

Implementation of value-based management system in a petrochemical company

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ABSTRACT

The main objective of this study was to determine the extent to which a petrochemical company embraces and implements value based management (VBM) and the overall understanding in all levels of management.

Value based management (VBM) was investigated by means of a literature study and theory was analysed through literature and previous research to understand how VBM, together with strategy alignment and implementation can be achieved. Value based management metrics (value drivers) as important metrics in value based management were examined and some studies on the success and failures from past research findings were considered to better understand the implementation of VBM. The company Sasol was chosen in order to understand the petrochemical industry in relation to the stated objective. Previous research on VBM was analysed and compared with Sasol's current situation. From there, Sasol's VBM systems and its importance and factors of success and failures were studied and analysed.

For the purpose of the literature review a standardised questionnaire was developed and followed with an empirical study. Once approval was granted for this research, the questionnaire was distributed in Sasol Secunda. The research targeted management, middle management and specialised professionals. The completed questionnaire was tested for reliability and validity before it was statistically analysed. Specific constructs were developed during the literature review, which, together with the respondents' basic demographic analysis, helped to explain VBM.

After a detailed analysis, the respondents' demographic information and the effects of all the significant and medium measured constructs (factors) were documented. The understanding of value based variables was analysed. In general, Sasol was found to have an enhanced understanding of value based management. Practical recommendations to improve systems were suggested and set out in the dissertation. Suggestions for future research on the topic were also suggested.

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LIST OF ABBREVIATIONS

Acronym	Description
ABSA	Allied Banks of South Africa
BSC	Balanced scorecard
CEO	Chief Executive Officer
CFROI	Cash flow return on investment
CTL	Coal-to-Liquid
DCF	Discounted cash flow
EMH	Efficient Market Hypothesis
EVA	Economic value added
FNB	First National Bank
GTL	Gas-to Liquid
IRR	Internal rate of return
JSE	Johannesburg Securities Exchange
JV	Joint Venture
MVA	Market value added
NOPLAT	Net operating profits less adjusted taxes
NPV	Net Present Value
NYSE	New York Stock Exchange
ROI	Return on investment
ROIC	Return on Invested Capital
RONA	Return on Net Assets
SASR	Sasol Advanced Sythol Reactor
TOC	Theory of Constraints
UDE	Undesirable effect
VBM	Value Based Management
VDL	Value Driven Leadership
WACC	Weighted Average Cost of Capital

CHAPTER 1:

Value Based Management the study orientation

1.1 Introduction

Shareholder value does not necessarily conflict with good citizenship towards employees, customers, suppliers, the environment and the community in which the industry operates. Businesses that respect those constituencies tend to outperform others, suggesting that value can be delivered to shareholders only if it is first delivered to other constituents (Copeland *et al.*, 1994:87). The increasingly demanding and competitive nature of a business drives companies to explore avenues to improve the way the business is operated with hope that those efforts will eventually improve shareholder value. Strict demands are being placed on companies by the increasing number of institutional owners and by investors who are more actively seeking to create value to their investments (Bausch *et al.*, 2009:16). It is argued that Value Based Management (VBM) offers the solution in that it provides precise and unambiguous value measures by which an entire company can be measured.

Value Based Management can be explained as an integrated strategic and financial approach to general management of a business. The single objective is to create shareholders' value. The VBM approach originated almost three decades ago with the establishment of management doctrine of shareholder value (Rappaport, 1981:88). The fundamental idea in Rappaport's shareholder value approach is to align corporate strategy with shareholders' value maximisation needs to mitigate agency costs caused by separation of ownership and control in public listed companies. VBM includes the alignment of corporate strategy, performance reporting, incentive compensation and aid to bring staff together to act like shareholders, making decisions that maximise share value (Athanasakos, 2007:1397). This implies that decision making ultimately leads to improved stock market performance.

The benefit of VBM includes the ability of focusing the efforts of all stakeholders in the organisation by channelling their energy towards a goal. The idea is to achieve what is important in a holistic manner (FMI, 1999).

- **Satisfied customers:** In a Service Company, value is measured by the satisfaction of customers, who in the future will continue to use services while maximising the share value of the company.

- **Correctly assigned resources:** Values Based Management focuses on identifying value drivers, and only assigns resources to those activities that bring more value to the company.
- **Growing profits:** Profit maximisation and prioritising a project increases profit and identifies value drivers in all operations undertaken.
- **Streamlining processes that deliver:** VBM is tailored to the corporate strategy and therefore emphasises processes that maximise share and regularly revisit processes for improvement.
- **Business facts to manage business:** Management manages a business based on factual information as measured by VBM metrics.
- **Motivated and accountable people:** Employees who are able to measure the value that they are adding to the company. Their compensation is based on value addition.
- **Waste elimination:** Only decisions that add value and are based on accurate information should be given attention.

Value Based Management (VBM) focuses on making good decisions based on accurate information within the company. Such information is attained by identifying variables that create value of the company in the company. Some of these variables (value drivers) that are already widely used in Value Based Management include the discounted cash flow (DCF); the cash flow return on investments (CFROI), the return on invested capital (ROIC) and economic value added (EVA).

An important component of Value Based Management is the performance variable that actually creates value for the business (value driver). The organisation can only influence its value by directly influencing these variables; in other words, what get measured gets done. If one has to add measurable value to the business, one has to act on those things that can be influenced, such as customer satisfaction, cost, capital expenditure, human resource development and more. Identifying value drivers can assist management to assign responsibility to individuals who may help the company to meet its targets (Copeland *et al.*, 1994). The creation of a sustainable intrinsic value is a company's ultimate goal and this is evident in the company's connection to higher economic performance in the future. Creating value and attaining competitive advantage are two sides of the same coin: The implementation of good value strategies results in sustained competitive advantage. A literature study of strategic management reveals that superior economic performance is the result of competitive advantage.

It is argued that the stock performance in value based managed companies outperforms the stock of those companies who are not value based. The question is: How do stockholders of the company determine whether the company is making a profit or creating wealth for shareholders?

It is important that the top down leadership structures understand the business strategy and the value drivers to continuously monitor and make the right decisions when things go wrong. A number of ratios can be used to test how the company is performing in the market, namely profitability, liquidity, asset management, solvency and asset management. Ryan and Trahan (1999:54) examined the determinants of using VBM systems and identified financial resources, sophistication, and profit margin as factors that primarily relate to corporations' use of Value Based Management methods. This implies that companies with a highly educational level within their senior executive component are likely to use VBM methods.

On the one hand, maximising the wealth of shareholders and workers is the goal of company management. On the other hand, the maximum of the market value of the stock is influenced not only by enterprise business performance but also by investor perception and micro economic environment (Wang *et al.*, 2006:36). A Value Based Management approach can be explained as the marriage between a value creation mind-set and those management processes and systems required to translate that mind-set into action or into good decisions. These factors (value creation mind-set and the management processes and systems) should be taken as a whole and not in isolation to observe the impact in value creation in the form of share price maximisation.

Value Based Management can be effective and value additive if it is being applied continuously and reviewed often. In the process VBM one has to put corrective measures in place; and emphasise on proactive management rather than reactive management. If the performance of the business were to be assessed, one should be looking for ways to measure the financial and economic consequences of the previous management decisions that shaped the investments, operations, and financing over time.

Important questions to be answered include: *Are all resources used effectively? Is the profitability of the business being met? Has the profitability exceeded the expectations? Are financing choices made correctly?* Equity value creation requires positive results in all the areas which will bring about favourable cash flow that exceeds the company's cost of capital. Value-based management represents more than the accounting treatment of financial results of

operations and capital management. It instils a mind-set where everybody in the organisation learns to prioritise decisions while understanding their impact on the corporate value.

South Africa's petrochemical industry is of substantial economic significance to the country contributing 5% of gross domestic products and about 25% of its manufacturing sales. The high commodity prices experienced during recession in 2009-2010 and recent political instability in Middle East raised the cost of operation. In order to be competitive, the need to use resources efficiently is much greater than before. A Value Based Management programme was introduced at Sasol in all operations with the emphasis on economic value addition to the company in all its operations.

