

The relationship between strategic change and firm performance in JSE listed firms in South Africa

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ABSTRACT

This study was conducted in order to investigate the relationship between strategic change and firm performance. Organisations operating in today's business environments are faced with several disruptive forces such as digitisation, globalisation and urbanisation but to name a few. These forces create very complex and unpredictable environments that can make it difficult for businesses to understand how and when to change their strategies to achieve optimum performance within their industries. Many academics and industry professionals also believe that these disruptive forces have rendered traditional strategic methods such as the five forces that shape strategy (Porter, 1979) and the resource based view (Wernerfelt, 1984), obsolete.

New theories however such as the theory of transient advantage by McGrath (2013) seem to be more compatible with current business conditions. This theory revolves around the concept that competitive advantage needs to be seen as fleeting, and that strategic change should exploit these advantages in the short term, creating what is termed a transient advantage cycle.

However, in order for companies to implement such an approach, they would first need to understand what impact strategic changes have within their organisations over a period of time. This study therefore aimed to analyse the relationship between strategic change and firm performance to determine to what degree transient advantage strategies could be successful. This research was performed on a set of Johannesburg Stock Exchange listed companies to frame the study in a South African context.

The results of the study found a positive U shape relationship between strategic change and firm performance, suggesting that many firms within the study have not found the optimum level of strategic change to make within their organisations. This result therefore suggests that the implementation of a transient advantage strategy may result in erratic firm performance and that these firms should first determine what the optimum level of strategic change is before implementing dynamic strategies such as those based on McGrath (2013).

DECLARATION

I, Mogisen Iyer, declare that this research report is my own work except as indicated in the references and acknowledgements. It is submitted in partial fulfilment of the requirements for the degree of Master of Business Administration in the University of the Witwatersrand, Johannesburg. It has not been submitted before for any degree or examination in this or any other university.

Signed at Parktown

On the 27th day of March 2017

DEDICATION

I would like to dedicate this research to my wife Denira Varma. Thank you for all the support and advice during my MBA. I couldn't have done it without you.

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CHAPTER 1. INTRODUCTION

1.1 Purpose of the study

The purpose of this research was to investigate the relationship between strategic change and firm performance. The study was performed on a set of South African companies selected from the Johannesburg Stock Exchange.

This research has aimed to build on studies by Zhang and Rajagopalan (2010), Haynes and Hillman (2010) and Batra (2016) who all performed similar empirical studies on the relationship between strategic change and firm performance.

1.2 Context of the study

“Strategy is stuck” (McGrath, 2013, p. 1). In an article by Webb (2014), several strategy experts from various backgrounds, including business and academia agree that strategy frameworks currently cannot cope with the dynamic and turbulent environments that businesses find themselves in today. The traditional strategic approach of trying to adopt a single long term strategy to maintain a sustainable competitive advantage, is in itself unsustainable (Reeves, Love, & Tillmanns, 2012).

Factors and phenomena such as digitization (Evans & Forth, 2015), exponential business growth (Ismail, 2014), shared value creation (McLaughlin & McMillon, 2015) as well as global mega trends such as urbanisation and millennial demographics (Lancefield, Robert, & Boxshall, 2015) are making it necessary for all businesses to employ some form of strategic flexibility into their business models. Failure to do so may be detrimental to the future survival of the business (Nadkarni & Narayanan, 2004; Weber & Tarba, 2014).

South Africa, much like the rest of the world is trying to find its feet in this highly dynamic economic and social environment. South African companies not only have to contend with the phenomena mentioned above, but have to also be able to cope with unique conditions and problems that are local to South Africa. The International Monetary Fund

(2015) has predicted South Africa's GDP to hover around the 2% mark, weak compared to the predicted 4-5% growth expected from the rest of the African continent. With issues such as weak commodity prices, electricity supply constraints and weak investor confidence plaguing the country, many South African companies are finding it difficult to make any significant growth strides (National Treasury, 2016).

Companies operating in South Africa have to therefore make very important decisions on the type of strategy to employ as well as the magnitude and frequency of strategic changes within their organisations, as these decisions can have severe impacts on the sustainability and success of their businesses (E. L. Chen, Katila, McDonald, & Eisenhardt, 2010).

1.3 Problem statement

1.3.1 *Main problem*

The main research problem is to identify empirically whether strategic change has any significant effect on firm performance and if so what the relationship between magnitude of strategic change and firm performance is.

1.4 Significance of the study

Although empirical studies have been performed that have examined the relationship between strategic change and firm performance, Vithessonthi and Thoumrungroje (2011) believe that due to many conflicting results, more empirical studies need to be performed in this field in order for us to better understand the relationship between these variables.

As outlined in the paragraphs above, senior management in companies face a far more difficult task of putting strategies together than ten years ago, mainly due to highly volatile and dynamic environmental conditions caused by digitisation, globalisation etc.

As Nadkarni and Narayanan (2004) point out, the ability to change strategies to adapt to environments is therefore becoming vitally important to business survival.

This study will provide much needed empirical analysis on the effects of strategic change on firm performance which may benefit top management teams and strategists within corporations in making decisions on how often and by how much to change their strategic objectives. Coupled to this, this study will be performed on South African firms, and will therefore try to add a South African perspective that will hopefully benefit companies both locally and possibly in other emerging economies as well.

1.5 Delimitations of the study

The sample that will be used for this study will be firms that are publically listed on the Johannesburg stock exchange, top one hundred. All firms identified for this study have market capitalizations in excess of sixteen billion Rand. This study may therefore not be applicable to firms whose market capitalisation is drastically less than this such as new ventures or small businesses.

This study will utilise an empirical analysis using statistical methods to explain relationships between strategic change and firm performance. Echambadi, Campbell, and Agarwal (2006) point out that management studies of this type, benefit most from studies that take both a quantitative and qualitative approach to solving the research problems. It must be noted that this empirical analysis may not be able to fully describe the relationships or problems that are put forward in this research report.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

This literature review will firstly discuss some of the major founding blocks of strategic theory, based on the theories put forward by Porter (1979) and Wernerfelt (1984). The discussion will then analyse factors and theories such as digitisation, global mega trends, shared value creation and exponential business growth in relation to traditional strategic theory and examine whether literature in the last few years indicate that older strategic frameworks are obsolete in current business environments.

The literature will then examine the theory of transient competitive advantage put forth by (McGrath, 2013). This theory forms the basis of this research study as it emphasises the need for businesses to be able to change and mould their strategies in short time periods.

The literature review will then analyse in detail, studies on strategic change and firm performance which will help build a framework for which to explore the hypothesis that will be put forward at the end of this chapter.

2.2 Background Discussion

2.2.1 Basics of Strategy Theory

Porter (1979), explains that the primary objective of any company's strategy is to enable the creation of a sustainable competitive advantage, which can only be achieved by the company positioning itself such that it performs similar activities to rivals differently or completely different activities from rivals that preserve what is distinctive about the company.

The notion of sustainable competitive advantage resulted in Porter (1979) putting forward the theory that competition within an industry extends beyond industry rivals and can be influenced by competitive forces generated by the customers, suppliers, potential

entrants and substitute products who are present within that specified industry. This theory has infamously been known as the five forces that shape strategy.

While Porter (1979) looked at the external environment to shape a firm's strategy, Wernerfelt (1984) and Barney (1991) put forward that organizations should look within their companies to find sources of competitive advantage, in what they refer to as the resource base view. The authors believed that if an organisation can find resources that are valuable, rare, costly to imitate and non-substitutable, the organisation would gain a competitive advantage in its environment.

For years scholars have used theories such as the resource based view (Wernerfelt, 1984) or the five forces that shape strategy (Porter & Advantage, 1985) as the basis for strategic management studies. These studies as pointed out by Dälken (2014) are still relevant as their theoretical underpinnings still remain true for many industries today. Dälken (2014) goes on to state that although the business environment has changed drastically in the last thirty years, theories such as Porter's five forces can still be used, as these forces still have a significant effect on business performance, but have to be modified in certain areas to accommodate the new changes to the environment.

Other authors however such as Weber and Tarba (2014) and McGrath (2013) believe that these theories were based in a time where the environmental factors both internal and external to companies are vastly different from what they are now and the methods outlined in these theories are inadequate to cope with the complexities of environmental conditions that businesses find themselves in today. Their sentiments are echoed by Van Alstyne, Parker, and Choudary (2016) who use the smart phone industry and the rise and fall of companies such as Nokia, Ericsson, Apple and Samsung as examples of how the rules of strategy have changed.

