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Diversification as a corporate strategy: an assessment of financial performance of industrial companies in South Africa

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Abstract

Corporate strategy forms the foundation when considering the strategic alternatives available to an organisation. Corporate diversification and specialisation are two of the more popular configurations often proposed by corporate strategy theory in order to grow and sustain financial performance. The issue of whether or not diversification leads to financial performance has been debated since the early 1950s. Ample research has been conducted from an international perspective. However, the findings have been inconclusive/mixed/inconsistent and there remains a lack of consensus regarding the diversification-performance relationship.

This study attempts to provide clarity on the matter by using a quantitative method to assess the financial performance of companies listed on the industrial sector of the Johannesburg Securities Exchange (JSE) for the period 2003 to 2010. Thirty-nine companies met the criteria for inclusion in the sample and were classified as either focused, moderately or highly diversified. Three financial measures were compared for the different categories, namely return on average equity, return on average assets and market return.

Two of the three hypotheses are not statistically significant and the differences in the average (mean) performance measures are due to sampling error. One of the performance measures, return on assets, indicates that the difference in the

average (mean) performance is statistically significant. The pairwise comparisons revealed significant differences between highly and moderately diversified companies as well as between moderately diversified and focused companies. The mean difference between focused and highly diversified companies was not statistically significant. In this regard, moderately diversified companies performed better than highly diversified and focused companies.

Key words

Corporate strategy

Diversification

Financial performance

Declaration

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

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Averen Deonanan Date

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CHAPTER 1. INTRODUCTION TO THE RESEARCH PROBLEM

1.1 Introduction and background

Corporate strategy forms the foundation when considering the strategic alternatives available to an organisation. The recent global financial crisis has resulted in many chief executives questioning the strategic intent and focus of their firms. Diversification and specialisation are two of the more popular configurations often proposed by corporate strategy theory in order to grow and sustain financial performance, particularly through difficult economic periods (Subramoney, 2010).

Porter (1987) stated that “shareholders are better at spreading investment risks than the management of corporations.” Pandya and Rao (1998) noted that “diversification is a strategic option that many managers use to improve their firm’s performance”. Internationally, “despite the proliferation of studies on the subject, no clear consensus exists regarding the state of knowledge to date” (Palich, Cardinal and Miller, 2000). Rushin (2006) stated that there has been no systematic study of the diversification-performance relationship in South Africa.

To further muddy the insights offered by the empirical studies cited above, within the South African context, the country faced economic sanctions and exchange control regulation that drove it into economic isolation forcing many firms to diversify during the period of the 1960s to the early 1990s. According to Rossouw (1997), the South African economy was dominated by six large conglomerates which accounted for 80% of the Johannesburg Securities Exchange (JSE) based on market capitalisation in the 1970s and 1980s. With re-entry into the global economy many companies have divested non-core assets. South African Breweries is a prime example of this divesture, returning to its core beverage business between 1997 and 1998. Other companies such as Bidvest Ltd have remained diversified. At present Bidvest operates in services, industrial and commercial, automotive, freight and the stationery industries.

1.2 The research problem

If organisations in South Africa are to compete on the global stage it is imperative that companies follow appropriate growth strategies that will enhance their revenue generation whilst reducing earnings volatility. This becomes particularly important during times of economic downturn.

Many studies have been performed in an attempt to establish the superior corporate strategy between diversification and specialisation. The evidence

provided has shown mixed results. Lubatkin and Chatterjee (1994) provided evidence which suggests an optimal level of diversification. In their conclusions, Pandya and Rao (1998) stated that within the class of “best performing” firms, the average return on equity of undiversified firms was four times better than the highly diversified firms. However, they also state that the average return of diversified firms (especially highly diversified firms) perform well on the risk and return dimension.

In conducting a synthesis, Ramanujam and Varadarajan (1989) concluded that the literature on diversification covers a great degree of breadth and scope, but that no comprehensive view of literature exists. Rushin (2006) performed the first systematic study in South Africa by analysing the diversification-performance relationship within the South African context. The study focused on the industrial sector and compared the average return on equity, the average return on assets, the average market return and the average earnings per share growth of diversified companies to focused organisations. The findings revealed that three of the four hypotheses were statistically insignificant. The average market return was the only hypothesis that could not be disproved and found focused organisations to be superior in this regard.

Pandya and Rao (1998) suggested that there is a difference in opinion between functional disciplines within organisations where management and marketing departments favour related diversification while the financial function makes a

strong case against corporate diversification. Thus, it is unclear whether diversification adds value to an organisation and leads to superior financial performance when compared to organisations which follow a more focused strategy.

1.3 Research objective

The objective of this report is to provide empirical evidence in favour of or against the notion that organisations are able to stabilise or improve financial performance through making use of diversification as a business strategy. The study follows the evaluation conducted by Pandya and Rao (1998) and looks at the comparative performance of specialised, moderately diversified and highly diversified companies listed in the industrial sector of the JSE.

All companies listed on the industrial sector of the JSE shall be grouped into the above categories subject to the scope as detailed below. Key financial indicators will be used to evaluate the performance of companies within their categories with the aim as listed above.

1.4 Scope

Organisations will be distinguished according to the company's specialisation ratio (SR). Pandya and Rao (1998) stated that the logic underlying the utilisation of the SR is that it reflects the importance of the firm's core product market in relation to the rest of the firm. The organisations were analysed as part of the population and met the following criteria. The firms were listed on the industrial sector of the JSE for the years 2003 to 2010. The segmented revenue per their published annual reports was used to calculate the firm's SR. Each company remained within a specific category for the time period examined. The financial measures used in the study are further defined below, however the scope of the research is limited to these financial measures and adjusted financial data.

CHAPTER 2. LITERATURE REVIEW

2.1 Corporate Strategy

Porter (1987) divided strategy into two distinct levels. The first level of strategy is business unit strategy. Business unit strategy is concerned with strategic decisions within each separate business unit as they operate and compete as independent units. The second level of strategy is the company wide or corporate strategy. Corporate strategy is the overarching strategy that makes the corporate whole add-up to more than the sum of the individual business units. Hamel and Prahalad (1989) argued that core competencies nurtured at the corporate level and deployed at the business unit level can provide advantages for the corporate over businesses which are focussed on business unit performance.

Hitt, Hoskisson and Ireland (1999) defined strategy as an integrated and coordinated set of commitments and actions designed to exploit core competencies and gain a competitive advantage. Andrews (1997) stated that strategy encompasses business and corporate strategy hence supporting Porter (1987) above, and defines corporate strategy as “the pattern of decisions in a company that determines and reveals its objectives, purposes, or goals, produces the principle policies and plans for achieving those goals, and defines the range of business the company is to pursue, the kind of economic and

human organisation it is or tends to be, and the nature of the economic and non-economic contribution it tends to make to its shareholders, employees, customers, and communities".

In analysing growth strategies for an organisation, Ansoff (1958) developed a conceptualised matrix consisting of product market strategies that encapsulated both business and corporate strategy. The business growth strategies consist of market penetration, market development, product development and diversification.

Table 1 Ansoff's (1958) growth strategies

Business growth alternative	Description
Market penetration	Increase sales without departing from an original product-market strategy. The business can grow sales by increasing volume to present customers or finding new customers.
Market development	Business strategy to adapt the current product line to new markets.
Product development	Business strategy to retain the present market and develop the product characteristics which will increase the performance of the product to the current market.
Diversification	Business strategy to simultaneously depart from the current product line and the present market structure.

Source: Ansoff (1958)

Ansoff (1958) argued that a simultaneous pursuit of market penetration, market development and product development is a sign of a healthy progressive organisation, but that diversification is different from the other strategies in that it requires new skills, techniques and facilities and will lead to organisational changes in its structure and functioning.

The uses of diversification have been noted by many. Glueck (1980) identified that diversification can be used not only for growth but also for change in corporate direction. Diversification has often been viewed as an essential vehicle for growth and improved performance from a strategic perspective (Nachum, 2004). Rushin (2006) stated that diversification is a strategic tool within corporate strategy which managers can follow in the quest to create greater value.

Supporting Porter's (1987) view of corporate strategy above, De Wit and Meyer (2004) suggested that corporate strategy is about selecting an optimal set of businesses and determining how they should be integrated as a whole. The process of compiling the optimal combination of businesses and relating them to one another is referred to as corporate configuration. Two items are dealt with in determining corporate configuration.

First, management needs to consider what business areas the organisation should operate in. Second, it must be decided how the group of businesses will be managed. The first issue relates to the direction and level of diversification, whilst the second point relates to management of such an organisation. This research report focuses on the item of diversification as one of the corporate strategy alternatives available to organisations and its impact on performance of such organisation.

2.2 Diversification

2.2.1 Diversification theory

Following from the four generic strategies presented above, Ansoff (1988) provided guidance on how firms may diversify. The specific vectors of diversification are vertical integration, horizontal integration, concentric integration and conglomerate diversification. These are summarised in Table 2. Pandya and Rao (1998) supported the above growth vectors by stating that diversification is a means by which a firm expands from its core business into other product markets. Aaker (2001) provided an extension of Ansoff's definition by defining diversification as the strategy for entering product markets different to those the firm is currently engaged in. Product diversification is often considered for companies looking to grow whilst geographic diversification would be for companies looking to stabilise earnings (Subramoney, 2010).

Table 2 Ansoff's (1988) diversification growth vectors

Diversification growth vector	Description
Vertical integration	An organisation acquires or moves into suppliers' or customers' areas of expertise to ensure the supply or use of its own products and services.
Horizontal integration	New (technology unrelated) products are introduced to current markets.
Concentric integration	New products, closely related to current products, are introduced into current and / or new markets.
Conglomerate diversification	Completely new, technologically unrelated products are introduced into new markets.

Source: Ansoff (1988)

Ramanujam and Varadarajan (1989) defined diversification as the entry of a firm or business unit into new lines of activity, either by processes in internal business development or via acquisition. The acquisition route entails changes in its administrative structure, systems and other management processes.

2.2.2 Reasoning behind corporate diversification

In examining why firms diversify, Montgomery (1994) identified three main theoretical perspectives, namely the market power view, the resource view and the agency view. These are discussed briefly below.

The market power view argues that diversified firms will thrive at the expense of non-diversified firms due to conglomerate power. Conglomerate power in essence comprises anti-competitive effects. According to Villalonga (2000) there are three different anti-competitive motives. First, profits generated by the firm in one industry are utilised to support predatory pricing in another. Second, there is collusion between firms which compete with the firm simultaneously in multiple markets. Third, there is employment of corporate diversification to engage in reciprocal buying with other large firms in order to squeeze out smaller competitors.

The resource view states that firms seeking other forms of income will diversify in response to an excess capacity in resources that are transferable across industries. This view expands on economies of scope whereby the diversified firm is an efficient form for organising economic activities (Penrose, 1959). Lewis (1995) stated that conglomeration promotes the sharing of scarce managerial and technical resources and that the conglomerate form provides power to the owners to discipline management and maintain entrepreneurial initiative.

The agency view holds that diversification results from the pursuit of managerial self-interest at the expense of shareholders. This view argues that management may direct a firm's diversification in a way that increases the need for their skills thereby making their position more secure (Shleifer and Vishny, 1990),

increasing their compensation (Jensen, 1986) and, reducing the risk of their personal investment portfolio by reducing firm risk because managers cannot reduce their own risk by diversifying their portfolios (Amihud and Lev, 1981). Accordingly, the agency view predicts a negative relationship between diversification and firm value.

Jones and Hill (1988) suggested that companies consider diversification when they generate financial resources in excess of the funding required to maintain a competitive advantage in their core business. They argue that a diversified company can create value in three ways. The first two methods stem from the resource view above which is split into transferring competencies and realising economies of scope. Transferring competencies involves the company transferring key competencies in one of their value creation functions such as manufacturing or marketing to a new business to improve the competitive advantage of the new business. Realising economies of scope occurs when two or more business units share resources such as research and development and advertising. Each business unit which shares resources has to invest less in the shared function. The third way in which value can be created via diversification is through acquisition and restructure. In this case, the focus of acquisition is to purchase a company which is poorly managed and increase efficiencies through the management expertise of the acquirer. The approach is considered a form of diversification as the acquirer does not have to be in the same industry as the acquired company. Haberberg and Rieple (2001) identified six reasons as to why organisations might be interested in diversifying.

First, organisations might perceive opportunities for growth that are not available in their core businesses and by diversifying into other businesses; they could capture value and profits for the organisation. Second, organisations may want to spread their risk and diversify into different businesses as a hedge. Third, from a defensive point of view, organisations might want to diversify into other businesses to prevent their competitors from gaining a foothold in a specific market. Fourth, in achieving synergy, the organisation might want to coordinate some functions by sharing the value chain. Activities such as purchasing and production across business units could lead to economies of scale and scope. Fifth, organisations may want to diversify to gain control either by backward or forward integration therefore influencing prices and the supply of raw materials to the entire organisation. Lastly, managers might be rewarded for the size of the organisation rather than the financial performance, thus leading to management seeking diversification as the ultimate strategy.

Along with the above reasons for diversification, incentives also exist externally and internally for a company to follow a diversification strategy (Hitt, Ireland and Hoskisson, 1999). Internal incentive lies within a company which has had poor performance over a prolonged period of time. Such a company might be willing to take greater risks in an attempt to improve performance, thereby diversifying into new business. Furthermore, companies operating in mature industries might find it necessary to diversify as a defensive strategy in order to survive over the long term. Lastly, companies that have synergy between business units face greater risk as the interdependencies between the business units

increase the risk of corporate failure. Diversification could reduce the interdependency and hence reduce the risk.

Externally, regulation either promoting or inhibiting diversification plays a role. Regulation could either boost diversification in unrelated business as a result of strict regulation to encourage competition and thus avoid monopolisation, or the regulation might be more conducive to take-overs and mergers within the same industries. Second, tax laws could encourage companies to rather reinvest funds as opposed to distributing them to shareholders. Higher personal taxes encourage shareholders to want the companies to retain the dividends and use the cash to acquire new businesses as opposed to distribution to shareholders.

In South Africa there was an additional element that prompted diversification. This was the political anomaly that occurred due to apartheid. While the reasons mentioned above are applicable in South Africa, the political isolation led to an inward focused economy.

2.2.3 Benefits of diversification

Reed and Luffman (1986) noted the reduction of risk, improvement in earnings stability and synergy as the main benefits of diversification. Amit and Livnat (1989) stated that the imperfections in the financial markets suggest that

corporate diversification may be undertaken to reduce firm specific risk. They also noted that a mix of businesses minimises business risk without sacrificing profits.

In their survey of literature on corporate diversification and shareholder value, Martin and Sayrak (2001) noted benefits relating to synergy. First, as the combined fortunes of the entire diversified firm's operating units are considered. Lewellen (1971) argued that the reduction in volatility of future cash flows as a result of diversification at the firm level serves to increase the diversified firm's debt capacity. Thus, to the extent that debt adds value, diversification can be a source of added value. Second, the firm's interactions with customers, suppliers, lenders and tax authorities are affected by the aggregated fortunes of its constituent businesses (Bhide, 1990). Third, a diversified firm's cash flows may provide a superior means of funding. Internally raised capital is less costly than funds raised on the external capital market. This is achieved by shifting funds from operating decisions with limited opportunities to others that are more promising in order to create shareholder value.