Value Based Management is perceived as a discipline that focuses on managing a company holistically by emphasising value creation as defined by its stakeholders and priorities (as defined by management). VBM focuses on the deployment of strategy and value creation by managing processes, activities, jobs, compensation and organisational structure. The aim is that such decisions should ultimately lead to improvements in stock market performance over the long run.

1.2 Problem statement

Value based management is usually explained in terms of specific metrics, such as economic value added, free cash flow and others as the measure of company performance. The financials metrics is believed to be not only financial instruments for company performance but also tools to measure the value to the company and to re-address shareholders' interest in value management.

Separation of ownership and management in a company creates a problem with regards to value management. This is known as "agency cost"; whereby the owners of the business are not employees and they have different interests than those of the managers who act as agents in running of the company. The lack of alignment between the interests of the two groups is perceived to be high, especially in large companies.

Although VBM is popular within the petrochemical industry; it is argued that understanding of this process and its usage on operational level is limited. Therefore, value addition is affected in terms of the decisions taken during operations at ground level.

1.3 Goals and objectives of the study

1.3.1 Main goal

The main objective of this study is to determine the extent to which a petrochemical company embraces VBM, and how it is overall understood and implemented in all levels of management.

1.3.2 Sub-objectives

The concept and the processes of VBM need to be understood from all levels of the organisation, if it were to be properly and successfully implemented. This includes proper alignment of the corporate strategy to operational strategy as well as understanding VBM metrics. The following sub-objectives need to be examined if this is to be achieved:

- 1.3.2.1 The agency cost and other factors that focus on value creation.
- 1.3.2.2 The organisational scope and components of VBM.
- 1.3.2.3 Familiarity and the use of prominent VBM metrics.
- 1.3.2.4 Information on how VBM is perceived and implemented, and
- 1.3.2.5 The application of VBM at organisational level.

1.4 Research methodology

This section presents the research methods to be used in the study

1.4.1 Literature study

A literature study is presented to provide a better understanding of Value Based Management and the South African petrochemical sector on the following issues:

- Value based management principles
- The South African petrochemical industry and its status
- The concept of economic value added and its origin
- The link between EVA and the share price
- Benefits of using VBM and its critique and
- The link between VBM and strategy.

1.4.2 Empirical study

Quantitative research and study is done by means of a survey questionnaire, from which data was obtained from Sasol employees focusing on top and middle management. The data was used for a statistical analysis to present the results. For the purpose of this study national and international publications on VBM are used together with text book based research.

1.5 Scope of the study

The field of study for this research is on Financial Management. This study evaluates Value Based Management methods and its effects on company and stock performance in a competitive industry, namely a petrochemical company.

1.6 Limitations of the study

A possible limitation is that the study was done by means of a questionnaire on a sample of employees in Secunda, a division of Sasol petrochemical industry and that it might not be representative of the petrochemical company or Sasol as a whole.

1.7 Layout of the study

Chapter 1 Value Based Management A review of the petrochemical industry

Chapter one introduces the content of the paper and explains why the topic was chosen for the research. This chapter presents the problem statement and the research goals, methods and research limitations.

Chapter 2 Literature study on Value Based Management

This chapter establishes the theoretical bases of the study and focuses on the origins of the VBM; its principles; benefits; and critique. It considers how corporate strategies can be formulated by using Value Based Management to maximise shareholders' wealth. This chapter also studies the link between VBM and the market by investigating the effect of VBM in relation to share price through literature review. The focus is on understanding the value drivers and its contribution to VBM e.g. economic value added (EVA).

Chapter 3 Literature study and a review of the petrochemical industry

Chapter three addresses research on VBM and sets out the background to the application of VBM in the petrochemical company. This chapter explains both established (proven and accepted) and contemporary theory (research conducted over the past five years).

Chapter 4 Empirical study

Chapter four deals with the empirical research and also explains how the research was done. The results are presented and this is followed by an open discussion. The discussion covers the following:

- Research methods
- Research sample
- Statistic methods
- Report of findings

Chapter 5 Conclusions and recommendations

In the last chapter a summary of the research is provided. Specific findings and conclusions derived from the research are discussed in more detail. Recommendations on the use of VBM are made and for practical implementation in petrochemical company and also for further research.

CHAPTER 2:

Value Based Management and the petrochemical industry

2.1 Introduction

A new global economic paradigm in the world of business is taking shape, generating a broad and fundamental shift in the underlying competitive dynamics of local and global businesses. This catalytic transformation changes the rules of the competitive game for businesses – regardless of size, the industry in which it is operated, and the country in which it is located.

Companies can no longer seek protection in the traditional positions built in domestic markets. In the new global economic paradigm everything is up for grabs; technology creates new markets, introduces new competitors, spurs globalisation and causes regulatory change. Take the example of the Internet. The Internet creates value by reducing the costs of transmitting information. It does so, however, in a unique way. It combines the two-way transmission mechanism of the telephone with informational display of the television and the database capability of computers. However, the reduction in transmission costs reduces the ability of companies participating on the Internet to take advantage of monopolies, which is the monopoly resulting from being physically close to the customers. Also, the Web makes it simple to explore new locations and to get feedback on these Web locations. This makes it more difficult for price spreads to exist and as a result, brand loyalty may decrease.

The mention issues above are some of the soft issues that concern business leaders in today's business. In the midst of such uncertainties in the business environment, many companies move to become high technological companies, and start to focus on certain key value drivers, which consistently push the company to measurable high performance. The biggest problem faced by business leaders today is to convert the multitude of factors involved in running a business into tangible factors that translate into profits, shareholders value and long term sustainability.

In trying to solve some of the mentioned problems above, this chapter will present a theoretical background for Value Based Management (VBM). It will investigate previous research done on VBM and its importance and also consider factors of success and failures. Through studying literature and previous research, this chapter tends to give directions on how VBM and strategy alignment and implementation can be achieved. Value based management metrics (value drivers) as important metrics in Value Based Management will be studied. The successes and failures from previous research will also be studied to better understand how VBM can be implemented.

2.2. Value creation

Value creation is often explained as the wealth created for a company's stockholders through price appreciation of shares and dividends. It is often criticised on the grounds that it ignores important constituencies other than the company's shareholders, such as employees, customers, suppliers, the environment and the local community (Young & O'Byrne, 2000:13).

According to Young and O' Byrne (2000:13), the growing body of evidence in Europe and North America shows that companies with good reputations in terms of (1) product and service quality, (2) ability to attract, develop, and retain talented people, and (3) community and environmental responsibility tend to outperform stock market averages. This evidence suggests that firms deliver value to shareholders only when they deliver value to their other constituencies. If customers are not satisfied, they buy from competitors. Likewise, if employees feel their talents are unappreciated and undervalued, they go elsewhere. Copeland and Bughin (1997:156) state that the pursuit of maximum shareholder wealth is "a virtuous cycle". It does not only increase shareholders wealth, but also creates more corporate growth, improved returns for employees, and welfare and economic benefits for society at large.

Value can be explained in many different ways and is believed to be a combination of different factors that create value in any organisation. Some of these factors are stated below

2.2.1 Market controls value

Market factors range from efficient market theory, which means that the market has available information. In order to set a fair market price for a stock, investors make rational judgements based on the available information (Knight, 1997:34). This implies that the public's information controls the company stock price. Price, it seems, is based on investors' expectations.

According to the Efficient Market Hypothesis (EMH), an operationally efficient stock market is expected to be externally and informational efficient. Therefore, security prices at any point in time are an unbiased reflection of all the available information on the security's expected future cash flows and the risk involved in owning such a security (Mabhunu, 2004:1). Such a market provides accurate signals for resource allocation as market prices represent each security's intrinsic worth. Market prices can at times deviate from the securities' true value, but these deviations are completely random and uncorrelated.

EMH is divided into three forms depending on the information set to which prices adjust. The three forms or levels of market efficiency are weak-form efficiency, semi-strong-form efficiency, and strong-form efficiency. The weak form of the EMH states that all information contained in past stock price movements is fully reflected in current market prices. The semi-strong form of the EMH states that current market prices reflect all publicly available information. The strong

form of the EMH states that current market prices reflect all pertinent information, whether publicly available or privately held.