2.2.2 Factors affecting the business environment

Several factors in the business environment currently are making it very difficult for businesses to design strategies that can cope with dynamic, sometimes unknown factors that affect the way they do business. Digitisation is one such topic. Evans and Forth (2015) explain that digital disruption has rendered many traditional business models and

strategic frameworks obsolete as they do not allow for the influences of disruptive technologies such as big data, augmented reality, robotics and artificial intelligence. Often these technologies may sometimes not exist when a master strategy for a business is created (Van Alstyne et al., 2016).

The effects of digitisation is further outlined by Ismail (2014), who has presented the concept of the exponential organisation. This theory outlines the fact that traditional linear growth models for businesses are becoming obsolete. New businesses are able to leverage on technologies assets such as communities and big data to achieve growth outcomes that significantly better than traditional companies. Ismail (2014) further states that businesses are becoming better, faster and cheaper and disruptive technologies are revolutionising the growth paths of many organisations, making them exponential in a very short time period.

These theories suggest that only firms who become aware and understand the shifts in their environment that are caused by digitisation, may be able to create a sustainable competitive advantage.

Another major factor influencing business strategy is the concept of shared value creation. McLaughlin and McMillon (2015) explain that the obligations of business are very different from what they used to be and there is a societal expectation that businesses should now create value for all stakeholders involved including, customers, employees, suppliers, communities, and the environment. Corporate and social needs therefore need to converge and have to be built into the overall strategy of the business. This literature suggest that businesses can no longer just concentrate on competitive advantage when formalising their strategies and have to examine a broader set of stakeholders and the business impact on them when making strategic decisions about the company.

Business strategists currently have to also contend with factors that influence their business from a global perspective, Lancefield et al. (2015) point out that global forces, in what they term mega trends, are having a significant effect on businesses. Mega trends are explained as large scale patterns such as urbanisation, climate change and technological breakthroughs, that can have a major long term effect on business and society, Hansen and Rocha (2016) in their study on building global strategies for internet

companies uses the internet as an example of how these types of forces can create an opportunity for significant market growth and new markets but similarly are also able to erode markets or entire industries by rendering them redundant.

All of the concepts above, such as digitisation, exponential organisations, shared value creation and mega trends suggest that businesses need to generate strategies that can quickly adapt to environments and market conditions around them. The literature highlights that failure by businesses to implement flexibility into their strategic plans may render them useless as the market conditions under which the strategies were initially created could no longer exist.

2.2.3 *The Theory of Transient Advantage*

In line with academics such as Weber and Tarba (2014) and Van Alstyne et al. (2016) who believe that new strategic theories and methods need to be created to cope with today's business environments, McGrath (2013) has put forth the theory of a transient competitive advantage. This theory focuses around the concept that competitive advantages need to be seen as fleeting and strategic approaches today need to focus on building existing competitive advantage, exploiting it and then moving on to building a new strategy that focuses on creating a new competitive advantage.

The diagram below illustrates how McGrath (2013) recommends businesses cycle through periods of transient advantages.

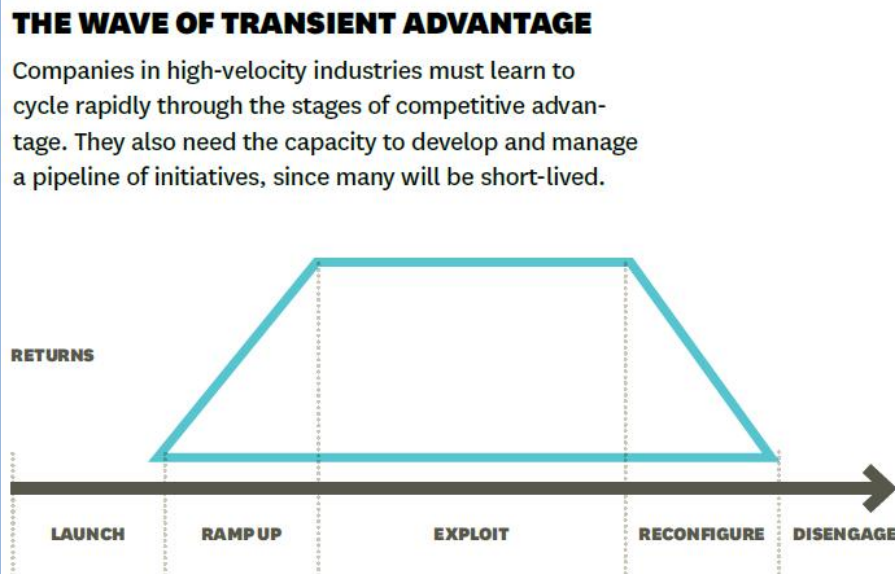


Figure 2.1: Diagram explaining how competitive advantage should be built in a firm (McGrath, 2013)

The theory of transient advantages therefore indicates that business strategy has to be innovative, flexible and be able to change in the short term In order to create an impact on the business environment. This study will therefore focus on whether this type of approach is feasible for companies to adopt by examining whether it is possible to change strategies continuously in order to improve a firm's performance. The relationship between strategic change and firm performance is therefore important in trying answer these questions.

2.3 Defining Strategic Change

Academic literature dating back four decades defined corporate level strategy and business level strategy differently. Strategy at a business level centred on decisions made with regard to competition within a specific industry (Rumelt, 1974). Corporate strategy as defined by Ansoff (1965) focused on strategic changes made within a firms product and market domains. This study will focus on strategic change at a corporate level.

Mintzberg (1978) theorised that strategic change in an organisation can be measured as change in the pattern of a firm's resource allocation. The author believed that resource

allocation can be seen as decisions made by the management of the company and strategic change can be looked at as a pattern in a stream of important decisions.

Later studies by Hoskisson and Hitt (1988) used R&D investment intensity as a measure of strategic change, while Sanders and Carpenter (1998), used internationalisation, and geographical diversification levels of a firm as a measure of strategic change. All of these studies measured strategic change as a function of a single strategic dimension.

Finkelstein and Hambrick (1990) however, who based their academic paper on Mintzberg (1978)'s theory that strategic change can be measured as a pattern of a firm's resource allocation, used six strategic indicators as composite measures of strategic change to define the overall change in pattern of a firm's resource allocation in multiple key strategic dimensions.

The six indicators chosen to measure strategic change by Finkelstein and Hambrick (1990) were done so on the basis that these indicators were easily available for data collection, could be compared between different firms, described the strategic profile of a firm, were a function of firm performance and were controllable by firm management.

Most importantly by choosing indicators that represented R&D investment, advertising spend, plant and equipment newness, production overheads, inventory and financial leverage Finkelstein and Hambrick (1990) managed to gain insight to overall strategic change within the business rather than just focusing on one dimension such as Hoskisson and Hitt (1988). This is the reason why these indicators will be used for this study.

Even recently Finkelstein and Hambrick (1990) six indicators have been used in many studies to define strategic change such as those by Zhang (2006), and Zhang and Rajagopalan (2010), Batra (2016) as well as Oehmichen, Schrapp, and Wolff (2016).

2.3.1 *Strategic Change in relation to firm performance*

Several studies have examined the relationship between strategic change and firm performance. These studies follow two distinct themes. One angle in which this

relationship is examined is through the lens of poorly performing organisations, where the success of turnaround strategies are used as an indicator of the relationship between strategic change and firm performance (Hofer, 1980; Sudarsanam & Lai, 2001). The other stream of research by academics such as Haveman (1992), Audia, Locke, and Smith (2000), Haynes and Hillman (2010), Batra (2016) have examined whether strategic change can be used to generate a sustainable competitive advantage as well as maintain and improve firm performance. For the later upon which this study is based, academic literature presents conflicting views on whether strategic change has positive effects on firm performance.

Haveman (1992), Zajac and Kraatz (1993), Zott and Amit (2008) all found evidence that strategic change enhances the performance of an organisation as firms are able to adapt to their constantly changing environments and therefore gain a competitive advantage. On the other hand Audia et al. (2000), Batra (2016) and Oehmichen et al. (2016) found that organisations which persisted with their strategies performed better than those who constantly changed. The latter group of authors highlighted that constant strategic change can lead to members of the firm loosing direction, confusion and ambiguous strategic goals causing firms to perform poorly.

While the studies above have had contradictory results most have also examined how firm size, business environment and CEO tenure have affected the degree of strategic change in companies.

Business environments for example put forward by Nadkarni and Narayanan (2004) can make a huge difference to the degree of strategic change can affect firm performance. They found that industry clock speed, which is defined as the rate of industry change driven by technological and competitive factors, plays a massive role in determining the success of strategic change. Their study found that firms which are present in industries with higher clock speeds benefit more from strategic change whilst firms in slower clock speed industries benefit more from strategic persistence.

