filtering

Shares in the database were sorted and filtered alphabetically according to share code to enable cross-referencing of tabs and ratio calculations.

Liquidity

In the INET BFA sample, a tradeability filter of 5% was applied by Dittberner (2016) to the database to avoid the issue of liquidity. Thinly traded shares which cumulatively accounted for 5% of total monthly value were omitted from the dataset.

Outliers in raw data

The first and 99th percentile of financial statement line items were excluded by Dittberner (2016) from the raw sample in order to control for the effect of outliers. This reduced the sample slightly but ensured the database excluded outliers.

Missing data

A very small number of fundamental data entries were missing. Where this was the case, the average of the previous and post financial year was used to determine the missing data point. In a small number of cases, data was missing for the final year. Where this was the case, the previous year was used to determine the missing data point.

Absorption cluster transformations

Using Excel, the following transformations and calculations were conducted to ensure the readiness of absorption variables for testing:

i. Equity was calculated as total assets less total liabilities.

ii. ROA ratio was calculated as PBT divided by total assets.

iii. ROE ratio was calculated as PBT divided by equity.

iv. Leverage was calculated as total liabilities divided by total assets.

v. Age was calculated as current year less year of listing.

vi. Size was calculated using the market capitalisation. Market capitalisation was adjusted for South African Consumer Price Inflation (CPI) in each successive year to ensure size was comparable. Following Iwasaki (2014), size was then converted into the natural logarithm of size for comparison purposes.

Industry transformations

Industry was measured in terms of two classifications. First, the classification used by a KPMG South Africa (KPMG, 2016) to categorise audit departments into industries of similar nature. Industry classifications used were confirmed in writing by the KPMG Head of Audit. The sub-industries in the sample were categorised as follows:

Table 3: Sub-industry classification

KPMG CLASSIFICATION	INDUSTRY
Consumer Markets (CM)	Food and beverages, furniture and household, media, print and publish, property, retail, travel and leisure, clothing and textile
Industrial and Automotive Products (IAP)	Building and construction, general industrial, paper and packaging, transport, engineering, automotive
Energy, Natural Resources and Technology (ENR & TECH)	Chemicals and energy, electronics and technology, metals and mining, technology
Financial Services and Healthcare (OTHER)	Banking, healthcare

Second, firms were classified according to whether they were part of *Sunrise* or *Sunset* industries following the categorisation by Fernquest (2010). *Sunrise* and *Sunset* industries were categorised as follows:

Table 4: Sunrise versus Sunset industry classification

CLASSIFICATION	INDUSTRY
Sunrise	Banking, chemicals and energy, electronics and technology, food and beverage, healthcare, media, paper and packaging, print and publish, technology, transport, travel and leisure, automotive
Sunset	Building and construction, furniture and household, general industrial, metals and mining, property, retail, engineering, clothing and textile

Censoring

Both the Kaplan-Meier and the Cox proportional hazard model require the use of data censoring. This is based on the outcome of event status, which should comprise two mutually exclusive and collectively exhaustive states, being either ‘censored’ or ‘event’. In other words, at least one of these events must occur. Censoring occurs when there is a natural withdrawal of a firm due to corporate action (merger or acquisition) or when the event of death has not occurred by the end of the study (firm is still alive). Censored data was given a value of zero and event data was given a value of one.

Outliers in financially calculated ratios

Once all the final financial ratios had been computed, a small number of outliers were evident in the ratio data which may have been spurious. Outliers were checked for reasonability and for over or understatement. For example, if assets of a firm were quickly disposed of yet profits of the firm remained, the ROA ratio was overstated. This challenge was only evident in the *ROA, ROE* and *Leverage* ratios based on the idea that these ratios included numerators and denominators, either one of which may have been impacted during the year the firm experienced death.

By way of example, although firms may formally have still been listed on the JSE, total assets may have already been written off as the firm experienced death some years prior, resulting in *ROA* and *Leverage* ratios that were unrealistically high. To overcome this challenge, the ratio used for the firm in its year of death was calculated as the average of the previous three years in order to incorporate more realistic ratios and avoid spurious results. This process was conducted for *ROA, ROE* and *Leverage. Size* did not require adjustment as no outliers were evident. *Age* did not require adjustment as outliers for outlying old firms were justified.

4.12 Limitations

Secondary data

Secondary data for the JSE listed firms for the study was not designed to meet the survival project specific needs (Zikmund, 2000). There is, therefore, a risk that data may be inadequate, not applicable to the time of interest and insufficient in detail.

Liquidity and outlier effects

By applying a tradeability filter, a small number of firms were excluded from the analysis. Outliers were also excluded from the dataset, meaning the sample analysed only included tradable firms above the first and below the 99th quartiles in terms of financial statement analysis.

Average ratios

Where ratios were calculated as the average of the previous three years fundamental data in the case of firm death, ratios calculated could potentially not approximate exact financial positions. However, the use of average ratios resulted in ratios very close to

previous ratios, and thus resulted in ratios which were far more accurate than using ratios which are evidently incorrect.

Sector

Although the industrial sector analysis is justified due to the challenges in regards to financial and resources, excluding these two sectors limited analysis in terms of understanding between macro sector survival probabilities.

Sources for listing date

Multiple sources were used to build a database to determine listing date resulting in potentially inconsistent results.

CHAPTER 5: RESULTS

5.1 Introduction

In this chapter, results are presented according to the research hypotheses formulated in Chapter 3. Findings are clustered around the two methodological tests conducted, the Kaplan-Meier survival function and the Cox proportional hazard model. The method of testing for each hypothesis is summarised in Table 5.

This chapter proceeds as follows. First, a description of the sample is reported. Second, differences between *event* and *censored* data are explained and survival status outcomes of the sample are defined. Third, descriptive statistics are provided for the entire sample, illustrating the survival status of all firms as well as the distribution of firm failure over time. Fourth, the Kaplan-Meier survival function is used to map the cumulative survival distributions for groupings of *Industry* and initial estimations of firm *Size*. Finally, the Cox proportional hazard results are presented for *Age, Size, Profitability* and *Leverage* variables for the entire period of review as well as for the Transition and the Post-transition periods.

Table 5: Summary of testing method each hypothesis

HYPOTHESIS	METHOD OF TESTING
[1] Age: Older firms have higher survival probabilities than younger firms	*Cox proportional hazard model
[2] Size: Larger firm size is positively correlated with survival probability	*Median firm size through Kaplan-Meier function *Time-varying firm size through Cox proportional hazard model
[3] Profitability: High profitability is positively correlated with the survival probability of the firm	*Cox proportional hazard model
[4] Industry: Firm survival depends on the sector in which it operates	*Kaplan-Meier survival function
[5] Leverage: High indebtedness increases the probability of failure	*Cox proportional hazard model
[6] Time period: The relationship between firm survival and the absorption variables is more significant in Transition than in Post-transition	*Cox proportional hazard model

5.2 Description of sample obtained

The target sample comprised all firms listed in the industrial sector of the JSE between the years 1991 and 2013. The sample specifically excluded firms listed in the financial and resources sector. Following Dittberner (2016), liquidity and outlier effects were removed resulting in a total of 318 firms included in the sample. Following the removal of duplicate firms, firms for which data points were missing and firms for which the survival status could not be accounted, a total of 304 industrial firms were included in the sample for analysis.

5.3 Survival status: censored versus event

For statistical testing and analysis purposes, firms are allocated one of four statuses. This allocation is shown in Table 6. Since both the Kaplan-Meier function and the Cox proportional hazard model require that event status comprises only two mutually exclusive and collectively exhaustive event states, each status was subsequently categorised into a censored or uncensored category and given a dummy variable of zero or one respectively. Event status is mutually exclusive since the outcome for a firm must either be censored or the event must have occurred.

The event category included those cases which experienced the event of death during the period of study. The censored category included those cases which did not experience the event of death during the period of study. Censored cases therefore were either Survival Champions or cases which naturally dropped out of the study (Laerd, 2016). This categorisation is summarised in Table 6.

Table 6: Censored versus event cases

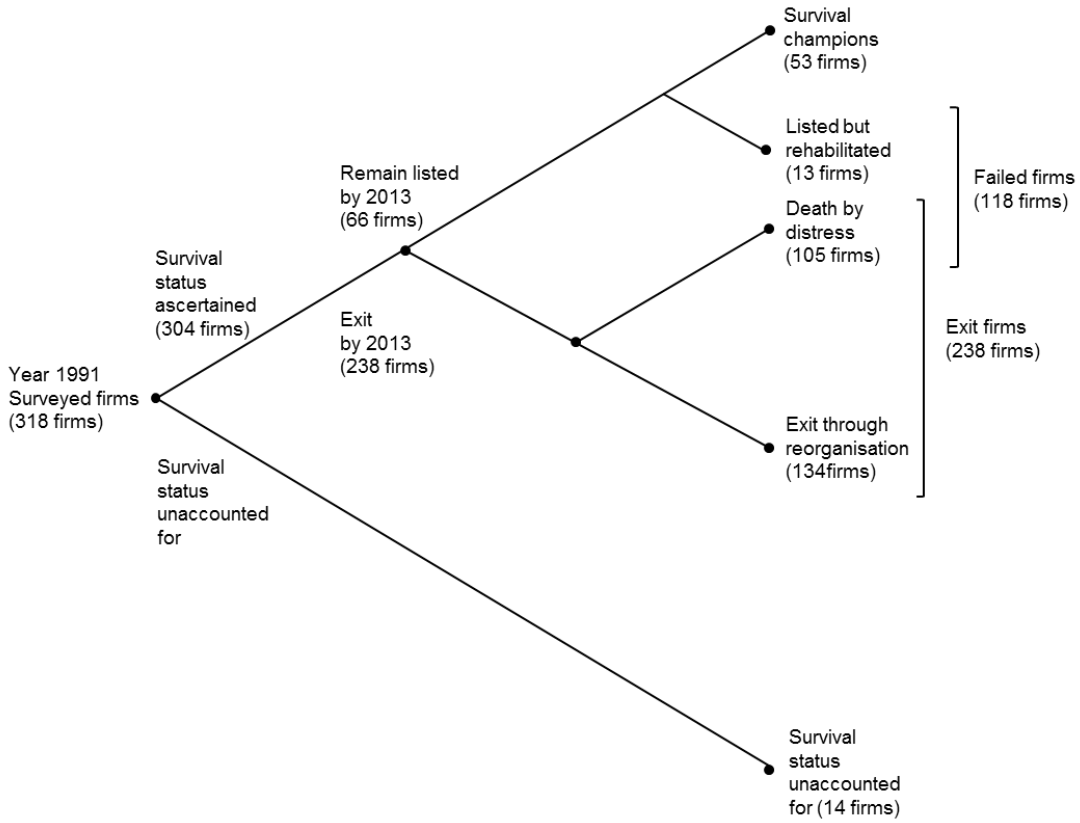
EVENT CATERGORY = 1	CENSORED CATEGORY = 0
[1] Death by Distress or Liquidation Firms which delisted as a result of financial distress, bankruptcy or liquidation	**[3] Survival Champion** Firms which remained listed by the end of 2013 and whose maximum market capitalisation by the end of 2013 had not dropped below the hurdle rate
[2] Listed but Rehabilitated Firms which remained listed in 2013 as a result of rehabilitation or recapitalisation	**[4] Exit through Reorganisation** Firms which delisted as a result of merger, acquisition or corporate reorganisation, i.e. natural withdrawal

5.4 Descriptive statistics

Survival status

To begin, Figure 2 illustrates the survival results of the 318 industrial firms analysed. The survival status of 304 of 318 firms is confirmed. Of the 304 firms, 66 (22%) remain listed by the end of 2013. 53 of the listed firms hold market capitalisation values consistent with the definition of survival and 13 of these fit the definition of Listed but Rehabilitated. The 53 Survival Champions are listed in Appendix 1. 238 of the firms surveyed (78%) cease to exist by the end of the study period. Of the 238 exit firms, 105 firms (35% of the initial sample) experience death as a result of distress, while the remaining 133 firms (44% of the initial sample) delist as a result of corporate activity. In summary, 17% of the firms sampled fit the definition of Survival Champion following the structural change from 1991 to 2013.

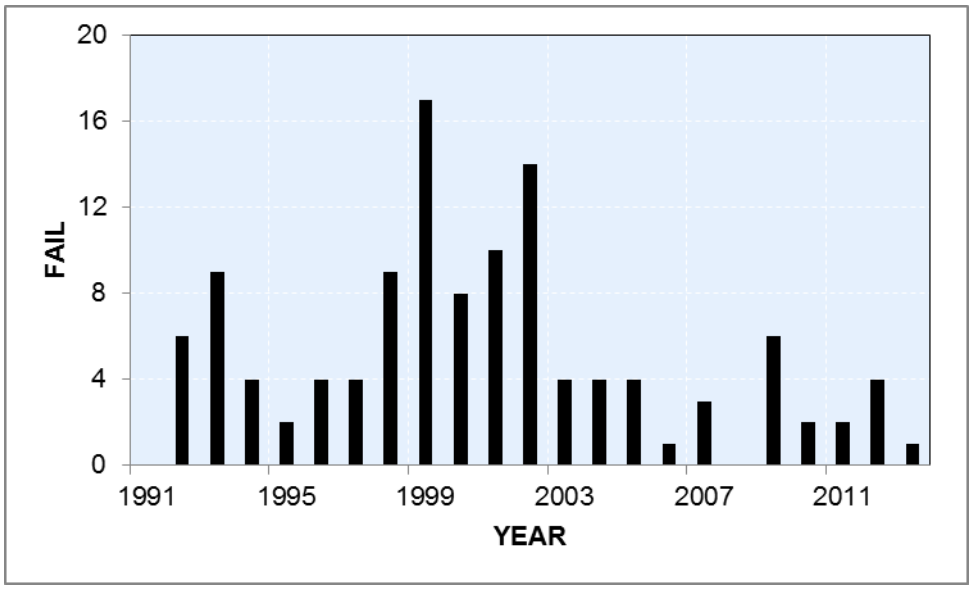
Figure 2: Survival status all firms



Distribution of failures

Figure 3 reports the distribution of corporate failures over the transitional period analysed. It is observed that most failures occur in 1999 and again in 2002. Apart from these periods, the distribution of deaths over time is relatively stable.