No individual can control the market, and for any business to create value for their shareholders, it has to create value that is above the market (in other words, it must beat the market). For the company to beat the market, it has to focus on how the business is operated by understanding the value drivers.

Market efficiency and the Tyranny of Investors

The efficient market; at any given time, represents the informed judgement of all investors and it is therefore impossible to beat it and deliver excess returns to investors using available information. This implies that a VBM application in any company will always reflect in the stock market price; and this is good news for those managers who implemented VBM in businesses they operate. For those who operate in an inefficient market economy, there will always be rewards in value creation. Likewise, all the stakeholders will benefit as value is delivered. McSweeney (2007:325) explains that maximising shareholder wealth is therefore justified not only as a consequence of ownership, but also on the grounds of economic efficiency and wider social gain.

According to Beneke (2007:28) an overwhelming body of established academic research proves that performance accounting measures are coincidentally related to share price and not primary determinants. Academic evidence proves that cash, adjusted for time and risk, which investors can expect to get back over the life of the business, truly determines the share price.

Ferguson *et al.* (2005:111) uses event study methodology to investigate whether firms adopt EVA due to poor performance and whether or not the adoption of EVA leads to better stock performance. It was found that firms that adopted EVA appear to have above-average profitability relative to peers, both before and after adopting EVA. There was some evidence that EVA adopters experienced increased profitability relative to peers following adoption.

The role of management in VBM

The primary objective of any company regardless of its background is to create long-term value and sustainability (John, 2009:1). The role of management is to create value for the shareholders of the company. This is not measured by monetary terms but by the decisions that they make during operation. Management needs to manage investors' expectations so that it does not exceed company expectations at all times. Management that correctly sets investors' expectations will meet or exceed investors' expectations and thus create more value for shareholders.

Athanasakou *et al.* (2007:1) explain that interactions between firms and stock market participants over the communication of earnings numbers are often described as a game. As managers have inside access to earnings information and as earnings surprises influence market prices, some form of game is likely to arise. The incentives for this game derive from managers' concerns about stock price, bonuses, reputation and job security, pressure from the investment community, market uncertainty about the firm's future prospects, and the possibility of lawsuits. Given these concerns, managers may engage in earnings forecast guidance; guiding analyst earnings forecasts down to make the final forecast more attainable, and earnings management, by inflating reported earnings to achieve the final forecast. Athanasakou *et al.* (2007:1) points to prior research, which investigated the methods managers used to ensure that reported earnings meet analyst expectations. This research also found that limited evidence exists on capital market consequences.

The above researchers Athanasakou *et al.* (2007:1) more overstate that the survey evidence done by Graham *et al.* in 2005 shows that the dominant incentive for U.S. managers relates to maintaining or increasing stock price.

Athanasakou *et al.* (2007:28) examines market response in achieving analyst expectations, how the response changes for firms that guide forecasts or manage earnings, and whether or not the response is rational. The results show that the U.K. market does not reward forecast guidance achievers but reduces the reward for classification shifting achievers relative to achievers that do not classification shift. Analysing the information in future earnings and rational pricing tests shows that the market response to forecast guidance achievers and classification shifting achievers is rational.

From this study finding it can be argued that managers will never create an expectation that is below the market. Managing investors' or shareholders' expectations entails that the manager should understand the market dynamics of the business and its environment.

2.3 Value based decision making process

Managers face decisions with conflicting objectives most of the time which requires trade-offs in selecting the best opportunity. Focusing on value as an objective for decision-making helps to balance the multiple perspective and helps the manager to think of the trade-offs in the decision process. The indication of whether VBM is working in an organisation lies in observing whether decision makers at all levels are provided with the right information and incentive to make value creating decisions (Beneke, 2007:11). For companies adhering to VBM decision-

making, stock market performance should ultimately lead to the improvement in share price over the long run. Accordingly, stock markets should in the long run share prices according to their ability to create value for shareholders. In this case the more efficient the market in pricing share according to ability to create value, the more efficient the stock market may become (Athanasakos, 2007:1397). It is therefore argued that a Value Based Management decision-making process should be based on true measurement of value.

There are four essential management processes that collectively govern the adoption of VBM. First, a company or business unit develops a strategy to maximise value. Second, it translates this strategy into short- and long-term performance targets defined in terms of the key value drivers. Third, it develops action plans and budgets to define the steps that will be taken over the next year or so to achieve these targets. Finally, it puts performance measurement and incentive systems in place to monitor performance against targets and to encourage employees to meet their goals.

According to Knight (1997:112), Value Based Management is more than just value-based decision making. It must be emphasised that the decisions must be supported by an environment that encourages value creation. In line with previous arguments, the decision-making environment is largely set by the following four key management processes: (1) Strategic planning, (2) Budgeting, (3) Compensation, and (4) Reporting. These processes are outlined as follows:

2.3.1 Strategic planning

Strategic planning takes information about the operating and strategic characteristics of the business today and assumptions about the future and adds knowledge from inside and outside the company. This information is then converted into a plan that usually includes economic, market and financial projections. Planning is part of strategic focus to make sure that the company resources are being used effectively to create competitive advantage. A value measure can then be used to convert the financial projections into information on how much value the entity plans create. The Value Based Management orientation does not replace good planning; but it can help to communicate the plan much better.

Malmi (2003:238) and Morin and Jarell (2001:219) argue that the specific objective of the strategic analysis module of the VBM framework is to formulate appropriate value-creating strategies across all the business units of the company. Malmi (2003:239) maintain that VBM literature does not explicitly say anything about strategies per se but that it offers tools to link strategy alternatives to shareholder value. Bausch *et al.* (2009:23) explains that while Value Based Management cannot be understood as a creative tool it could be used to develop

strategy alternatives as its metrics are extremely useful in assessing the sustainability and desirability of potential strategies. One of the unique strengths of Value Based Management is that it links strategy formulation to financial management while centering on value creation (Bausch *et al.*, 2009:23).

2.3.2 Budgeting

Budgeting is the process of committing capital funds for near term operating results, usually for one year. Budgeting is concerned with allocating resources, usually to different product lines or business units. Value measurement plays an important role as it places different opportunities on a level playing field so that they may be compared. The result of this is a reduction of the agency cost in fund allocation to projects. In case of different business units; each business unit presents its proposal and the decision has to be taken based on the value addition of the proposed project. Ameels *et al.* (2002:23) maintain that the extent of the bonus, the depolarisation of budgets and the less frequent interventions in resource allocation programmes can be viewed as success factors. These success factors are the result of adequate implementation and support of the on-going use of the VBM system.

2.3.3 Compensation

Value based decision making is enhanced when compensation is strategically integrated and the value created is awarded. It encourages informed judgement during decision making.

Ameels *et al.* (2002:23) identifies the third of the five key value-driven elements as building ownership. Based on this element, it is argued that rewarding large numbers of managers and employees on corporate and/or business unit economic profit measures has a positive influence on the creation of ownership. In the VBM literature, it is assumed that target setting cannot be effective without linking it to compensation (Malmi, 2003:238). The fundamental premise underlying VBM system is simple, what a firm measures and what a firm rewards gets done (Martin & Petty, 2000:171). Bonuses linked to EVA can be paid in each financial year. Malmi (2003:238) states that equity based compensation, such as stock options, could be used to further align shareholder and manager interest. However, such compensation should be targeted to higher level management, since stock ownership for some is simply too abstract and too remote to strongly impact on behaviour.

2.3.4 Reporting (Communication)

Communication ties the process together and provides management with opportunity to internally and externally discuss the company's goals. Management has to discuss precisely how it will measure and create value for the company. Communication also provides management a chance to directly influence the share price value by controlling the investors' expectation based on the notion that market controls value from perfect market theory.

Ameels *et al.* (2002:33) conclude that none of the six consulting firms denies the importance and the impact of external communication with regard to Value Based Management, after studying the elements of consultant's approach on VBM. According to PriceWaterhouseCoopers, investor communication is essential to ensure that investors understand the company's goals and strategies, and remain confident about the ability of management to implement and deliver those objectives (Ameels *et al.*, 2002:33). Ameels *et al.* (2002:33) refers to L.E.K. consultant's concern about the alignment between the market evaluation and the company's strategic plans. The result of this concern about providing investors with accurate information was the publication of a shareholders scorecard. The scorecard did not only send unambiguous signals to members of the organization but also to outside investors. After all, a focus on superior total shareholder returns assured the owners of a company that management is totally committed to exceeding competitors' shareholder returns performance. This argument as mentioned above states out the company's stock price as the clearest measure of market expectation and also an importance of communication as an influence. Young & O'Byrne (2000:18) as well as Ameels *et al.* (2002:34) are confident about the added value of EVA in the external communication.