Furthermore, the firm's managers can exercise superior decision making control over project selection leading to an enhanced firm value (Stein, 1997). Lewis (1995) mentioned that conglomeration provides the financial muscle necessary for large scale investments.

2.2.4 The costs of diversification

The potential costs of diversification define the benefits of maintaining a focused enterprise. The fundamental argument made against corporate diversification is that it exacerbates managerial agency problems. This means that if a firm's management tends to over invest when the organisation has excess free cash flow, then access to an internal market for capital in a diversified firm simply provides a greater opportunity to over invest (Martin and Sayrak, 2001). Hadlock, Ryngaert and Thomas (2001) also suggested that the marginal amount spent by diversified firms was invested in relatively poorer projects than the marginal amount invested by focused firms.

In assessing the benefit that diversification allows, namely the sharing of scarce managerial and technical resources, Gerson (1991) stated that some group executives were for the most part completely unfamiliar with the business of their subsidiaries. Lewis (1991) noted that many of the common services provided including treasury, tax advice, group benefits and industrial relations were not highly valued by the operating subsidiaries. Porter (1987) further noted that there is a need for compromise on the design or performance of an activity such that it may be shared. If the compromise greatly erodes the activity's effectiveness, then sharing may reduce rather than enhance competitive advantage.

2.2.5 A history of diversification

Turner (2005) summarised the international history of diversification in three phases. The early 1900s to the 1970s was well known as a time when diversification was a welcomed remedy to companies that were faced with maturity in their core businesses. With regard to the 1960s Chandler (1969) noted the following reasons for the increase in diversification. Concentration increased through World War II and declined slightly thereafter. In this regard, the event of World War II encouraged organisations to adopt diversification by opening new opportunities for the production of new products such as radar equipment and other war-related products. The post-World War II boom was characterised by constrained demand and the rapid expansion of government spending on research and development which gave momentum to diversification in the 1940s and 1950s. By the 1960s organisations developed the decentralised organisational structure which was made popular by the DuPont Corporation. The result of this was the embedding of the strategy of diversification.

With regard to the 1970s Collis and Montgomery (2005) noted that the concept of portfolio planning was developed in response to the problems and prospects of managing sustainable growth. Portfolio planning became the primary tool for resource allocation in organisations and was seen as a large step forward in the strategy of diversification. Haspeslagh (1982) concluded that by 1979, 45% of the Fortune 500 industrial companies had introduced the portfolio planning process to some extent.

In the 1980s, companies were urged to sell non-core businesses, focus on much smaller, more manageable portfolios of business and to occupy dominant market positions. This was largely due to the failure of diversification strategies in the United States of America (USA). In this regard, Collis and Montgomery (2005) noted that the portfolio planning process was not sustainable as it assumed that organisations needed to be internally self-funded, while in practice there was no reason for such a policy when capital markets were efficient.

From the 1990s onwards, companies were refocusing and not diversifying to the extent that was experienced in previous years. The new trend however, was to pursue international diversification as compared to product diversification. This increased in importance and led to greater financial performance relative to product diversification. Berger and Ofek (1995) and Ushijima and Fukui (2004) noted the reversal of diversification strategies to focus on core business in both USA and Japanese companies respectively.

In considering diversification trends within the South African context, it is noted that companies were subject to economic sanctions and regulation not permitting firms to invest offshore. This meant that South African organisations were obliged to invest within South Africa which led to large diversified corporations in the 1970s and 1980s (Rossouw, 1997).

Research completed by Bhana (2004) revealed a decline in the amount of mergers and acquisitions in South Africa since the 1990s. This coupled with corporate restructuring through spin-offs resulted in many diversified companies downsizing and focusing on their core competencies and business. The study identified 47 voluntary spin-offs that were initiated by nineteen parent organisations during the period 1988 to 1999. This was an indication that South African companies were following the international trend described above.

Bhana (2004) defined a spin off as a distribution of shares of a subsidiary to its shareholders. This results in the subsidiary becoming a separate decision-making organisation with separate control.

2.3 Diversification and firm value

2.3.1 Diversification-performance theory

Perhaps the most researched topic in the strategic management literature is the link between diversification and performance (Chatterjee and Wernerfelt, 1991), and yet a level of consensus has still not been reached regarding this topic (Palich *et al*., 2000). Palich *et al*. (2000) also noted that there has been inconsistency in the findings of the diversification-performance research for more than 30 years and that there is still a lack of agreement.

Rushin (2006) mentioned that empirical findings have shown that there has either been a positive relationship with regard to economic performance (e.g., Pandya and Rao, 1998; Singh, Mathur, Gleason & Etabari, 2001 and Piscetello, 2004), a negative relationship with regard to economic performance (e.g., Makides, 1995; Lins and Servaes, 2002 and Gary, 2005) or a curvature relationship depending on the level of diversification (e.g., Ramanujam *et al*., 1987; Hitt *et al*., 1999 and Palich *et al*. 2000). These notions are discussed briefly below.

2.3.2 The positive diversification-performance relationship

Pandya and Rao (1998) concluded that on average, diversified firms showed superior performance when compared to focused firms in terms of risk and return. The reasons for these results were that diversified firms improved their leverage and had nominal decline in operating performance, whereas focused firms reduced their leverage and had a superior operating performance.

Etabari *et al*, (2001) found that diversified firms performed better than focused firms in their study utilising a sample of 1 528 firms from 1990 to 1996. Piscetello (2004) conducted a study to measure corporate diversification, coherence and economic performance over the period 1987 to 1993 and found that a positive relationship exists between corporate diversification, coherence and economic performance.

The positive diversification-performance relationship basically postulates that a firm's performance increases as it engages in increasing levels of diversification. The model reflects increasing performance through stages of an organisation moving from being a single business into related and then unrelated diversification.

2.3.3 The negative diversification-performance relationship

Markides (1995) suggested that a negative relationship exists between diversification and the organisation's average profitability by noting that marginal returns of diversified companies decreased as further diversification occurred. Berger and Ofek (1995) calculated that on average, diversified firms had a value loss of between 13% and 15% when 3 659 organisations were studied in the United States of America (USA) during 1986 and 1991. Delios and Beamish (1999) tested the performance of 399 Japanese manufacturing firms and found that performance was not related to the extent of product diversification.

Scharfstein (1998) stated that "the consensus among academic researchers, consultants, and investment bankers is that diversified firms destroy value". The negative diversification performance relationship postulates that a firm's performance decreases as increasing levels of diversification are employed.

Lin *et al*. (2002) noted similar findings in emerging markets where diversified firms traded at a discount of approximately seven per cent as compared to focused firms. The diversification discount is further expanded on below. Gary (2005) stated that a higher degree of relatedness could intensify resource overstretching in an organisation, which causes lower profitability in comparison to an organisation which is less related.

2.3.4 The curvilinear diversification-performance relationship

Palich *et al*. (2000) described a curvilinear relationship between corporate diversification and financial performance, suggesting that performance increases as firms shift from single-business strategies to related diversification, but performance decreases as firms change from related diversification to unrelated diversification. Palich *et al*. (2000) therefore supported Varandarajan and Ramanujam's (1987) finding that related organisations out-performed unrelated diversified organisations.

Palich et al. (2000) mentioned two alternative curvilinear models that have surfaced in literature, namely the inverted-u model and the intermediate model. As stated above, each of these models posits that some diversification (moderate levels or related diversification) is better than none. The two models do however differ in their predictions of the performance trend as firms move toward even greater, usually unrelated, diversification.

The inverted-u model states that single business firms do not have the opportunity to exploit between unit synergies or the portfolio effects that are available only to moderately and highly diversified firms. Focused firms therefore do not enjoy scope economies and bear greater risk because they have not diversified their way out of that risk by financial streams from multiple businesses (Lubatkin et al., 1994). Therefore, in contrast to limited diversification, related diversifiers become involved in multiple industries with businesses that are able to tap into a common pool of resources (Lubatkin and O'Neill, 1987; Nayyar, 1992) thus yielding advantages to the firm such as synergy and economies of scope (Markides and Williamson, 1994; Seth, 1990).

While diversification has many benefits, these are often associated with major costs. Grant, Jammine and Thomas (1998) recognised the growing strain on top management as it tries to manage an increasingly disparate portfolio of businesses. Palich et al. (2000) stated that the marginal costs of diversification increase rapidly as diversification hits high levels and firms experience an optimal level of diversification. The inverted-u model is depicted below. In summary it shows us that benefits accrue to the firm as related diversification is engaged in, however, as the level of diversification increases to that of unrelated diversification, the strain on management causes firm performance to decrease.

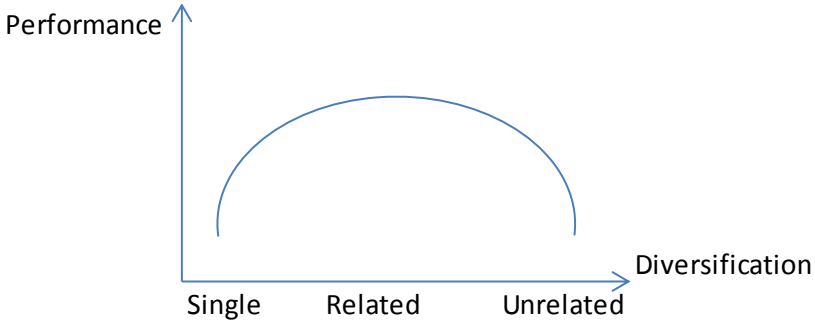

Figure 1 The inverted-u model

Source: Palich, Cardinal and Miller (2000)

The second curvilinear model is the intermediate model which debates the relative performance contribution of related versus unrelated diversification. The primary issue surrounding this topic arises from concerns that related firms may not be able to fully exploit the relatedness designed into the portfolio of businesses. Markides and Williamson (1994) argued that related diversifiers will outperform their unrelated counterparts only to the degree they are able to exploit relatedness. Goold and Campbell (1998) stated that synergy benefits often fall short of management expectations thus blunting out any primary advantage related diversification may have over unrelated alternatives.

Furthermore, industry-specific risk can be reduced only through extra-industry diversification (Kim, Hwang and Burgers, 1993). Therefore, unrelated diversification can do more to reduce risk because this strategy involves business units in multiple industries (Amit and Livnat, 1988). The intermediate

model is graphically depicted below and Markides (1992) provided helpful insight by stating that as a firm increases diversification, it moves further and further away from its core business, and the benefits of diversification decline at a marginal rate. Palich *et al*. (2000) mentioned that the benefits of diversification beyond the optimum are likely to prove disappointing, especially when compared to benefits of increasing diversity at lower levels of diversification.

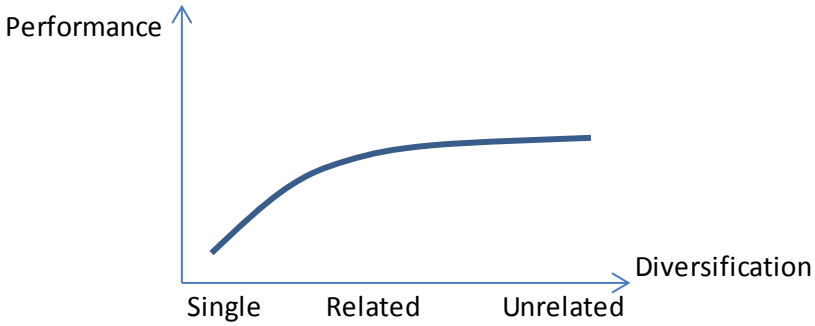

Figure 2 The intermediate model

Source: Palich, Cardinal and Miller (2000)

2.3.5 The diversification discount

Lang and Stultz (1994) and Berger and Ofek (1995) showed that diversified firms trade at a significant discount. As the size and complexity of conglomerates increase, previous optimal internal allocation of capital is likely to be replaced by an inefficient allocation of capital (Hill *et al*., 1992). Greater diversification increases managerial, structural, and organisational complexity, incurs greater coordination and integration costs and strains top management

resources (Grant *et al*., 1988). Burch, Nanda and Narayanan (2004) suggested that diversification discounts follow from a weaker competitive position of firms that choose to diversify. This is likely to occur because often, less productive firms are more likely to diversify in a bid to enhance earnings.

Shyu and Chen (2009) stated that pre-existing characteristics result in poorer firm performance before firms embark on diversification and eventually lead to a diversification discount. Graham, Lemmon and Wolf (1999) identified that acquired firms sell at an average discount of approximately 15% in their last year of operation as a standalone firm. Hyland (1999) found that conglomerate firms perform poorly and adopt a diversification strategy in an effort to acquire growth opportunities. Campa and Kedia (2002) and Villalonga (2004) reported that, after controlling for these pre-existing characteristics, the magnitude of the diversification discount is significantly reduced and shows a small diversification premium.

A diversification premium may result due to diversified firms having better access to capital markets than focused firms (Hadlock, 2001). Subsequent to this Lee and Pen (2008) argued that the premium declines over a period of time and eventually becomes a discount. The various studies performed above by multiple authors have resulted in a spectrum of outcomes. While it was previously a firm belief that a diversification discount would result, new research

as detailed above has proven otherwise resulting in an inconsistent view. The lack of current consensus as per the above theory motivates the present study.

2.4 Classification of organisations

Rumelt (1982) pioneered a categorisation approach whereby organisations were grouped into various categories based on measurements obtained from financial data and financial databases. This approach utilised ratios of revenues earned as a fraction of the total revenue. The various categories outlined were, single business, dominant vertical, dominant constrained, dominant linked-unrelated, related constrained, related linked and unrelated business.

According to the above groups, single business is the least diversified on one end of the scale whilst unrelated business is the most diversified on the other end. Rumelt (1982) utilised two important ratios in carrying out the classification. The SR measures the proportion of an organisation's revenues derived from its single largest business. The related ratio measures the proportion of an organisation's revenues derived from its largest single group of related businesses.

Pandya and Rao (1998), Markides (1995) and Harper and Viguerie (2002) utilised Rumelt's (1982) classification model. Pandya and Rao (1998) adjusted

the SR values for their purposes to focus on three categories. In carrying out the above research a Compustat database was utilised whereby organisations were classified into their modified scheme as shown in Table 4. The current research being carried out for this discussion follows the method used by Pandya and Rao (1998).

2.5 Growth and Recession in South Africa

In the decade prior to 1994, South Africa experienced the worst period of economic growth since the end of World War II as growth was variable and declining. The related causes for the slowing growth were trade and financial sanctions in opposition to the apartheid government, political instability and macroeconomic policy decisions that attempted to resuscitate the economy but resulted in higher inflation, increased uncertainty, and declining investment.

The downward trend in economic growth rates from the early 1970s was reversed in 1994. The rapid re-establishment of a basic level of political certainty was followed by confidence-building economic announcements, the combination of which helped to reverse some of the low consumption and investment levels. Output in the economy abruptly switched from contraction to growth. After averaging one per cent during the final decade of apartheid, output growth rose to an average of three per cent over the period 1994 to 2003 and just over five per cent for the period 2004 to 2007. In 2008, the South

African economy faced a number of challenges including rising local interest rates, the global economic slowdown, fall-out from the sub-prime lending crises, rising input costs, the electricity emergency, soaring oil and food prices, rising inflation and falling consumer demand.