Most of the academic literature examined for this study such Nadkarni and Barr (2008), Zhang and Rajagopalan (2010), Yi, He, Ndofor, and Wei (2015), Batra (2016), Oehmichen et al. (2016) all found negative relationships between firm size and strategic change. A common reason for this relationship that was determined by all these authors

was that as firms grow, strategic changes become more difficult to implement and that larger firms generally invest significant resources into a strategic vision which is then difficult to adapt in a short time.

Studies by Zhang and Rajagopalan (2010) and Oehmichen et al. (2016) also examined the relationship between CEO tenure and strategic change. Here both studies found that CEO tenure and strategic change had an inverse relationship indicating that the longer CEO's spent in an organisation the less changes they make to the organisation strategically.

While academia has shown that several factors affect the degree to which strategic change is implemented in organisations, the contradictory results on the relationship between firm performance and strategic change still poses a lot of questions to academia.

Vithessonthi and Thoumrungroje (2011) have therefore put forth the theory that the relationship between strategic change and firm performance is not linear, but rather an inverted U shape. The reasoning behind their assumption stems from the prior studies done where some researchers found positive linear relationships between strategic change and firm performance whilst others found negative results. Vithessonthi and Thoumrungroje (2011) believe that the data used for these studies have been heavily biased to one side of the quadratic relationship, hence leading to some studies showing contradictory linear relationships between strategic change and firm performance.

Zhang and Rajagopalan (2010) tested empirically the hypothesis of an inverted U shape relationship between strategic change and firm performance and found a statistically significant relationship between the two variables to support their hypothesis. These authors argue that strategic change can affect an organisation in an adaptive or disruptive way, where an adaptive effect would align the organisation to the environment, leading to positive effects on firm performance and on the other hand disruptive effects caused by poor decisions on strategic changes would cause negative effects on firm performance. In its disruptive form however, Zhang and Rajagopalan (2010) also put forward that strategic changes would initially have small negative effects on firm performance but as the level of strategic change grew, its impact on negative firm performance would become larger..

A similar study to Zhang and Rajagopalan (2010) and Vithessonthi and Thoumrungroje (2011) was also performed by Yi et al. (2015). Their study focused solely on Chinese firms and examined the possibility of an inverted U shaped relationship between strategic change frequency and firm performance. Yi et al. (2015) based their hypothesis on conflicting theories of the effects of strategic change frequency on firm performance. These authors cited studies by Judge and Miller (1991) and M.-J. Chen (1996) that theorised that strategic changes need to occur with high frequencies within organisations in highly dynamic environments so that these organisations can capitalise on the initiating dynamic strategic actions that would give them a competitive advantage over rival companies. Yi et al. (2015) also cited other studies that contradicted these theories such as Robert Baum and Wally (2003) who put forth that strategic changes made too quickly would lead to inefficient and disruptive behaviour within an organisation leading to decreased firm performance.

This study will follow on the academic literature detailed above. In order to examine the relationship between strategic change and firm performance the following hypothesis will be put forward:

H1: The relationship between strategic change and firm performance is an inverted U shape.

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Research methodology / paradigm

This study uses a quantitative methodology to analyse the hypotheses put forward in the literature review. Shah and Corley (2006) explain that quantitative research is based on the functionalist paradigm, originally defined by Burrell and Morgan (1979), where the aim is to replicate studies continually in order to refine the tested theories. This methodology, Shah and Corley (2006) state is based on the presumption that data gathered for a particular hypothesis or theory, will yield similar results to a study of the same nature exploring the same theories and hypothesis, thus reinforcing the theory.

Echambadi et al. (2006) state that management research benefits most from a combination of quantitative and qualitative studies. Studies based solely on quantitative methods however do play an important role in theory development in the management field. Echambadi et al. (2006) do caution that scholars wishing to undertake quantitative methods in their research need to be aware of frequently encountered methodological errors that occur in strategic management research pertaining to variable measurement, causality and endogeneity.

The purpose of this research is deductive in nature and has utilised previous studies that used similar hypothesis as the basis for the analysis. A quantitative methodology was thus the best choice for this study.

3.2 Research Design

In order to fully understand the effects of strategic change on firm performance, these variables have been measured at different times in a firm's lifecycle. Longitudinal data is therefore being used as the basis for this study. Zeger and Liang (1986) explain that longitudinal data is data that is comprised of repeated measurements of a variable at different times. The objective generally for studies involving longitudinal data is to

analyse, explain or predict the impact of covariates or predictor variables on a particular dependent variable, over a period in time. For this study, strategic change is used as predictor variables for the dependent variable, firm performance.

Diggle (2002) state that the choice of statistical model depends on the type of the dependent variable (i.e. continuous, categorical, interval). In this case, since firm performance is a continuous variable, a linear model for statistical analysis should suffice. Liang and Zeger (1986) however point out that standard linear models assume that all variables measured are independent. However since longitudinal data measures variables at different times, the correlation effects of the measurements have to be catered for in the linear model used to analyse longitudinal data.

This study therefore uses a fixed effects generalized linear model with least squares as the statistical method to analyse the data for this study. Allison (2009) explains that the fixed effect general linear model, henceforth known as the fixed effects model has become one of the statistical methods of choice for longitudinal data analysis, since it is able to accommodate the unobserved effects of each subject or environment used in the data analysis. This method may therefore eliminate some of the variable bias that may exist in a linear model as a result of exclusions of any unobserved variables. Littell, Stroup, Milliken, Wolfinger, and Schabenberger (2006) explain that this allows fixed effects models to explain more of the variance of the dependant variables in linear models. The authors caution however that individual specific fixed effects that are included in the linear models have to be time invariant.

A simplified explanation of the linear mixed model as explained from algebraic literature is defined as follows:

$$Y_{it} = \beta_0 + X_{it} \cdot \beta + \alpha_i + \varepsilon_i$$

Where:

Y_{it} = dependant variable

β_0 = y intercept of linear model

$X_{it} \cdot \beta$ = time variant predictor variables

α_i = *Unobserved specific individual effect of subjects*

ε_i = *Unobserved Random error term*

i = *the i^{th} subject*

t = *time at which the variable was measured*

3.3 Population and sample

3.3.1 Population

This research is performed on South African firms specifically selected from the Johannesburg Stock Exchange, henceforth known as the JSE. According to Johannesburg Stock Exchange (2016), the JSE is the nineteenth largest stock exchange in the world by market capitalisation and the largest in Africa. The exchange currently lists approximately four hundred companies on the equity market across both its main and alternate (Alt X) boards.

3.3.2 Sample and sampling method

This study utilises the Johannesburg Stock Exchange Top One Hundred or JSE Top 100 companies as the sample set for analysis. According to Deloitte (2014) report, the JSE Top 100 lists the top one hundred companies on the Johannesburg Stock Exchange according to market capitalisation (*See Appendix A for a list of all one hundred companies*). The JSE Top 100 comprises of firms that cover eighteen industrial sectors within the South African economy (Deloitte, 2014). This data set is therefore an excellent sample for which to perform the study.

The study analyses strategic change and firm performance on the JSE Top 100 for a period of eight years, from the year 2008 to 2015. The sampling frequency for each of the variables used in this study are done on an annual basis.

3.4 The research instrument

3.4.1 *Dependant variable:*

The dependant variable for this study is firm performance. In order to measure firm performance, the annual return on assets (ROA) for each of the firms in the study is used. This method of measuring firm performance is consistent with studies by Zhang and Rajagopalan (2010) as well as Yi et al. (2015). The ROA data obtained for the set of companies used for this study was positively skewed and hence the logarithm of this variable was used as in the statistical analysis presented in Chapter 4.

3.4.2 *Predictor variables*

Strategic change is used as the predictor variable for this study. As highlighted in the literature review, strategic change in previous studies has either been measured in a single dimension, such as the change in the diversification of a firms product mix (Boeker, 1997), or in a multi dimension space as discussed by Finkelstein and Hambrick (1990).