Ameels *et al.* (2002:34) reveals the following Marakon Associates advocate the importance of communication not more or less than the amount of wealth that the company will create for its shareholders. The perception of the internal contribution of the VBM-approach seems to be closely linked with communication, since all six consulting firms studied denote in one way or another its influence on internal communications. McKinsey & Co refer mainly to the improvement of the dialogue between corporate and business level (Ameels *et al.*, 2002:34).

The four management processes mentioned above need to send consistent signals to managers in order to reinforce the mind-set of value based management. Performance majors must be included in the processes, and the process must be designed to reinforce consistent signalling to managers that support the company's strategy. One management process is to focus to different priority than the other processes. These processes need to be aligned in order to send consistent signals to managers. The consistency factor is important to help managers focused on making decisions that create value.

2.4 Value Based Management

Within the last two decades, increasing competition on the global capital markets in general and growing influence on institutional investors in particular have triggered the growing popularity of the Value Based Management concepts (Bausch *et al.*, 2009:16). Companies that have gained sustained competitive advantage seem to be able to create greater economic

value than their competitors. Therefore it has become important to strategically implement Value Based Management from the top to bottom in order to influence decisions that will increase value and boost the share price.

Value-based management is a management philosophy that uses analytical tools and processes to focus an organisation to the single objective of creating shareholder value. It includes an alignment of corporate strategy, performance reporting and incentive compensation that aid to bring all staff together to act like shareholders and make decisions that maximise value (Athanassakos, 2007:1397). VBM instils a mind-set whereby everyone in the company learns to prioritise decisions with an understanding of how the decisions affect or contribute to corporate value.

VBM is a management approach where the company's overall aspiration, strategies, analytical techniques and management process are aligned. The aim is to maximise the company's value by focusing on the key drivers of value (Elgharbawy & Abdel-Kader, 2010:5). Theoretical, it is argued that VBM involves a shift away from using traditional accounting measures like earning per share and net profit as these provide unreliable guidelines to shareholders' value creation. According to Athanassakos (2007:1398), the initial study of Value Based Management methods were based on the theory that traditional accounting and financial measures are inadequate for organisational performance. Earnings per share were found to encourage short-sighted behaviour, which caused managers to believe that shareholders are a costless source of fund. Accounting tells us about past performance because it is a retrospective measure of the financial results. While it involves financial reporting and financial performance; both these measures are so difficult to understand especially for operational managers who are set to make decisions during the course of production that will enhance the value. VBM provides a tool to influence the financial value of a company through informed decision making. Another essential advantage of value based metrics is that it captures real value creation by taking account of the risk notion, the impact of inflation, and partly opportunity cost, which is not considered in traditional accounting measures (Bausch *et al.*, 2009:16). VBM was found to be a valuable mechanism to improve corporate performance and to increase value (Rapp *et al.*, 2010:15). The VBM system was found to have positive effects on accounting performance, cash flow performance and firm valuation. According to Ryan and Trahan (2007:124), and Rapp *et al.* (2010:2), VBM provides managers with metrics and analytical techniques to identify value-creating strategies. It also aligns managers' and shareholders' interest in that it links managers' compensation and promotions directly to value creation. Companies that implement VBM systems tend to gain more shareholder return than companies that do not implement the concept. In addition, it seem as if the number of years that a company has implemented VBM also contributes to the value earnings (Rapp *et al.*, 2010:14).

Implementing a comprehensive Value Based Management system helps a company to attain the goal of value maximisation (Bausch *et al.*, 2009:16). It is argued that a comprehensive system can only be effective where managers are given incentives for implementing and managing them. These incentives should align with value based strategies and corporate strategy. The importance of incentives is a result of the separation of power between ownership and control of the company (known as agency cost). Agency cost is the decisions taken by managers that do not favour the ownership of the company or shareholders. Incentives reflect the fact that while all individuals want to succeed, they also want other things as well. For that reason, some extra inducement is needed to keep them focused on maximising the performance of the company. VBM systems produce superior stock returns, and this effect is particularly pronounced in firms with high agency costs (Rapp *et al.*, 2010:14). Furthermore, VBM helps to align managers in making decisions that will maximise the share price.

According to Elgharbawy and Abdel-Kader (2010:5) little attention has been paid to VBM literature and the extent that internal economic measures are preferred for planning and evaluating management performance, and for control purpose. There is no clear evidence whether companies that use economic measures as internal economic measures for performance measurement and compensation purposes can outperform companies that use performance measurement systems based on other performance measures. This argument is based on research done by Zummerman (1997) and Francis & Minchington (2002) as quoted by Elgharbawy and Abdel-Kader (2010:5). The mixed results that these studies produced are considered as a partial deficiency in the implementation of VBM.

2.5 Benefits of Value Based Management

When companies employ VBM to the fullest (which is what they must do to change the behaviour, and reduce the agency cost), it becomes far more than just another financial management system (Ehrbar, 1998:6). Some of the benefits of a VBM approach include (1) VBM is the only corporate performance measure that is tied most directly, both theoretically and empirically, to the creation of shareholders wealth. By definition this refers to managing for high value based metrics, which by definition is managing for higher stock price. (2) VBM is only performance measure that always provides the correct answer in the sense that the cash flow return on investments (CFROI), the return on invested capital (ROIC) and economic value added (EVA) is unambiguously better for shareholders, which makes them the only genuine continuously improvement metrics. In contrast, actions that increase profit margins, earnings per share, and even rates of return sometimes destroy shareholder wealth. (3) VBM is a tool that provides the framework underlying a comprehensive new system of cooperate financial management that guides every decision, from annual operating budgets to capital budgeting, strategic planning and acquisitions and divestitures. (4) VBM provides simple but effective

methods for teaching business literacy to sophisticated workers. (5) VBM provides key variables that create a unique incentive compensation system, which for the first time actually aligns the interests of managers with those of shareholders and causes managers to think like and act like owners. (6) VBM provides a framework for companies to communicate their company goals and achievements to investors. Those investors can use this framework to identify companies with superior performance prospects. (7) VBM is also a tool that provides an internal system of corporate governance to motivate all managers and employees to work cooperatively and enthusiastically to achieve the best performance possible.

2.6 Limitation of Value Based Management

Value management can only be successful in a company if the decision makers understand what it is and how they can affect value creation through their decisions. Failure to integrate value based decision making throughout an organisation is a recipe for failure in implementing Value Based Management.

It is argued that VBM is an all-embracing, holistic management philosophy that often requires a culture change. Because of this, VBM programmes are typical large scale initiatives. To be successful it demands considerable time, resources and patience. VBM may sound simpler than corporate strategy, but it is not. In order to be successful, it needs support from top management.

Economic value added (EVA), Performance Management and the Balanced Scorecard are very powerful management support tools and processes. However, each presents its own costs if used incorrectly. It is therefore advisable not to go into too much detail or use measuring methods that are too complex. Extreme caution should be taken not to measure the wrong elements as these ultimately lead to value destruction.

The successful implementation and sustenance of VBM requires a strong and explicit CEO and the support of the executive board. Comprehensive training and management consultancy are advisable but can be quite costly. The perfect VBM system or valuation model has not yet been invented yet. Any chosen method will always have its drawbacks, which must always be considered.

2.7 Principles of Value Based Management

Performance management systems, corporate governance practice and entrepreneurial orientation are important determinants of organisational performance (Elgharbawy & Abdel-Kader, 2010:2). Corporate governance reforms (including laws, codes, and principles and

listing rules) have been established to protect shareholders' rights, to restore investors' confidence in the capital market, and to ensure management's accountability to shareholders.