A combination of these factors resulted in the decline of GDP growth to three per cent. In the first quarter of 2009, the economy felt the effects of the above as it declined over six per cent leading the economy into recession after seventeen years. As a result of growth stimulating policies introduced by various governments, South African GDP contracted by less than two per cent in 2009 and grew by just under three per cent in 2010.

The current study was compiled for the period 2003 to 2010. As described above, firms in South Africa were subject to a changing economic environment which encompassed erratic growth, downturn, recession and stabilisation. Whilst the research considers the performance of organisations over the entire eight year period, the above forms an ideal backdrop within which focused, moderately diversified and highly diversified strategies may be tested.

2.6 Conglomeration in South Africa

"The degree of control that is exercised over the South African economy by a handful of corporations and by the select and overlapping clique of aged white males who comprise their boards of directors in legend" (Lewis, 1991). The above was a result of apartheid and, as noted by Gerson (1991), the imposition of stringent currency restrictions in 1960 compelled large corporations to diversify within the country across many industries instead of internationally across a narrower set of activities.

However, some companies did engage in capital flight under apartheid. In this regard, Rustomjee (1991) noted that several conglomerates that dominate the economy restructured their operations to transform themselves from South African multinationals into transnational corporations by placing portions of their assets beyond the reach of the future democratic state. A multinational organisation is seen to operate in many countries but still have a parent country, whereas a transnational corporation is one that also operates worldwide but cannot be associated with a national home base. Lessard and Williamson (1987) defined capital flight as a subset of international asset redeployments or portfolio adjustments, undertaken in response to a significant perceived deterioration in risk return profiles associated with assets located in a particular country. In South Africa, as mentioned above, the capital flight was encouraged by the existence of capital and exchange controls. Capital flight occurs in many forms, with the crudest mechanism being the transfer of high value articles to

areas outside national boundaries. More sophisticated measures include the manipulation of the financial system, the use of loopholes in existing legislation or by transgressing regulatory mechanisms.

In addition to the ownership issue above and with the slow improvement of the South African economy, there has been a growing recognition that ownership structures have implications for both equity and growth. Adams and Brock (1990) defined a conglomerate as an aggregation of functionally unrelated or incoherent operating subsidiaries that are centrally managed and controlled. Thus, the activity of the conglomerate is the management of this portfolio of shares. Lewis (1991) highlighted three major elements.

First, the character of its major activity is portfolio management. Thus revenue is in the form of dividends from subsidiaries and this has an impact on the behaviour of conglomerates. Second, conglomerates operate in diverse sectors of the economy. Diversity is possibly the outstanding characteristic of conglomeration. As discussed earlier, there are various degrees of diversity and most companies start at some major historical activity. However, there is a point in the conglomeration process where transaction cost considerations and questions of upstream / downstream efficiency cease to govern the composition of a particular group of companies, and where pure financial considerations dominate. At this point, conglomeration becomes the defining characteristic of

the group. Third, conglomerates are distinct from holding companies as they are rather controlling shareholders.

Control is exercised in many different forms. It is possible to control a company without owning a majority of its shares. Scott (1986) referred to this as “controlling constellations” described as a circumstance where there is no clear dominant shareholder, whereby control is generally exercised through a complex ensemble that combines the economics of the capital market with the sociology of the boardroom and it’s interlocking directorates, old school ties and gentlemen’s clubs.

In South Africa, the controlling shareholder generally owns in excess of 50% of the share capital. However, while this may be the case, it is important to note that the ultimate controlling shareholder is not necessarily the direct owner of the dominant block of shares in any given subsidiary. The structure of pyramiding allows the company at the apex of the pyramid to control the board appointments of subsidiary corporations in which it holds a very small direct equity share itself. Some companies in South Africa look for majority ownership while others do not. This view is supported by Gerson (1991) who stated that it is entirely inappropriate to treat ownership and control as coterminous because control is not necessarily in any way dependent on the level of ownership.

Within the Top 100 companies listed on the JSE as at 2007, 56 of the organisations are listed within the industrial sector. Many of these companies are composed of mining, manufacturing and financial activities. The above listed industrial sector companies are generally manufacturing conglomerates. Taking the above into account, the industrial sector was selected for the purposes of this study.

There is a widely accepted view that conglomerates are inefficient. In considering the defining characteristic of conglomeration, the following issues arise as stated by Adams and Brock (1990). High diversification leading to conglomeration results in none of the traditional efficiencies of large scale business. It does not confer operating economies by virtue of a firm's "horizontal" size, nor does it yield economies because of a firm's "vertical" size in its ability to achieve cost savings from integrating functionally related stages of production and distribution. By their very nature, large conglomerates cut across product and industry lines, and hence do not benefit from horizontal or vertical firm size. This is largely because conglomerates are constructed on the basis of financial strength and not operational criteria.

Proponents of conglomeration have the following answers to the above. First, conglomeration does not inhibit operational management, but rather spreads scarce managerial resources throughout the economy. Second, conglomerates deploy their financial resources in support of their operating subsidiaries more

rapidly and more selectively than the capital market. They also have the capacity to mobilise capital for large investments that market mechanisms alone would not otherwise generate. Third, most conglomerates claim not to interfere in the management of their operating subsidiaries.

Lewis (1991) stated that in South Africa the private sector conglomerates dominate the allocation of capital through their activities on the JSE. The power of the conglomerates and the character of the regulatory environment inhibit the market mechanism from operating against them. Therefore an operating subsidiary of one of the South African conglomerates is immune to hostile takeover which is the ultimate market sanction. On the other hand, a successful manufacturer outside a conglomerate is subject to a predatory conglomerate which substantially inhibits long term investment.

CHAPTER 3. RESEARCH HYPOTHESES

The study that was conducted follows the approach used by Pandya and Rao (1998). In accordance with their research, the performance measures that were utilised are two accounting measures, namely, return on average equity (ROE) and return on average assets (ROA), along with market return (MKTRET) which represents a market based measure. Once these measures were ascertained, the information below was garnered.

Management researchers prefer accounting variables as performance measures such as return on equity (ROE), return on investment (ROI), and return on assets (ROA), along with their variability as measures of risk. Earlier studies typically measured accounting rates of return. These included return on investment (ROI), return on capital (ROC), return on assets (ROA) and return on sales (ROS). These measures appear to evaluate managerial performance by considering how well a firm uses their assets (as measured in Rand) to generate accounting returns per rand of investment, assets or sales.

The challenge with these measures includes the fact that accounting returns include depreciation and inventory costs which affect the accurate reporting of earnings. Asset values are also recorded historically. To cater for the accurate

measures of risk and to maintain consistency, two accounting measures were used, namely return on average equity and return on average assets, along with market return to measure performance. These measures therefore represent the dependent variables and are defined later in the discussion. Palich *et al*. (2000) also found in their study that the two main measures used were accounting and market based performance measures. A further conclusion from the study stated that diversification was related to accounting and market performance measures. The research hypotheses are as follows:

Hypothesis 1: The null hypothesis states that there is no difference in the return on average equity (ROE) between the three categories, namely, focused, moderately diversified and highly diversified.

Hypothesis 2: The null hypothesis states that there is no difference in the return on average assets (ROA) between the three categories, namely, focused, moderately diversified and highly diversified.

Hypothesis 3: The null hypothesis states that there is no difference in the market return (MKTRET) between the three categories, namely, focused, moderately diversified and highly diversified.

The performance measures return on equity and return on assets were also utilised by other researchers. In conducting their studies, return on equity was used as a financial measure by Rumelt (1986), Ramanujam *et al*. (1987), Delios and Beamish (1999), Hall and Lee (1999) and Singh (2001). Return on assets was used as a financial measure by Dubofsky and Vardarajan (1987), Berger

and Ofek (1995), Delios and Beamish (1999), Hall *et al*. (1999), Singh *et al* (2001) and Ushijima and Fukui (2004).

CHAPTER 4. RESEARCH METHOD AND DESIGN

4.1 Research design

Quasi-experimental research was utilised as the research design for the study. To define quasi-experimental research, experimental research is first defined in order to be able to distinguish the difference between these two methods. Welman and Kruger (2005) define experimental research as research where the units of analysis are exposed to something to which they would not otherwise have been subjected. True experimental research is conducted where the researcher has optimal control over the research situation and where the researcher can assign the unit of analysis randomly to groups of design.

Quasi-experimental research as defined by Welman and Kruger (2005) differs from true experimental research in that the researcher cannot randomly assign a unit of analysis to the different groups of study. The goal of the study was to categorise organisations listed on the industrial sector of the JSE into three groups based on the SR of each organisation, being highly diversified, moderately diversified or focused. For this reason, quasi-experimental research design was chosen as the organisations were classified into the above-mentioned categories utilising the SR. The SR was calculated for each year between 2003 and 2010. The basic research design is in accordance with that used by Pandya and Rao (1998).

4.2 Unit of analysis

The unit of analysis describes the level at which the research is performed and which objects are researched (Blumberg, Cooper and Schindler, 2008). The unit of analysis for this study are the organisations listed in the industrial sector of the JSE. For the purposes of the research, the organisations listed on the industrial sector of the JSE were grouped as either focused, moderately or highly diversified using Rumelt's (1982) SR.

4.3 Population of relevance

A population is the total collection of elements from which the researcher wishes to make some inferences, whereby a population element represents the subject on which the measurement is being taken (Blumberg *et al*., 2008). The population of relevance to be used specifically for the research is all organisations listed in the industrial sector of the JSE. Table 3 below reflects all companies listed on the industrial sector of the JSE as at 31 December 2010. The sampling frame, however, is limited to only those companies that remained within a specific classification group for the duration of the study. The sampling frame represents the list of elements from which the sample is actually drawn (Blumberg *et al*., 2008).

Table 3 Organisations listed on the Industrial sector the JSE as at 2010

Alpha	LongName	SubSectorLongName
MTE	Marshall Monteagle HD SA Ltd	Industrial Suppliers
BAW	Barloworld Ltd	Diversified Industrials
GND	Grindrod Ltd	Marine Transportation
MUR	Murray and Roberts Ltd	Heavy Construction
APK	Astrapak Ltd	Containers & Packaging
PMV	Primeserv Group Ltd	Business Training & Employment Agencies
EXL	Excellerate Hldgs Ltd	Business Support Services
ILA	Iliad Africa Ltd	Industrial Suppliers
OLG	Onelogix Group Ltd	Business Support Services
ZPT	Zaptronix Ltd	Electronic Equipment
MMG	Micromega Holdings Ltd	Business Support Services
VLE	Value Group Ltd	Transportation Services
DGC	Digicore Holdings Ltd	Electronic Equipment
AEG	Aveng Ltd	Heavy Construction
SLL	Stella Vista Technol Ltd	Electrical Components & Equipment
AGI	AG Industries Ltd	Building Materials & Fixtures
CMA	Command Holdings Ltd	Business Support Services
REM	Remgro Ltd	Diversified Industrials
SNV	Santova Logistics Ltd	Marine Transportation
BSR	Basil Read Holdings Ltd	Heavy Construction
CRM	Ceramic Industries Ltd	Building Materials & Fixtures
GRF	Group Five Ltd	Heavy Construction
MAS	Masonite Africa Ltd	Building Materials & Fixtures
PPC	Pretoria Portland Cement Ltd	Building Materials & Fixtures
ATN	Allied Electronics Corp Ltd	Electrical Components & Equipment
CAC	Cafca Ltd	Electrical Components & Equipment
CNL	Control Instruments Group Ltd	Electronic Equipment
JSC	Jasco Electronics Holdings Ltd	Electrical Components & Equipment
RLO	Reunert Ltd	Electrical Components & Equipment
WNH	Winhold Ltd	Industrial Suppliers
ELR	ELB Group Ltd	Industrial Suppliers
HDC	Hudaco Industries Ltd	Industrial Machinery
NPK	Nampak Ltd	Containers & Packaging
TPC	Transpaco Ltd	Containers & Packaging
JDH	John Daniel Holdings Ltd	Commercial Vehicles & Trucks
AER	Amalgamated Elec Corp Ltd	Electronic Equipment
MVGP	Mvelaphanda Group Ltd	Business Support Services
WEA	W G Wearne Ltd	Building Materials & Fixtures
ESR	Esorfranki Ltd	Heavy Construction
PSV	Psv Holdings Ltd	Industrial Machinery
SAN	Sanyati Holdings Ltd	Heavy Construction
DLG	Dialogue Group Hldgs Ltd	Business Support Services
AFT	Afrimat Ltd	Building Materials & Fixtures
CRG	Cargo Carriers Ltd	Trucking
MOB	Mobile Industries Ltd	Transportation Services
TRE	Trencor Ltd	Transportation Services
ADR	Adcorp Hldgs Ltd	Business Training & Employment Agencies
BCF	Bowler Metcalf Ltd	Containers & Packaging
CMG	Cenmag Holdings Ltd	Industrial Machinery

Alpha	LongName	SubSectorLongName
IPL	Imperial Holdings Ltd	Transportation Services
LAB	Labat Africa Ltd	Business Support Services
IVT	Invicta Holdings Ltd	Industrial Machinery
BVT	Bidvest Ltd	Diversified Industrials
WBO	Wilson Bayly Hlm Ltd	Heavy Construction
ATNP	Allied Elect Corp Ltd	Electrical Components & Equipment
WKF	Workforce Holdings Ltd	Business Training & Employment Agencies
ACE	Accentuate Ltd	Building Materials & Fixtures
TFX	Top Fix Holdings Ltd	Building Materials & Fixtures
ASO	Austro Group Ltd	Industrial Machinery
RAR	Rare Holdings Ltd	Industrial Suppliers
SOH	South Ocean Holdings Ltd	Electrical Components & Equipment
KEL	Kelly Group Ltd	Business Training & Employment Agencies
ANS	Ansys Ltd	Electronic Equipment
WTL	William Tell Holdings Ltd	Building Materials & Fixtures
IWE	Interwaste Holdings Ltd	Waste & Disposal Services
BWI	B&W Instrument & Elec Ltd	Heavy Construction
SSK	Stefanutti Stocks Holdings Ltd	Heavy Construction
BIK	Brikor Ltd	Building Materials & Fixtures
PKH	Protech Khuthele Holdings Ltd	Heavy Construction
SKY	Sea Kay Holdings Ltd	Heavy Construction
ELI	Ellies Holdings Ltd	Electrical Components & Equipment
MIX	Mix Telematics Ltd	Business Support Services
ABK	African Brick Centre Ltd	Building Materials & Fixtures
RAC	Racec Group Ltd	Heavy Construction
IDE	Ideco Group Ltd	Electronic Equipment
SFH	S A French Ltd	Industrial Suppliers
KDV	Kaydav Group Ltd	Building Materials & Fixtures
CGR	Calgro M3 Holdings Ltd	Heavy Construction
CSP	Chemical Specialities Ltd	Building Materials & Fixtures
ARH	ARB Holdings Ltd	Electrical Components & Equipment
MZR	Mazor Group Ltd	Building Materials & Fixtures
CIL	Cons Infrastructure Group Ltd	Electrical Components & Equipment
UNI	Universal Industry Corporation Ltd	Industrial Machinery
OLI	O-Line Holdings Ltd	Building Materials & Fixtures
ERB	Erbacon Investment Holdings Ltd	Heavy Construction
EQS	Eqstra Holdings Ltd	Diversified Industrials
KAP	Kap International Holdings Ltd	Diversified Industrials
BEL	Bell Equipment Ltd	Commercial Vehicles & Trucks
MFL	Metrofile Holdings Ltd	Business Support Services
DAW	Distribution And Warehousing Ltd	Building Materials & Fixtures
SPG	Super Group Ltd	Transportation Services
HWN	Howden Africa Holdings Ltd	Industrial Machinery
BDM	Buildmax Ltd	Building Materials & Fixtures
KIR	Kairos Industrial Holdings Ltd	Industrial Machinery
RGT	RGT Smart Market Int Ltd	Business Support Services
MVS	Mvelaserve Ltd	Business Support Services
RBX	Raubex Group Ltd	Heavy Construction
NT1	Net 1 UEPS Tech Incorporated	Financial Administration

Source: Johannesburg Securities Exchange (2010)

4.4 Sampling method and sample size

A non-probability convenient sample was the sampling method used. Blumberg *et al*. (2008) stated that with a non-probability sample, the probability of selecting population elements is unknown. They further state that non probability samples that are unrestricted are referred to as convenience samples. This type of sample is necessary for the study as only companies that remained within a specific classification group for the duration of the study are eligible for selection.