Figure 3: Number of firms failing by year



5.5 Kaplan-Meier survival function

Kaplan-Meier static variables

Kaplan-Meier survival methodology is used to empirically test time series changes of non-parametric variables. Of the hypotheses developed, the Kaplan-Meier function is used to test whether median estimations of firm size are associated with higher probabilities of survival and whether the industry in which firms operate matters for survival.

Industry is tested using two sets of categorisation. The first of these is the KPMG classification of sub-industry and the second is the classification of sub-industries into Sunrise or Sunset industries (Hannah, 1999). Following Iwasaki (2014), *Size* is tested using the median market capitalisation of each firm for which the natural logarithm is determined. Firms are divided into large, medium and small firms. Table 7 shows the survival status together with descriptive results of firms by *Industry* – KPMG subsector, Sunrise and Sunset – and by *Size*.

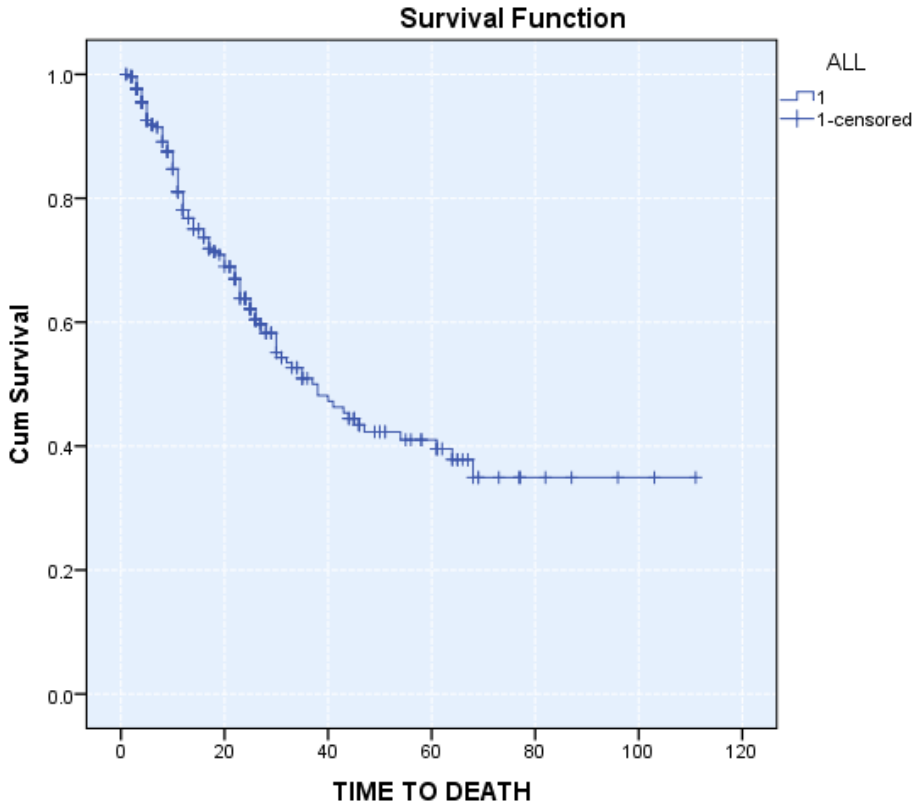
Table 7: Breakdown of survival status by sector and firm size

	Number of firms surveyed in 1991 (i)	Number of champion firms (ii)	Number of exit firms (iii)	Exit status in 2013 at end of period			Survivial rate (ii/i)	Cumulative probability of survival final interval (vii)
				Listed but distressed (iv)	Death by distress (v)	Death by reorg (vi)		
ALL	304	53	251	13	105	133	0.174	0.35
(a) Breakdown by KPMG sub sector								
CM	119	21.00	98	1.00	48.00	49.00	0.18	0.39
IAP	122	24.00	98	6.00	40.00	52.00	0.20	0.33
ENRT	47	6.00	41	6.00	12.00	23.00	0.13	0.39
OTHER	16	2.00	14	-	5.00	9.00	0.13	0.44
(b) Breakdown by Sunrise and Sunset								
SUNRISE	160	35.00	125	5.00	46.00	74.00	0.22	0.44
SUNSET	144	18.00	126	8.00	59.00	59.00	0.13	0.27
(c) Breakdown by firm size								
SMALL	66	3.00	63	-	33.00	30.00	0.05	0.24
MEDIUM	189	27.00	162	8.00	59.00	95.00	0.14	0.35
LARGE	49	23.00	26	5.00	13.00	8.00	0.47	0.45

Kaplan-Meier curve all firms

The cumulative survival distribution for all firms is illustrated in Figure 4, where horizontal intervals and attendant survival probabilities are constructed for the event of death. The horizontal X-axis represents the survival duration of the specific interval, where the interval is terminated when the event of death occurs. The vertical distance between each horizontal line shows the cumulative probability of survival as the curve advances. The function is a step-wise estimate as opposed to a smooth estimate and thus the cumulative probability of survival at each given time is shown on the Y-axis. The cumulative probability of surviving 111 years is determined by the final horizontal interval of 0.35.

Figure 4: Kaplan-Meier cumulative survival distribution all firms



Kaplan-Meier median and Log Rank results

For each defined group, Table 8 summarises the median survival time; the 95% confidence interval for survival time; the number of censored cases and the results of Log Rank (Mantel-Cox) testing following Kaplan-Meier analysis. The results of each subgroup are described in the following sections. Where the Log Rank (Mantel-Cox) results are statistically significant and more than two variables are present, further pairwise comparisons are carried out to determine where the differences lie in the between case factors.

Table 8: Kaplan-Meier Median and Log Rank results

	Median	95% Confidence		Censored		Log Rank-Mantel-Cox	
	Estimate	Lower Bound	Upper Bound	N	Percent	Chi-Square	Sig.
(a) Breakdown by sub industry							
CM	35.00	12.64	57.36	70.00	0.59	3.10	0.38
IAP	38.00	10.42	65.58	76.00	0.62		
ENRT	40.00	26.22	53.78	29.00	0.62		
OTHER	25.00	0.00	50.24	11.00	0.69		
(b) Breakdown by sunrise and sunset							
SUNRISE	61.00	36.41	85.59	109.00	0.68	9.64	0.00 ***
SUNSET	30.00	24.52	35.48	77.00	0.53		
(c) Breakdown by firm size							
SMALL	12.00	6.73	17.27	33.00	0.50	29.18	0.00 ***
MEDIUM	38.00	28.24	47.76	122.00	0.65		
LARGE	68.00	36.82	99.18	31.00	0.63		

* Significant at 10%

** Significant at 5%

*** Significant at 1%

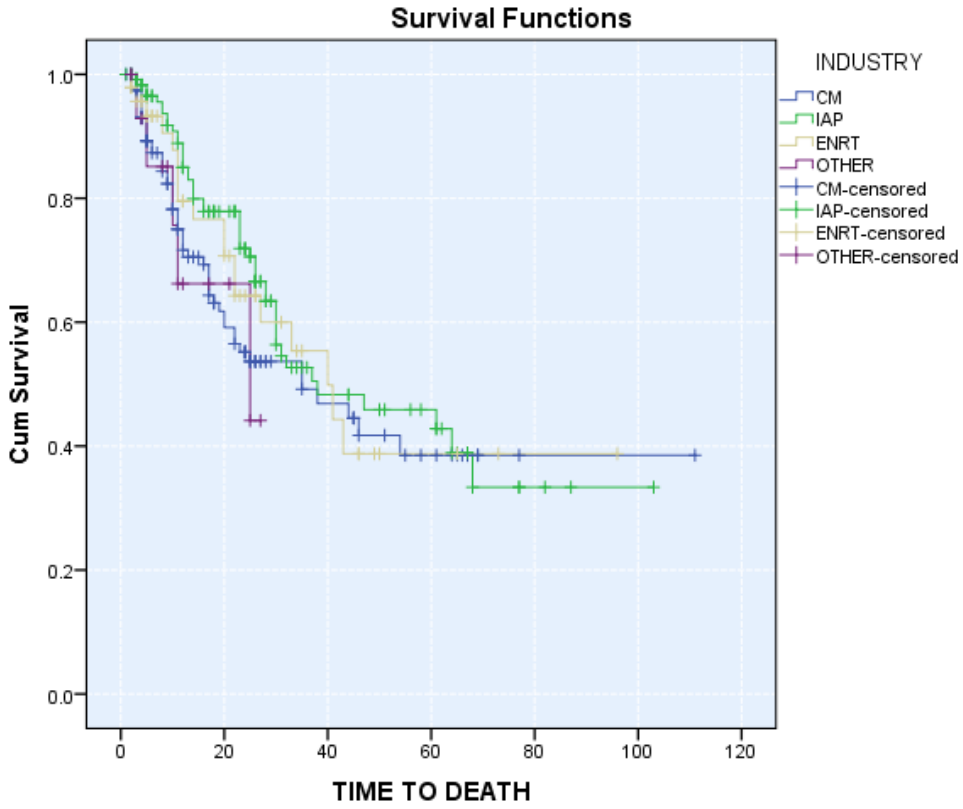
KPMG industry classification

Figure 5 illustrates the cumulative survival function for the different industries according to the KPMG audit classification (KPMG, 2016). A similar number of censored cases were present in the four categories, illustrated by the censored graph in Appendix 2. No survival curve for any particular group appears specifically above or below another group's curve and therefore it appears that no one sub-industry demonstrates an advantageous effect on survival over another.

The CM category has a median time to death of 35 years, 95% CI [12.6, 57.4]. The IAP category has a median time to death of 38 years, 95% CI [10.4, 65.6]. The ENRT category has a median time to death of 40 years, 95% CI [26.2, 53.8]. The Other category has a median time to death of 25 years, 95% CI [0, 50.2].

A Log Rank test was conducted in order to verify whether there are statistically significant differences between the survival functions by sub-industry. Although the ENRT category displays longer median survival times compared to the other three categories, the survival distributions for the four sub-industries are not statistically significant, $p = .38$. No evidence exists to accept the reject the null hypothesis, $H_{i+}0$ (Wegner, 2014).

Figure 5: Kaplan-Meier survival distribution KPMG industries



Sunrise versus Sunset industries

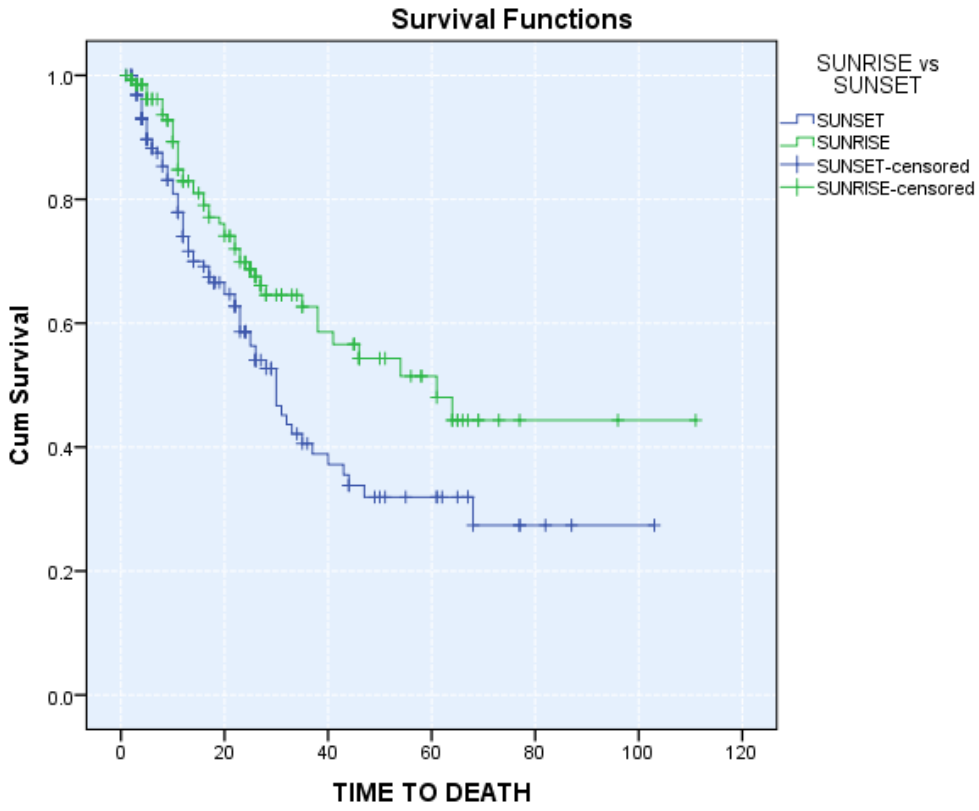
Figure 6 illustrates the cumulative survival function for the Sunset and Sunrise industry classifications. A similar number of censored cases were present in the four categories, illustrated by the censored graph in Appendix 2. The Sunrise survival curve appears above the Sunset survival curve, depicting that those firms operating in Sunrise industries are better equipped to absorb change than their Sunset counterparts. It appears that operating in a Sunrise industry significantly prolongs the time taken to death compared to a Sunset industry.