Governance and ownership: As mentioned before; at the heart of managing for value exists a problem common to many large companies and particularly Johannesburg Stock Exchange (JSE) listed companies. The problem lies in separating power between managers and the owner of the company. This is known as agency cost. Owners or shareholders effectively delegate the day to day running of the company to paid managers who act as their agents. The results can be the lack of alignment between the interests of the two groups. Managers are likely to have the most significant impact on value creation of a company as they are in charge of day to day running of the company. Yet, since managers may be driven by self-economic interest there is a risk that they may not always make decisions that have shareholders' best interest at heart.

Starovic *et al.* (2004:16) argue that compensation plans are barriers in place to prevent managers from abusing their positions. One of these is the threat of reputational damage to their future employment prospects. There are also other safeguards, in the form of corporate governance codes and practice. Aligning owners' and managers' interests entails fostering open and honest communication together with the active interest from shareholders.

As executive tenures get shorter and executive pay packets get bigger, they will try to make their spell at the top as profitable as possible. In extreme cases this can go as far as aggressive earnings management (Starovic *et al.*, 2004:16). The only way to prevent this is to link the reward for the executive to the value of the share price, which should be higher and also impermanent.

Recent investors' activism has led shareholders to become more active and to introduce new codes of corporate governance such as the King Report 111 or the Soberness Ashley Act. However, executives complain about having too many corporate government codes forced unto them. They accuse investors of micro managing and meddling in the day to day affairs of the company. Corporate government codes were created as governmental pressure threatened legislation where businesses remained passive to issues. Companies that ignore such a reality may risk negative publicity, destroy its value and lose new business. Currently; this issue is experienced by Wall Mart in its bid to acquire the control of Mass Mart in South Africa. Despite the fact that it has created more value to its shareholders it is argued that the achievements obtained were at the expense of workers.

Remuneration: Value Based Management agendas must include an attempt to align the interest of two parties; namely employees in the first place and shareholders in the second place. Employees should be allowed to share directly in the benefits they help to create. This effectively means that they must be paid in the way that makes them behave more like owners, by linking their rewards to the long term value growth of the entity. In practice this equates to remuneration structures that include some form of equity linked compensation. Starovic *et al.* (2004:17) argues that the following practices associated to VBM should be implemented in order to increase ownership to employees (1) The bonus system rewards improvement at any level of performance means there is no cap on the bonus payable, which, in turn encourages employees to work hard as to increase their bonus in each fiscal year. (2) A shareholders' value based bonus system for staff – this means that shares are allocated as a bonus to staff. The bonus is based on the value they create for the company. (3) Encouraging as many as possible staff members to build up shareholdings in the company through purchases or bonus – this will allow staff to start thinking as owners when making decisions in the business.

The basic concept of tying remuneration to an increased company value implies that the owner and manager's interests are aligned. This is especially true in small companies where the link is visible in an individual performance and where company performance is also visible and relatively straight forward. In any case, it is important to install the process and structure to safeguard the owners' interest against the power abuse. Clearly documented policies and procedures for remuneration should be in place.

Culture: Creating value is a continuous cycle supported by the sum of strategic and operational decisions made throughout the company; it is not a once off event that comes about as the results of a major strategic breakthrough. The decisions taken must inform by the principles of VBM and maintain sustainable value management decisions. This can only happen if VBM is imbedded into company culture to the extent that it becomes a second nature.

Culture encompasses all the norms and ways that direct employees to act in a particular way. The influence of these norms tends to be greater in everyday operations than the influence of a manager.

This study highlights five elements of cultural transformation shared by companies where VBM programmes have been successful (Starovic *et al.*, 2004:19). (1) Nearly all made an explicit commitment to shareholder value. (2) Through training they created an environment receptive to the changes that the programme would engender. (3) They reinforced the training with broad-based incentive systems that were closely tied to the VBM performance measures and which gave employees throughout the company a sense of ownership in both the company and

the programme.(4) They were willing to make major organisational changes that would allow their workers to make value creating decisions. (4) The changes that were introduced to the company systems and process were broad rather than focusing on financial report.

Structure and stakeholders: Organisational structure is an effective way to implement strategic objectives and to clarify who makes what decisions in the organisation. Implementing VBM in an organisation may need the change of structure; centralising some business units and dropping those that destroy the value.

Recognising the stakeholders in VBM practice may signify a trade-off between value creating decisions. But the actual process of value maximisation cannot bypass the stakeholders concerned. If the company fails to recognise its stakeholders, it runs the risk of ignoring their concerns that will result in strikes that in turn will damage the company's reputation. This will lead to value destruction in market value. The prospect of entering a new business or mergers in future will also be reduced as the company's reputation gets damaged.

2.8 VBM and strategy

Bausch *et al.* (2009:23) explains that while Value Based Management cannot be understood as creative tools to develop a strategy alternative, its metrics are extremely useful for assessing the sustainability and desirability of a potential strategy. The strength of Value Based Management is that it links strategy formulation to financial management while centring on value creation.

Beneke (2007:29) formulates a strategy to determine where an organisation is currently and where it should be in future. Industry attractiveness must be properly analysed when the strategy is formulated to show that the adopted strategy will indeed create value to the shareholders. An analysis of industry attractiveness seeks to determine how alternative strategies might affect the industry's attractiveness and the company's position in relation to its competitors.

Knowing the value of the strategic plan helps to answer the questions such as: Are we going to meet our investor's expectations? / Is the strategy good enough? The starting point in developing the strategy is to determine the investor's expectation. It should be the ultimate goal for any company to perform more than expectation from their investors. If the analysis is not done properly on the strategic plan, the company will fail to meet the expectation of the investors. When this happens, the stock will drop and wealth will be destroyed. Consequently, management will find themselves with a stock option below the market price which will threaten the job security for all those employed by the company. Using performance measurement, it is

possible to define how much value a business strategy or alternative business strategy will create.

2.9 Value-Based Management metrics

In order to implement a Value Based Management system, managers must have concrete and clear target measures, since value is abstract and vague by its nature (Kim, 2004:939). Specific strategic variables that derive the value of the business must be identified and their progress needs to be tracked. Traditional performance measurement is perceived as accounting driven and it is less understood by supervisors and line managers who always need to make decisions during operation. VBM may force a company to modify its traditional approach from being accounting driven to management driven. According to Bausch *et al.* (2009:16) another essential advantage of value based metrics is that it captures real value creation by taking account of the risk notion, the impact of inflation and partly of opportunity cost, which is not the case for traditional accounting based performance measures. Copeland *et al.* (2000:101) explains that value is the only performance measurement that uses complete information. Performance measurement is therefore a key element when management focuses on value creation. It is argued that VBM metrics can be used for numerous purposes, including valuation, strategy, evaluation and the monitoring of performance. Although there are significant differences between different value metrics it is agreed in each case that the primary objective of a company should be to maximise shareholders' wealth (Starovic *et al.*, 2004:10).

Numerous consulting firms have developed and popularised some VBM metrics for their clients. These metrics have been studied and widely accepted by academics. Ryan and Trahan (1999:47) compile some of these metrics as follows

Discounted Cash Flow (DCF). DCF is the present value of forecasted cash flow. Any compensation relied on DCF, would be based on projections, not results. DCF recognises that the market value of a company can be expressed as the present value of its expected future cash flows discounted back to the present at the company's cost of capital. This measure was popularised by Alcar and is directly linked to shareholders' value (taking into consideration its expected future value).

Cash Flow Return on Investment (CFROI). CFROI is the real rate of return measure because it is adjusted for the effect of inflation. This measure identifies the relationship between cash generated by a business relative to the cash invested in it. It is argued that CFROI provides an accurate measure of the economic performance of a business, free from the potential accounting distortions related to issues such as inflation and variations in asset ages (Starovic *et al.*, 2004:13).

CFROI incorporates the principles of the internal rate of return (IRR) concept, which is associated with the appraisal of capital investment opportunities. Its calculation requires the following three important stages (Starovic *et al.*, 2004:13). First, accounting profit is converted into real cash flow for the period. This involves adjusting for a non-cash profit, lost account items and non-operating items.

Secondly, the balance sheet value of capital invested in the business is converted into an inflation-adjusted measure of investment in the business (described as gross asset at current cost). Gross assets include off-balance sheet assets, excluding goodwill. The inflation adjustment returns assets to their full historical cost. This is then adjusted for the effect of general price inflation.