This study has utilised the method outlined by Finkelstein and Hambrick (1990) where a firms resource allocation, in the measurement of six key indicators has been used to measure the strategic position of a company. The change in strategic position during a certain time period can then regarded as the strategic change within the firm. The six key indicators that describe the strategic position of a firm as listed by Finkelstein and Hambrick (1990) are (1) advertising spend, (2) research and development intensity, (3) newness of plant and equipment, (4) overheads of non-production items, (5) inventory states and (6) debt to equity ratios. *(See Appendix B for detailed explanation on how each indicator is calculated)*

In order to measure the strategic change within a firm, previous studies such as those by Zhang and Rajagopalan (2010) and Oehmichen et al. (2016) have done so in the following method. Each of the six indicators outlined by Finkelstein and Hambrick (1990) were sampled on an annual basis. The difference between consecutive years of each indicator were then calculated and standardised. The standardised differences for each

indicator were then added together and averaged by dividing by six to form a composite variable representing strategic change between two consecutive years for which the indicators were measured.

In order to use this method of calculating a composite variable of strategic change, Zhang and Rajagopalan (2010) and Oehmichen et al. (2016) have intrinsically assumed that in averaging the differences of each of the six indicators used to calculate strategic change, one makes the assumption that it is ok for positive difference in one indicator to cancel out a negative difference in another indicator. For example, if a change in R&D intensity between two consecutive years resulted in a value of +1 and a change in advertising spend resulted in a value of -1, when added and averaged, these values would result in a total strategic change of zero. However if each of the indicators are thought of to be representing a dimension of a firms strategic position as described by Finkelstein and Hambrick (1990) then it is important for studies to independently evaluate the effect of each strategic indicator when using this method to analyse strategic change in order to improve the validity of the study. This study therefore utilises a different method to calculate the composite variable representing strategic change in order to improve the validity of the results put forth.

The composite variable representing strategic change for this study is calculated in the following way. Each of the six indicators outlined by Finkelstein and Hambrick (1990) are measured on an annual basis. The Euclidean distance between all six indicators for each consecutive year is then calculated and used as the composite variable representing the strategic change between the years for which the indicators were measured.

The following equation further describes how the strategic change variable is calculated:

Strategic Change =

$$\sqrt{(U_t - U_{t-1})^2 + (V_t - V_{t-1})^2 + (W_t - W_{t-1})^2 + (X_t - X_{t-1})^2 + (Y_t - Y_{t-1})^2 + (Z_t - Z_{t-1})^2}$$

Where

U = R&D Intensity

V = Advertising Intensity

W = Plant and Equipment Newness

X = Overhead Spend

U = Inventory

U = Debt to Equity Ratio

By employing this method, this study has evaluated the contribution of each of the six indicators used to examine strategic change within a firm, even when using all six indicators as a composite measure. The method of using the Euclidean distance to measure the change in multiple variables has been used in several studies including those by Ho, Wu, and Wu (2014) and Leung, Foo, and Chaturvedi (2013). This method is therefore suitable for the context of this study.

3.4.3 Control variables

Firm size is used as one of the control variables for this study. Yoo, Reed, Shin, and Lemak (2009) have shown that larger firms implement less strategic change than small firms while Haveman (1993) in his study on the relationship between strategic change and firm size found that large organisations were better equipped to take advantage of opportunities and enter new markets, compared to small firms and hence performed better. Firm size is calculated as the logarithm of the number of employees within a firm.

CEO tenure and executive remuneration have also been included as control variables in this study as they have shown to effect both firm performance and strategic change (Haynes & Hillman, 2010; Zhang & Rajagopalan, 2010). CEO tenure is measured as the number of years that CEO served in office updated annually and executive remuneration is calculated as the logarithm of executive pay extracted from each company's financial statements.

3.5 Procedure for data collection

Data for this study has been gathered using the annual reports of all the companies listed on the JSE Top 100. This information is publically available on all company websites. Further to this databases such as Reuters and Google Finance have been used to source officially released financial information of companies.

3.6 Data analysis and interpretation

This study has utilised a linear regression as the method to analyse the data for this study. As explained by Weisberg (2005), a linear regression is a statistical method used to explain or predict the behaviour of a dependant variable, by one or more predictor variables. It has already been outlined in chapter 3.2 that standard linear regression models will not suffice in this study due to the fact that longitudinal data will be used. A generalized linear model with fixed effects has therefore be used as the statistical method to test the hypothesis put forward in the chapter 2.

Three models have been run for this study. The first model tested the inverted U shape relationship between strategic change and firm performance excluding control variables to examine if the parabolic relationship exists and how much it affects the variance of the dependant variable. The second model included all control variables as well as the fixed effects of CEO tenure and industry segment. Lastly a model was run with strategic change as the dependant variable to examine what effect firm size, CEO tenure, industry sector and executive remuneration have on strategic change. By running the last model the study was able to examine the inter-relationships between the control variables, strategic change and firm performance.

Firm performance lagged the predictor variables by one year in order to take into considerations that the effect of strategic changes in year Y_1 will only happen in year Y_{t+1} .

3.7 Limitations of the study

The limitations for this study are as follows:

- This study uses the method outlined by Finkelstein and Hambrick (1990) to measure strategic change. This method only utilises the allocation of a firm's resources as a measure of strategic change.
- Firm performance is only measured using the return on assets for a firm
- Only four control variables in the form of firm size, CEO tenure, executive remuneration and industry sector will be used in the regression model. There could be several other factors that could affect the model that are not included here.
- Industry sectors are only divided in Goods and Services
- This sampling of the strategic change is only done on an annual basis.

3.8 Validity and reliability

3.8.1 *External validity*

This research paper examined the effect of strategic change on firm performance on a sample of publically listed companies from the Johannesburg Stock exchange. The measurement instrument in this study is made up of constructs that are calculated from publically available financial information obtained either from the respective company's financial statements or financial databases such as Reuters. This study can therefore be performed on companies from a variety of industries or countries as long as the specific financial information needed to make up the constructs of the measurement instruments are available. The study therefore has a high degree of external validity as it can be generalized across companies from multiple industries, countries and environments

3.8.2 *Internal validity*

Content/Face Validity

All measurement instruments in this study are taken either taken directly from the financial statements of the companies used in this study. Composite variables such as the predictor variable, strategic change are calculated in the method outlined in Section 3.4.2. All variables feeding into these equations are also taken from the annual financial statements of each company.

Firm performance is being measured by using the return on asset ratio from each of the organisations. Academic studies such as those by Huson, Malatesta, and Parrino (2004) Zhang and Rajagopalan (2010) show that ROA can be used as a good measure of firm performance.

Strategic change is being measured by calculating the Euclidean distance between each of the six indicators that measure how resources are allocated within an organisation, across consecutive years. These six indicators are based on a study by Finkelstein and Hambrick (1990). Although this method is dated, it is theoretically sound and is a good measure of strategic change within an organisation as it has been used often in academic papers some recent examples being Batra (2016) and Oehmichen et al. (2016). Although the six indicators by Finkelstein and Hambrick (1990) are being used as inputs to calculate the composite variable of strategic change, this study will use the Euclidean distance to between the six indicators over consecutive years instead of averaging the standardised differences of each indicator to represent the composite variable as done by Zhang and Rajagopalan (2010) and Oehmichen et al. (2016).

Criterion-Related Validity

The research instruments used for this study are concurrently valid as the variables such as firm performance and strategic change can be measured using other methods. For example Batra (2016) who examined the relationship between strategic change utilised a 4 point scale measuring market share, profitability, productivity and customer satisfaction as a method to measure firm performance. Other studies such as those by Yi et al. (2015) used 7 point scales instead of company financial figures to determine the six indicators of resource allocation by Finkelstein and Hambrick (1990) and measure strategic change.

The instruments used in this study are measured over an eight year period to determine the relationships between the strategic change and firm performance. The outcomes of this research is therefore based on this time period. Conclusions drawn from these results may be able to estimate what the relationship between these variables are but it is still unclear as to whether an eight year period of study is sufficient to predict what the future relationship between strategic change and firm performance will be.

Construct Validity

Hagel, Brown, and Davison (2010) explain that ROA ratios of firms are one of the best ways to measure a firm's performance as it is independent of potential short term distortions in the market is therefore a more stable indication of firm performance over the long. Furthermore Hagel et al. (2010) state that ROA unlike profitability takes into consideration the assets of the business rather than just return on sales. This is a better measure as it indicates whether companies can get return from the assets they invested into the business rather than just sales which can be volatile. The construct of firm performance is therefore valid.

Strategic change is being measured by six indicators used to describe resource allocation within a firm. These indicators were selected by Finkelstein and Hambrick (1990) as they can be compared between different firms, are a function of firm performance and are controllable by firm management. Most importantly these indicators have shown to adequately describe strategic change within firms. The construct of strategic change for this study is therefore also valid

3.8.3 Reliability

Accuracy and Precision

This study utilised data from the official annual financial reports of the JSE Top 100 companies to form the data set on which the analysis for the hypothesis put forward in the research report will be performed. The data was sampled on a yearly frequency to

keep the consistency of the data in check. The information obtained from the annual financial statements of the companies are officially audited results and therefore be taken as highly accurate. Since the results are obtained from financial stamen they can also be taken as precise since a repeated measurement of a variable will yield the exact same result.