The Sunrise category had a median time to death of 61 years, 95% CI [36.4, 85.6]. The Sunset category had a median time to death of 30 years, 95% CI [24.5, 35.5].

A Log Rank test was run in order to determine whether there are statistically significant differences between the survival functions categorised into Sunset and Sunrise. The survival distributions for the two categories are statistically significant at the 1% level,

illustrated by p = .00. Overwhelming evidence exists to accept the alternative hypothesis, $H_{l+}1$ (Wegner, 2014).

Figure 6: Kaplan-Meier survival distribution sunrise and sunset industries



Firm size

Figure 7 illustrates the cumulative survival functions of Small, Medium and Large firms. A similar number of censored cases were present in the four categories, illustrated by the censored graph in Appendix 2. The Small survival curve appears to be well below the Medium and Large survival curves, indicating that Medium and Large firms are better equipped to survive than their smaller counterparts. It appears that the larger a firm, the more prolonged the time to death.

The Small category has a median time to death of 12 years, 95% CI [6.7, 17.3]. The Medium category has a median time to death of 38 years, 95% CI [28.2, 47.8]. The Large category has a median time to death of 68 years, 95% CI [36.8, 99.2].

A Log Rank test was run in order to determine whether there were statistically significant differences between the Small, Medium and Large survival functions. The survival

distributions for the three categories are statistically significant, at the 1% level, illustrated by p = .00. Overwhelming evidence exists to accept the alternative hypothesis, $H_{S+}1$ (Wegner, 2014).

To determine where the differences between size survival curves lay, a Log Rank and pairwise comparison was run. These results are illustrated in Table 9. To compensate for making multiple comparisons, a Bonferroni correction is made by dividing alpha of 0.05 by three and declaring the new statistical significance as p < .0167 (Laerd, 2016). There is a statistically significant difference at the 1% level between the survival distributions of Small and Medium firms and between Small and Large firms, illustrated by p = .00 and p = .00 respectively.

Figure 7: Kaplan-Meier survival distribution firm size

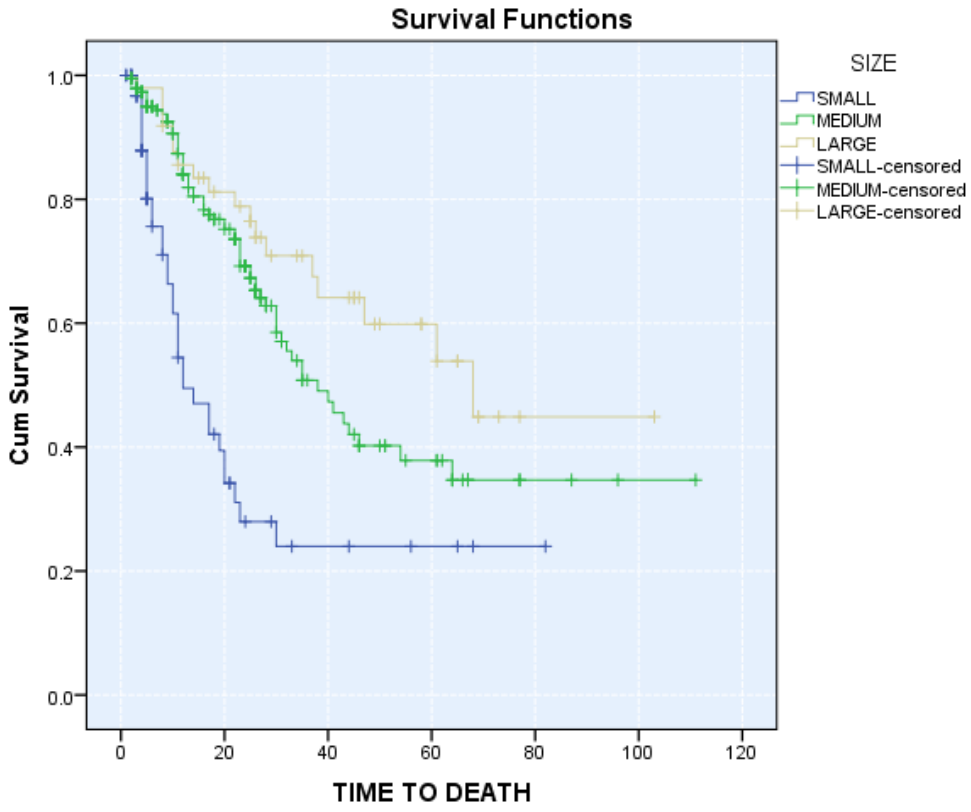


Table 9: Pairwise comparison firm size

SIZE		Small		Med		Large	
		Chi-Square	Sig.	Chi-Square	Sig.	Chi-Square	Sig.
Log Rank (Mantel-Cox)	Small			21.61	0.00 ***	17.68	0.00 ***
	Med	21.61	0.00 ***			2.66	0.10
	Large	17.68	0.00 ***	2.66	0.10		

* Significant at 10%

** Significant at 5%

*** Significant at 1%

Kaplan-Meier conclusion

Kaplan-Meier statistics are performed as a nonparametric method to estimate the survival probability past certain time points to determine whether differences exist in survival distribution and time among KPMG sub-industries, Sunrise and Sunset industries and Small, Medium and Large firms. Results demonstrate that Medium and Large firms operating in Sunrise industries have a substantially higher survival probability compared with Small firms operating in Sunset industries. Results provide overwhelming evidence to accept the alternative hypotheses of *Size* and *Industry*. Findings suggest that survival depends on the *Industry* in which the firm operates and that *Size* is positively correlated with the survival probability of the firm.

5.6 Cox proportional hazard model

A formal Cox hazard regression was used in order to analyse time-to-event by incorporating both censored and uncensored data as well as time-varying covariates. Compared to parametric methods, the semi-parametric nature of the Cox model is advantageous in that it allows for robust results to be obtained regardless of how time is distributed (Spaliara & Tsoukas, 2013; Iwasaki, 2014). The relationship between failure and a given number of variables are tested through use of the hazard function (Cox, 1972).

Four of the five variables – *Age*, Size, *Profitability* and *Leverage* – are tested empirically through the regression due to their time-varying nature. Variables included in the regression model are as follows:

i. *AGE* calculated as current year less year of JSE listing

ii. *SIZE*: calculated as the natural logarithm of adjusted market capitalisation

iii. *ROA*: calculated as profit before tax divided by total assets
[Profitability measure 1]

iv. *ROE*: calculated as profit before tax divided by total equity
[Profitability measure 2]

v. *LEV*: calculated as total liabilities divided by total assets

Not only are descriptive and regression statistics presented for the full period of review, but also for two subsample of groups by dividing firms into a period of Transition, which contains the years up to and including Mandela's presidential term (1991 to 1999) and a period Post-transition which contains the presidential term of Mbeki (2000 to 2008) as well as the first presidential term of Zuma (2009 to 2013). Indicators are modelled in both periods to capture the sensitivity of failure to the absorption variables both during and after the transition to democracy.

Estimates are reported as hazard ratios with associated *p*-values. Following the explanation given by of Spaliara & Tsoukas (2013), since the hazard ratio has a base level equal to one, any ratio greater than one implies that an increase in the independent variable being measured increases the probability of failure, i.e. the hazard. On the other hand, any hazard below one indicates that an increase in the independent variable being measured reduces the probability of failure.

Summary statistics full period

Table 10 reports summary statistics for the five absorption variable measures used in the empirical regression. Using the research organisation applied by Spaliara & Tsoukas (2013), means and standard deviations of firm-specific absorption variables are presented for the total sample in Column 1 and for failed and surviving firms in Columns 2 and 3 respectively. Column 4 includes the tests of equality *p*-values for sample means following *t*-tests of difference. To account for censoring and failure simultaneously, *Fail* takes on the dummy value of one if the firm fails and zero otherwise.

Table 10: Summary statistics all periods

		All firms [1]	Fail = 1 [2]	Fail = 0 [3]	Diff. [4]	
Mean	FAIL	0.34	1.00	0.00	-	
Std						
Mean	AGE	25.63	18.11	25.92	0.00	***
Std		(20.84)	(13.78)	(21.02)	-	
Mean	SIZE	18.89	17.47	18.94	0.00	***
Std		(2.36)	(2.29)	(2.34)	-	
Mean	ROA	0.12	0.07	0.12	0.00	***
Std		(0.13)	(0.11)	(0.13)	-	
Mean	ROE	0.23	0.15	0.24	0.02	**
Std		(0.42)	(0.30)	(0.41)	-	
Mean	LEV	0.49	0.61	0.50	0.04	**
Std		(0.20)	(0.89)	(0.56)	-	
Observations		3 121	118	3 003		

* Significant at 10%

** Significant at 5%

*** Significant at 1%

Looking at Columns 2 and 3, it appears that surviving firms are longer listed, larger in size, more profitable and less indebted. When comparing the failed and surviving firm means for statistical differences, *Age, Size* and *ROA* result in statistical significance at the 1% level and *ROE* and *Leverage* result in statistical significance at the 5% level. Taken together, the summary statistics presented in Table 9 suggest that there is a significant correlation between the cluster of absorption variables and firm survival. In the following section, these preliminary findings are confirmed through formal regression analysis.

Cox regression all periods

Table 11 presents the formal regression estimation results with regard to the absorption indicators. Hazard rates together with their associated *p*-values are presented for variables successively in Columns 1 to 5, and for the cluster of absorption variables together in Column 6.

Table 11: Cox regression results full period of transition

		[1]	[2]	[3]	[4]	[5]	[6]
Exp (coeff)	AGE	0.98					0.99
P		0.00 ***					0.01 **
Exp (coeff)	SIZE		0.77				0.81
P			0.00 ***				0.00 ***
Exp (coeff)	ROA			0.13			0.50
P				0.00 ***			0.31
Exp (coeff)	ROE				0.63		0.81
P					0.00 ***		0.06 *
Exp (coeff)	LEV					1.09	1.05
P						0.09 *	0.47
Observations		3121	3121	3121	3121	3121	3121
Log-likelihood		(1 881)	(1 855)	(1 885)	(1 884)	(1 897)	(1 840)
Wald test (x2)		14.93	40.94	19.10	28.88	2.80	

* Significant at 10%

** Significant at 5%

*** Significant at 1%

In Column 1, it is observed that *Age* reduces the hazard of firm failure, indicated by a hazard ratio of below one and p = .00. In economic terms, the survival probability of older firms increases by 2% for every 1% increase in *Age*. In Column 2, the important role of size is demonstrated by a hazard ratio of below one and p = .00, suggesting that a 1% increase in size will reduce the hazard of failure by 23%. Both profitability measures, *ROA* and *ROE,* are also observed to have a statistically significant impact on firm survival, illustrated by hazard ratios of below one and p = .00. Survival probability is especially sensitive to *ROA*, suggesting that a firm with higher return on assets increases the survival probability by 87%, whereas a firm with high profitability when measured against equity increase survival probability by 37%. Balance sheet health, measured by *Leverage* in Column 5 increases the hazard of failure, illustrated by a coefficient above one. The impact of *Leverage* on survival probability is weaker where p = .09, though nonetheless significant at 10%. A 1% increase in the *Leverage* ratio of firms raises the hazard of failure by 9%. Finally, in Column 6, the absorption variables within the cluster are modelled together. Although all variables are consistent in terms of their hazard direction, only *Size, Age* and *ROE* are statistically significant when variables are grouped together. Taken together, these results suggest that each independent absorption factor within the cluster is a significant determinant of survival.

Summary statistics transition and post transition

Table 12 reports the summary statistics for the five variables for failed firms in Columns 1 to 3 and for surviving firms in Columns 4 to 6, both during the period of Transition and for the period Post-transition. Standard deviations of firm-specific variables are presented with associated *p*-values resulting from sample mean tests of equality. The objective of conducting *t*-tests of difference is to determine the sensitivity of the absorption variables in relation to survival during and post transition. The Transition years 1991 to 1999 take on a dummy value of one. The Post-transition years 2000 to 2013 take on a dummy value of two.