Finally, annual cash performance is converted into measure of economic performance over the average life of the firms' assets, using principles of IRR. It is argued that CFROI is a superior measure of performance that provides the basis for more accurate business valuations. CFROI is also argued that it is the only metrics that mostly accurately reflects the way in which the stock market judges the company's performance.

Return on Invested Capital (ROIC). This is the ratio of the company's net operating profits less adjusted taxes (NOPLAT) to its invested capital. NOPLAT is the company's earnings before interest and taxes less cash taxes, and invested capital is the sum invested in the operations of the company.

Economic Value Added (EVA). EVA is a remarkably simple, yet powerful measure of performance (Desai & Ferri, 2006:1). It is argued that management, investors and other stakeholders need to be aware of a company's performance to enable them to make informed decisions about the future. EVA is the one of the tool/metric aimed at measuring the company's ability to generate profits in excess to the cost of capital invested to generate that profit. It is argued that EVA helps managers to incorporate two basic principles of finance into their decision making. The first is that the primary financial objective of the company should be to maximize the shareholders' wealth. The second is that the value of the company depends on the extent to which investors expect future profits to exceed or fall short of the cost of capital.

EVA equals the spread between return on net assets and the cost of capital, multiplied by invested capital (Young & O'Byrne, 2001:68). It is calculated as the difference between after tax operating profit and the cost of invested capital including both debt holder and equity holders (Desai & Ferri, 2006:1).

$$EVA = NOPAT - (Cost\ of\ Capital \times Capital)$$

where:

NOPAT = Net Operating Profits After Taxes

Capital = Capital invested by debt holders and equity holders

Cost of Capital = Weighted average of the after-tax cost of debt and cost of equity

The origin of the EVA is the results of the revival of the residual income developed by economist such as Alfred Marshall in the 1890s (Desai & Ferri, 2006:2). It is argued that the growing demand for a new value based management practices that needed to better align the interest of managers with those of shareholders lead the firm Stern Stewart & Company in 1980-1990s to revive the residual income. Stern Stewart & Company further developed the concept into broader EVA that is currently used today (Desai & Ferri, 2006:2).

According to Young & O'Byrne (2001:85), EVA is much more than a measurement. It is also an instrument for changing managerial behaviour. It is about changing mind-set, and getting everybody to think different about their work. Implementing value based principles requires acceptance and understanding among managers, who need to appreciate why value creation is so important while also grasping the fundamental concepts underlying value creation, such as net present value. VBM makes finance accessible to all managers. One of the greatest virtues of EVA is that it makes sound finance theory accessible, so that operating managers, including those with no background or experience in accounting or finance, can incorporate insights from these disciplines into the way they run their businesses.

EVA proponents argue that the benefits of EVA are even greater when EVA is used to evaluate and reward performance at a divisional level and for non-executive employees (Desai & Ferri, 2006:14). It is argued that equity-based compensation is not a very attractive option, whereby in large, multidivisional companies, the performance of a single business unit or lower-level employees is less likely to affect the stock price directly. The stock maximization has nothing to do with running the day-to-day production operations. It is further argued that operating performance measure, such as EVA, provides all employees with performance measurement while maintaining, at least in theory, a strong connection with shareholder value creation.

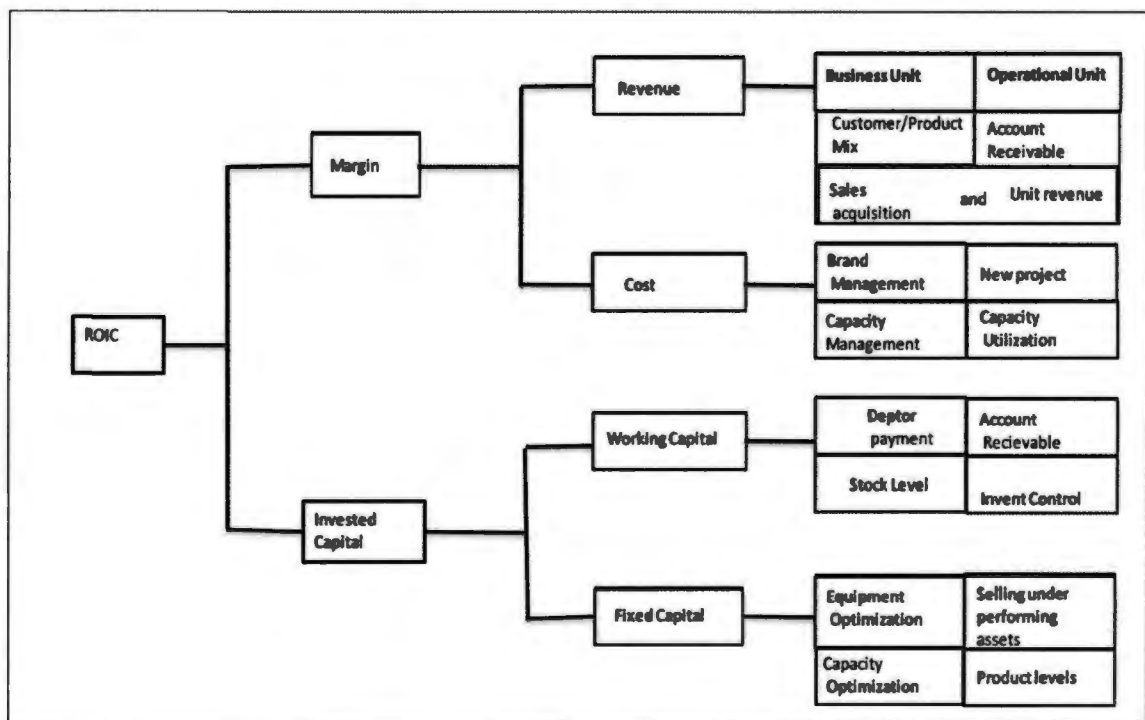
Desai and Ferri (2006:14) further argued that bringing down EVA in the factory floor presents a number of challenges. The overview study conducted in South Africa on how EVA is implemented in South African companies concluded that EVA is costly to implement, difficult to understand and often misunderstood by management and the staff who need to employ it (Van der Poll *et al.*, 2011:139). It was also argued that EVA is more suitable for capital-intensive organisation.

2.10 Value drivers

Copeland and Copeland (1999:91-92) explains that an important part of VBM is a deep understanding of the performance variables that will actually create the value of the business. These variables are known as value drivers. Such an understanding is essential because an organisation cannot act directly on value. It has to act on things it *can* influence such as customer satisfaction, cost, capital expenditures, and so on. Moreover, it is through these drivers of value that senior management learns to understand the rest of the organisation and to establish a dialogue about what it expects to be accomplished in each business unit and a company as whole.

A value driver is any variable that can be manipulated to change the value of the company. The changes seen on the value metrics are influenced by value drivers. To influence the value metrics one needs to identify the related value drivers and change them. Value drivers need to be identified and organised so that managers can identify which will have the greatest impact on value and assign responsibility for them to individuals who can help the organisation meet their targets, so that value can be influenced positively. Value drivers can be classified into internal and external value drivers. Internal value drivers are those that management can influence while external value drivers relate to micro-economic factors in which the company operates.

Figure 2.1: Internal value drivers for ROIC.



Source: Copeland et al. (1994:69).

The above representation of value drivers illustrates how value drivers influence the value metrics which in turn influences the company value. These drivers need to be holistic monitored in order to influence the value as a whole. The value drivers need to be constantly reviewed because of the changes in the organisation as well the markets.

Potential value drivers are identified by a focus review and analysis of the organisation from four different approaches, which are detailed below (Ronen *et al.*, 2007:155). The review is carried out by interviewing the management team, key personnel, customers, suppliers, or other business partners. Financial and management reports are also reviewed and the premises are visited and benchmarked against similar organisations.

The financial statements approach. Financial statements are reviewed and benchmarked in order to identify potential value drivers such as high inventory levels or decreased revenues.

The financial review approach (bottom-up). All organisational functions are systematically examined to find relevant value drivers. These functions include business strategy, marketing, sales and business development; human resources management; information systems; finance; research and development; quality; operations; logistics and procurement; cost accounting; organisational structure; risk management; customer service and support and project management.