Stability

All measurements made in this study have been taken directly from financial statements. Repeated measurements of the same variables will be taken over an eight year period. The expectation is that these variables will fluctuate over time as they are financial indicators. The instruments for this research can therefore be considered as stable.

Equivalence

This study has been performed on the top one hundred companies listed on the Johannesburg Stock Exchange, which are selected into this category by the size of their market capitalisations. The results of this study may differ considerably if this study is performed on companies whose market capitalisation is smaller than those companies listed here.

CHAPTER 4. Presentation of Results

4.1 Introduction

This chapter will present the results obtained from the statistical analysis on a dataset of South African companies, to examine the relationship between strategic change and firm performance as put forth in the hypothesis presented in Chapter 2 of this research.

This analysis runs through two different regression models in order to get a better understanding of how the dependant variable firm performance is affected by strategic change and whether previous studies are consistent with the results obtained from this study.

4.2 Sample population

The population sample used for this study was taken from the Johannesburg Stock Exchange top one hundred index. All one hundred companies were examined for this study over a period of 8 years starting from December 2008 to December 2015. The financial ratios and figures needed for this study were either obtained from the annual financial statements of the respective companies or taken off the Reuters and Google Finance databases pertaining to officially released Johannesburg stock exchange information.

Of the one hundred companies analysed, seventy one had enough available information going back to December 2008 for the statistical analysis methods to be run. These seventy one companies collectively had five hundred and sixty eight data points which were then analysed for the results below. Due to the fact that this study examines the change in a firm's strategy from one year to the next, the study

Raw Data Descriptive Statistics					
Variable	N	Means	Standard Dev.	Min	Max
ROA (Firm Performance)	544	8.13%	10.00%	-3.40%	65.00%
Strategic Change	472	1.3	4.09	0.004	42.2
Firm Size	480	26441	27173	30	181349
Executive Remuneration	520	R 44,766,869	R 58,569,216	R 1,475,000	R 657,949,000

Table 4.1: Descriptive statistics of continuous variables used

Categorical Frequency Statistics	
Variable	N
Total Number of Companies	71
Companies in Service Sector	35
Companies in Goods Sector	36
Companies with one CEO during time period	28
Companies with > one CEO during time period	44

Table 4.2: Frequency of categorical variables used

Correlation Statistics				
Variables	1	2	3	4
1.Strategic Change	1.00	-0.26***	-0.15***	-0.28***
2.Firm Size	-0.26***	1.00	0.17***	-0.09**
3.Executive Remuneration	-0.15***	0.17***	1.00	0.03
4.Firm Performance	-0.28***	-0.09**	0.03	1.00

Table 4.3: Correlation Statistics for continuous variables

Not all of the predictor variables could be calculated for the seventy one companies used in this study due to missing data as can be seen in the descriptive statistics table above. Statistical methods that are able to deal with missing data were therefore chosen to perform this study. ROA (Firm performance) as well as Strategic Change were calculated using the equations and ratios outlined in Chapter 3 of this study.

The dataset was also categorised into companies operating in the service sector and goods sector as well as two other categories pertaining to CEO tenure. Here companies were separated into those which had one CEO during the eight year time period of this study and those that had two or more CEO's during this period.

4.3 Statistical results

4.3.1 *Simple panel multiple linear regression with no control variables (Model1)*

The first analysis done on the dataset was a simple panel multiple linear regression model using the firm performance variable, ROA as the dependant variable and Strategic change and Strategic Change squared as the explanatory variables.

The objective of this model was to prove the existence of a second degree polynomial relationship between strategic change and firm performance.

This model will be referred to as **Model 1** going forward.

Parameter Estimates		
Dependant Variable = ROA (Firm Performance)		
Variable	Estimate	
Intercept	-0.78	***
Strategic Change	-0.90	***
Strategic Change*Strategic Change	0.25	***
***significant at p<0.001, **significant at P<0.01, * significant at p<0.1		

R-Square = 0.146

Table 4.4: Parameter Estimates of simple panel regression with no control variables

ANNOVA F statistics for this model indicated a good linear regression fit and highly statistically significant at $p < 0.001$. The intercept, strategic change variable and the second degree polynomial term of strategic change are all highly significant in this model indicating that there is strong quadratic relationship between firm performance and strategic change. Interestingly however, the polynomial term estimate is positive indicating a U-shape relationship between strategic change and firm performance. The R-squared value for this model was calculated to be 14.6%, indicating that a fair amount of the dependant variable, firm performance can be explained by this model.

The presence however of a positive estimate for the second degree polynomial term of strategic change, is not consistent with the hypothesis put forth in chapter two. The implications of a U shape as opposed to an inverted U shape relationship between these two variables will further be discussed in Chapter 5.

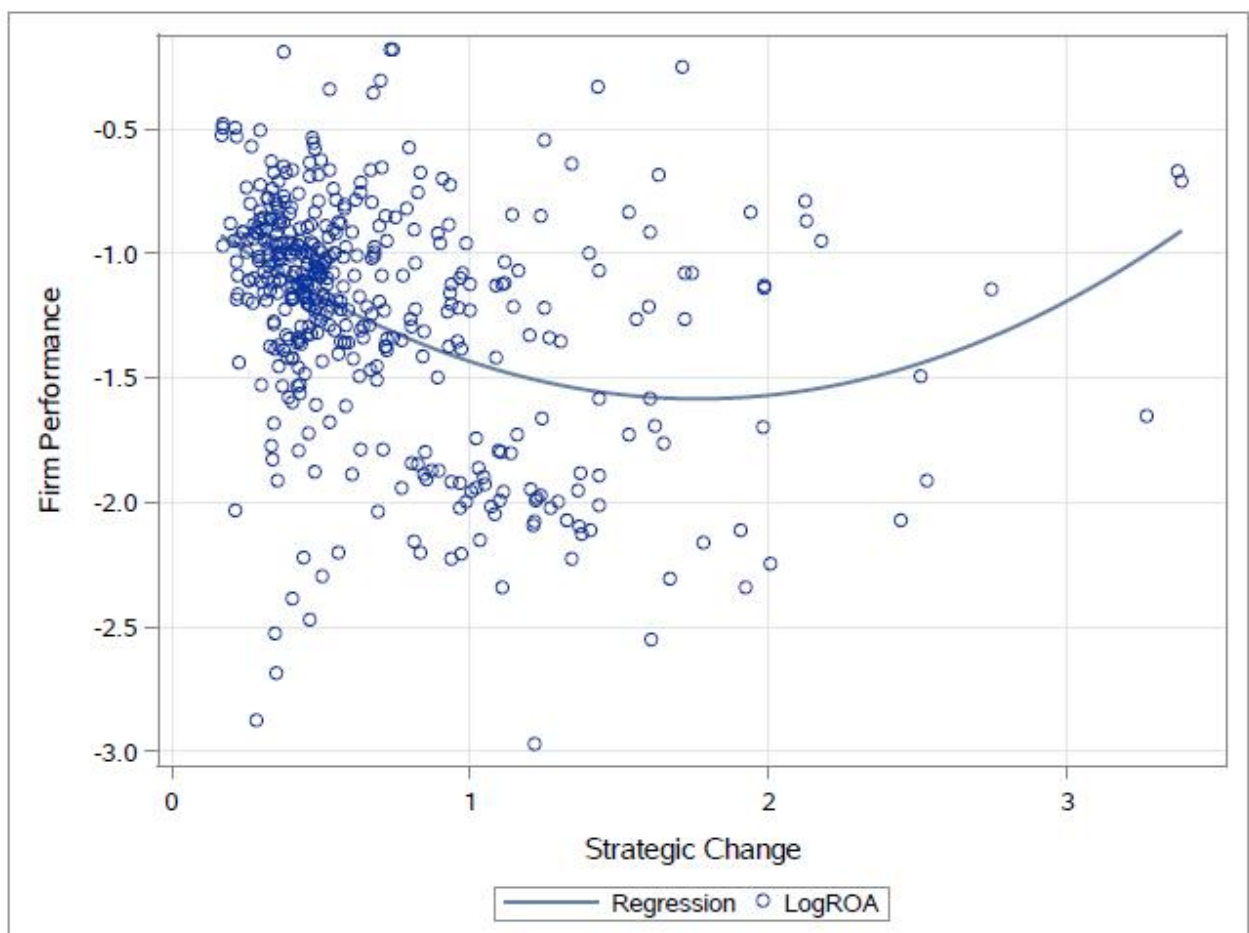


Figure 4.1: Scatter plot of Firm performance and Strategic Change fitted with the quadratic equation from Regression Model 1