Table 12: Summary statistics during and post transition

		FAIL =1				FAIL = 0			
		Trans= 1 [1]	Post = 2 [2]	Diff. [3]		Trans= 1 [4]	Post = 2 [5]	Diff. [6]	
Mean	FAIL	0.41	0.22	1.00		-	-	-	
Std									
Mean	AGE	13.90	24.70	0.00	***	19.66	37.01	0.00	***
Std		(12.19)	(13.67)	-		(18.11)	(21.25)	-	
Mean	SIZE	17.69	17.12	0.18		18.46	19.78	0.00	***
Std		(2.32)	(2.23)	-		(2.18)	(2.38)	-	
Mean	ROA	0.08	0.04	0.09	*	0.12	0.11	0.45	
Std		(0.12)	(0.10)	-		(0.12)	(0.15)	-	
Mean	ROE	0.20	0.08	0.04	**	0.24	0.24	0.65	
Std		(0.31)	(0.28)	-		(0.40)	(0.42)	-	
Mean	LEV	0.54	0.52	0.68		0.51	0.49	0.44	
Std		(0.20)	(0.25)	-		(0.68)	(0.21)	-	
Observations		72	46			1 919	1 084		

* Significant at 10%

** Significant at 5%

*** Significant at 1%

Looking at Columns 1 and 2, it is observed that firm failure rate during the Transition is almost double the failure rate Post-transition. In addition, during the Transition, failure is more sensitive to firm age and the two profitability measures *ROA* and *ROE*, indicated by statistically significant *p*-values. When comparing surviving firm means during the Transition and Post-transition periods, surviving firms in the post-transition period are shown to be older and larger than their counterparts, as given by *p*-values which are statistically significant at the 1% level. Taken together, these statistics suggest some correlation between the sensitivity effects of absorption factors during and post the transition to democracy. It remains to be seen whether these indicative results hold true

when a formal regression is conducted using the time-varying ability of the Cox proportional hazard model.

Cox regression during and post transition

Table 13 presents the formal regression results for all variables for the two defined periods; during Transition (1991 to 1999) and Post-transition (2000 to 2013). Coefficients together with their associated *p*-values are presented for variables successively in Columns 1 to 5, and all variables together in Column 6. The Transition years 1991 to 1999 take on a dummy value of one. The Post-transition years 1999 to 2013 take on a dummy value of two.

Table 13: Cox regression results during and post transition

		[1]		[2]		[3]		[4]		[5]		[6]	
Exp (coeff)	AGE	0.98										0.98	
P	Trans	0.01	***									0.03	**
Exp (coeff)	AGE	0.96										0.97	
P	Post	0.00	***									0.01	***
Exp (coeff)	SIZE			0.85								0.91	
P	Trans			0.00	***							0.09	*
Exp (coeff)	SIZE			0.67								0.71	
P	Post			0.00	***							0.00	***
Exp (coeff)	ROA					0.15						0.33	
P	Trans					0.01	***					0.23	
Exp (coeff)	ROA					0.11						0.64	
P	Post					0.00	***					0.60	
Exp (coeff)	ROE							0.68				0.85	
P	Trans							0.01	***			0.36	
Exp (coeff)	ROE							0.59				0.79	
P	Post							0.00	***			0.11	
Exp (coeff)	LEV									1.04		0.99	
P	Trans									0.72		0.94	
Exp (coeff)	LEV									1.41		1.17	
P	Post									0.00	***	0.18	
Trans													
Observations		1991		1991		1991		1991		1991		1991	
Log-likelyhood		(1 086)		(1 085)		(1 088)		(1 089)		(1 094)		(1 076)	
Wald test (x2)		6.72		8.20		7.52		7.46		0.13		-	
Post													
Observations		1130		1130		1130		1130		1130		1130	
Log-likelyhood		(629)		(599)		(639)		(636)		(628)		(573)	
Wald test (x2)		13.29		45.45		11.52		21.57		10.49		-	

* Significant at 10%

** Significant at 5%

*** Significant at 1%

In Column 1, *Age* is shown to be statistically significant at the 1% level in both the Transition and Post-transition periods, illustrated by a hazard ratio of below one in both instances. Surprisingly, the effect of *Age* on the hazard of failure in the Post-transition period is double that of the Transition period. The survival probability of older firms during Transition increases by 2% whereas the survival probability of older firms in the Post-transition period increases by 4%. In Column 2, *Size* is shown to be statistically significant at the 1% level in both periods, each reporting a hazard of below one. Contrary to expected findings, in the Post-transition period the relationship between *Size* and survival is amplified, where *Size* increases survival probability by 33% as opposed to only 15% in the Transition period.

In Column 3, *ROA* is reported to be statistically significant in both periods at the 1% level, explained by hazard ratios of below one. In the Post-transition period, *ROA* plays a larger role, reducing the hazard of failure by 4% more than during Transition. In Column 4, the importance of profitability in increasing firm survival is further demonstrated. The second measure of profitability, *ROE* supports the findings of the first profitability measure, *ROA*. While *ROE* is statistically significant in both periods at the 1% level, the effect is more potent Post-transition. A 1% increase in *ROE* would reduce the hazard of failure by 32% during Transition, compared to an increase of 41% in the Post-transition period. Findings for both profitability measures are in opposition to initial expectations. Finally, in Column 5, *Leverage* is shown to be statistically significant in the Post-transition period, but surprisingly not during Transition. In the Post-transitional period, a 1% increases in *Leverage* raises the hazard of failure by as much as 41%.

Pulling the above together, evidence found from comparative regression results for the Transition and Post-transition periods does not support the hypothesis that absorption variables have a more significant impact on firm survival during periods of rapid and profound change. Contrary to expected findings, these statistics suggest that while almost all variables are significant determinants of survival in the full transitional period as well as the Transition and Post-transition periods, the variables have more potent effect in years following the transition to democracy.

CHAPTER 6: DISCUSSION OF RESULTS

6.1 Introduction

Chapter 6 discusses in detail the research findings within the context and period of the study and in line with the research hypotheses formulated. Research findings reported in Chapter 5 are compared and contrasted to the literature reviewed in Chapter 2 and concluded against the hypotheses outlined in Chapter 3. Finally, new insights are offered into the unexplored phenomenon of firm survival in transitional economies.

6.2 Descriptive statistics

A total sample of 304 industrial firms was analysed over the 23-year period from 1991 to 2013. The period reviewed included the years from Nelson Mandela's release from political imprisonment and up to the end of his presidency as well as the presidential terms of Thabo Mbeki and the first presidential term of Jacob Zuma.

As illustrated in Figure 2, of the 304 industrial firms analysed, 53 firms (17%) fit the definition of a transitional economy Survival Champion. These 53 cases are those firms which adapted to and evolved with the structural, socio-political and economic changes particular to South Africa during the period reviewed. More specifically, the Survival Champions remained listed on the JSE for the full 23-year transitional period without material reorganisation or recapitalization. Following the thesis of creative destruction as conceptualised by Schumpeter (1942), findings confirm that destruction is undeniably a common feature not only in modern economies but also in emerging economies. The evidence is consistent with findings from Hannah (1999); Schor (2009); de Geus (1997) and Ferguson (2008) and confirms that survival is indeed a minority activity.

6.3 The liability of newness

The Cox proportional hazard model was used to test whether the idea that there is a liability of newness held true in a developing economy undergoing profound change. The estimate of the variable *Age* – measured as current year less year of listing – resulted in a hazard of below one which was significant at the 1% level. This indicates that older, more experienced firms are less likely to fail than their younger counterparts. Interestingly, the average age of failed firms in their year of death was 18 years, whereas the average age of survivors in the 2013 final year was 52 years. In line with the

literature, this suggests that in an environment characterised by rampant change, both experience and maturity matter (Tsvetkova et al., 2014). The more years that firms have been in business, the more likely they are to have already experienced economic changes, technological shifts and market volatilities, resulting in a depth of experience which can be used to cope with change in the future. Surprisingly, only two firms in the sample achieved the milestone age of 100 years. Both PPC Limited and Cullinan Holdings reached 100 years of age, meeting the criteria of those member firms belonging to the *Japanese Shinise Society* which honours firms over 100 years old (Sasaki & Sone, 2015).

Age findings are consistent with studies in other developing economies, which show that most companies die young and some at middle age (Napolitano et al., 2015). For example, Spaliara & Tsoukas (2013) find age to be a significant determinant of Asian firm survival during the economic crises between 1997 and 1998. Subsequent to this, Iwasaki (2014) report that age decreases exit rates in Russian firms during the global financial crises of 2008 and 2009. Specifically, the findings in this South African research paper add to the current academic discourse by confirming not only the liability of newness in general, but that the liability of newness is especially true for firms operating in an environment of considerable change.

However, the findings contrast scholars who report a liability of ageing (Fackler et al., 2013). According to these scholars, as well as those proponents of population ecology theory (Salimath & Jones, 2011; Hannan & Freeman, 1977), old firms eventually suffer from organisational inertia, rendering adaptation ineffective due to the inability to flex, innovate and respond quickly to environmental changes. In the South African case, inertia through age did not impede survival prospects but instead increased the survival probabilities of the firms analysed.

The null hypothesis $H_{A+}0$ – that there is no association between age and survival probability of the firm – is therefore rejected. Based on results which showed a significant association between old age and survival probability, the alternative hypothesis $H_{A+}1$ – that there is an association between age and survival probability of the firm – is accepted.

6.4 The liability of smallness

The variable *Size* was initially tested through use of the Kaplan-Meier survival function, where *Size* was categorised into Small, Medium and Large firms based on median market capitalisation. As demonstrated in Figure 7: Kaplan-Meier survival distribution firm size, the cumulative survival curve for small sized firms appears below both the medium and large cumulative curves, indicating that medium-sized firms demonstrate beneficial advantages when compared to small sized firms, and large firms demonstrate beneficial advantages when compared to medium firms. Results from a Log Rank pairwise comparison, following the application of a Bonferroni correction, showed that both medium and large survival curves were statistically different compared to the small curve. These results demonstrate that firms which are either medium or large in size are better equipped to cope with changes in the environment in which they operate.

To confirm the initial size results demonstrated through the Kaplan-Meier survival curves, the Cox proportional hazard model was further used to test whether the variable *Size* – measured as the adjusted market capitalisation – had an impact on survival probability using time-varying size covariates. Formal regression results reported *Size* to have a hazard ratio of 0.77, which like *Age*, was significant at the 1% level. Thus, results from both Kaplan-Meier and Cox regression functions showed that during a period of profound change, a consistently positive relationship exists between larger firm size and longevity prospects (Tsvetkova et al., 2014).

Scholars attribute the relationship between increased survival probability and large firm size to the idea that large firms possess a number of advantages, which include scale effects, greater resources, bargaining power, brand recognition and market power in general (Bonn, 2000; Napolitano et al., 2015). The work of business historians corresponds to this view. For example, Chandler (1990) suggests that large firms build significant organisational, marketing and technical capabilities, enabling them to acquire unassailable first-mover advantages (Hannah, 1999). Iwasaki (2014) extends the size argument by suggesting that the expansion of company size enhances survival probability by “strengthening the resilience of the business organisation based on the scale merit and the higher trust from investors, financial institutions and customers” (p. 189). However, like age, firm size comes with the concomitant challenge of inertia, resulting in eventual complacency and bureaucracy. Cox regression results with respect to firm size are consistent with Napolitano et al. (2015); Sönmez (2013); Tsvetkova et al., (2014) and Fackler et al., (2013), all who suggest that on average larger firms live longer.

To explain how South African firms acquired resources sufficient to afford them large status, a short historical excursus is required (Ramamurti & Singh, 2011). Big business in South Africa is closely tied with the discovery of gold and diamonds in the 1860s. By 1888, De Beers Diamond Company had consolidated much of the diamond production in the country. Ramamurti & Singh (2011) note that by the end of the 19th century, control of 124 gold mining firms – which accounted for a quarter of global gold production – was by then in the hands of only ten British, German and French groups. Since then, industry amalgamation, achieved through the purchasing of minority investments, laid the foundational structure not only for the resources industry but for the subsequent industries into which the sector began to diversify, such as equipment, banking, general industrials, engineering and consumer goods (Ramamurti & Singh, 2011).

From 1948, industry in South Africa was further concentrated under the policy of 'Afrikaner favouritism' of the Nationalist government. State-owned entities and private Afrikaans firms were given direct assistance, awarded government contracts and in general benefited from exclusionary government policies. Once apartheid was firmly entrenched, large South African businesses benefited further. Two distinct economies began to develop with starkly different economic realities, which persisted as a major determinant of the unique pattern of development in corporate South Africa. According to Ramamurti & Singh (2011), protectionist policies together with the active promotion of Afrikaner business development resulted in high economic concentration, where conglomeration became a common feature of the South African economy.

Following the economic and political history of South Africa, it appears that an explanation for the relationship between increased survival probability and large firm size lies not only in the size advantages afforded to giant firms, but in the head start these firms were given under the colonial and apartheid states. Compared to their smaller counterparts, large firms were able to take full advantage of the positive characteristics associated with size during the transition to democracy. More specifically, large firms given protectionist head starts had war chests available to weather the changes inherent in the shifting climate. However, when the political environment changed, smaller firms were less able to use features such as scale and bargaining power to their advantage to ensure their longevity.

The null hypothesis $H_{S+}0$ – that there is no association between size and survival probability of the firm – is therefore rejected. Based on results which showed a significant association between large size and survival probability, the alternative hypothesis $H_{S+}1$ –

that there is an association between size and survival probability of the firm – is accepted. The results confirm that heft matters during times of change and that those large organisations which have built particular capabilities because of their size are indeed “Giant Redwoods with a charmed life” (Hannah, 1999, p. 254).