The performance measures approach. The value creation potential of improving each one of the current and prospective performance measures of the organisation is evaluated. These include the following: Theory of Constraints (TOC) measures; Throughput, operating expenses, inventory, lead time, quality, and due date performance, as well as specific relevant global measures.

The core problem identification approach (top-down). This is an analysis of the undesirable effect (UDEs) to identify the root problems of the organisation. The undesirable effects are the major issues that prevent the organisation from achieving its goal.

2.10.1 Economic value added (EVA) and market value added (MVA)

Market value added (MVA) can be defined as the measurement of the company's market value in excess of the company's book value. MVA is the definitive measure of wealth creation (Ehrbar, 1998:40). It is argued that MVA beat out all other measures because it is the difference between cash in and cash out or between what investors put in to the company as capital and what they could get out by selling at today's market price. The argument concluded that the far better course is to manage for increase in EVA, because EVA is the internal performance measure that is mostly highly correlated with MVA and provides the most reliable guide to

whether or by how much the management actions will contribute to shareholders' wealth. The study conducted by Shorter *et al.* in 1998, investigating the strength of association of EVA with shareholder value and comparing the association to that of traditional performance metrics, concluded that EVA seems to have stronger association with Market Value Added than other traditional performance metric (Van der Poll *et al.*, 2011:130).

According to Bausch *et al.* (2009:19), EVA is a measure of residual profits from an entity perspective for one period; while the multi periodical measure is the market value added (MVA). It is an accumulative measure of company performance, which illustrates the assessment of NPV of all current and planned investment projects of a company. From an external point of view, MVA is the difference between the market value of a company and its book value. From an internal point of view, it is the net present value of all future EVAs.

Market value added = Present value of future EVAs

The difference is that the MVA takes consideration of the stock market to give true value at a period of time. The MVA is calculated internally in the company as the discounted future. EVA is equal to the external calculated MVA only if expectations on the stock market are the same within the company (Bausch *et al.*, 2009:22). In the long run the maximisation of MVA should be the ultimate goal of shareholders' centred management. This can be achieved since EVA is the fuel that fires MVA. Companies may therefore need to be made more aware of the importance of economic profits (EVA) and their effect on the value of the company (Van der Poll *et al.*, 2011:131).

2.10.2 The Balanced Scorecard

Non-financial value drivers are important because they may predict future EVA or greater future growth opportunities than current EVA and its current components (Young & O'Byrne, 2000:289). Many companies use the balanced scorecard to identify key value drivers. A balanced scorecard consists of an integrated set of performance measures that are derived from and support the company strategy throughout the organisation (Garrison *et al.*, 2008:438). The company that practices Value Based Management should maintain future EVA growth as its goal but should also be careful of not ignoring soft admitted indicators, such as customer satisfaction and product innovation that may be important drivers of future EVA. By identifying other nonfinancial indicators of performance, the balanced scorecard becomes not only a performance measurement, evaluation, and compensation tool but also a mechanism for transmitting the strategic vision of top management throughout the organisation. Performance measurements used in the balanced scorecard approach tend to fall into the following four categories (Figure 2.2) Financial, customer, internal business processes and learning, and growth.

Figure 2.2: The Balanced Scorecard.



Source: Finntrack.eu

2.11 Conclusion

Investors require a return for their investment and the role of management is to deliver the required return to investors while balancing the interest of other stakeholders and ensuring the long term viability of the business (Knight, 1997:295). Value-based management is a management philosophy that uses analytical tools and processes to focus an organisation to the single objective of creating shareholder value. It aligns corporate strategy, performance reporting and incentive compensation and aid to bring all staff together to act like shareholders and make decisions to maximise value (Athanassakos, 2007:1397).

It is argued that comprehensive VBM systems can only be effective if managers are given the incentive for implementing and managing them. These incentives should align with value based strategies and should come from corporate strategy from the top. The importance of incentives is due to the separation of power between the ownership and control of the company (known as agency cost). The incentives reflect the fact that while all individuals want to succeed, they want other things as well, so that some extra inducement is needed to keep them focused on maximising the performance of the company. Value Based Management thus places company owners' interests back to the centre of decision-making (Starovic *et al.*, 2004:23). This means that those investors can rely on more than just the instruments of corporate governance to protect them from possible conflicts of interest arising from the split between ownership and management.

It is argued that VBM is an all-embracing, holistic management philosophy that often requires culture change. Because of this, VBM programmes are typical large scale initiatives. To be

successful they take considerable time, resources and patience. Value Based Management may sound simpler than corporate strategy, but it is not, It is essentially more the same and it needs support from the top management to be successful.

CHAPTER 3:

Value Based Management: The Sasol Case.

3.1 Introduction

A number of theories have attempted to explain why some companies in a petrochemical industry are more competitive than others. Global perspectives on the competitiveness of some companies arise from macro-economic phenomena directed by exchange rates, deficit of the national budget or interest rates (Luburic, 2011:80).

The nature of the petrochemical industry strongly depends on the natural resources (largely crude oil and gas), which are scattered around the world, and have influenced companies in the petrochemical industry to become global players in search of resources and cheap labour.

The latest (2008) economic downturn has driven petrochemicals prices to their lowest levels in recent years. The main cause of this decline in price is the recent plunge in crude oil that damaged the growth in petrochemical industry. The health of the petrochemical business depends to a significant degree on the health of the global petroleum industry, which operates in a world characterised by complexity, geopolitical uncertainty, questions about future energy supplies, and concerns about the risk of climate change.

As the instability of the crude oil price continues, Sasol continues its diversification of business, and as the company grows its business complexity becomes more complex than ever. In addition, agency cost compromises the shareholders' value like any other big organisation. Many studies conducted on VBM have proved that it creates a goal alignment within the management, which in turn creates long-term sustainable value for shareholders and the communities in which it operates.

To ensure congruency it is implied that business units should have the same culture, same systems and metrics to build common culture. This will unlock the value of shareholders among all decision makers within Sasol group of companies.

Chapter three outlines the key elements of Value Based Management. This chapter also captures the application of the VBM at organisational management and operation level. Furthermore, this chapter outlines VBM key success factors within the group.

3.2 Company background

Sasol Limited, the holding company of the group, is incorporated and domiciled in the Republic of South Africa and was listed on the JSE on 31 October 1979 and on the New York Stock Exchange (NYSE) on 9 April 2003. For the 2010 financial year report; profit attributable to shareholders of R15 941 million for the year was 17% higher (2009 – 39% lower) than the R13 648 million of the previous year. Earnings per share, after taking into account the share buyback programme, increased by 17% (2009 – decrease of 39%) from R22, 90 per share to R26, 68 per share.

Sasol is an integrated energy and chemicals company based in South Africa, which operates throughout the world. Sasol converts coal, oil and gas reserves to manufacture and market liquid fuels, fuel components and chemicals.

Sasol mines coal in South Africa. Through Sasol Synfuels, this coal, along with gas produced in Mozambique, is converted into fuels and chemical feedstock using proprietary Fischer-Tropsch technology. Sasol also produces condensate in Mozambique and oil in Gabon.

The group also has chemical manufacturing and marketing operations in South Africa, Europe, Asia, the Middle East and the America.

Sasol's larger chemical portfolios include monomers, polymers, solvents, olefins, surfactants, surfactant intermediates, co-monomers, waxes, phenolics and nitrogenous products.

Sasol produces crude oil offshore Gabon and intends to increase its oil and gas production in selected regions around the world, including Mozambique, Papua New Guinea, Australia and West Africa.