The SR for each company was calculated for each year 2003 to 2010. This ensured that each firm remained within their original category from the first year of the study, namely 2003. The SR method of classification was utilised by Rumelt (1982). Within the categorisation model, Rumelt (1982) defined seven categories of diversification. This was then adapted by Pandya and Rao (1998) who utilised three categories. The method utilised by Pandya and Rao (1998) was utilised in this study. Operationally, the SR is the firm's annual revenues from its largest discrete, product-market activity noted in comparison to its total revenues. The values of specialisation ratios to be used in accordance with Pandya and Rao (1998) are tabled below.

Table 4 Values of specialisation ratios to be utilised

Classification	SR values
Undiversified firms	SR $\geq$ 0.095
Moderately diversified firms	0.95 < SR $\leq$ 0.5
Highly diversified firms	SR < 0.5

Source: Pandya and Rao (1998)

As stated, organisations were categorised according to their SR. Firms with a SR greater than or equal to 0.95 were regarded as focused, firms with a SR between 0.95 and greater or equal to 0.5 were regarded as moderately diversified and firms with a SR of less than 0.5 were regarded as highly diversified organisations.

All organisations listed within the industrial sector of the JSE were subject to the limitations imposed by the study. Companies that were not listed on the JSE for the duration of the study or that were listed by means of preference shares or options as separate instruments to their ordinary shares were excluded. Further, in calculating the SR, organisations that did not report segmental revenues or where no conclusion as to separate revenue per business unit could be made, were excluded, along with companies that did not remain in one of the stated categories for the duration of the study due their SR. The categorisation process was extremely important, as the organisations' financial performance was compared to identify which group outperformed the other.

4.5 Detail of data collection

Data collection was divided into two categories. The first category was related to the collection of data to determine the level of diversification of the various organisations, whilst the second category was related to the collection of performance data of the organisations once the categorisation into focused, moderately and highly diversified companies was completed.

4.5.1 Data required to determine the organisation's level of diversification

The initial collection of data required to determine the level of diversification in the organisation was primary data. Primary data as defined by Welman and Kruger (2005) is "original data that has been collected by the researcher for the purpose of his or her own study at hand". The primary data acquired for use in respect of the above was the organisation's published annual reports for the years 2001 to 2010 to be able to establish the revenue earned per segment. The annual reports were obtained via the company's website, by direct contact with the company and through the Osiris financial database.

4.5.2 Performance data representing the dependent variable

Subsequent to the categorisation above, the performance data per organisation per year was required. The data used in this regard was secondary data. Welman and Kruger (2005) define secondary data as "information obtained by

individuals, agencies and institutions other than the researcher himself". The database utilised in this respect was McGregor's Bureau of Financial Analysis (BFANet) database, which is a vendor that supplies financial data relating to listed companies to subscribers.

The relevant performance data and their respective definitions per the McGregor BFA database as summarised by Rushin (2006) are discussed below.

Return on average equity

The return on average equity percentage (ROE%) data was obtained from the McGregor BFANet database. The relevant data obtained was data per organisation per year from 2003 to 2010. The definition of ROE% used by McGregor is:

ROE% = [Profit attributable to ordinary shareholders / (Ordinary shareholder interest at the end of the year + (Ordinary shareholder interest at the beginning of the year)/2)] x 100

Return on average assets

The return on average assets percentage (ROA%) data was obtained from the McGregor BFANet database. The relevant data obtained was data per

organisation per year from 2003 to 2010. The definition of ROA% used by McGregor is:

ROA% = [(Earnings before interest and tax) / (Total Assets at the beginning of the year + Total Assets at the end of the year)/2] x 100

Market return

The market return per organisation had to be calculated using the year-end share price and the dividends paid for the year. The year-end share price and the dividend data was obtained from McGregor's BFANet database. The data was obtained per organisation per year from 2003 to 2010. The calculation for market return was calculated in accordance with Pandya and Rao's (1998) definition.

Market return = Difference between the current year's ending stock price and the previous year's ending stock and subsequently adding the answer to the dividends paid out for the year. This result was then divided by the previous year's end market price (Pandya and Rao, 1998).

As the market return was not directly obtainable from McGregor's BFANet database, the year-end share price and ordinary dividends paid were obtained to manually perform the calculation in agreement with the above stated definition. The year-end share price is defined by McGregor as the total monetary value of shares sold during the last month of the financial year divided

by the number of shares sold during that month. The ordinary dividends paid for the year is defined by McGregor as the ordinary dividends declared or provided for in favour of the various classes of ordinary shareholders in respect of the current financial period.

4.6 Process of data analysis

Data analysis has been separated into two categories. The first category is that of descriptive techniques, whilst the second category is that of inferential statistics. These two categories are discussed further below.

4.6.1 Descriptive statistics

Welman and Kruger (2005) stated that descriptive statistics refers to the description and general characteristics of the data that was obtained for a group of individual units of analysis. Descriptive statistics consist of the mean, median, range, minimum, maximum and standard deviation for each performance measure. These statistical elements are summarised by Black (2004) below:

Table 5 Statistical El

Statistical element	Definition
n	The amount of occurrences within the sample
Mean	The long-run average of occurrences
Median	The middle value in an ordered array of numbers
Range	The difference between the largest and smallest values in a set of numbers
Minimum	The smallest value in a set of numbers
Maximum	The largest value in a set of numbers
Skewness	The lack of symmetry of a distribution of values
Kurtosis	The amount of peakedness of a distribution
Standard deviation	The square root of the variance that provides an indication of the spread of the data

Source: Black (2004)

4.6.2 Inferential statistics

Welman and Kruger (2005) defined inferential statistics as inferences a person can make about a population index on the basis of a corresponding index obtained from samples of populations. The use of parametric and non-parametric statistics was used to make such inferences about a population in hypothesis testing. Black (2004) defined parametric statistics as statistical techniques that were based on assumptions about the population from which the sample was selected. One of the important assumptions of parametric statistics was that the population was normally distributed. Nonparametric tests were defined by Black (2004) as statistics that have fewer assumptions about the population, one of which was the assumption that the population was not normally distributed.

4.6.3 Hypothesis testing

In order to provide empirical evidence in favour of or against the null hypothesis in the research, it shall be necessary to compare the means of the three independent categories of organisations for the particular performance measure being considered by the relevant hypothesis. Parametric and nonparametric-tests will be used in this regard. The parametric test to be used to obtain empirical evidence in favour of or against the stated null hypotheses in this study is the analysis of variance (ANOVA) statistical technique. This technique was previously utilised by Rumelt (1986) and Ramanujam *et al*. (1987) in obtaining evidence for their hypotheses. ANOVA is used when a study analyses more than two groups. The analysis measures the difference between the means of the three independent groups.

The ANOVA analysis used the ρ-value approach. Albright, Winston and Zappe (2003) defined the ρ-value approach as the probability of seeing a sample with at least as much evidence in favour of the alternative hypothesis as the sample actually observed. The smaller the ρ-value, the more evidence exists in favour of the alternative hypothesis. The null hypothesis was rejected when the observed ρ-value was greater than the significant level.

The ANOVA tests using the ρ-value approach was performed according to the following steps:

The null hypothesis (H_0) was stated.

The alternative hypothesis (H_1) was stated.

The significant level alpha (α) was chosen.

The sample size (n) was determined from the performance data.

The ρ-value was calculated from the statistical software used. The statistical software used in the research was Statistical Packages for Social Sciences (SPSS) version 13.

The ρ-value was compared to the significant (α) level.

The outcome of the test determined if the null hypothesis (H_0) was going to be rejected or not. The following rules were applied to the observed ρ-values:

If $\rho \geq \alpha$, the null hypothesis (H_0) was not rejected

If $\rho < \alpha$, the null hypothesis (H_0) was rejected

The ANOVA test with the ρ-value approach used above assumed the sample distribution to be normally distributed. Berenson and Levine (1996) remarked that for most population distributions, the sampling distribution of the mean will be approximately normally distributed if samples of at least 30 observations

were selected. Although the focused category had 13 organisations, the moderately diversified category had 16 organisations and the highly diversified category had ten organisations, eight years of data was used in the test. Therefore the focused category contained a sample of 104 data observations, the moderately diversified category had 128 data observations and the highly diversified category had 80 data observations. The data observations for each category are thus in excess of the required 30 sample observations mentioned by Berenson and Levine (1996).

Although the ANOVA test with the ρ-value approach assumed a normal distribution, SPSS automatically performed additional non-parametric tests in conjunction with the ANOVA test. The non-parametric test performed was the Kruskal Wallis test. The sample size of the three independent categories was greater than the 30 observations and therefore normality could be assumed, however the additional tests were carried out to confirm the results.

The test was performed per hypothesis whereby all the observations were included in the sample. As there were large outliers present in the observations, a second test per hypothesis was performed whereby large outliers were removed from the sample to evaluate the impact the outliers had on the results. Black (2004) defined an outlier as a data point that lay apart from the rest of the observations.

4.7 Limitations of the research

It is noted that the research report is subject to potential limitations. Data was analysed through a single period of growth and recession which occurs in the specified eight year window. It would be ideal to perform the research over a longer timeframe. The performance data had to be reconciled and data scrubbed to ensure the data was accurate as errors were found.

Only three categories were used, namely, focused, moderately and highly diversified organisations. Rumelt's (1982) study made use of seven categories. Further, three hypotheses and average measures were used to calculate the performance of the various companies within the above categories. Research was limited to the industrial sector and hence may not accurately reflect the behaviour of all companies listed on the JSE. The SR was the methodology used to determine the level of an organisation's diversification.

It is also noted that there was a lack of South African research material relating to corporate diversification and the effect of diversification on company performance. As a result, much of the past literature and comparisons were made from international studies.

CHAPTER 5. RESULTS

As was described earlier, the process of data analysis and hence the results are divided into three sections. The first section reflects the results obtained from the calculation of the SR and the final segmentation of companies as focused, moderately diversified or highly diversified. The segmentation took into account the limitations noted in the previous chapter. The second section shows the results of the performance and market measures. The third section depicts the descriptive statistics and analysis obtained from the hypothesis testing.

5.1 Segmentation results

Subject to the limitations stated above, the companies listed on the industrial sector of the JSE were segmented into one of three categories namely focused, moderately diversified or highly diversified. The segmentation was completed using the SR. Detailed results of this calculation can be viewed in Appendix 1. The final segmentation results are presented below in Table 6.

Table 6 Company segmentation

Focused	Moderately diversified	Highly diversified
Adcorp Holdings Ltd	Aveng Ltd	Allied Electronics Corporation Ltd
Bell Equipment Ltd	Basil Read Holdings Ltd	Astrapak Ltd
Bowler Metcalf Ltd	Ceramic Industries Ltd	Barloworld Ltd
Buildmax Ltd	Digicore Holdings Ltd	Bidvest Ltd
Cargo Carriers Ltd	Excellerate Hldgs Ltd	Imperial Holdings Ltd
Control Instruments Group Ltd	Grindrod Ltd	Invicta Holdings Ltd
Distribution And Warehousing Ltd	Group Five Ltd	Nampak Ltd
ELB Group Ltd	Howden Africa Holdings Ltd	Remgro Ltd
Iliad Africa Ltd	Hudaco Industries Ltd	Super Group Ltd
Primeserv Group Ltd	Jasco Electronics Holdings Ltd	Winhold Ltd
Trencor Ltd	Kairos Industrial Holdings Ltd	
Value Group Ltd	Masonite Africa Ltd	
Wilson Bayly Hlm Ltd	Murray And Roberts Ltd	
	Pretori Portland Cement Ltd	
	Reunert Ltd	
	Transpaco Ltd	

The SR is the firm's annual revenues from its largest discrete product-market activity noted in comparison to its total revenues. Actual specialisation ratios were calculated for each company for each year. A three year rolling average was then calculated for each year to adjust for immaterial movements between categories. As can be seen above, the resultant segmentation and sample reflected 13 focused, 16 moderately diversified and 10 highly diversified companies.

The 98 companies listed on the Industrial sector of the JSE as at 31 December 2010 are depicted in Table 3. From this listing, 47 companies were not in existence for the entire period of the study and hence were not counted as applicable as per the limitations detailed above. In addition to the 47

companies, 12 other companies failed to meet the sample criteria. The reasons for this are discussed below.

Mobile Industries Ltd is an investment holding company with its sole investment being Trencor Ltd. Trencor Ltd has already been included in the sample and thus also incorporating Mobile Industries Ltd would add bias. Further, the holding in Trencor Ltd was unbundled to Mobile Industries Ltd shareholders on 7 February 2011 and it is intended that Mobile Industries will be delisted and wound up. Due to these reasons, Mobile Industries Ltd was excluded from the sample.

Command Holdings Ltd did not publish interim results for 2011 and hence the relevant performance data could not be obtained. AG Industries filed for liquidation at the end December 2010 and has thus also been excluded. Allied Electronics Corporation Ltd participating preference listing was excluded as only ordinary share listings were included in the sample.

The sample only included companies listed on the main board of the JSE. Zaptronix Ltd and Onelogix Group Ltd were excluded due to these companies being listed on the Alt X board. Stella Vista Technologies Ltd and Cenmag holdings are currently listed on the Development Capital Board and are hence

excluded. Labat Africa Ltd did also not form part of the sample by virtue of being listed on the Venture Capital Board.

Marshall Monteagle Holdings Ltd has its primary listing in Luxembourg which breached the requirement stating that the companies must have their primary listing on the JSE. Micromega Holdings Ltd and John Daniel Holdings Ltd did not remain in the same segmented category for the duration of the study and were hence excluded from the sample. The resultant sample as detailed above and depicted in Table 6 was 39 companies.

5.2 Performance data results

Performance data was gathered from each company within the sample for each year from 2003 to 2010. The relevant performance measures were return on average equity, return on average assets and market return. The results were obtained from the McGregor BFA database.

5.2.1 Return on average equity

The return on average equity performance data was collated for the period 1 January to 31 December for each company for each year of the study. This was prepared to allow all company results to be evaluated over the same time

period. As the ROE for a company is calculated at their financial year end based on the operational result obtained for the year, it was necessary to weight the ROEs in order to compile the data for the required time period.