6.5 Financial health: profitability

The first measure of financial health, *Profitability*, was empirically tested through a formal Cox regression using two measures. The first of these *ROA*, measures the profit per rand of assets invested in the company (Firer et al., 2012) and is used to determine how efficient a firm is at using its asset base to generate earnings. The second measure, *ROE*, measures the profit per rand of shareholders’ funds (Firer et al., 2012) and is used to provide insight into how efficiently the firm is managing shareholders’ contributions.

Initially, it appeared in Table 10: Summary statistics all periods that surviving firms were more profitable using both measures of profitability. These results were confirmed through the formal regression conducted. Both measures resulted in hazard ratios of below one, meaning that higher profitability reduces the hazard of failure. Both *ROA* and *ROE* were statistically significant at the 1% level.

Profitability predictions are supported by a number of preceding studies in developed markets and considerable empirical evidence suggests a positive relationship between strong financial performance and firm survival probability (Iwasaki, 2014; Tsvetkova et al., 2014). Borrowing from Baker & Kennedy (2002), the economic grim reaper – the process by which firms disappear – kills poorly performing firms. In a developing economy undergoing profound transition, the relationship between profitability and survival probability is less understood.

One explanation for the significant relationship between high profitability and survival prospects is that during a time of rampant change, the ability to generate high returns is especially important to cushion firms against environmental flux. Firms which have the ability to generate healthy returns can use profit generated funds as a “buffer to absorb unexpected losses, reducing the probability of insolvency and the hazard of failure” (Spaliara & Tsoukas, 2013, p. 89). In contrast, poorly performing firms have added financial pressure resulting in the inability to generate sufficient cash flows to sustain operations (Delmar et al., 2013). This result suggests the viability of firms operating in a transitional environment is determined and shaped by the ability to generate high returns.

The null hypothesis $H_{P+}0$ – that there is no association between profitability and survival probability of the firm – is therefore rejected. Based on results which showed a significant association between highly profitable firms and survival probability, the alternative hypothesis $H_{P+}1$ – that there is an association between profitability and survival probability of the firm – is accepted. The results confirm that the ability to generate internal profits to absorb change is especially important when operating in a shifting climate.

6.6 Sunrise and Sunset industries

The impact that operating sector had on survival prospects of firms operating in a transitional environment was measured in two ways. First, firms were divided into four mutually exclusive and collectively exhaustive sector groups based on the KPMG audit classification of similar industries (KPMG, 2016). Next, firms were divided into what can be termed Sunrise and Sunset industries. Both measures of *Industry* were tested through the Kaplan-Meier survival function since the variable *Industry* is static and thus suitable to the non-parametric nature of the Kaplan-Meier function.

The Kaplan-Meier curves according to KPMG industry classification showed that no particular industry group curve appeared significantly above or below another, meaning no one group demonstrates specific advantages over any other group. Log Rank test results confirmed that the findings between groups were not statistically significant. These results were contrary to other empirical studies (Dunne & Masenyetse, 2015; Ehrhardt & Nowak, 2011; Sönmez, 2013; Iwasaki, 2014).

However, when groupings were allocated according to the Sunrise and Sunset categories, the cumulative survival curves reported in Figure 6 illustrated obvious differences. The Sunset curve appeared well below the Sunrise curve, indicating that those firms operating in Sunrise industries have beneficial advantages and better survival prospects than their Sunset counterparts. Results from a Log Rank (Mantel-Cox) test corroborated this initial view, explained by significant differences between curves at the 1% level.

This unusual result both supports and contradicts the literature on the relationship between industry and operating sector. On the one hand, grouping sectors according to similar operating characteristics yielded results which were not significant. This result is in line with Bonn (2000) who argues that although industry type affects performance, the

actual operating industry is not accountable for firm survival. On the other hand, results are consistent with the idea that Sunrise industries provide favourable conditions for firms to build competitive advantage, thus increasing survival prospects (Hannah, 1999; Tsvetkova et al., 2014; Mas-Verdu et al., 2015).

Findings are explained by how categories are grouped. The KPMG categories were determined based on industries which exhibited similar product and operating characteristics, regardless of their growth prospects. Conversely, the Sunrise and Sunset categories may have vastly different sub-industries, yet what the industries have in common are rapid growth rates, high levels of innovation and expansion within the Sunrise category, and slow growth, stagnation and dim prospects in the Sunset category.

According to Hannah (1999), Sunrise industries are rapidly expanding, show high growth rates, display promising prospects, offer better growth opportunities, have an abundance of available funding and are characterised by high degrees of innovation. Examples include electronics and chemicals, technology, automotive and financial service sectors. In contrast, the Sunset category includes sectors which are in decline, have dim long-term prospects and do not have relevant capabilities to escape market constraints (Hannah, 1999). Examples include furniture and household, building and construction, general retail and textiles. For the firms in the Sunset category, it appears that the collapse of their market during the transitional period posed particularly tough survival obstacles.

These unusual results add a unique perspective to the literature. Findings show that what matters for survival in a shifting environment is not the particular sector in which firms operate but instead whether the sector itself is rapidly growing with hopeful future prospects. This implies that a firm at Sunset stage is at high risk of becoming obsolete and redundant. This risk is particularly impactful when the environment is changing, where firms which are no longer relevant find it especially challenging to raise capital, remain relevant and compete with their Sunrise counterparts.

Drawing the above together, Hannah (1999) argues that while dynamic economies will always consist of rising and declining industries, it would be wrong to suggest that firms have “clearly predestined outcomes depending on their initial “sunrise” or “sunset” industry base” (p. 269). To avoid the predestined failure outcome of Sunset industries, two possible solutions are proposed. The first proposal is that while Sunset firms have a higher failure rate, it is possible for firms to develop competitive advantage in either kind

of category. This can be achieved by learning to operate profitably and distinctively, no matter the category, as opposed to paying for fashionable acquisitions in Sunrise industries to which no distinctive value can be attributed (Hannah, 1999). This supports findings from the third hypothesis, which showcases profitability to be the most significant determine of survival. A second proposal for Sunset firms may be absorption into other Sunrise firms to maximise the value of any transferable skills.

The null hypothesis $H_{I+}0$ – that there is no association between industry and survival probability of the firm – is therefore rejected. Based on results which showed a significant association between Sunrise firms and survival probability, the alternative hypothesis $H_{I+}1$ – that there is an association between industry and survival probability – is accepted. The results confirm that the firms operating in growing industries characterised by expansion and innovation are better able to cope with shifts in their operating environment.

6.7 Financial health: leverage

The final independent variable *Leverage* was tested as a time-varying covariate through the Cox proportional hazard model. *Leverage* is measured as the ratio of total liabilities to total assets and indicates the extent to which assets are financed by debt together with the ability of firms to meet their financial obligations. The fifth hypothesis sought to establish whether highly indebted firms have a greater probability of failure.

Initial descriptive statistics indicated that failed firms had significantly higher leverage ratios than those firms that did not fail. This result was formalised through the Cox regression, which reported a hazard ratio above one which was statistically significant at the 10% level, meaning that firms which high levels of leverage increase the hazard of failure by 9%. Thus, a high leverage ratio is considered to be a risk factor for survival prospects of firms in shifting environments.

Interestingly, although results are consistent with a raft of global studies, findings contradict an alternative set of empirical studies, which set includes a specific South African case. In the former case, results correspond to findings reported by Iwasaki (2014); Tsvetkova et al., (2014); Spaliara & Tsoukas (2013); Ferragina et al., (2012) and Byrne et al., (2016), all who show that a sound liability position is positively correlated with firm longevity. Spaliara & Tsouakas (2013) further recognise that high levels of debt are associated with unhealthy balance sheets, meaning that highly leveraged firms face

a greater level of difficulty raising capital in the market, especially during extreme environmental conditions. In the latter case, results contradict a group of studies which include the seminal work of Modigliani & Miller (1958).

Napolitano et al., (2015) explain the relationship between leverage and survival. When firms are sensitive to a changing environment and simultaneously adopt a conservative approach to finance, success over long periods is achieved as a result of cautious behaviour, which rewards risk-averse firms. When firms are financially constrained as a result of high interest and capital payments due to high indebtedness, firms become unable to service debt, resulting in eventual bankruptcy and an increased likelihood of exit (Tsvetkova et al., 2014). Results are aligned to the literature on population ecology, which shows that surviving firms which are best fit to their environment (Ehrhardt & Nowak, 2011; Ormerod, 2005). In the South African transitional case, capital structure decisions are shown to be of high importance where the best fit firms are financially conservative and have lower levels of debt.

Results from contradictory studies were founded on the seminal work of Modigliani & Miller (1958). Through their thesis on Capital Structure Irreverence, the scholars theorise that there is no difference in debt and equity in the capital structure decision of the firm. Capital Structure Irreverence is supported by findings evidenced by Audtrestch (2000) and Chung et al., (2013) who agree that capital structure policy does not impact survival probability of the firm.

Surprisingly, one South African study contrasted both the Modigliani & Miller (1958) and results from this study. Dunne & Masenyetse (2015) propose that although capital structure decisions matter, it is conservatively financed firms which have higher exit probabilities. Dunne & Masenyetse (2015) suggest this is because highly leveraged firms have a better chance of survival based on the increased oversight and monitoring which is applied by institutions to firms which have taken on considerable levels of debt. The authors argue that close monitoring of firms by financial institutions prevents managers from participating in non-productive activities and instead managers are encouraged to focus on core, profit producing operations.

That results are in direct contrast to the one other South Africa study is puzzling. A possible explanation may be the difference in the length and political climate of the periods reviewed. The Dunne & Masenyetse (2015) study analysed the ten years from 2000 to 2010 whereas this study analysed the 23 years from 1991 to 2013. The obvious

difference between these two periods is not just the length but that the longer period was characterised by rampant and profound structural change. This implies that conservative levels of leverage matter not only for those firms operating in stable environments but especially in a shifting environment.

The null hypothesis $H_{L+}0$ – that there is no association between leverage and survival probability – is therefore rejected. Based on results which showed a significant association between firms with lower leverage and survival probability, the alternative hypothesis $H_{L+}1$ – that there is an association between leverage and survival probability – is accepted. The results confirm that highly leveraged firms are less able to cope with shifts in their operating environment.

6.8 Period analysis

Finally, following the testing of the independent variables across the entire period from 1991 to 2013, the period reviewed was divided into two specific periods based on the presidential terms of the post-apartheid presidents. The first period was defined as Transition and included the 1991 to 1999 years up to and including Mandela's presidential term which period included the transition to democracy, the first free and fair elections and the founding of the South African Constitution. The second period was defined as Post-transition and included the 2000 to 2013 years of Mbeki's first presidential term, the removal of Mbeki in 2008, the appointment of Zuma in 2009 and the first full presidential term of Zuma.

Surprisingly, all five variables proved to be more important indicators of survival in the Post-transition period compared to the Transition period. These results were contrary to expected findings and in particular, contrary to empirical results reported by Spaliara & Tsoukas (2013). In fact, results were in direct opposition to the study of Asian firms during and outside of an environmental shock. While Spaliara & Tsoukas (2013) conclude that survival prospects are more sensitive to variables such as leverage, profitability and collateral during a period of a shock compared to more tranquil periods, results from this study show conflicting results.

The impact that all five variables had on survival prospects following the period of transition was magnified. The survival probability of older firms increased by 4% Post-transition compared to 2% during Transition. For *Size*, the survival probability increased by 33% Post-transition compared to 15% during Transition. Both *Profitability* measures

ROA and ROE showed similar patterns. The survival probability of firms with higher ROA increased by 89% Post-transition compared to 85% during Transition and for ROE, results showed increased survival probability of 41% Post-transition compared to 32% during Transition. Finally, *Leverage* was shown to increase the hazard of failure by 41% Post-transition compared to 4% during Transition. In summary, it was observed that survival prospects are more sensitive for the cluster of absorption variables in the Post-transition period than during Transition.

This peculiar result suggests the idea that sensitivity is directly related to a profound political change may be wrong under certain circumstances and that heightened sensitivity may result many years later, when the political change becomes a reality. In the research conducted by Spaliara & Tsoukas (2013), the period which produced the most sensitivity to the financial variables was characterised by crisis and shock, meaning that good financial shape was more important in these tumultuous times than in tranquil times. Although it was hypothesised that the environmental change and shock surrounding the 1994 transition would result in higher sensitivity of the cluster of absorption factors to survival, results indicate that heightened sensitivity of the variables, in fact, occurred in the latter period.

Results indicate that the period of Transition may have been more stable than the period Post-transition, thus yielding less sensitive results. In a case study entitled “South Africa: A Fractured Rainbow?” authors Vietor & Sheldahl-Thomason (2016) give voice to this idea, stating that in this latter period, “the political climate was the worst it had been since the transition from apartheid in 1993“ (p. 1).

Although the 1994 transition was profound in its nature, an unexpectedly peaceful election resulted, followed by the appointment of Mandela as president (Vietor & Sheldahl-Thomason, 2016). This marked the country’s passage from a system of apartheid to one of full democracy (Lings, 2014). Although there were serious concerns that the elections would be marred by violence and civil unrest, what resulted was a peaceful transition which uplifted the country and the economy and is now regarded and written about as a political miracle (Lings, 2014). What followed was a honeymoon period both economically and socially under the presidency of Mandela. Michie & Padayachee (1997) illustrate the impact this period of positivity had on the economy. Real GDP recovered from minus 2.2 per cent in 1992 to plus 1.3 per cent in 1993, followed by an increase to 2.7 per cent in 1994 and 3.4 per cent in 1995. The economic upturn was

particularly evident in the secondary and tertiary sectors of the economy which increased manufacturing output and benefited from increased international demand for production (Michie & Padayachee, 1997). Foreign direct investment begun to flow into the country and a general environment of optimism and positivity ensued.