Figure 4.1 above is a scatter plot of firm performance against strategic change. The quadratic equation from the previous regression model (Model 1) is superimposed onto the plot. The results paint an interesting picture, showing that a large number of firms, depicted here in the far left corner of the graph, make fairly small changes to their strategies and hover around the negative slope of the quadratic. It is possible that firms may move up and down the negative slope of the parabola, depending on the degree to which they change their strategy from year to year. One thing that is clear is that for firms acting in this region of the graph is that more strategic change leads to diminished firm performance until which time that the firm can find a large enough of strategic change that can act positively and move the firm to the positive section of the parabolic curve. This can be depicted by the firms who have made large strategic changes and find themselves on the far right of the graph. There are also firms, those that find themselves at or close to the vertex of parabola whose strategic changes have led them to very poor firm performance. In fact the presence of a statistically significant y intercept term may suggest that these particular firms would have been better making very little or changes at all to get better firm performance. The U shape relationship between strategic change and firm performance may suggest good firm performance may be more dependent on making strategic changes in the correct areas of the business rather than purely on the magnitude of strategic change across the business.

4.3.2 *Linear Regression model with Fixed Effects*

The second analysis done on the dataset is a fixed effects regression model. The equation for this model is outlined in Chapter 3 of this study. The fixed effects variables used for this model are the Industry Sector of the respective firm as well as the CEO tenure of the firm. Industry sector was broken up into Goods or Service sectors and CEO tenure was separated into two categories, one for firms which had one CEO during the time period defined for this study and another for firms which had two or more CEO's.

Firm performance, in this case is still measured by ROA "Return on Assets" and strategic change and the second degree polynomial of strategic change are also included in the

model. Firm size and executive remuneration are included as control variables for this model. This model will be referred to as **Model 2** going forward.

Parameter Estimates		
Dependant Variable = ROA (Firm Performance)		
Variable	Estimate	
Intercept	-0.70	*
Strategic Change	-1.04	***
Strategic Change*Strategic Change	0.28	***
Firm Size	-0.21	***
Executive Remuneration	0.10	*
One CEO from 2008 to 2015	-0.07	*
Two or More CEO's from 2008 to 2015		
Sector – Goods	0.19	***
Sector – Service		
***significant at p<0.001, **significant at P<0.01, * significant at p<0.1		

R-Square = 0.31

Table 4.5: Parameter Estimates of fixed effects model

The ANNOVA F statistic for this fixed effect model was highly significant at $p<0.001$ suggesting that the analysis of the regression model could therefore be performed. Inclusion of the fixed effects variables as well as the two control variables increased the R-square value in Model 1 from 14.6% to 31% indicating that Model 2 does improve the explanatory power of the linear model.

Strategic change and the second degree polynomial of strategic change are statistically significant indicating that a presence of a quadratic relationship between firm performance and strategic change still exists for this model. Firm size has a negative relationship on firm performance indicating that in this dataset larger firms performed worse than smaller firms. Executive remuneration however has a positive effect on firm performance suggesting that firms in which executives got paid better performed better.

The fixed effects variables for this model indicate that firms from the Goods industry outperformed those in the service industry. CEO tenure seems to have a negative effect on firm performance with firms having more than one CEO during the period outperforming those that had a single CEO.

4.3.3 Linear regression using Strategic Change as dependant variable (Model 3)

Since companies operating in the goods sector performed better than those in the services sector and companies with one CEO during the time period performed worse than those with two or more CEO's a linear regression was run using strategic change as the dependant variable to try and understand the relationship between sector and strategic change as well as between CEO tenure and strategic change. This model will be known as Model 3 going forward.

Parameter Estimates		
Dependant Variable = Strategic Change		
Variable	Estimate	
Intercept	2.09	***
Firm Size	-0.05	*
Executive Remuneration	-0.12	***
One CEO from 2008 to 2015	0.00	
Two or More CEO's from 2008 to 2015		
Sector – Goods	-0.43	***
Sector – Service		
***significant at $p < 0.001$, **significant at $P < 0.01$, * significant at $p < 0.05$		
R-Square = 0.26		

Table 4.6: Parameter Estimates of regression with strategic change as dependant variable

The ANNOVA F statistic for the model above was statistically significant at the $p < 0.001$ level. 26% of the variance of the dependant variable, strategic change could be explained by this model. All parameter estimates except CEO tenure, were highly significant. The results indicate that the larger the firm size, the less strategic changes are made. From the model, the executive remuneration parameter estimate indicates that executives who get paid more make less strategic changes in their companies. This model also shows that companies operating within the goods sector made 43% less changes than those in the service sector. Again the result is interesting as companies in

the good sector performed 19% better than those in the service sector. These relationships will further be discussed in Chapter 5.

CHAPTER 5. Discussion of Results

5.1 Strategic Change and firm performance

5.1.1 *Proving the Hypothesis*

This study set out to examine the relationship between strategic change and firm performance. More specifically, the statistical analysis undertaken in Chapter 4 sought to prove an inverted U shape relationship between strategic change and firm performance. Model 1 from the previous chapter was therefore used as an initial test to examine the polynomial relationship between strategic change and firm performance. While the model did prove a quadratic relationship between strategic change and firm performance, this model was not consistent with the hypothesis that strategic change and firm performance have an inverted U shape relationship. Instead, due the parameter estimate of the second degree polynomial being positive the relationship between strategic change and firm performance is a U shape and not inverted.

These results are contradictory with studies by Zhang and Rajagopalan (2010) and Vithessonthi and Thoumrungroje (2011) who found inverted U shape relationships between strategic change and firm performance. The inverted U shape relationship of these variables as put forth by Vithessonthi and Thoumrungroje (2011) suggest that firms have the ability to operate around an optimum strategy which would be the vertex of the parabolic curve. The inverted U shape also suggests that firms who are not performing either employed too little strategic change or too much and have not found their optimal operating conditions as yet.

A U shape relationship however between strategic change and firm performance tells a very different story than an inverted one. The U shape suggests that firms are unaware of where their optimum level of strategic change exists and continually overshoot or undershoot the implementation strategic changes within their businesses resulting in poor performance. Haans, Pieters, and He (2015) explain that possible reasons why firms may find themselves in this situation is because they have limited cognitive abilities, their goals and strategies are ambiguous and inconsistent or they operate in a highly

uncertain and turbulent environment in which they find it difficult to find their optimum strategic level.

Figure 4.1 however suggests that while examination the entire dataset has resulted in a U shape relationship between strategic change and firm performance, a large amount of firms operating in the far left corner of the graph make very limited changes to their strategies from year to year when compared with the full set of companies examined. It is possible that these firms may be operating around an optimal strategic level and could be moving up and down the negative slope of the parabola, suggesting that this group of firms may be cognitively able to deal with their environmental conditions and choose strategies that can lead to optimal firm performance. It is also possible that the industry within which these firms operate have conditions within which these firms can find an optimal rate of strategic change while firms who find themselves close to vertex of the parabola may struggle to deal with the turbulent conditions within their environment. This theory consistent with Nadkarni and Narayanan (2004) who put forward that industry environments play a large part in determining the degree of strategic change needed to reach the optimal level of firm performance..

5.1.2 *Explanatory power of the statistical models*

The R-squared value obtained from the two linear models used to describe firm performance and strategic change ranged from 14% to 31%. Although a significant amount of the variance of the dependant variable firm performance is unexplained, the R squared value is still significant enough for the models to be examined. Similar studies by Yi et al. (2015), Zhang and Rajagopalan (2010) and Batra (2016) have yielded similar R-square values when examining models dealing with strategic change and firm performance. It has to be noted however that a firm's performance can be affected by several factors which can emanate from both the external environment and from within the company itself. It also has to be noted that the individual specific unobserved effects of the companies themselves have not been taken into consideration in these models.

5.1.3 *Parameter estimate relationships in the statistical models*

Model 2 from the statistical analysis offered the best explanatory power for the strategic change and firm performance relationship. Apart from reinforcing a parabolic relationship between strategic change and firm performance, the model also gave some insight into how firm size, executive remuneration, CEO tenure and industry sector affect firm performance. Coupled to this a separate model called Model 3, was created with these same four predictor variables with strategic change being used as the dependant variable. This was done to also examine how these four predictor variables also affected strategic change in companies.