The 2011 company results were required to calculate the weighted ROE for the year ending 31 December 2010. As many companies within the sample had not published their 2011 annual results at the time of study, the relevant organisations' interim results were used as a proxy to the 2011 annual results. The calculation performed using the interim results were per the return on average equity definition as proposed by McGregor BFA that was discussed earlier. The final data for each category and for each year of this study is reproduced below in Table 7.

Table 7 Return on equity per category, company and year

Focused companies Company	% 2010	% 2009	% 2008	% 2007	% 2006	% 2005	% 2004	% 2003
Adcorp Holdings Ltd	12.07	13.42	21.76	33.10	36.07	36.74	27.56	21.45
Bell Equipment Ltd	1.81	-16.36	22.21	31.25	28.55	-1.17	-1.62	5.13
Bowler Metcalf Ltd	21.39	23.51	22.81	20.31	22.96	26.71	38.85	44.73
Buildmax Ltd	-31.00	-76.18	-7.70	15.33	16.29	10.13	4.20	-14.48
Cargo Carriers Ltd	5.55	7.52	7.44	15.26	15.22	17.78	12.47	11.32
Control Instruments Group Ltd	0.75	-7.13	-21.30	118.71	22.02	17.98	21.66	23.06
Distribution And Warehousing Ltd	8.83	12.57	28.32	44.49	47.50	50.64	47.10	34.96
ELB Group Ltd	22.08	20.25	24.89	23.45	9.14	5.90	9.00	2.41
Iliad Africa Ltd	5.16	7.27	25.55	27.42	30.21	29.60	30.70	26.07
Primeserv Group Ltd	9.75	16.17	28.36	27.85	9.07	8.11	-20.37	-37.89
Trencor Ltd	16.13	6.21	17.24	23.81	14.69	25.01	3.96	-6.08
Value Group Ltd	19.09	19.38	18.79	11.37	6.32	21.02	21.22	21.35
Wilson Bayly Hlm Ltd	33.16	38.88	47.32	42.39	32.34	31.09	27.95	23.36

Moderately diversified companies Company	% 2010	% 2009	% 2008	% 2007	% 2006	% 2005	% 2004	% 2003
Aveng Ltd	15.33	15.96	1.77	45.52	60.72	16.70	11.19	14.54
Basil Read Holdings Ltd	16.25	23.95	35.71	42.90	47.75	125.74	-83.54	54.06
Ceramic Industries Ltd	14.77	10.74	12.99	20.70	23.70	24.79	24.30	25.70
Digicore Holdings Ltd	9.54	12.77	27.70	39.48	38.57	33.77	25.06	17.56
Excellerate Holdings Ltd	11.48	12.69	16.02	14.54	9.82	10.74	10.63	7.59
Grindrod Ltd	13.46	15.13	44.16	41.02	45.04	62.33	72.62	42.44
Group Five Ltd	-1.60	17.25	23.32	21.81	21.07	22.14	22.95	23.20
Howden Africa Holdings Ltd	40.47	84.98	79.01	108.01	14.08	19.42	20.50	18.34
Hudaco Industries Ltd	17.88	22.08	32.76	24.63	22.74	22.46	18.65	19.03
Jasco Electronics Holdings Ltd	6.10	10.83	18.98	23.36	20.53	12.90	4.52	34.51
Kairos Industrial Holdings Ltd	16.50	-326.01	-1.83	2.82	10.88	14.78	29.13	12.73
Masonite Africa Ltd	0.86	10.05	27.79	15.85	8.97	6.26	3.11	8.45
Murray And Roberts Ltd	18.52	26.48	36.63	29.80	18.34	15.93	17.41	20.21
Pretoria Portland Cement Ltd	127.83	96.03	76.88	65.54	58.97	46.99	37.20	29.93
Reunert Ltd	15.99	27.96	35.80	32.53	51.89	59.32	49.22	31.36
Transpaco Ltd	26.86	28.43	24.41	19.44	7.58	7.83	20.96	21.37

Highly diversified companies Company	% 2010	% 2009	% 2008	% 2007	% 2006	% 2005	% 2004	% 2003
Allied Electronics Corporation Ltd	11.08	12.39	19.15	25.39	23.75	17.12	13.77	15.77
Astrapak Ltd	11.04	13.27	7.24	14.20	21.01	26.26	31.79	37.04
Barloworld Ltd	-0.11	2.26	7.69	15.67	18.20	16.59	14.99	11.90
Bidvest Ltd	21.51	21.11	23.73	27.29	28.46	30.09	28.87	25.65
Imperial Holdings Ltd	19.71	16.54	-2.37	4.09	26.12	25.09	22.90	18.96
Invicta Holdings Ltd	23.45	25.18	27.91	27.40	26.08	25.73	32.06	30.66
Nampak Ltd	14.79	6.73	7.40	15.83	16.53	15.01	17.82	19.84
Remgro Ltd	14.62	51.33	57.48	18.91	18.26	22.89	19.94	22.28
Super Group Ltd	9.54	-41.02	-45.50	11.13	20.77	21.88	28.01	27.07
Winhold Ltd	10.39	11.02	13.27	13.15	13.07	12.31	21.50	23.92

5.2.2 Return on average assets

The return on average assets performance data was collated for the period 1 January to 31 December for each company for each year of the study. This was done to allow all company results to be evaluated over the same time period. As the ROA for a company is calculated at their financial year end based on the operational result obtained for the year, it was necessary to weight the ROAs in order to compile the data for the required time period.

The 2011 company results were required to calculate the weighted ROA for the year ending 31 December 2010. As many companies within the sample had not published their 2011 annual results at the time of study, the relevant organisations interim results were used as a proxy to the 2011 annual results. The calculation performed using the interim results were completed according to the return on average assets definition of McGregor BFA as detailed previously. The final data for each category and for each year of this study is depicted below in Table 8.

Table 8 Return on assets per category, company and year

Focused companies Company	% 2010	% 2009	% 2008	% 2007	% 2006	% 2005	% 2004	% 2003
Adcorp Holdings Ltd	18.13	22.34	34.36	53.31	37.94	24.67	22.85	23.26
Bell Equipment Ltd	4.99	-7.38	18.29	20.70	20.39	2.15	1.78	7.81
Bowler Metcalf Ltd	24.96	27.65	25.25	21.67	23.45	26.94	38.69	44.87
Buildmax Ltd	-31.91	-44.37	25.99	9.15	14.35	10.41	2.26	-11.68
Cargo Carriers Ltd	7.31	8.36	7.88	13.54	13.70	14.53	10.76	11.39
Control Instruments Group Ltd	3.03	-4.09	-7.44	-0.37	19.29	15.65	20.17	12.37
Distribution And Warehousing Ltd	9.49	11.48	16.56	23.07	25.35	27.17	24.11	18.73
ELB Group Ltd	12.70	11.13	14.41	16.88	11.41	4.43	3.22	1.52
Iliad Africa Ltd	6.59	10.97	28.55	27.65	25.43	25.87	25.88	21.23
Primeserv Group Ltd	10.76	17.45	20.70	19.64	7.11	8.32	-8.15	9.59
Trencor Ltd	10.01	5.76	12.99	12.93	9.16	11.93	5.50	1.86
Value Group Ltd	14.80	14.45	15.57	8.72	6.42	16.48	16.39	18.03
Wilson Bayly Hlm Ltd	17.31	16.14	17.18	15.70	12.33	11.38	9.40	7.64

Moderately diversified companies Company	% 2010	% 2009	% 2008	% 2007	% 2006	% 2005	% 2004	% 2003
Aveng Ltd	11.11	12.45	15.21	35.93	31.47	7.07	4.92	7.74
Basil Read Holdings Ltd	12.53	16.00	19.00	19.80	14.04	13.33	-11.59	16.41
Ceramic Industries Ltd	17.08	13.77	15.39	22.05	25.07	26.22	25.06	24.45
Digicore Holdings Ltd	13.64	20.36	38.66	51.21	48.27	43.15	33.03	24.49
Excellerate Holdings Ltd	13.30	14.90	15.74	15.61	11.10	11.47	12.31	13.51
Grindrod Ltd	8.83	10.51	24.34	19.05	20.88	27.33	27.12	16.72
Group Five Ltd	3.81	8.35	9.85	8.79	7.17	7.10	7.87	7.71
Howden Africa Holdings Ltd	18.40	26.94	28.82	30.84	19.52	18.95	21.47	33.76
Hudaco Industries Ltd	13.62	13.92	17.39	15.43	22.05	22.34	19.25	20.09
Jasco Electronics Holdings Ltd	8.07	12.80	21.63	26.94	26.52	21.38	13.40	18.17
Kairos Industrial Holdings Ltd	-21.24	-36.66	8.17	10.25	8.82	14.32	20.50	13.26
Masonite Africa Ltd	1.16	10.53	24.68	15.96	9.30	5.86	3.44	8.62
Murray And Roberts Ltd	8.81	11.98	15.69	14.58	10.91	9.29	8.33	8.80
Pretoria Portland Cement Ltd	33.86	40.97	49.30	49.88	50.49	47.90	38.87	29.97
Reunert Ltd	13.39	20.73	26.95	22.28	27.90	30.34	26.82	23.22
Transpaco Ltd	20.00	20.53	17.36	13.91	12.31	12.65	16.42	18.88

Highly diversified companies Company	% 2010	% 2009	% 2008	% 2007	% 2006	% 2005	% 2004	% 2003
Allied Electronics Corporation Ltd	13.18	14.80	19.83	23.55	21.69	16.80	14.23	14.43
Astrapak Ltd	11.15	14.99	13.72	13.77	16.49	18.52	19.98	20.39
Barloworld Ltd	4.96	6.35	9.71	10.85	15.04	14.80	13.16	10.68
Bidvest Ltd	14.68	14.90	15.40	16.62	17.08	18.17	18.15	17.02
Imperial Holdings Ltd	12.22	9.44	7.26	10.00	13.21	14.62	14.35	13.39
Invicta Holdings Ltd	15.42	15.30	15.67	15.20	15.77	16.45	25.01	25.13
Nampak Ltd	10.29	6.40	7.30	13.03	15.30	15.42	17.13	17.04
Remgro Ltd	1.93	1.85	3.80	5.29	6.84	9.77	7.40	5.77
Super Group Ltd	7.58	6.88	7.09	11.15	13.15	14.35	17.75	17.10
Winhold Ltd	10.15	10.83	11.97	11.45	11.89	10.86	14.58	15.72

5.2.3 Market return

The Market return performance data was collated for the period 1 January to 31 December for each company for each year of the study. This was completed to allow all company results to be evaluated over the same time period. The calculation was completed for each company for each year in accordance with the definition discussed previously. The final data for each category and for each year of this study is shown below in Table 9.

Table 9 Market return per category, company and year

Focused companies Company	% 2010	% 2009	% 2008	% 2007	% 2006	% 2005	% 2004	% 2003
Adcorp Holdings Ltd	17.56	20.44	-38.20	39.37	31.13	48.82	49.92	94.76
Bell Equipment Ltd	5.42	-33.75	-71.91	104.81	173.68	53.23	-20.51	-16.75
Bowler Metcalf Ltd	24.33	58.16	-20.81	-13.90	12.98	15.25	43.38	52.04
Buildmax Ltd	-77.33	-32.43	-64.19	152.03	-9.12	150.91	243.75	-5.88
Cargo Carriers Ltd	26.63	-2.51	-45.41	61.85	37.60	53.50	68.85	29.58
Control Instruments Group Ltd	15.38	54.76	-66.89	-74.25	10.45	79.35	85.00	79.69
Distribution And Warehousing Ltd	21.39	-2.58	-54.29	41.72	80.00	29.45	225.88	203.57
ELB Group Ltd	46.83	45.73	-53.64	108.42	63.56	39.53	0.00	48.48
Iliad Africa Ltd	19.39	54.03	-51.18	19.92	17.36	13.63	88.91	123.02
Primeserv Group Ltd	12.50	-24.11	-22.00	105.41	18.75	60.00	-18.00	25.00
Trencor Ltd	26.67	39.54	-26.68	-6.26	47.62	46.24	42.25	17.92
Value Group Ltd	14.29	37.41	17.87	-21.67	16.29	40.84	68.10	128.85
Wilson Bayly Hlm Ltd	32.38	2.77	-20.35	90.73	67.75	68.42	66.73	62.94

Moderately diversified companies Company	% 2010	% 2009	% 2008	% 2007	% 2006	% 2005	% 2004	% 2003
Aveng Ltd	12.03	34.60	-44.75	83.63	88.88	51.83	36.56	-8.10
Basil Read Holdings Ltd	-2.77	-8.07	-53.79	164.29	270.59	233.33	24.66	-16.57
Ceramic Industries Ltd	23.28	49.49	-47.83	11.78	19.84	36.48	50.16	-18.78
Digicore Holdings Ltd	-1.29	-27.27	-52.68	133.49	63.26	74.19	246.81	145.00
Excellerate Holdings Ltd	25.40	-19.51	-29.17	71.43	0.00	0.00	125.81	-16.22
Grindrod Ltd	9.79	22.61	-29.89	57.18	27.06	89.87	270.59	101.43
Group Five Ltd	-1.64	12.11	-33.55	22.46	118.81	42.18	61.55	32.72
Howden Africa Holdings Ltd	24.95	30.27	-16.67	162.50	62.27	127.27	84.00	86.59
Hudaco Industries Ltd	31.06	10.87	-22.06	48.11	47.11	34.10	59.76	29.83
Jasco Electronics Holdings Ltd	-15.82	8.72	-48.49	54.29	14.41	26.67	93.55	-41.07
Kairos Industrial Holdings Ltd	12.50	-61.90	-30.00	-21.05	-7.32	24.24	371.43	40.00
Masonite Africa Ltd	-7.53	100.00	-53.33	100.16	57.24	18.55	4.96	8.62
Murray And Roberts Ltd	-11.32	1.38	-51.02	157.26	107.65	45.82	3.65	12.01
Pretoria Portland Cement Ltd	6.39	17.96	-22.07	70.80	90.68	90.46	197.56	156.39
Reunert Ltd	19.60	20.73	-24.62	-6.52	63.65	44.85	77.89	16.46
Transpaco Ltd	57.68	70.20	-27.69	24.03	25.00	-3.27	42.00	118.42

Highly diversified companies Company	% 2010	% 2009	% 2008	% 2007	% 2006	% 2005	% 2004	% 2003
Allied Electronics Corporation Ltd	-0.54	28.07	-50.52	40.74	53.53	45.36	55.64	30.63
Astrapak Ltd	6.38	35.14	-28.55	-20.37	2.89	17.83	61.45	95.18
Barloworld Ltd	50.55	12.47	-58.41	-26.79	52.67	7.70	56.02	21.55
Bidvest Ltd	24.86	26.63	-10.62	-5.12	49.28	21.72	66.24	16.00
Imperial Holdings Ltd	48.25	51.75	-40.61	-31.96	20.01	38.99	59.93	28.91
Invicta Holdings Ltd	80.36	14.47	-17.95	6.83	105.81	8.43	99.59	46.30
Nampak Ltd	55.06	21.44	-33.47	4.97	34.24	12.95	26.09	-3.64
Remgro Ltd	28.97	19.18	-58.94	13.99	52.15	38.98	40.52	18.06
Super Group Ltd	25.76	-60.48	-85.60	3.90	11.68	-13.52	41.08	55.02
Winhold Ltd	17.24	33.91	-12.50	-6.37	20.59	-25.68	115.00	104.89

5.3 The presence of outliers

Each dataset for the three performance measures comprised of 312 observations. The presence of outliers surfaced within these three data sets. The ROE observations contained 11 outliers, the ROA observations contained four outliers and the MKTRET data included four outliers. As will be described below, the existence of outliers necessitated testing to be completed for the sample data including and excluding outliers. The data utilised for the test excluding outliers did include extreme values which were not removed.