A number of key events and institutional changes added to the general euphoria of the new South Africa, paving way for a stable and successful transition. In 1995, the country hosted and won the World Cup Rugby, the first major international sporting event to be held in the country since apartheid and since South Africa's exclusion from competing in international sport. In 1996, a new constitution was formed (Vietor & Sheldahl-Thomason, 2016) and by 1999, the country was invited to join the Group of 20 (G20) – an international forum of 20 major economies (Lings, 2014). On the whole, the 1991 to 1999 period was characterised less by environmental shock than by positive environmental change.

However, following the appointment of Thabo Mbeki in 1999, the reality of a changed economy began to set in as the ANC was pressurised to implement the promises made in 1994. In contrast to the Mandela years, the 2000 to 2013 period was marked by political disagreements, volatility in the ruling party, a challenging economic landscape and the realities of fulfilling the promises of a new South Africa. Mbeki's presidency was characterised by a number of political controversies which eventually resulted in his recalling from the ANC in 2008 to be replaced by deputy president Kgalema Motlanthe (Vietor & Sheldahl-Thomason, 2016). Following the 2009 presidential appointment of Jacob Zuma, the country has continued to experience political ambiguity and economic challenges. The latter period included Mbeki's controversial management of the AIDS pandemic in South Africa and Africa, Mbeki's contentious stance towards Zimbabwe foreign policy and the public hearing of Zuma's corruption and rape trials (Vietor & Sheldahl-Thomason, 2016). Labour disputes and social tension worsened during this period, culminating in the Marikana platinum mine strike and shootings in 2012, which Lings (2014) states was "the country's worst post-apartheid tragedy" (p. 13). The event dented investor confidence both locally and abroad and contributed to a loss in credit ratings by Moody's, Standards and Poors and Fitch (Lings, 2014). In summary, the latter period was marked by social tension, high unemployment, extreme income inequality, poor levels of education, political volatility, rising corruption and high levels of crime. In reality, South Africa had not achieved the economic and social goals set for itself in 1994, and the Rainbow Nation indeed had become fractured (Vietor & Sheldahl-Thomason, 2016).

Drawing the above together, it becomes clear that although the formal political transition occurred in the 1991 to 1999 period, fractures and fragility in the environment occurred when the reality of the transition set in, resulting in heightened sensitivity to the cluster of absorption factors when compared to the former period. This suggests that the link between absorption and firm survival in an economy which has undergone a successful transition is stronger in the period post the transition, which is more fragile and politically challenging. This gives support to the idea that strong absorption ability and good financial shape a vital for survival prospects during periods marked by political and economic instability (Spaliara & Tsoukas, 2013).

The null hypothesis $H_{T+}0$ – that the cluster of absorption variables does not have a more significant impact on survival during Transition compared to the Post-transition – fails to be rejected. Test results showed that the sensitivity of the relationship between the cluster of variables and survival probability of the firm is more significant Post-transition than during Transition. Therefore the alternative hypothesis $H_{T+}1$ – that the cluster of absorption variables has a more significant impact on survival probability during Transition compared to Post-transition period – is not accepted.

6.9 Conclusion

Results demonstrate that survival of institutional change is a minority activity. Those firms which do survive are best fit to their environment and better equipped to absorb profound change. A cluster of absorption factors – age, size, profitability, industry and leverage – was empirically tested to determine whether survival depends on the ability to absorb change. Findings suggest that firm survival is dependent on the ability to absorb and negotiate environmental change. Finally, findings indicate that the sensitivity of survival to the absorption factors is significantly higher in the period post the South African political transition compared to the period during the transition.

CHAPTER 7: CONCLUSION

7.1 Introduction

In this chapter, a concluding model summarising the impact that the cluster of absorption factors has on the survival probability of firms operating in a shifting environment is presented. The model is discussed in terms of the literature reviewed in Chapter 2, the findings presented in Chapter 5 and the insights debated in Chapter 6. Based on the findings and the model developed, implications for management are discussed and recommendations are made. Finally, limitations of the research are highlighted and suggestions for future research are offered.

7.2 Principal findings

The fundamental findings of the research demonstrate that during a period of structural change, absorptive capability is especially important to firm survival. Firms which display higher absorptive characteristics are shown to be better equipped to withstand environmental changes over long periods. In fact, few firms emerged from the transition unscathed and only 17% of firms remained listed without the need for recapitalisation during the period from 1991 to 2013. These findings are consistent with scholars who report survival to be a minority activity (de Geus, 1997; Hannah, 1999; Ferguson, 2008; Schor, 2009; Napolitiano et al., 2015).

South African Survival Champions that maintained their vitality for over two decades were found to have a number of critical success factors in common. In total, surviving firms were tolerant to change, resilient to environmental variation and demonstrated superiority over their competitors (Napolitano et al., 2015).

Using the Cox proportional hazard model and the Kaplan-Meier survival function, a cluster of absorption factors was empirically tested to determine the impact on firm survival probability. The cluster included five specific variables; age, size, profitability, industry and leverage. All five variables were found to be significant determinants of survival of South African firms during the period reviewed.

During the transition, Survival Champions succeeded by tapping into their experience and maturity, demonstrating that over time, age affords firms specific knowledge advantages (Tsvetkova et al., 2014). As with age, large firms were cushioned against

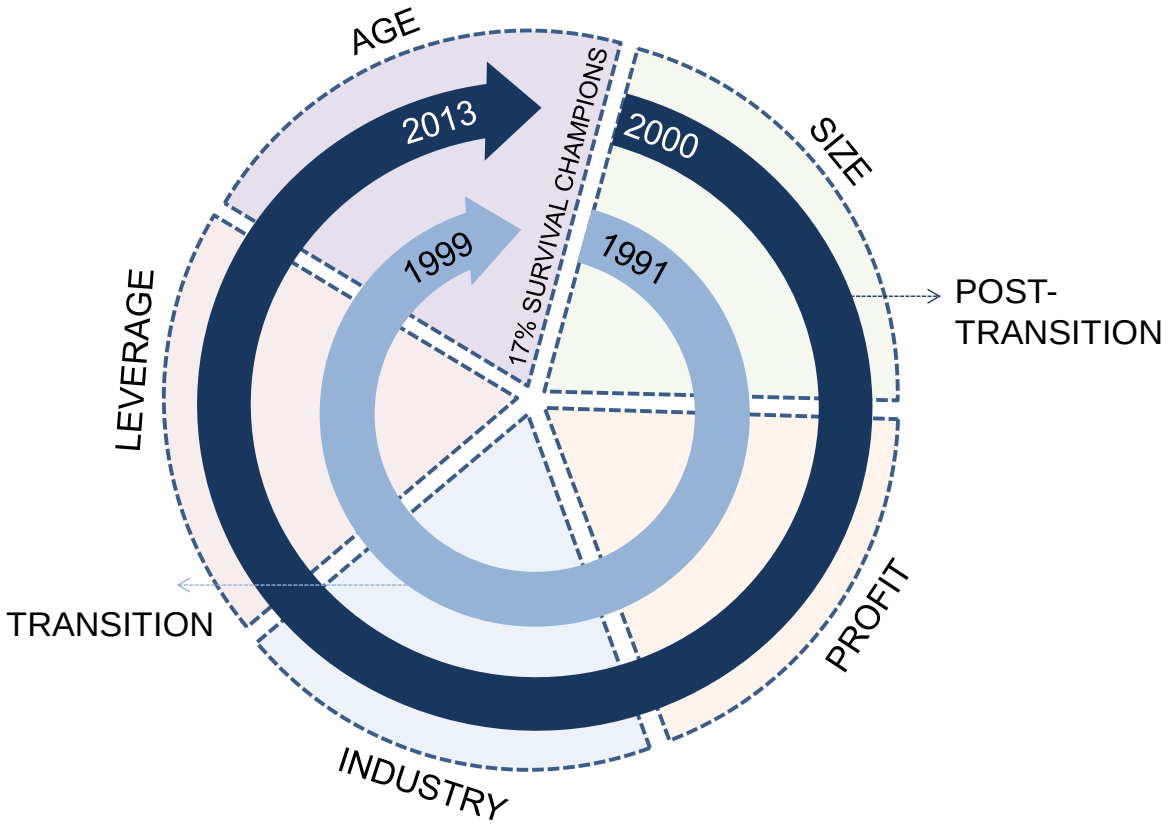
environmental movements by building up sufficient internal resources to ride out the transition. Large firms were able to leverage benefits associated with age – such as scale and bargaining power – to ensure their survival (Bonn, 2000). Similarly, firms which generated high returns and maintained healthy profit ratios used these resources to cope with change by absorbing unexpected losses and reducing the likelihood of insolvency (Spaliara & Tsoukas, 2013). Surviving firms were found to operate in Sunrise industries – being those industries which were rapidly expanding, showed high growth rates and demonstrated promising prospects (Hannah, 1999). Findings from the final variable analysed showed that Survival Champions displayed healthy balance sheets with sound liability positions and that those firms which adopted conservative approaches to financing assets were rewarded for their cautious behaviour (Napolitano et al., 2015).

Finally, when the entire period was divided into two distinct phases incorporating the presidential terms of Mandela, Mbeki and Zuma, results suggested that the sensitivity of the cluster of absorption variables to survival prospects was significantly higher Post-transition when compared to during Transition. Therefore, the period Post-transition had a greater impact on the firm failure hazards. This surprising finding was contrary to expectations. A possible explanation may be that when an economy undergoes a peaceful and successful transition, it is the period post the implementation of the transition which creates environmental volatility as political reality sets in, and not the period during which the transition takes place. Following Spaliara & Tsoukas, (2013), it is established that good financial shape is more important during a tumultuous period.

The research findings are summarised in the model presented in Figure 8. The model illustrates the five factors within the cluster of absorption variables which impact survival probability. Age, size, profitability, industry and leverage are all significant predictors of survival of firms operating in a transitional economy. The model further demonstrates that all five of the variables have a more significant impact on survival in the Post-transition years 2000 to 2013 compared to the Transition years 1991 to 1999. This is shown by the larger, outer period arrow.

The findings enrich research in the long-standing field of survival by studying survival in a developing market context. Results suggest that long-living South African firms built up heft and bulk which enabled them to weather the vagaries of a shifting environment and that what matters for survival in an environment characterised by dramatic transition is the ability to absorb change.

Figure 8: Transitional economy survival factors model



7.3 Implications and recommendations for management

Organisational management

The testimony given by the minority of firms able to ride out profound transitional change is central to managing organisations (Bonn, 2000; Napolitano et al., 2015). Questions such as 'Why do some firms have better survival prospects than others?' and 'What factors lead to the longevity of these extraordinarily resilient firms?' are of basic concern for every CEO, manager and entrepreneur. This is true not only for those involved in managing organisations, but also for consultants, investors, journalists and "anyone else interested in the distinguishing characteristics" of a transitional economy Survival Champion (Collins & Porras, 2005, p. xvi). Understanding what makes exceptional survivors truly different as they negotiate dramatic transformation in the environment around them allows for the discovery of timeless principles which can be applied to other firms in emerging economies (Collins & Porras, 2005). Lessons offered by the Survival Champions can be learned and applied by managers at all levels of the organisation.

Stakeholder approach

Findings of time-tested fundamentals have implications not only for the actors within firms themselves, but also for the economic, political and social systems in which these organisations emerge and die (Napolitano et al., 2015). Both the businesses themselves and key stakeholders are affected by the on-going operations of the firm.

Crane & Matten (2010) define a stakeholder as "any group or individual who can affect, or is affected by, the achievement of the organisations objectives" (p. 61). From this it is clear that a wide group of stakeholders including government, customers, employees, suppliers and even competitors are affected by the on-going longevity of the firm. This corresponds to the Schumpeterian view that while creative destruction is a common feature in capitalist economies (Baker & Kennedy, 2002), business failure has a damaging effect on both communities and individuals affected by the firm (Schumpeter, 1942).

Key implications arise from the stakeholder relationship between government and the firm. In South Africa as well as globally, governments are tasked with the allocation of public resources, some of which are earmarked for firm resuscitation. As such, spending public funds to facilitate the operations of short-lived firms is tantamount to the inefficient use of government resources (Tsvetkova et al., 2014). For this reason, understanding which characteristics contribute to long-living firms in a transitional economy is of practical relevance for state policy-makers wishing to foster an environment of sustainable business and implement programs to stimulate economic activity (Renski, 2011; Tsvetkova et al., 2014; Spaliara & Tsoukas, 2013).

Spaliara & Tsoukas (2015) expand the argument that government is a stakeholder, concluding that those firms with poor financial health suffer from a shortage of lending during periods characterised by crisis. Such firms should have access to more affordable forms of credit in order to better their chances of survival. This is based on the idea that young and small organisations frequently exit – especially when there is an external shock – due to lack of financial resources and not necessarily due to lack of competence (Fackler et al., 2013). Accordingly, possible political action could include access to cheaper credit resources for younger, less experienced firms, thus providing improved opportunity for the on-going operations of young and small but promising businesses (Fackler et al., 2013). However, access to subsidised credit or public guarantees should be aligned to convincing future financial potential, with the knowledge that no guarantee exists by picking one small firm over another.