With respect to firm size, Model 2 showed that for the sampling period increases in firm size led to a decrease in firm performance and Model 3 showed that an increase in firm size led to a decrease in the implementation of strategic changes. With respect to firm size and strategic change, the results are consistent with studies by Yoo et al. (2009) and Oehmichen et al. (2016) which indicate that as firm size increases strategic changes may be more difficult to implement. In this particular dataset the inability of large firms to deploy strategic change may have resulted in a decrease of firm performance. However Model 1 does indicate that the relationship between strategic change and firm performance is quadratic so in some cases less strategic change may have resulted in positive firm performance for some companies.

Model 2 showed that executive remuneration has a positive effect on firm performance while Model 3 shows that executives that get paid more make less strategic changes within their firms. From the correlation statistics in Table 4.3, it is evident that larger firms pay executives more. This is also consistent with studies by Tosi, Werner, Katz, and Gomez-Mejia (2000) who found that executive remuneration is largely dependent on firm size. Literature on whether executive remuneration affects strategic changes is limited but this study however has also shown that larger firms find it more difficult to implement strategic changes and therefore the fact that firms in which executives get paid more implement less strategic changes may be more attributed to the size of the firm than executive remuneration itself.

For Industry sector, companies that operated in the goods industry outperformed those in the service industry by 19% and Model 3 indicates that companies from the goods

industry implemented almost 43% less strategic changes than those from the service industry. These results may suggest that companies operating within the service sector may be operating in more turbulent environments than those in the goods sector since they make larger changes in their strategy from year to year (Nadkarni & Narayanan, 2004). Although firms operating in goods industry performed better than those in the service industry and implemented less strategic change, it cannot be deducted that less strategic change resulted in better firm performance as the relationship between firm performance and strategic change has been shown to be quadratic.

5.1.4 *Linking back to theory*

The purpose of this research was to examine how firms should approach strategic changes within their organisations in order to maximise firm performance. One of the key pieces of literature on which this research was performed was the theory of transient advantage put forth by McGrath (2013) which states that business strategy has to be innovative, flexible and be able to change in the short term in order to create an impact on the business environment. The theory further states that competitive advantages are fleeting and strategies should exploit a firm's competitive advantage in the short term and then change it to take advantage of a new competitive advantage.

An inverted U shape relationship between strategic change and firm performance would have demonstrated that the firms within this dataset had the capability to find an optimal level of strategic change needed within their organisations. This would have meant that firms within the dataset would be able to take advantage of transient advantage strategies continually adopting them to hover around the vertex of their firm performance and strategic change parabolic curve.

However the presence of U shape relationship suggests that firms within this dataset are unaware of how to reach an optimal level of strategic change and first need to figure this out before employing transient advantage type strategies. The deployment of a transient strategy into an organisation that does not understand how to reach an optimum level of performance may result in erratic firm performance. However on the flip side a transient

strategy may also allow a firm to discover how to get to an optimal level of strategic change within the organisation or move it to a trajectory where a certain strategy moves the firm from a negative firm performance to a positive firm performance. On examination of the graphical representation Figure 4.1, this would be akin to a firm's strategic change moving it from the negative slope of the parabola to the positive slope.

One of the key findings however on examination of the scatter plot data in Figure 4.1 was that a large percentage of companies employed a similar degree of strategic change within their organisations (companies to the far left of the graph) suggesting that other external factors such as industry and environment may affect the relationship between these two variables quite drastically. This study would yield more valid results if the analysis of the strategic change and firm performance variables were done per sector. .

CHAPTER 6. Conclusions and Recommendations

6.1 Conclusion

This study aimed to examine the relationship between strategic change and firm performance. Organisations operating in today's business environments are faced with several disruptive forces such as digitisation, globalisation and urbanisation but to name a few. These forces create very complex unpredictable environments can make it difficult for businesses to understand how and when to change the strategies to suite the environments around them.

The literature in this study first tried to understand whether tried and tested theories used to build strategies such as the five forces that shape strategy (Porter, 1979) and the resource based view (Wernerfelt, 1984), still held any relevance for businesses operating in today's environments. Here conflicting views were found where some academics have shown that these theories are theoretically sound in the science of strategy and merely have to be adapted to suite the current business environments, whilst other studies contradict this by showing that business environments have changed so much in the last decade that traditional strategic models can no longer cope with the complexities that businesses find themselves in today.

There is however overwhelming evidence not only in literature that support the latter studies. The rise and fall of companies in the smart phone industry, the total eradication of the photo film and movie rental industries and the exponential growth of the internet are but just a few examples that demonstrate how volatile business environments can be.

This study has therefore focused on the strategic theories such the transient advantage put forward by McGrath (2013) that focuses around the concept that competitive advantages need to be seen as fleeting, and that strategic changes should exploit these advantages in the short term and then focus on creating new completeive advantage in what is called a transient advantage cycle. In order for companies to implement such an

approach within their organisations they need to understand what impact strategic changes have within their organisations over a period of time.

This study therefore sort to analyse the relationship between strategic change and firm performance on a set of Johannesburg Stock Exchange listed companies to frame the study in a South African context.

Literature on the relationship between strategic change and firm performance also produced contradictory results. Some studies found that high magnitudes of change benefitted firm performance whilst others found the relationship to be inverse.

This study however focused on trying to examine whether the reason for these contradictory results were due to the relationship between strategic change and firm performance being an inverted U shape. This type of relationship between these two variables have been shown in studies by Zhang and Rajagopalan (2010), Vithessonthi and Thoumrungroje (2011) and Haans et al. (2015).

Similar methods to studies by Zhang and Rajagopalan (2010) and Yi et al. (2015) were used to analyse the data obtained from the top one hundred companies on the Johannesburg Stock exchange.

Three linear models were run on different sets of variables to examine the impacts of strategic change on firm performance. This study did not find consistent results with previous studies of an inverted U shape relationship between strategic change and firm performance. Instead the models in this study resulted in a positive U shape relationship between strategic change and firm performance. The implications of this type of parabolic relationship between strategic change and firm performance had totally different implications that those of the inverted U shape models found in previous studies.

While inverted U shape between strategic change and firm performance suggest that firms have the ability to operate around an optimum strategic level, a U shape result, suggests that firms are unable for a range of reasons to discover where this optimal level is, and continually either undershoot or overshoot this point. This type of results means that firms within this dataset should first determine how to get to an optimum strategic

change level before implementing transient strategies as this may result in erratic firm performance.

6.2 Recommendations

The following studies or changes to this study should be performed in order to further analyse the relationship between strategic change and firm performance:

1. The linear regression models used in this study only resulted in an R-squared value of 31%. Better equipped statistical methods such as linear mixed models should be utilised to evaluate future studies relating to strategic change and firm performance. Linear mixed models using both random and fixed effects of subject variables have been shown to be able to statistically fit longitudinal models better than generalised mixed models so it would be recommended to utilise such methods to perform this study.
2. This study was performed only on a small set of one hundred companies from the Johannesburg Stock Exchange over a period of eight years. It would be recommended to utilise a larger sample set over a longer period to fully understand how strategic change affects firm performance
3. This study only separated the sampled companies into two industries, namely goods and services due to the size of the dataset. However companies operate in many more sectors than these and if the datasets are larger these sectors can be added into the models to understand which types of industries are most prone to the U shape relationships outlined in this study. The scattering of the data in

Figure 4.1 is an indication that industry sector and environment may have a large impact on the relationship between strategic change and firm performance.