5.4 Descriptive statistics

Descriptive statistics relating to each of the three performance measures are summarised in Table 10, Table 11 and Table 12. The statistics are presented for the observations including and excluding large outliers. This therefore allows one to determine the impact on the results following from the removal of outliers.

Table 10 Descriptive statistics for focused companies

		ROE		ROA		MKTRET	
Focused (incl. outliers)		Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error
Mean		17.390	2.070	13.814	1.263	34.116	5.843
95% Confidence Interval for Mean	Lower Bound	13.286		11.309		22.528	
	Upper Bound	21.495		16.318		45.704	
Median		19.813		14.027		29.519	
Variance		445.526		165.832		3 550.582	
Std. Deviation		21.107		12.878		59.587	
Minimum		-76.178		-44.368		-77.333	
Maximum		118.710		53.308		243.750	
Range		194.888		97.677		321.083	
Interquartile Range		20.108		13.109		63.952	
Skewness		-0.091	0.237	-0.930	0.237	0.919	0.237
Kurtosis		7.879	0.469	5.091	0.469	1.939	0.469

		ROE		ROA		MKTRET	
Focused (excl. outliers)		Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error
Mean		16.751	1.148	13.358	0.700	19.703	4.091
95% Confidence Interval for Mean	Lower Bound	14.473		11.970		11.590	
	Upper Bound	19.029		14.745		27.817	
Median		16.530		13.160		19.840	
Variance		135.816		50.414		1 723.442	
Std. Deviation		11.654		7.100		41.514	
Minimum		-20.370		-8.150		-71.910	
Maximum		59.320		30.340		173.680	
Range		79.690		38.490		245.590	
Interquartile Range		13.820		9.030		55.640	
Skewness		0.318	0.238	0.005	0.238	0.584	0.238
Kurtosis		2.707	0.472	0.670	0.472	1.233	0.472

Table 11 Descriptive statistics for moderately diversified companies

		ROE		ROA		MKTRET	
Moderately diversified (incl. outliers)		Statistic	Std. Error	Statistic	Std. Error	Statistic	Std. Error
Mean		24.275	3.539	18.223	1.111	41.985	6.330
95% Confidence Interval for Mean	Lower Bound	17.271		16.024		29.459	
	Upper Bound	31.278		20.421		54.511	
Median		21.010		16.205		24.974	
Variance		1 603.268		157.997		5 128.958	
Std. Deviation		40.041		12.570		71.617	
Minimum		-326.007		-36.655		-61.905	
Maximum		127.834		51.205		371.429	
Range		453.841		87.860		433.333	
Interquartile Range		20.705		13.377		73.796	
Skewness		-5.013	0.214	-0.122	0.214	1.695	0.214
Kurtosis		46.829	0.425	3.536	0.425	4.214	0.425

		ROE		ROA		MKTRET	
Moderately diversified (excl. outliers)		**Statistic**	**Std. Error**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
Mean		22.223	1.352	17.878	1.074	40.288	4.933
95% Confidence Interval for Mean	Lower Bound	19.546		15.751		30.516	
	Upper Bound	24.901		20.005		50.060	
Median		21.350		16.390		34.600	
Variance		210.092		132.542		2 798.417	
Std. Deviation		14.495		11.513		52.900	
Minimum		-21.300		-11.680		-66.890	
Maximum		65.540		51.210		203.570	
Range		86.840		62.890		270.460	
Interquartile Range		13.290		13.040		60.410	
Skewness		0.305	0.226	0.757	0.226	0.566	0.226
Kurtosis		1.376	0.447	1.328	0.447	0.632	0.447

Table 12 Descriptive statistics for highly diversified companies

		ROE		ROA		MKTRET	
Highly diversified (incl. outliers)		**Statistic**	**Std. Error**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
Mean		17.922	1.537	13.256	0.545	21.152	4.392
95% Confidence Interval for Mean	Lower Bound	14.863		12.171		12.410	
	Upper Bound	20.981		14.340		29.894	
Median		18.933		14.286		21.493	
Variance		188.971		23.740		1 543.238	
Std. Deviation		13.747		4.872		39.284	
Minimum		-45.500		1.845		-85.603	
Maximum		57.480		25.130		115.000	
Range		102.980		23.285		200.603	
Interquartile Range		12.246		6.087		47.449	
Skewness		-1.806	0.269	-0.095	0.269	-0.130	0.269
Kurtosis		9.408	0.532	0.137	0.532	0.443	0.532

		ROE		ROA		MKTRET	
Highly diversified (excl. outliers)		**Statistic**	**Std. Error**	**Statistic**	**Std. Error**	**Statistic**	**Std. Error**
Mean		22.692	1.555	15.292	0.964	30.751	5.649
95% Confidence Interval for Mean	Lower Bound	19.591		13.370		19.486	
	Upper Bound	25.794		17.214		42.015	
Median		21.135		14.505		25.000	
Variance		174.199		66.906		2 297.889	
Std. Deviation		13.198		8.180		47.936	
Minimum		-1.830		-21.240		-53.790	
Maximum		62.330		44.870		164.290	
Range		64.160		66.110		218.080	
Interquartile Range		17.845		6.778		56.305	
Skewness		0.633	0.283	-0.199	0.283	0.456	0.283
Kurtosis		0.207	0.559	7.206	0.559	0.183	0.559

5.5 Hypothesis test results

Each hypothesis was tested by method of parametric or non-parametric tests. ANOVA was used for parametric testing whilst Kruskal Wallis was used for non-parametric tests. The first section of the results depict the findings from the tests conducted using all 312 observations, whilst the second section presents the results from testing where the data excludes large outliers. This therefore allows one to determine the impact of large outliers on the results.

Hypothesis 1: Return on average equity

The null hypothesis states that there is no difference in the return on average equity (ROE) between the three categories, namely, focused, moderately diversified and highly diversified.

The alternative hypothesis states that there is a difference between at least two of the three groups stated above.

H_0: µROE Foc = µROE MD = µROE HD

H_1: µROE of at least two of the three groups are different

Where µx = mean

Depicted below are the results obtained from the inferential analysis and pairwise testing that was performed. The results are first shown for the data that included outliers and are followed by the observations that excluded outliers.

As indicated in Table 13 below, the probability level (ρ) = 0.143 using ANOVA is greater than 0.05 whilst the probability level (ρ) = 0.0035 utilising Kruskal Wallis is less than 0.05. Hence, using parametric tests, the result fails to reject the null hypothesis, whilst non parametric tests indicate that the null hypothesis is rejected. It is important to note that failure to reject the null hypothesis does not imply the acceptance of the null hypothesis. The result rather means that the alternative hypothesis is not significant at the five per cent alpha level and that the difference between the three categories is due to sampling error.

Table 13 Return on average equity test results

Returns	Variable	Mean	Median	Standard Deviation	Prob. Level P	Prob. Level NP	Alpha (α)	Result P	Result NP
Return on equity (incl. outliers)	Focused	17.39	19.81	21.11	0.143	0.035	0.05	Do not reject H_0	Reject H_0
	Moderately diversified	24.27	21.01	40.04					
	Highly diversified	17.92	18.93	13.75					

Returns	Variable	Mean	Median	Standard Deviation	Prob. Level P	Prob. Level NP	Alpha (α)	Result P	Result NP
Return on equity (excl. outliers)	Focused	16.75	16.53	11.65	0.001	0.001	0.05	Reject H_0	Reject H_0
	Moderately diversified	22.40	21.37	14.56					
	Highly diversified	23.12	21.58	13.36					

The second test conducted excluded the outliers. As shown in Table 13 above, the probability level (ρ) = 0.001 using both ANOVA and Kruskal Wallis. Therefore under both tests the null hypothesis is rejected at a five per cent alpha level. Using data including outliers and utilising parametric tests, the result of the hypothesis concludes that although the average ROE of moderately diversified organisations (24.27%) is larger than that of highly diversified (17.92%) and focused companies (17.39%), the difference is not statistically significant. However, when utilising data excluding outliers and when considering non-parametric tests for data including outliers, the result of the hypothesis concludes that the differences between at least two of the groups are statistically significant. The outliers excluded in the second test can be seen in Table 14 below.

Table 14 Return on average equity outliers

Company	Diversification	Year	ROE
Pretoria Portland Cement Ltd	Moderately diversified	2010	127.83
Basil Read Holdings Ltd	Moderately diversified	2005	125.74
Control Instruments Group Ltd	Focused	2007	118.71
Howden Africa Holdings Ltd	Moderately diversified	2007	108.01
Pretoria Portland Cement Ltd	Moderately diversified	2009	96.03
Howden Africa Holdings Ltd	Moderately diversified	2009	84.98
Howden Africa Holdings Ltd	Moderately diversified	2008	79.01
Pretoria Portland Cement Ltd	Moderately diversified	2008	76.88
Primeserv Group Ltd	Focused	2003	-37.89
Super Group Ltd	Highly diversified	2009	-41.02
Super Group Ltd	Highly diversified	2008	-45.50
Buildmax Ltd	Focused	2009	-76.18
Basil Read Holdings Ltd	Moderately diversified	2004	-83.54
Kairos Industrial Holdings Ltd	Moderately diversified	2009	-326.01

Pairwise comparisons were completed to establish which categories produced significant differences. The results are presented below in Table 15. The first set of results depicts the analysis including outliers and the second set does so excluding outliers. The mean difference is significant at the five per cent level. Thus, looking at the first set of results, all p-values are greater than the above and hence the mean difference is not significant.

The second set of results which exclude outliers does however reveal significant differences between the moderately diversified and focused categories with a p-value of 0.005, as well as between the highly diversified and focused categories with a p-value of 0.004. The p-value was not significant

when examining the mean difference between moderately and highly diversified companies.

Table 15 Return on average equity pairwise comparisons

Return on equity (incl. outliers)				
(I) Type of diversification	**(J) Type of diversification**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
Focused	Moderately diversified	-6.8841476	3.8619	0.227
	Highly diversified	-0.5315866	4.35037	1.000
Moderately diversified	Focused	6.8841476	3.8619	0.227
	Highly diversified	6.352561	4.16927	0.386
Highly diversified	Focused	0.5315866	4.35037	1.000
	Moderately diversified	-6.352561	4.16927	0.386
* The mean difference is significant at the .05 level.				

Return on equity (excl. outliers)				
(I) Type of diversification	**(J) Type of diversification**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
Focused	Moderately diversified	-5.6450679(*)	1.76073	0.005
	Highly diversified	-6.3668043(*)	1.93121	0.004
Moderately diversified	Focused	5.6450679(*)	1.76073	0.005
	Highly diversified	-0.7217363	2.04757	0.979
Highly diversified	Focused	6.3668043(*)	1.93121	0.004
	Moderately diversified	0.7217363	2.04757	0.979
* The mean difference is significant at the .05 level.				

Hypothesis 2: Return on average assets

The null hypothesis states that there is no difference in the return on average assets (ROA) between the three categories, namely, focused, moderately diversified and highly diversified.

The alternative hypothesis states that there is a difference between at least two of the three groups stated above.

H_0: μROA Foc = μROA MD = μROA HD

H_1: μROA of at least two of the three groups are different

Where μx = mean

Depicted below are the results obtained from the inferential analysis and pairwise testing that was performed. The results are first shown for the data that included outliers and are followed by the observations that excluded outliers.

As indicated in Table 16 below, the probability level (ρ) = 0.002 using ANOVA and 0.001 using Kruskal Wallis is therefore less than 0.0. Hence, using parametric and non-parametric tests the null hypothesis is rejected and the alternate hypothesis is accepted.

Table 16 Return on average assets test results

Returns	Variable	Mean	Median	Standard Deviation	Prob. Level		Alpha (α)	Result	
					P	NP		P	NP
Return on assets (incl. outliers)	Focused	13.81	14.03	12.88	0.002	0.001	0.05	Reject H_0	Reject H_0
	Moderately diversified	18.22	16.2	12.57					
	Highly diversified	13.26	14.29	4.87					

Returns	Variable	Mean	Median	Standard Deviation	Prob. Level		Alpha (α)	Result	
					P	NP		P	NP
Return on assets (excl. outliers)	Focused	13.32	13.10	7.08	0.000	0.001	0.05	Reject H_0	Reject H_0
	Moderately diversified	18.61	16.48	12.06					
	Highly diversified	14.92	14.41	8.60					

The second test conducted excluded outliers. As shown in Table 16 above, the probability level (ρ) = 0.000 using ANOVA and 0.001 Kruskal Wallis. Therefore under both tests the null hypothesis is rejected at a five per cent alpha level. Using data including and excluding outliers in both parametric and non-parametric tests revealed that the mean difference between at least two of the three groups is statistically significant. The mean for the various categories can also be seen in Table 16. The outliers excluded from the second test are detailed in Table 17 below.

Table 17 Return on average assets outliers

Company	Diversification	Year	ROA
Adcorp Holdings Ltd	Focused	2007	53.31
Buildmax Ltd	Focused	2010	-31.91
Kairos Industrial Holdings Ltd	Moderately diversified	2009	-36.66
Buildmax Ltd	Focused	2009	-44.37

Pairwise comparisons were completed to establish which categories produced significant differences. The results are present below in Table 18. The first set of results depicts the analysis including outliers and the second set does so excluding outliers. The mean difference is significant at the five per cent level. Thus, looking at the first set of results, significant differences were found between moderately diversified and focused organisations with a p-value of 0.010, as well as between moderately and highly diversified companies with a p-value of 0.006, which is thus lower than the 0.05 alpha level. The p-value was not significant when examining the mean difference between focused and highly diversified companies.

The second set of results which exclude outliers also revealed significant differences between the moderately diversified and focused categories with a p-value of 0.000, as well as between the highly diversified and moderately diversified categories with a p-value of 0.035. Again, the p-value was not significant when examining the mean difference between focused and highly diversified companies.

Table 18 Return average assets pairwise comparisons

Return on assets (incl. outliers)				
(I) Type of diversification	**(J) Type of diversification**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
Focused	Moderately diversified	-4.4088834(*)	1.48353	0.010
	Highly diversified	0.5582266	1.67117	1.000
Moderately diversified	Focused	4.4088834(*)	1.48353	0.010
	Highly diversified	4.9671099(*)	1.60161	0.006
Highly diversified	Focused	-0.5582266	1.67117	1.000
	Moderately diversified	-4.9671099(*)	1.60161	0.006
* The mean difference is significant at the .05 level.				

Return on assets (excl. outliers)				
(I) Type of diversification	**(J) Type of diversification**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
Focused	Moderately diversified	-5.2843815(*)	1.28253	0.000
	Highly diversified	-1.5949172	1.19085	0.452
Moderately diversified	Focused	5.2843815(*)	1.28253	0.000
	Highly diversified	3.6894643(*)	1.44924	0.035
Highly diversified	Focused	1.5949172	1.19085	0.452
	Moderately diversified	-3.6894643(*)	1.44924	0.035
* The mean difference is significant at the .05 level.				