Other economies

Understanding the distinguishing characteristics of firms which were able to survive dramatic structural change has implications not only for South African firms, but for those firms operating in similarly diverse and transitional economies such as Brazil, Iran, Egypt and Libya. The lessons embedded in the story of the South African Survival Champions offer insights for firms operating in other economies that may have undergone – or be undergoing – similar environmental transformation. Knowledge of which firms were best suited to endure dramatic change is essential for structuring and strategy decisions and for overcoming possible shortcomings.

For example, the liability of newness and the liability of smallness can be overcome by merging younger and smaller firms with their older and larger counterparts. Moreover, firms operating in Sunset industries can avoid their predestined outcome by being absorbed into Sunrise industries in order to maximise the value of transferable skills (Hannah, 1999). As an example of this, Hannah (1999) demonstrates how American coal corporations of 1912 operating in Sunset industries were absorbed into more promising, high growth firms such as DuPont.

Hannah (1999) stresses that firms operating in these dynamic economies do not always have a predestined outcome and have the ability to alter their future. What remains critical is the development of a sustained completive advantage and “learning to operate distinctly and profitably anywhere” (Hannah, 1999, p. 270).

Period sensitivity

Finally, the finding that the Post-transition period yielded more sensitive results compared to the Transition period has implications for firms in economies undergoing similar change. While a successful transition may create an optimistic and stable corporate environment, if the transition does not deliver the promised economic, social and political objectives, a tumultuous period may follow, resulting in heightened sensitivity of the absorption variables to survival prospects.

7.4 Research limitations

Although the research employed robust sampling and methodology, a number of noticeable limitations exist. The most obvious of these was the exclusion from the sample of resource and financial firms. Excluding resource firms was specifically limiting.

As a result of a wealth of mineral resources, the South African corporate sector has traditionally been dominated by resource-specific firms. Therefore, excluding resource firms from the sample limited the analysis of cross sector firms and restricted the study of survival at a greater economic level – despite the fact that South Africa is now moving away from resources towards a more knowledge-based economy. As such, findings cannot be generalised to all listed firms. Although excluding resource and financial sectors was justified on the basis of challenges relating to financial comparisons, future research could benefit from inclusion of all three industrial, resource and financial sectors.

Second, a number of firms were excluded from the study following the application of tradability and outlier filters (Dittberner, 2016). Firms were further excluded where data obtained was incomplete. Exclusion of these firms reduced the sample size.

Third, because secondary data was not necessarily designed to meet project specific needs (Zikmund, 2000), and data sources appeared in some instances to be incorrect or incomplete, a number of gaps existed which had to be corrected for through multiple source analysis. For example, multiple sources were used to determine listing date in order to build a robust age database, which could potentially result in inconsistent results.

Fourth, in the year of death, the average of the final three years of firm financial data was used to approximate the final year ratio, since the final year ratio in average reflected spurious results. Although this meant that actual ratios in the year of death were not used, the usage of an average ratio was a far better approximation of the relevant variable being tested.

Fifth, the categorisation used for the Sunrise and Sunset industries was sourced from a business publication and not an academic journal. Furthermore, whether Sunrise and Sunset industries remain relevant for the entire period remains unresolved and needs further work to achieve a fuller understanding and more complete perspective.

Finally, only listed firms were incorporated into the study and thus findings cannot be generalised to private, nationalised or family-run firms.

7.5 Recommendations for future research

Based on the research findings and limitations discussed, a number of suggestions for future research are made. First, future survival studies could benefit from an extended period of analysis meaning that a richer and more detailed database could be compiled and studied.

Second, future studies could build on this study by including the analysis of all three listed sectors, being financial, resources and industrial. This would enable the study of survival at greater economic level.

Third, the field of survival could be further matured by extending this study to other economies which have undergone – or are undergoing – similar transitional change, such as Brazil, Iran, Egypt and Libya. Contrasting such studies to this research would provide a unique and meaningful academic comparison which would further enrich the understanding of firm survival in emerging markets.

A fourth area for future research lies in the realm of the Sunrise and Sunset industry categorisation. Studies could benefit from conducting further work to better understand the make-up and changing nature of such industries in emerging markets, as well as the impact that such industries have on future prospects of the firm.

A final suggestion for future research is that while this study focused on a set of absorptive characteristics which enabled firms to endure change, the study could be extended by exploring which agility factors impact firm survival. As noted by Sull (2009), “absorption and agility are not mutually exclusive” but are instead complementary attributes (p. 219). As a result, future research could benefit by integrating these two perspectives. The theoretical foundation for this integrated approach has already been laid out and discussed in the literature reviewed in Chapter 2. Extending this study by incorporating agility factors such as leadership, culture and process could take on either a qualitative or quantitative nature.

7.6 Concluding remarks

Understanding the distinguishing characteristics of firms which are able to navigate rapid and dramatic change contributes unique insights to the understanding of corporate survival at a global level. Findings not only offer key lessons for managers and

stakeholders of firms at a local level, but are applicable to firms in other economies undergoing similar transitions. Although determinants of survival have been well researched in developed countries, empirical studies in transitional economies have been largely limited to examining firm exit in post-socialist countries. This research paper enriches the survival literature by adding a more nuanced and mature voice to the storytelling of corporate longevity in emerging markets.

REFERENCE LIST

Aghina, W., De Smet, A., & Weerda, K. (2015). *Agility: It rhymes with stability.* Retrieved from http://www.mckinsey.com/business-functions/organization/our-insights/agility-it-rhymes-with-stability

Ahmad, Z., Abdullah, N. M. H., & Roslan, S. (2012). Capital structure effect on firm performance: Focusing on consumers and industrials sectors on Malaysian firms. *International Review of Business Research Papers*, *8*(5), 137-155.

Amankwah-Amoah, J. (2016). An integrative process model of organisational failure. *Journal of Business Research*, *69*(9), 3388-3397.

Aragón-Correa, J. A., & Sharma, S. (2003). A contingent resource-based view of proactive corporate environmental strategy. *Academy Of Management Review, 28*(1), 71-88.

Audretsch, D. B., Houweling, P., & Thurik, A. R. (2000). Firm survival in the Netherlands. *Review of Industrial Organization*, *16*(1), 1-11.

Austin, P. C. (2012). Generating survival times to simulate Cox proportional hazards models with time-varying covariates. *Statistics in Medicine*, *31*(29), 3946-3958.

Baker, G. P., & Kennedy, R. E. (2002). Survivorship and the economic grim reaper. *Journal of Law, Economics and Organization*, *18*(2), 324-361.

Bamiatzi, Bozos, Cavusgil, Hult (2016). Revisiting the firm, industry and country effects on profitability under recessionary and expansion periods: A multi-level analysis. *Strategic Management Journal, 37,* 1448-1471.

Barney, J. (1991). Firm resources and sustained competitive advantage. *Journal of Management*, *17*(1), 99-120.

Bharadwaj, S. G., Varadarajan, P. R., & Fahy, J. (2015). Sustainable competitive advantage in service industries: A conceptual model and research propositions. *Proceedings of the 1992 Academy of Marketing Science (AMS) Annual Conference:* Springer International Publishing.

Bonn, I. (2000). Staying on top: characteristics of long-term survival. *Journal of Organizational Change Management*, *13*(1), 32-48.

Boyer, T., & Blazy, R. (2014). Born to be alive? The survival of innovative and non-innovative French micro-start-ups. *Small Business Economics*, *42*(4), 669-683.

Bruton, G. D., Lau, C. M., & Obloj, K. (2014). Institutions, resources and firm strategies: A comparative analysis of entrepreneurial firms in three transitional economies. *European Journal of International Management*, *8*(6), 697-720.

Butler, B., & Surace, K. (2015). Call for organisational agility in the emergent sector of the service industry. *Journal of Business Management*, (10), 4-14.

Byrne, J. P., Spaliara, M. E., & Tsoukas, S. (2016). Firm survival, uncertainty, and financial frictions: Is there a financial uncertainty accelerator? *Economic Inquiry*, *54*(1), 375-390.

Chandler, A. D., (1990). *Scale and scope: The dynamics of industrial capitalism*. Cambridge: Belknap Press.

Chung, Y. P., Na, H. S., & Smith, R. (2013). How important is capital structure policy to firm survival? *Journal of Corporate Finance*, *22*, 83-103.

Coleman, S., Cotei, C., & Farhat, J. (2013). A resource-based view of new firm survival: New perspectives on the role of industry and exit route. *Journal of Developmental Entrepreneurship*, *18*(1), 1-25.

Collins, J. C., & Porras, J. I. (2005). *Built to last: Successful habits of visionary companies*. New York: Random House.

Cox, D., (1972). Regression models and life tables. *Journal of the Royal Statistical Society, 34*, 187-220.

Crane, A., Mattern, S. (2010). *Business Ethics*. New York: Oxford University Press.

de Geus, A. (1997). *The living company: Habits for survival in a turbulent business environment.* Boston: Harvard Business School Press.

Delmar, F., McKelvie, A., & Wennberg, K. (2013). Untangling the relationships among growth, profitability and survival in new firms. *Technovation*, *33*(8), 276-291.

Dittberner, A. G. (2016). *Fundamental momentum: a new approach to investment analysis* (Doctoral dissertation). University of Pretoria, Pretoria, South Africa.

Dunne, J. P., & Masenyetse, R. (2015). The determinants of firm survival in South Africa. Retrieved from http://2015.essa.org.za/fullpaper/essa_2900.pdf

Dzhumashev, R., Mishra, V., & Smyth, R. (2011). *Exporting, R&D investment and Firm survival* (No. 39-11). Monash University, Department of Economics.

Edmondson, A. C., & McManus, S. E. (2007). Methodological fit in management field research. *Academy of Management Review*, *32*(4), 1246-1264.

Ehrhardt, O., & Nowak, E. (2011). The evolution of German industrial legends: The case of Baden-Württemberg, 1940–2007. *Business History*, *53*(1), 144-168.

Enriquez de la O, J. F. (2015). Resource-based view and dynamic capabilities - Achieving competitive advantage through internal resources and competences. *Budapest Management Review*, *46*(11), 50.

Fackler, D., Schnabel, C., & Wagner, J. (2013). Establishment exits in Germany: The role of size and age. *Small Business Economics*, *41*(3), 683-700.

Fagerberg, J. (2003). Schumpeter and the revival of evolutionary economics: an appraisal of the literature. *Journal of Evolutionary Economics*, *13*(2), 125-159.

Fama, E. F., & French, K. R. (1992). The cross-section of expected stock returns. *Journal of Finance*, *47*(2), 427-465.

Ferguson, N. (2008). *The ascent of money: A financial history of the world*. New York: The Penguin Press

Fernquest, J. (2010). Thailand's sunrise and sunset industries. Bangkok Post. Retrieved from http://www.bangkokpost.com.

Ferragina, A., Pittiglio, R., & Reganati, F. (2012). Multinational status and firm exit in the Italian manufacturing and service sectors. *Structural Change and Economic Dynamics*, *23*(4), 363-372.

Firer, C., Ross, SA, Westerfield, RW & Jordan, BD. (2012). *Fundamentals of corporate finance*. Berkshire: McGraw-Hill Education

GIBS Dynamic Market Index (2016). Retrieved from https://www.gibs.co.za/about-us/centres/Dynamic_Markets/Documents/DMI%202016.pdf

Gujarati, D.N. (2003). *Basic Econometrics.* New York: McGraw-Hill.

Hannah, L. (1999). Marshall's “trees" and the global “forest": Were "giant redwoods" Different? *Learning by doing in markets, firms, and countries* (pp. 253-294). University of Chicago Press.

Hannan, M. T., & Freeman, J. (1977). The population ecology of organizations. *American Journal of Sociology*, 929-964.

Hsiao, C. (2014). *Analysis of panel data.* 3rd ed. New York: Cambridge University Press.

INET BFA database. (2016). Retrieved from: http://www.inetbfa.com

Iwasaki, I. (2014). Global financial crisis, corporate governance, and firm survival: The Russian experience. *Journal of Comparative Economics*, *42*(1), 178-211.

Jullens, J. (2014, February). Why strategy matters in emerging markets after all. *Forbes*. Retrieved from http://www.forbes.com

Kaplan, E. L., & Meier, P. (1958). Nonparametric estimation from incomplete observations. *Journal of the American Statistical Association*, *53*, 457-485.

Khan, M. M. S. (2015). Factors essential for longevity among Dow Jones index organisations: QCA analysis. *The Journal of Developing Areas*, *49*(6), 469-479.

Khan, M. M. S. (2015). The longevity of large enterprises: A study of the factors that sustain enterprises over an extended period of time. *The Journal of Developing Areas*, *49*(5), 41-52.

Khanna, T., & Palepu, K. (1997). Why focused strategies may be wrong for emerging markets. *Harvard Business Review*, *75*(4), 41-48.

Khanna, T., Palepu, K. G., & Sinha, J. (2005). Strategies that fit emerging markets. *Harvard Business Review*, *83*(6), 4-19.