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APPENDIX A – List of JSE Top 100 Firms

No	Company Code	Company Name	Market Capitalisation (Rand)
1	ABINBEV	Anheuser-Busch InBev SA NV	R 2,886,794,670,020
2	BATS	BRITISH AM. TOBACCO PLC	R 1,849,252,392,975
3	SABMILLER	SABMILLER PLC	R 1,403,325,851,630
4	NASPERSN	NASPERS LIMITED	R 982,953,055,524
5	GLENCORE	GLENCORE XSTRATA PLC	R 514,017,690,325
6	RICHEMONT	COMPAGNIE FIN RICHEMONT	R 439,524,000,000
7	BILLITON	BHP BILLITON PLC	R 399,477,259,495
8	STEINHOFF	Steinhoff Int Hldgs N.V	R 338,429,872,961
9	MTN	MTN GROUP LIMITED	R 265,008,292,280
10	FIRSTRAND	Firstrand Limited	R 262,299,658,926
11	SASOL	SASOL LIMITED	R 258,966,415,980
12	VODACOM	VODACOM GROUP LIMITED	R 252,431,396,100
13	ANGLO	ANGLO AMERICAN PLC	R 222,710,433,926
14	STANBANK	STANDARD BANK GROUP LIMITED	R 214,537,719,457
15	OLDMUTUAL	OLD MUTUAL PLC	R 190,982,189,916
16	ASPEN	Aspen Pharmacare Hldgs	R 172,757,973,567
17	MEDCLIN	Mediclinic Int plc	R 148,960,111,810
18	SANLAM	Sanlam Limited	R 135,404,487,875
19	NPNNIK	NBNPNR608.14CIK 1:1OCT15	R 134,752,000,000
20	ANGGOLD	ANGLOGOLD ASHANTI LIMITED	R 124,088,396,250
21	B-AFRICA	Barclays Africa Grp Ltd	R 123,771,599,134
22	REMGRO	REMGRO LIMITED	R 122,783,156,687
23	MEDCLINO	MEDICLINICO INTERNATIONAL	R 117,732,979,429
24	SOUTH32	South32 Limited	R 111,479,595,146
25	ANGLOPLAT	ANGLO AMERICAN PLATINUM CORPORATION LIMITED	R 107,872,754,400
26	NBEXX2	NBKI2EXXSTUB12 23JAN2015	R 105,348,600,000
27	SHOPRIT	SHOPRITE HOLDINGS LIMITED	R 100,338,523,794
28	MONDIPLCP	MONDI PLC PRE	R 99,155,017,350
29	NEDCOR	NEDBANK GROUP LTD	R 95,950,017,013
30	WOOLIES	WOOLWORTHS HOLDINGS LIMITED	R 88,389,268,318
31	BIDCORP	BID Corporation Ltd	R 86,842,858,571
32	RMBH	RMB HOLDINGS LIMITED	R 83,601,064,569
33	DISCOVERY	DISCOVERY HOLDINGS LIMITED	R 78,630,124,041
34	NPNNIJ	NBNPNR474.25CIJ 1:1OCT14	R 74,616,000,000
35	TIGBRANDS	TIGER BRANDS LTD	R 74,271,497,256
36	GROWPNT	GROWTHPOINT PROPERTIES LIMITED	R 73,134,950,857
37	INTUPROP	INTUPROP	R 71,927,902,010
38	CAPITEC	CAPITEC	R 70,623,809,832

39	GFIELD	GOLD FIELDS LIMITED	R 69,748,126,824
No	Company Code	Company Name	Market Capitalisation (Rand)
40	BRAIT	BRAIT S E	R 64,245,104,639
41	REINET	REINET INVESTMENTS SCA	R 63,484,976,664
42	RMIH	RAND MERCH INS HLDGS LTD	R 63,275,466,656
43	SIBANYE	SIBANYE GOLD LIMITED	R 57,134,128,682
44	INVPLC	INVESTEC PLC	R 56,071,796,934
45	REDEFINE	REDEFINE PROPERTIES LTD	R 55,508,746,984
46	MRPRICE	MR PRICE GROUP LIMITED	R 55,497,346,825
47	RESILIENT	Resilient Property Income Fund	R 52,303,534,200
48	BIDVEST	THE BIDVEST GROUP LIMITED	R 49,606,282,954
49	NEPI	NEW EUROPE PROP INV PLC	R 47,850,026,164
50	NETCARE	NETCARE LIMITED	R 47,557,528,208
51	CAPCO	CAPITAL & COUNTIES PROP PLC	R 46,551,271,791
52	KUMBAIO	Kumba Iron Ore Ltd	R 43,378,538,978
53	PSG	PSG GROUP LIMITED	R 42,943,272,397
54	PNR-FOODS	PIONEER FOODS GROUP LTD	R 42,201,137,566
55	LIFEHC	LIFE HEALTHCARE GRP HLDG LTD	R 40,482,006,803
56	SABNIK	NB SAB R268.89CIK 1:1APR15	R 40,303,000,000
57	IMPLATS	IMPALA PLATINUM HOLDINGS LIMITED	R 39,942,552,628
58	TRUWTHS	TRUWORTHS INTERNATIONAL LIMITED	R 38,654,522,217
59	SAPPI	SAPPI LIMITED	R 37,884,992,223
60	SPAR	THE SPAR GROUP LTD	R 37,631,478,842
61	PICKNPAY	PICK N PAY STORES LIMITED	R 37,122,224,396
62	FORTRESSB	FORTRESS INCOME FUND LTD	R 36,461,431,530
63	LIB-HOLD	LIBERTY HOLDINGS LTD ORD	R 36,270,426,730
64	MMIHLDS	MMI HOLDINGS LTD	R 36,150,971,344
65	TELKOM	TELKOM SA Limited	R 34,246,395,883
66	DISTELL	DISTELL	R 34,164,861,139
67	HYPROP	HYPROP INVESTMENTS LIMITED	R 33,253,107,776
68	IMPERIAL	IMPERIAL HOLDINGS LTD	R 32,495,800,304
69	MONDILTD	MONDI LIMITED	R 32,036,787,370
70	ROCKCASTL	Rockcastle Global Real Estate	R 31,840,005,709
71	TFG	THE FOSCHINI GROUP LTD	R 31,225,878,325
72	CLICKS	CLICKS GROUP LTD	R 31,168,424,928
73	A-V-I	AVI LTD	R 30,442,597,687
74	TSOGO-SUN	TSOGO SUN HOLDINGS LIMITED	R 29,943,636,842
75	EXXARO	EXXARO RESOURCES LIMITED	R 29,723,586,915
76	MASSMART	MASSMART HOLDINGS LTD	R 29,454,543,707
77	HARMONY	HARMONY GOLD MINING COMPANY LIMITED	R 28,153,340,458
78	ASSORE	ASSORE LTD	R 25,827,295,000
79	INVLT	INVESTEC LIMITED	R 25,791,996,505

80	SANTAM	SANTAM LTD	R 25,630,556,052
No	Company Code	Company Name	Market Capitalisation (Rand)
81	APNNIH	NBAPN R139.74CIH 1:1NOV14	R 25,247,000,000
82	NPNSTJ	SB NPN R1300CTJ 1:1OCT16	R 24,283,000,000
83	NORTHAM	NORTHAM PLATINUM LIMITED	R 23,607,967,927
84	CML	Coronation Fund Managers Limited	R 23,527,487,600
85	NPNSTI	SB NPN R950CTI 1:1OCT15	R 23,386,500,000
86	NEWGOLD	NEW GOLD ISSUER LTD	R 23,042,717,104
87	ARM	AFRICAN RAINBOW MINERALS	R 21,366,142,182
88	BVTNIK	NBBVTR161.90CIK1:1APR16	R 20,101,000,000
89	SOLNIK	NBSOLR285.44CIK 1:1APR15	R 19,423,000,000
90	PIKWIK	PICK N PAY HOLDINGS LIMITED	R 19,323,678,855
91	SOLNNG	NB SOLR361.50CNG1:1OCT14	R 19,244,000,000
92	EOH	EOH LTD	R 19,216,155,146
93	FORTRESSA	FORTRESS INCOME FUND LTD	R 18,587,158,344
94	OAKBAY	Oakbay Res and Energy Ltd	R 18,400,000,000
95	TOPSBA	SBTOP30000CA000100AUG15	R 16,908,000,000
96	BARWORLD	BARLOWORLD LIMITED	R 16,592,148,399
97	TBSNIJ	NB TBS R148.55CIJ 1:1OCT14	R 16,543,000,000
98	AMSNIJ	NBAMSR212.CIJ 1:1OCT14	R 16,483,000,000
99	MNPNII	NB MNP 8550CII 1:1APR15	R 16,387,000,000
100	MNDNII	NB MND 8553CII 1:1APR15	R 16,243,000,000

APPENDIX B – Equations for strategic change measurement

$$\text{Advertising Intensity} = \frac{\text{Advertising}_{Cost}}{\text{Sales}}$$

$$\text{Research and Development Intensity} = \frac{\text{R\&D}_{Cost}}{\text{Sales}}$$

$$\text{Plant and Equipment Newness} = \frac{\text{net P\&E}}{\text{gross P\&E}}$$

$$\text{Nonproduction overhead} = \frac{\text{SG\&A}}{\text{Sales}}$$

$$\text{Inventory Levels} = \frac{\text{Inventories}}{\text{Sales}}$$

$$\text{Financial leverage} = \frac{\text{Debt}}{\text{Equity}}$$

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