Hypothesis 3: Average market return

The null hypothesis states that there is no difference in the average market return (MKTRET) between the three categories, namely, focused, moderately diversified and highly diversified.

The alternative hypothesis states that there is a difference between at least two of the three groups stated above.

H_0: μMKTRET Foc = μMKTRET MD = μMKTRET HD

H_1: μROE of at least two of the three groups are different

Where μx = mean

Depicted below are the results obtained from the inferential analysis and pairwise testing that was performed. The results are first shown for the data that included outliers and are followed by the observations that excluded outliers.

As indicated in Table 19 below, the probability level (ρ) = 0.057 using ANOVA and 0.331 utilising Kruskal Wallis, is therefore greater than 0.05. Hence, using parametric and non-parametric tests, the result fails to reject the null hypothesis. It is important to note that failure to reject the null does not imply the acceptance of the null hypothesis. The result rather means that the alternative hypothesis is not significant at the five per cent alpha level and that the difference between the three categories is due to sampling error.

Table 19 Average market return test results

Returns	Varaible	Mean	Median	Standard Deviation	Prob. Level		Alpha (α)	Result	
					P	NP		P	NP
Market return (incl. outliers)	Focused	34.12	29.52	59.59	0.057	0.331	0.05	Do not reject H_0	Do not reject H_0
	Moderately diversified	41.98	24.97	71.62					
	Highly diversified	21.15	21.49	39.28					

Returns	Variable	Mean	Median	Standard Deviation	Prob. Level		Alpha (α)	Result	
					P	NP		P	NP
Market return (excl. outliers)	Focused	19.75	19.88	41.32	0.027	0.049	0.05	Reject H_0	Reject H_0
	Moderately diversified	37.33	29.45	54.92					
	Highly diversified	26.72	23.76	50.65					

The second test conducted excluded outliers. As shown in Table 19 above, the probability level (ρ) = 0.027 using ANOVA and 0.0049 utilising Kruskal Wallis. Therefore under both tests the null hypothesis is rejected at a five per cent alpha level. Using data including outliers and utilising parametric and non-parametric tests, the result of the hypothesis concludes that although the average MKTRET of moderately diversified organisations (41.98%) is larger than that of focused (34.12%) and highly diversified companies (21.15%), the difference is not statistically significant. However, when utilising data excluding outliers the result of the hypothesis concludes that the mean differences between at least two of the groups are statistically significant. The mean values in this respect are also presented in Table 19 above. The outliers excluded from the second test are detailed in Table 20 below.

Table 20 Average market return outliers

Company	Diversification	Year	MKTRET
Kairos Industrial Holdings Ltd	Moderately diversified	2004	371.43
Grindrod Ltd	Moderately diversified	2004	270.59
Basil Read Holdings Ltd	Moderately diversified	2006	270.59
Digicore Holdings Ltd	Moderately diversified	2004	246.81

Pairwise comparisons were completed to establish which categories produced significant differences. The results are presented below in Table 21. The first set of results depicts the analysis including outliers and the second set does so excluding outliers. The mean difference is significant at the five per cent level. Thus, looking at the first set of results, all p-values are greater than this and hence the mean difference is not significant.

The second set of results which exclude outliers do however reveal significant differences between the moderately diversified and focused categories with a p-value of 0.019. The p-value was not significant when examining the mean difference between moderately and highly diversified companies, as well as between focused and highly diversified companies.

Table 21 Average market return pairwise comparisons

Market return (incl. outliers)				
(I) Type of diversification	**(J) Type of diversification**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
Focused	Moderately diversified	-7.8687824	8.01504	0.981
	Highly diversified	12.9642453	9.02881	0.456
Moderately diversified	Focused	7.8687824	8.01504	0.019
	Highly diversified	20.8330276	8.65297	0.416
Highly diversified	Focused	-12.9642453	9.02881	0.456
	Moderately diversified	-20.8330276	8.65297	0.059
* The mean difference is significant at the .05 level.				

Market return (excl. outliers)				
(I) Type of diversification	**(J) Type of diversification**	**Mean Difference (I-J)**	**Std. Error**	**Sig.**
Focused	Moderately diversified	-17.5806815(*)	6.36722	0.019
	Highly diversified	-6.9663563	7.08288	0.694
Moderately diversified	Focused	17.5806815(*)	6.36722	0.019
	Highly diversified	10.6143253	7.60803	0.416
Highly diversified	Focused	6.9663563	7.08288	0.694
	Moderately diversified	-10.6143253	7.60803	0.416
* The mean difference is significant at the .05 level.				

5.6 Overall result

The results of the performance measures indicated that large outliers exist in the test of the hypotheses. The first test was completed inclusive of all observations, whilst the second test was completed without the large outliers. The tests without the outliers indicated significant differences in the descriptive statistics. The aim of the research is to test the hypotheses inclusive of all observations as the data is real financial data that was observed, however, the results of tests excluding outliers are also presented to demonstrate the impact of the outliers.

In analysing results from all the data observations, overall it can be seen that two of the three hypotheses are not statistically significant at the five per cent alpha level and that the differences in the average (mean) performance measures of ROE and MKTRET are due to sampling error. The hypothesis for

ROA however indicated that the difference in the average (mean) performance is statistically significant. The pairwise comparisons revealed significant differences highly and moderately diversified companies as well as between moderately diversified and focused companies. The mean difference between focused and highly diversified was not statistically significant. In this regard, moderately diversified companies performed better then highly diversified and focused companies.

In stating the results from observations excluding large outliers, overall it can be seen that for all three performance measures, the mean difference is significant at the five per cent alpha level. Pairwise comparison revealed the following statistically significant differences for each of the three measures.

For the ROE performance measure, significant mean differences were found between moderately diversified and focused companies and between highly diversified and focused organisations. In this regard, both moderately and highly diversified reflected better performance than focused companies. The mean difference between the moderately and highly diversified categories was not seen as significant.

For the ROA performance measure, significant mean differences were found between moderately diversified and focused companies and between highly

and moderately diversified organisations. In this regard, companies with moderate diversification performed better than focused and highly diversified organisations. The mean difference between highly diversified companies and those that are focused was not seen as significant.

For the MKTRET performance measure, significant mean differences were found between moderately diversified and focused companies. In this regard, companies with moderate diversification performed better than focused organisations. The mean difference between highly diversified companies and those that are focused as well as between moderately and highly diversified organisations was not seen as significant.

CHAPTER 6. DISCUSSION OF RESULTS

The discussion of results is divided into two sections. The first section presents the SR classification of organisations as either focused, moderately diversified or highly diversified. The second section discusses the performance data per hypothesis.

6.1 Categorisation of companies resulting from segmentation

The categorisation was performed by means of using the SR method that was originally used by Rumelt (1982) and subsequently by Pandya and Rao (1998). The categorisation presented in Table 6 represents a high level breakdown of the categorisation. The detailed results for the segmentation can be found in Appendix 1.

From Appendix 1, it can be seen that the SR was performed for each company for each year from 2003 to 2010. A three year rolling average was used in order to allow short minimal movement from one category into another where the strategy of the company remained the same over the relevant time period. The categorisation was subject to limitations as was discussed earlier. Organisations with a SR greater than or equal to 0.95 were regarded as focused, organisations with a SR between 0.95 and greater or equal to 0.5 were

regarded as moderately diversified and firms with a SR less than 0.5 were regarded as highly diversified.

6.2 Performance measures

The key question in the research is to determine if there is a significant difference in financial performance between companies that are either focused, moderately diversified or highly diversified. South African companies are integrating into the world economy on an increasing basis and as such it is important to determine whether organisations that choose to diversify actually do outperform those that remain focused or diversify on a smaller scale. It is also interesting to determine if the organisations have a special capability arising from regulation and sanctions that were placed on South African organisations to invest and diversify by acquiring local companies, ultimately leading to the formation of large diversified conglomerates (Rossouw, 1997).

This research report does not find that there are any significant differences in performance between the three groups in two out of the three hypotheses when one considers all the data observations including outliers. The one statistically significant result shows that the ROA of moderately diversified organisations is superior to that of focused or highly diversified organisations.

In considering data excluding large outliers, all three hypotheses were found to have significant differences. The exact differences were detailed earlier. Each hypothesis is discussed further by considering the results from testing that includes and excludes large outliers.

Hypothesis 1: Return on average equity

The annual ROE% results for each organisation per category as being focused, moderately diversified or highly diversified for the period 2003 to 2010 is presented in Table 7. The ROE% was weighted to allow measurement for each company over the same time period. The results of the hypothesis are presented in Table 13.

In considering all observations, the null hypothesis is not rejected utilising parametric tests. The use of parametric tests is made as normality is assumed following from the earlier discussion. It is interesting to note that using non-parametric tests, the null hypothesis would actually be rejected. However, if pairwise comparisons are then investigated, it can be seen that no significant differences existed between the categories. Although the ROE of moderately diversified organisations is (24.27%) is greater than that of highly diversified (17.92%) and focused (17.39%) organisations, it is not statistically significant and it can therefore not be statistically shown that moderately diversified companies have a superior ROE in comparison to the other two groups. The differences that exist are attributable to sampling error.

The second test was performed excluding outliers. Both parametric and non-parametric tests rejected the null hypothesis at a five per cent alpha level. Pairwise comparisons were then performed to determine exactly where the differences lie. For the ROE performance measure, significant mean differences were found between moderately diversified and focused companies and between highly diversified and focused organisations. In this regard, both moderately (22.40%) and highly (23.12%) diversified companies' results reflect better performance than focused companies (16.75%).This therefore also indicates a positive diversification-performance relationship as was discussed in earlier chapters. The mean difference between the moderately and highly diversified categories was not seen as significant. The results excluding outliers also showed a decrease in the standard deviation value. The outliers excluded during the second test are represented in Table 14.

It is interesting to note that moderately diversified companies reflect a larger variance than focused and highly diversified companies as shown by the standard deviation values. Moderately diversified organisations have a standard deviation of 40.04% including outliers and 14.56% excluding outliers. Tests including outliers show focused companies as having a higher standard deviation (21.11%) than highly diversified companies (13.75%) whilst tests excluding outliers present the opposite. In the case of the latter, the standard deviation was 13.36% for diversified companies and 11.65% for those that are focused.

It was expected that focused organisations would have a larger variance and therefore be more volatile in terms of the return to shareholders as focused organisations tend to be more prone to economic cycles and more sensitive to the parts of the economy that affect the focused organisations core businesses. This result also goes against portfolio theory of finance whereby diversification leads to a smaller beta coefficient than investments that are not diversified. The expectation was that the more diverse a portfolio of investments are, the more likely the return of the investment will be to the return of the overall market. It is clear from the results of the study that this research does not follow the portfolio theory of finance as partial diversification led to greater variability in returns to shareholders. However, while undiversified firms have lower risk than moderately diversified companies, the moderately diversified companies have significantly higher returns.

Rumelt's (1986) study shows that the ROE amongst two of the four major categories are statistically significant at the five per cent alpha level. His research considered the performance of organisations from 1951 to 1970. The ROE of the four major categories were single business at 13.20%, dominant business at 11.64%, related business at 13.55% and unrelated business at 11.92%. Thus in line with the current study, Rumelt (1986) showed that moderately diversified companies (related business) yielded a higher return that the other groups.

This research project was performed in accordance with the study conducted by Pandya and Rao (1998) in the USA between 1984 and 1990. The findings from their study in terms of the ROE performance measure are presented in Table 22 below. Their findings are thus the same as this study whereby the mean return for moderately diversified companies is higher than that of focused and highly diversified companies. Pandya and Rao (1998) was also able to statistically show a mean difference between focused and highly diversified companies whereby highly diversified companies performed better than those that were focused. Further, their findings were statistically significant at the one per cent alpha level.

Table 22 Mean % return from Padya *et al*. study

Mean %	ROE	ROA	MKTRET
Undiversifed	-1.6	-1.9	8.2
Moderately diversified	32.7	4.0	13.2
Highly diversified	14.6	5.8	16.3

Source: Pandya and Rao (1998)

The study performed by Hall *et al*. (1999) forms a further comparator to this study. The difference in ROE was measured between USA and Korean organisations using multiple regression techniques. The ROE of the USA diversified organisations performed weaker than the ROE of the focused organisations. This finding was significant at the one per cent alpha level. The same test carried out on Korean organisations revealed that the ROE of

diversified organisations perform better than focused organisations. This finding was however not statistically significant.

Similarly Singh *et al*. (2001) found that on an annual basis in 1994, 1995 and 1996, the ROE of diversified US organisations was greater than that of focused organisations. In two of the years, namely, 1995 and 1996, the difference in ROE was significant at the five per cent alpha level, whereas for 1994 it was not. The result of this study for data excluding outliers was that highly and moderately diversified companies reflected a higher mean ROE than focused companies.

Hypothesis 2: Return on average assets

The annual ROA% results for each organisation per category as being focused moderately diversified or highly diversified for the period 2003 to 2010 is presented in Table 8. The ROA% was weighted to allow measurement for each company over the same time period. The results of the hypothesis are presented in Table 16.

In considering all observations, the null hypothesis is rejected at the five per cent alpha level utilising both parametric and non-parametric tests. The use of parametric tests was made as normality is assumed following from the earlier discussion. Pairwise comparisons were then performed to determine exactly

where the differences lie. For the ROA performance measure, significant mean differences were found between moderately diversified and focused companies and between highly and moderately diversified organisations. In this regard, moderately diversified organisations (18.22%) reflected better performance than both focused (13.81%) and highly diversified (13.26%) organisations. The mean difference between the moderately diversified and focused categories was not seen as significant.

The second test was performed excluding outliers. Both parametric and non-parametric tests rejected the null hypothesis at a five per cent alpha level. Pairwise comparisons were then performed to determine exactly where the differences lie. For the ROA performance measure, significant mean differences were found between moderately diversified and focused companies and between highly and moderately diversified organisations. In this regard, moderately diversified organisations (18.61%) reflected better performance than highly diversified (14.92%) and focused (13.32%) companies. The mean difference between the focused and highly diversified categories was not seen as significant. The results obtained above appear to follow the inverted-u curvilinear model as was discussed in earlier chapters. The results excluding outliers also showed a decrease in the standard deviation value. The outliers excluded during the second test are depicted in Table 17.

The variability of returns is examined by looking at the standard deviation. In considering all data, focused companies (12.88%) exhibit greater variability in returns, followed closely by moderately diversified (12.57%) companies. Highly diversified companies (4.87%) exhibit much lower variability. In examining the data excluding large outliers it can be seen that moderately diversified companies (12.06%) exhibit the highest standard deviation followed by highly diversified (8.60%) and focused (7.08%) organisations.

It was expected that focused organisations would have a larger variance and therefore be more volatile in terms of the return to shareholders as focused organisations will tend to be more prone to economic cycles and more sensitive to the parts of the economy that affect the focused organisations core businesses. Portfolio theory of finance also states that diversification leads to a smaller beta coefficient than investments that are not diversified. It was expected that the more diverse a portfolio of investments are, the more likely the return of the investment will be to the return of the overall market. Therefore when considering all observations, the analysis on ROA does in fact follow the theoretical view. However, the analysis excluding outliers does not follow the theory above with partial diversification leading to greater variability in returns to shareholders. Further investigation can be completed to determine the compilation of the asset base in terms of net assets and intangible assets in order to gain a better understanding of the above.