Khanna, T., Palepu, K. (2005). *Spotting institutional voids in emerging markets.* (HBS No. 9-106-014). Boston: Harvard Business School Publishing.

Kolasa, M., Rubaszek, M., & Taglioni, D. (2010). Firms in the great global recession: The role of foreign ownership and financial dependence. *Emerging Markets Review*, *11*(4), 341-357.

Kosova, R. (2010). Do foreign firms crowd out domestic firms? Evidence from the Czech Republic. *The Review of Economics and Statistics*, *92*(4), 861-881.

KPMG (2016). *Industries.* Retrieved from https://home.kpmg.com.

Laerd Statistics (2015). *Statistical tutorials and software guides*. Retrieved from https://statistics.laerd.com/

Le Mens, G., Hannan, M. T., & Pólos, L. (2014). Organizational obsolescence, drifting tastes, and age dependence in organizational life chances. *Organization Science*, *26*(2), 550-570.

Lings, K. (2014). *The Missing Piece*. Johannesburg, South Africa: Pan Macmillan

Lipton, M. (2014). Is South Africa's constitutional democracy being consolidated or eroded? *South African Journal of International Affairs*, *21*(1), 1-26.

Lockett, A., Thompson, S., & Morgenstern, U. (2009). The development of the resource-based view of the firm: A critical appraisal. *International Journal of Management Reviews*, *11*(1), 9-28.

Makkonen, H., Pohjola, M., Olkkonen, R., & Koponen, A. (2014). Dynamic capabilities and firm performance in a financial crisis. *Journal of Business Research*, *67*(1), 2707-2719.

Makura, M. (2012). *Going Global: Insights from South Africa's top companies*. South Africa: MME Media

Marquis, C., & Raynard, M. (2015). Institutional strategies in emerging markets. *The Academy of Management Annals*, *9*(1), 291-335.

Mas-Verdú, F., Ribeiro-Soriano, D., & Roig-Tierno, N. (2015). Firm survival: The role of incubators and business characteristics. *Journal of Business Research*, *68*(4), 793-796.

McGrath, R. G. (2012). How the Growth Outliers Do It. *Harvard Business Review, 90*(1/2), 110-116.

Mellahi, K., & Wilkinson, A. (2010). Managing and coping with organizational failure: Introduction to the special issue. *Group & Organization Management*, *35*(5), 531-541.

Michie, J., Padayachee, V. (1997). *The Political Economy of South Africa's Transition*. London, United Kingdom: The Dryden Press.

Modigliani, F. & Miller, M., (1958). The cost of capital, corporation finance and the theory of investment. *American Economic Review*, *6*, 261-297.

Napolitano, M. R., Marino, V., & Ojala, J. (2015). In search of an integrated framework of business longevity. *Business History*, *57*(7), 955-969.

National Planning Commission. (2013). *National Development Plan (2030).* Retrieved from GIBS Blackboard: http://gibs.blackboard.com

Nenty, H. J. (2009). Writing a quantitative research thesis. *International Journal of Educational Sciences*, *1*(1), 19-32.

North, D. C. (1990). *Institutions, institutional change and economic performance*. Cambridge: Cambridge University Press.

Olopade, D. (2014, February). *The end of the 'Developing World'*. The New York Times. Retrieved from http://nyti.ms/NaZ8GK

Ormerod, P. (2005). *Why most things fail: Evolution, extinction and economics*. New York: John Wiley & Sons.

Peng, M. W. (2003). Institutional transitions and strategic choices. *Academy of Management Review*, *28*(2), 275-296.

Ramamurti, R., & Singh, J. (2011). *Emerging multinationals in emerging markets*. New York: Cambridge University Press.

Renski, H. (2011). External economies of localization, urbanization and industrial diversity and new firm survival. *Papers in Regional Science*, *90*(3), 473-502.

Riviezzo, A., Skippari, M., & Garofano, A. (2015). Who wants to live forever: Exploring 30 years of research on business longevity. *Business History*, *57*(7), 970-987.

Sabin, D & Miras, H (2015). Debt level and firm performance: A Study on low-cap firms listed on the Kuala Lumpur stock exchange. *International Journal of Accounting, Business and Management*. *1*(1). 2289-4519.

Salimath, M. S., & Jones III, R. (2011). Population ecology theory: implications for sustainability. *Management Decision*, *49*(6), 874-910.

Sasaki, I., & Sone, H. (2015). Cultural approach to understanding the long-term survival of firms–Japanese Shinise firms in the sake brewing industry. *Business History*, *57*(7), 1020-1036.

Saunders, M., & Lewis, P. (2012). *Doing Research in Business & Management.* England: Pearson.

Saville, A. (2015). *How can companies boost their competitive advantage?* Retrieved from http://www.citadel.co.za/Insights/view/634/how-can-companies-boost-their-competitive-advantage

Schumpeter, J. (1942). Creative destruction. *Capitalism, Socialism and Democracy*, 82-5.

Schrör, H. (2009). Business Demography: employment and survival. *Birth*, *16*, 18.

Scott, W. R. (1987). The adolescence of institutional theory. *Administrative Science Quarterly*, 493-511.

Sharedata. (2016). Retrieved from http://www.sharedata.co.za/

Sönmez, A. (2013). Firm entry, survival, and exit. *Academic Journal of Interdisciplinary Studies*, *2*(9), 160.

Spaliara, M. E., & Tsoukas, S. (2013). What matters for corporate failures in Asia? Exploring the role of firm-specific characteristics during the Asian crisis. *Structural Change and Economic Dynamics*, *26*, 83-96.

Stadler, C. (2011). *Enduring success: What we can learn from the history of outstanding corporations*. Stanford University Press.

Sull, D. (2009). *The upside of turbulence*. Harper Business.

Tsvetkova, A., Thill, J. C., & Strumsky, D. (2014). Metropolitan innovation, firm size, and business survival in a high-tech industry. *Small Business Economics*, *43*(3), 661-676.

Veblen, T. (1898). Why is economics not an evolutionary science? *The Quarterly Journal of Economics*, *12*(4), 373-397.

Vietor, R., Sheldahl-Thomason, H. (2016). *South Africa: A Fractured Rainbow?* (HBS No. 9-716-069). Boston: Harvard Business School Publishing.

Wagner, J. (1994). The post-entry performance of new firms in German manufacturing industries. *Journal of Industrial Economics*, 92, 141–154.

Wegner, T. (2014*). Applied Business Statistics*. Juta & Company. Cape Town: South Africa.

Wernerfelt, B. (1984). A resource based view of the firm. *Strategic Management Journal, 5(2)*, 171-180.

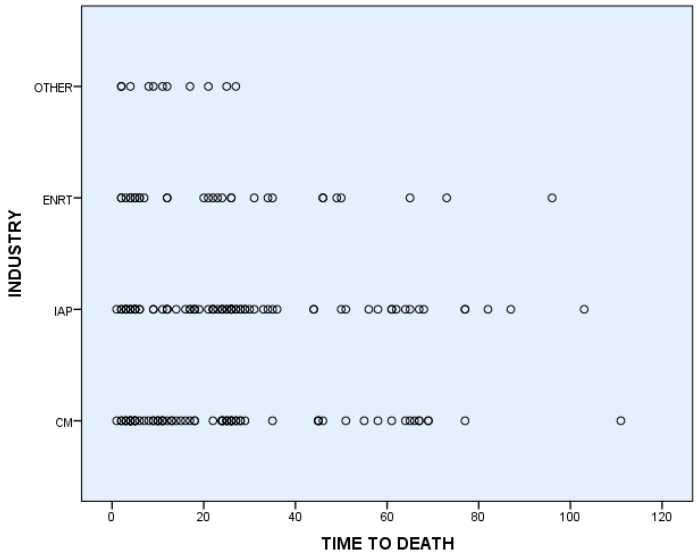
Whittington, R. (2011). More SSOP: Commentary on the special issue. *Business History, 53*(1), 169-173.

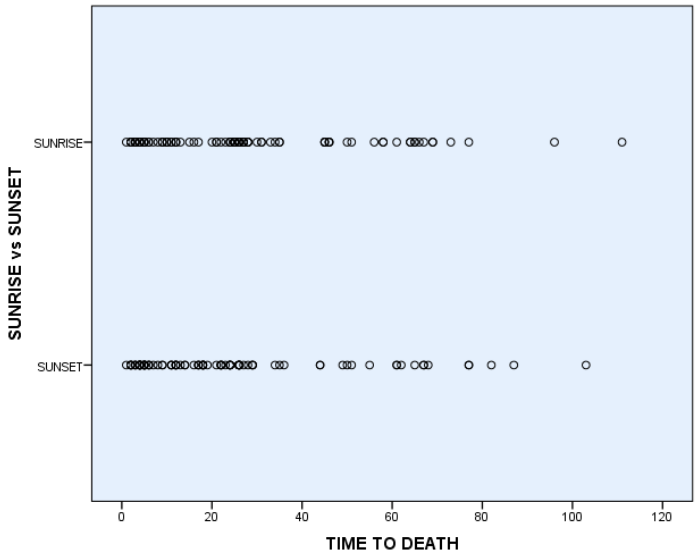
Zikmund, W. (2000). *Business Research Methods (6th Edition).* USA, Orlando: The Dryden Press, Harcourt College Publishers

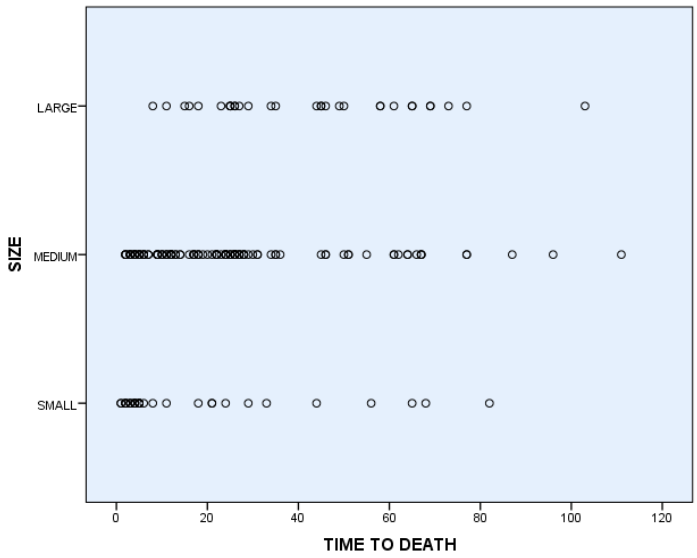
APPENDIX 1: SURVIVAL CHAMPIONS

#	CODE	NAME	#	CODE	NAME
1	ADR	Adcorp Holdings Ltd	28	MPC	Mr Price Group Ltd
2	AFE	Aeci Ltd	29	MTA	Metair Investments Ltd
3	AFX	African Oxygen Ltd	30	NCS	Nictus Ltd
4	AOO	African & Over Ent Ltd	31	NPK	Nampak Ltd
5	APN	Aspen Pharmacare Hldgs Ltd	32	NWL	Nu-World Hldgs Ltd
6	ATN	Allied Electronics Corp	33	OCE	Oceana Group Ltd
7	AVI	Avi Ltd	34	OMN	Omnia Holdings Ltd
8	BCF	Bowler Metcalf Ltd	35	PIK	Pik N Pay Stores Ltd
9	BVT	Bidvest Ltd	36	PPC	Ppc Ltd
10	CAT	Caxton Ctp Publish Print	37	PWK	Pik N Pay Holdings Ltd
11	CFR	Compagnie Fin Richemont	38	RCL	Rcl Foods Ltd
12	CKS	Crookes Brothers Ltd	39	RLO	Reunert Ltd
13	CLS	Clicks Group Ltd	40	RTO	Rex Trueform Cloth Co Ld
14	CMH	Combined Motor Hldgs Ltd	41	SAB	Sabmiller Plc
15	CRG	Cargo Carriers Ltd	42	SER	Seardel Inv Corp Ltd
16	CSB	Cashbuild Ltd	43	SHP	Shoprite Holdings Ltd
17	CUL	Cullinan Holdings Ltd	44	SOL	Sasol Ltd
18	DST	Distell Group Ltd	45	SUI	Sun International Ltd
19	ELR	Elb Group Ltd	46	TBS	Tiger Brands Ltd
20	GND	Grindrod Ltd	47	TON	Tongaat Hulett Ltd
21	HDC	Hudaco Industries Ltd	48	TPC	Transpaco Ltd
22	IPL	Imperial Holdings Ltd	49	TRE	Trencor Ltd
23	ITE	Italtile Ltd	50	TSH	Tsogo Sun Holdings Ltd
24	IVT	Invicta Holdings Ltd	51	WBO	Wilson Bayly Hlm-Ovc Ltd
25	JSC	Jasco Electron Hldgs Ltd	52	WNH	Winhold Ltd
26	MAS	Masonite Africa Ltd	53	YRK	York Timber Holdings Ltd
27	MDC	Mediclinic Internat Ltd			

APPENDIX 2: KAPLAN-MEIER CENSORING







APPENDIX 3: ETHICS APPROVAL

Gordon Institute of Business Science
University of Pretoria

Dear Mrs Amy van Schoor

Protocol Number: **Temp2016-01384**

Title: **Dynamic market survival champions**

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

You are therefore allowed to continue collecting your data.

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

Kind Regards,

Adele Bekker