This research project was performed in accordance with the study conducted by Pandya and Rao (1998) in the USA between 1984 and 1990. The findings from their study in terms of the ROA performance measure are presented in Table 22 above. Their findings are thus different to this study whereby the mean return for highly diversified companies are higher than that of moderately diversified and undiversified companies. Their findings were statistically significant at the five per cent alpha level.

The study performed by Hall *et al*. (1999) forms a further comparator to this study. The difference in ROA was measured between USA and Korean organisations using multiple regression techniques. The ROA of the USA diversified organisations performed weaker than the ROA of the focused organisations. This finding was found to be significant. The same test carried out on Korean organisations revealed that the ROA of diversified organisations perform better than focused organisations. This finding was also statistically significant.

Similarly Singh *et al*. (2001) found that on an annual basis in 1994, 1995 and 1996, that the ROA of diversified US organisations was weaker than that of focused organisations. In two of the years, namely, 1995 and 1996, the difference in ROA was not found to be significant whereas for 1994 it was. The result of this study for data including and excluding outliers was that moderately

diversified companies showed a high mean ROA than both moderately diversified and focused companies.

Hypothesis 3: Average market return

The annual MKTRET% results for each organisation per category as being focused, moderately diversified or highly diversified for the period 2003 to 2010 is presented in Table 9. The MKTRET% was calculated for the same time period for each company within the sample. The results of the hypothesis are presented in Table 19.

In considering all observations, the null hypothesis is not rejected utilising parametric and non-parametric tests. Although the MKTRET of moderately diversified organisations is (41.98%) is greater than that of focused (34.12%) and highly diversified (21.15%) organisations, it is not statistically significant and it can therefore not be statistically shown that moderately diversified companies have a superior MKTRET in comparison to the other two groups. The differences that exist are attributable to sampling error.

The second test was performed excluding outliers. Both parametric and non-parametric tests rejected the null hypothesis at a five per cent alpha level. Pairwise comparisons were then performed to determine exactly where the differences lie. For the MKTRET performance measure, significant mean

differences were found between moderately diversified and focused companies. In this regard, moderately diversified organisations (37.33%) reflect better performance focused (19.75%) companies. The mean difference between the focused and highly diversified categories, as well as between moderately diversified companies and highly diversified companies was not seen as significant. The results obtained above appear to follow the inverted-u curvilinear model as was discussed in earlier chapters. The results excluding outliers also showed a decrease in the standard deviation value. The outliers excluded during the second test are depicted in Table 20.

The variability of returns is examined by looking at the standard deviation. When considering all data, moderately diversified companies (71.62%) exhibit greater variability in returns, followed by focused (59.59%) and highly diversified companies (39.28%). In examining the data excluding large outliers it can be seen that moderately diversified companies (54.92%) exhibit the highest standard deviation followed by highly diversified (50.65%) and focused (41.32%) organisations.

It was expected that focused organisations would have a larger variance and therefore be more volatile in terms of the return to shareholders as focused organisations will tend to be more prone to economic cycles and more sensitive to the parts of the economy that affect the focused organisations core businesses. Portfolio theory of finance also states that diversification leads to a

smaller beta coefficient than investments that are not diversified. It was expected that the more diverse a portfolio of investments are, the more likely the return of the investment will be to the return of the overall market. Therefore when considering all observations, the analysis on MKTRET does in fact not follow the theoretical view with partial diversification leading to greater variability in returns to shareholders.

This research project was performed in accordance with the study conducted by Pandya and Rao (1998) in the USA between 1984 and 1990. The findings from their study in terms of the MKTRET performance measure are presented in Table 22 above. Their findings are thus different to this study whereby the mean return for highly diversified companies are higher than that of moderately diversified and undiversified companies. Further, their findings were statistically significant.

The study performed by Hall *et al*. (1999) forms a further comparator to this study. Hall *et al*. (1990) measured the difference in market-based measures (MVE) between USA and Korean organisations. Although this measure is different to MKTRET, the study found that the MVE of the USA diversified organisations performed weaker than the MVE of focused organisations, and this is found to be statistically significant; whereas for Korean companies it shows that the MVE for diversified organisations performed better than focused organisations, and is found to be statistically significant. The result of this study

for data excluding outliers was that moderately diversified companies showed a high mean MKTRET than focused companies.

The objective of the study is to determine if there is a difference in the financial performance of organisations that follow either a focused, moderately diversified or highly diversified strategy. In analysing results from all the data observations, overall it can be seen that two of the three hypotheses are not statistically significant at the five per cent alpha level and that the differences in the average (mean) performance measures of ROE and MKTRET are due to sampling error. The hypothesis for ROA however indicates that the difference in the average (mean) performance is statistically significant. The pairwise comparisons revealed significant differences between highly and moderately diversified companies as well as between moderately diversified and focused companies. The mean difference between focused and highly diversified was not statistically significant. In this regard, moderately diversified companies performed better then highly diversified and focused companies.

CHAPTER 7. CONCLUSION

7.1 Background

Corporate strategy forms the base in considering the strategic alternatives for an organisation. Corporate diversification and specialisation are two of the more common configurations that corporate strategy theory would propose to grow and sustain financial performance. The question of whether diversification leads to financial performance has been debated since the early 1950s. Ample research has been conducted from an international perspective; however the findings have been inconsistent and there remains a lack of consensus regarding the diversification-performance relationship.

There has been one systematic study of the diversification-performance relationship in South Africa. Further to the lack of empirical study, the country faced economic sanctions and exchange control regulation that drove it into economic isolation forcing many firms to diversify during the period of the 1960s to the early 1990s. With re-entry into the global economy many companies have divested non-core assets. There is evidence that organisations that divested their non-core businesses and focused on core industries have indeed done well. However, there is also evidence that diversified organisations are performing well with good growth being achieved.

This research report was conducted to determine if corporate diversification leads to an improvement in the financial performance of an organisation.

7.2 Findings

The research was conducted for the period from 2003 to 2010 on organisations listed on the industrial sector of the JSE. Each organisation was subjected to the limitations imposed upon the study. Every organisation was first categorised as either being focused, moderately or highly diversified. Subsequent to categorisation, a second step was completed whereby the statistical performance of the three categories was statistically measured to determine whether diversification does indeed lead to superior financial performance.

The segmentation of the organisations was a systematic approach adopted from earlier international studies whereby a SR was used to perform the categorisation. The SR is the firm's annual revenues from its largest discrete, product-market activity noted in comparison to its total revenues. The information utilised in the calculation of the SR was not available on a public database and therefore a manual process was used to collate and calculate the diversification level of the organisations for segmentation. The organisations that qualified and met all the criteria had to remain either focused, moderately or highly diversified through the eight year study period. This resulted in 39 companies being classified.

The following step of the research process entailed the comparison of financial data between the three categories of organisations in order to determine if there is a difference in financial performance. Three hypotheses were developed, whereby the return on average equity (ROE), return on average assets (ROA) and average market return (MKTRET) of focused, moderately and highly diversified organisations were compared to each other during the period from 2003 to 2010. The alternative hypothesis assumed that there was a difference in the financial performance of the three categories. The parametric test used in this regard was the Analysis of Variance Statistical Technique. The analysis measured the difference between the means of the various independent groups utilising the ρ-value approach. The Kruskal Wallis non-parametric test was used to confirm the findings.

In analysing results from all the data observations, the findings revealed that overall two of the three hypotheses were not statistically significant at the five per cent alpha level and that the differences in the average (mean) performance measures of ROE and MKTRET were due to sampling error. The hypothesis for ROA however indicated that the difference in the average (mean) performance is statistically significant. The pairwise comparisons revealed significant differences between highly and moderately diversified companies as well as between moderately diversified and focused companies. The mean difference between focused and highly diversified companies was not statistically significant. In this regard, moderately diversified companies performed better then highly diversified and focused companies.

In analysing results from observations excluding large outliers, the findings revealed that overall, for all three performance measures, the mean difference were significant at the five per cent alpha level. Pairwise comparison revealed the following statistically significant differences for each of the three measures.

For the ROE performance measure, significant mean differences were found between moderately diversified and focused companies and between highly diversified and focused organisations. In this regard, both moderately and highly diversified reflected better performance than focused companies. The mean difference between the moderately and highly diversified categories was not seen as significant.

For the ROA performance measure, significant mean differences were found between moderately diversified and focused companies and between highly and moderately diversified organisations. In this regard, companies with moderate diversification performed better than focused and highly diversified organisations. The mean difference between highly diversified companies and those that are focused was not seen as significant.

For the MKTRET performance measure, significant mean differences were found between moderately diversified and focused companies. In this regard, companies with moderate diversification performed better than focused

organisations. The mean difference between highly diversified companies and those that are focused as well as between moderately and highly diversified organisations was not seen as significant.

7.3 Summary

It is therefore found in this research study that two of the three hypotheses were not statistically significant and that the differences in the average (mean) performance measures of ROE and MKTRET were due to sampling error. One of the performance measures, ROA, indicated that the difference in the average (mean) performance was statistically significant. The pairwise comparisons revealed significant differences between highly and moderately diversified companies as well as between moderately diversified and focused companies. The mean difference between focused and highly diversified companies was not statistically significant. In this regard, moderately diversified companies performed better than highly diversified and focused companies.

7.4 Recommendations for future research

Utilising international research methodologies, this study attempted to gain insight into the diversification-performance relationship within the South African context. Whilst the research has contributed to the body of knowledge in this regard, several limitations were noted earlier. Various recommendations are

made to gain a better understanding of the impact of diversification within the South African environment.

The research considers three categories namely, focused, moderately and highly diversified. It is suggested that a greater number of categories are used to incorporate alternate strategies that fall between the ranges described above. This would aid in understanding how the results differ by strategy.

The industrial sector was the only JSE sector considered by the study. It is recommended that the study be expanded to other sectors of the JSE. This will allow a better understanding of all listed organisations and not just those listed on the industrial sector.

A third recommendation is to extend the study period to that between 15 and 20 years. The extended time period will capture the changes South African organisations underwent when economic sanctions were lifted, as well as the trend of organisations becoming more focused since the 1990s.

It is further recommended that research be conducted whereby the level and performance of South African organisations that diversify their businesses and

operations internationally be measured, thus measuring performance across geographical borders as a diversification strategy.

Unique competencies have been developed by diversified organisations to operate effectively. Further research should be conducted to understand these competencies and how they impact the organisation and business units.

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APPENDIX

Appendix 1: Segmentation results

Focused								
Company	2010	2009	2008	2007	2006	2005	2004	2003
Adcorp Holdings Ltd	95.03%	95.05%	96.65%	98.43%	98.49%	96.79%	95.12%	95.04%
Bell Equipment Ltd	98.33%	98.63%	99.05%	99.20%	98.06%	97.15%	96.04%	96.17%
Bowler Metcalf Ltd	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Buildmax Ltd	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Cargo Carriers Ltd	96.36%	96.82%	97.48%	97.45%	97.62%	97.37%	97.69%	97.62%
Control Instruments Group Ltd	100.00%	99.97%	99.93%	99.93%	99.96%	100.00%	99.90%	99.36%
Distribution And Warehousing Ltd	99.85%	99.88%	99.90%	99.93%	99.98%	100.00%	98.62%	97.14%
ELB Group Ltd	99.18%	98.46%	98.46%	99.28%	100.00%	100.00%	98.54%	96.97%
Iliad Africa Ltd	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%	100.00%
Primeserv Group Ltd	100.00%	98.38%	97.16%	95.82%	95.85%	97.07%	98.40%	100.00%
Trencor Ltd	100.00%	99.84%	99.84%	99.79%	99.92%	99.78%	99.72%	99.66%
Value Group Ltd	95.37%	96.94%	98.62%	100.00%	100.00%	100.00%	100.00%	100.00%
Wilson Bayly Hlm Ltd	97.56%	97.66%	98.25%	98.81%	100.00%	100.00%	100.00%	100.00%

Moderately diversified								
Company	2010	2009	2008	2007	2006	2005	2004	2003
Aveng Ltd	66.76%	63.39%	62.71%	62.73%	64.33%	67.37%	70.45%	72.40%
Basil Read Holdings Ltd	77.59%	71.33%	60.12%	62.54%	76.09%	89.80%	86.15%	82.02%
Ceramic Industries Ltd	84.41%	82.76%	82.65%	82.97%	83.80%	84.05%	84.14%	85.01%
Digicore Holdings Ltd	71.64%	68.15%	66.41%	70.30%	73.91%	78.63%	81.31%	84.38%
Excellerate Hldgs Ltd	58.13%	63.99%	70.98%	74.82%	74.05%	70.73%	66.10%	63.92%
Grindrod Ltd	73.71%	69.26%	70.74%	67.50%	73.95%	73.66%	76.88%	73.11%
Group Five Ltd	81.60%	81.75%	83.09%	82.94%	80.57%	78.12%	78.63%	78.88%
Howden Africa Holdings Ltd	71.34%	65.51%	67.32%	65.55%	62.25%	61.67%	61.78%	60.88%
Hudaco Industries Ltd	66.41%	61.81%	58.89%	57.68%	56.56%	56.22%	55.78%	58.26%
Jasco Electronics Holdings Ltd	56.94%	55.59%	57.01%	57.55%	59.07%	63.44%	64.58%	65.41%
Kairos Industrial Holdings Ltd	83.05%	76.17%	66.29%	58.22%	61.70%	71.20%	81.36%	84.38%
Masonite Africa Ltd	84.10%	83.94%	83.51%	82.46%	81.92%	83.20%	84.39%	84.09%
Murray And Roberts Ltd	77.87%	74.09%	68.77%	65.42%	60.49%	57.23%	51.89%	52.50%
Pretori Portland Cement Ltd	76.38%	80.51%	80.87%	80.07%	77.24%	73.21%	68.96%	67.22%
Reunert Ltd	61.60%	63.73%	60.97%	62.27%	58.03%	67.43%	74.46%	81.32%
Transpaco Ltd	77.36%	77.55%	75.68%	72.31%	65.28%	60.80%	58.90%	62.97%

Highly diversified								
Company	2010	2009	2008	2007	2006	2005	2004	2003
Allied Electronics Corporation Ltd	39.59%	38.31%	37.75%	38.58%	38.43%	37.94%	40.05%	42.76%
Astrapak Ltd	46.95%	44.78%	43.52%	42.76%	44.45%	44.50%	46.77%	49.25%
Barloworld Ltd	45.11%	41.02%	39.80%	38.95%	35.37%	33.05%	29.22%	28.24%
Bidvest Ltd	49.87%	47.13%	43.67%	40.54%	40.09%	41.93%	45.88%	46.82%
Imperial Holdings Ltd	32.34%	30.91%	29.05%	28.03%	29.66%	31.88%	39.79%	46.84%
Invicta Holdings Ltd	49.69%	49.50%	49.00%	49.05%	48.96%	49.46%	49.13%	48.93%
Nampak Ltd	41.09%	43.78%	45.99%	46.43%	46.81%	46.81%	43.08%	39.64%
Remgro Ltd	42.91%	42.73%	38.81%	39.92%	42.38%	46.10%	48.16%	49.02%
Super Group Ltd	28.36%	24.51%	21.21%	21.19%	20.79%	17.26%	15.18%	27.90%
Winhold Ltd	47.85%	47.40%	46.63%	45.26%	43.97%	45.46%	45.55%	49.07%