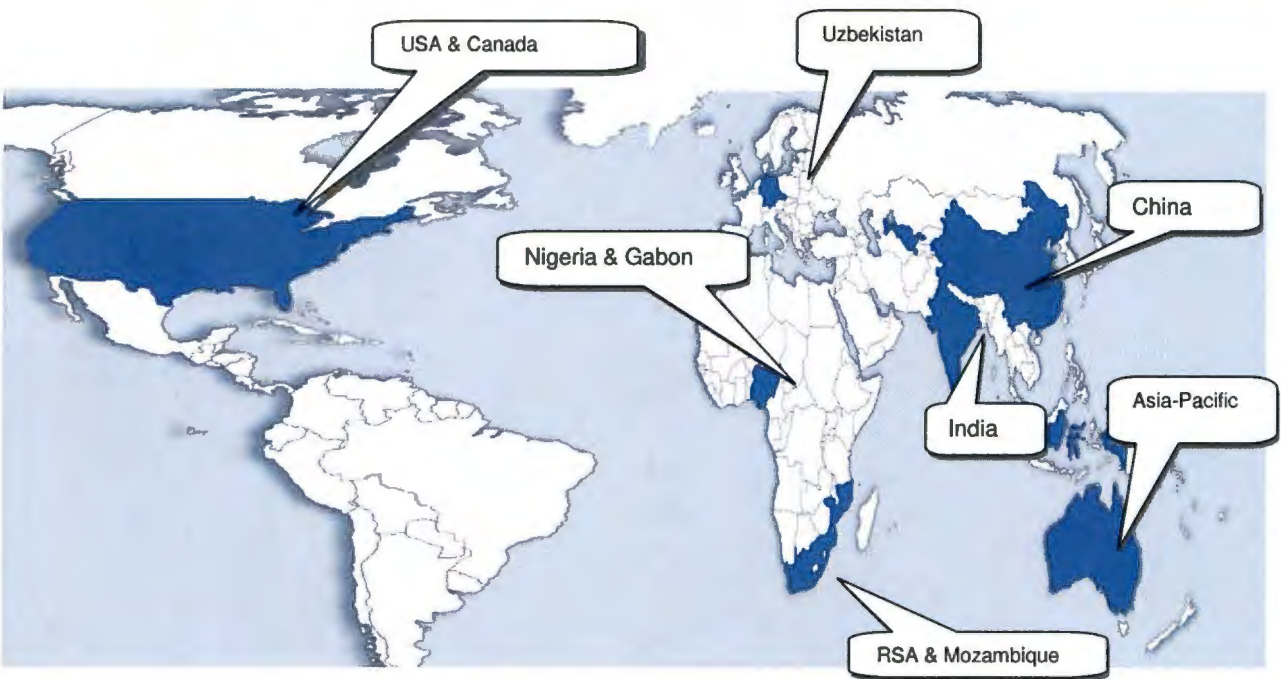
In South Africa, Sasol refines crude oil into liquid fuels. It also retails liquid fuels and lubricants produced in the Natref refinery and by Sasol Synfuels through a network of Sasol- and Excel-branded retail convenience centres. The group also sells liquid fuels to other distributors in South Africa and exports fuels to a few sub-Saharan African countries.

Natural gas is produced in Mozambique for supply to customers and as feedstock for some of the group's fuel and chemical production in South Africa. In 2007, Sasol started up its first international joint-venture gas-to liquids (GTL) plant in Qatar.

Sasol pursues local and international opportunities to grow its upstream asset base, and for leverage of the proprietary Fischer-Tropsch conversion technology to develop new GTL and coal to liquids (CTL) facilities.

Recent technology developments in the cost-effective extraction of shale gas, and the resulting lower gas prices, present a significant opportunity to expand the GTL value proposition. Sasol continues to develop a number of CTL opportunities and is also progressing plans to expand chemical businesses inside South Africa and the world. The blue marks on the map presented in Figure 3. 1 depicts the presence of the Sasol facility in almost every continent in the world, making it a true global player in the petrochemical business.

Figure 3.1: Geographical area of operation.



Source: Company data

3.3 Sasol processes

3.3.1 Introduction

The production of synfuel and petrochemicals by Sasol is an integrated production process that starts from hydrocarbon feedstock (coal or gas) to synfuels and other chemicals as outlined below. This process has remained fundamental the same throughout the years, though there has been radical improvements in the process technology and the addition of plants recovery of high value chemical products. This is evident in Sasol's recent launch of jet fuel. The process can be described as follows

3.3.2 Hydrocarbon feedstock

The process begins with the extraction of coal at Sasol mining facilities, which is used as the feedstock at Secunda plant. Sasol also mines natural gas in Mozambique which is used in Secunda as the coal supplement and as the Sasolburg feed stock for gas-to-liquid (GTL) process.

3.3.3 Gas production

The coal gasification plant is where the coal with the aid of heat, pressure, steam and oxygen, is converted into crude synthesis feed gas. The gasification condensate once cooled, yield tars, oils, pitches and associated co-products. Other products like ammonia sulphur and phenolics are recovered.

3.3.4 High-temperature synthesis gas conversion.

Purified synthesis feed gas is sent to the Sasol Advanced Synthol (SAS) reactors where hydrogen and carbon monoxide react under pressure with the aid of a catalyst at high temperature to yield different types of hydrocarbons. Through proprietary Sasol technologies many chemicals are recovered. These include alcohols, acetic acids, ketones and many more.

3.3.5 GTL processes

In the gas-to-liquid process, natural gas is received in Mozambique and is sent into auto thermal reactors, before it is converted to synthesis gas. The synthesis gas is then sent into a Fischer-Tropsch process which converts synthesis gas at a lower temperature. With the Sasol process other products like alcohols, acetic acids, ketenes' and many more are produced.

3.4 The cyclical nature of the petrochemical industry

The principal characteristic of the petrochemical industry is determined by its cyclical nature and its productivity is directly connected to it. Its principal condition is reflected in the relationship between product supply and demand. Globally, the petrochemical industry exhibits significant cyclicity (Luburic, 2011:80), which is caused by economic cycles and the tendency to attract over-investment during the high profitability scenario. This is caused by the long gestation period and capacity additions in lumps, which subsequently create an oversupply position, which in turn causes the margins to decline significant.

This critical aspect of the industry should be understood by all role players involved in the petrochemical industry. It is important to understand influences in pricing decisions and behaviours at different points in the industry.

3.5 Demand and supply in the petrochemical industry

Several numbers of critical forces and competitiveness criteria affect the petrochemical industry. Globalisation of the markets; the improved global communication and the existence of an increasingly international and mobile pool of scientific and commercial talent mean that companies can serve more markets from fewer locations.

Demands levels in the industry are a function of the general economic cycle and regional political instability within oil producing countries and is the key determinant of the industry's profitability. Key cost drivers and cyclical influence in petrochemical industry are oil and gas for both feedstock and fuel (Luburic, 2011:82). Many petrochemical industries including Sasol have adopted a differentiation strategy, which can be implemented by diverse methods. Among these methods are the top down approach of activities, the acquisition of companies or mergers throughout the complex, and the establishment of partnerships and alliances between clients and suppliers. Luburic (2011:84) explains that regardless of the solution, it is necessary to have in an information system in existence to allow the supply companies in the supply chain to be fully aware of the end user's consumption needs.

Bowersox and Closs (1996:114) explain that in order to implement a higher degree of cooperation between participants it is necessary that information be shared. By exchanging information and through mutual planning it is possible to eliminate or reduce duplicated stocks, which represent high costs and risks associated with variations in prices. In this context, the development of information technologies and data processing has been an essential factor, in that it has promoted the management of the distribution channel (supply chain).

From the above argument, it is obvious that in order to unlock the organisation's competitiveness and allow VBM to flourish, supply and demand in the petrochemical company has to be managed within and outside the boundaries of the company. This can be done by sharing information within the supply chain and also adopting management systems that complement highly skilled professionals or labour.

Strategic alliances permit specific processes to be administered under a perspective of channel distribution. In turn, this expands the traditional supplier/company/ client perspective.

The strategy of integration through partnerships presents some difficulties with respect to implementation. The differences that exist between the size of the company on the one side, and the producers of basic and final consumer goods on the other side, tend to generate unequal bargaining power, that can lead to a lack of equilibrium in the appropriation of the

margins if there is a lack of accords to permit improved equity in the distribution of profit (Luburic, 2011:84).

The relationship between the companies should be implemented through long-term accords or contracts that take into consideration supply and demand and create a strong and long-lasting bond between the supplier and the client. This must be done in order to meet the cyclical nature in the petrochemical industry; and will benefit end users or customers.

3.6 Value Based Management (VBM) at Sasol

Theoretically; Value Based Management is more or less than the concept that instils the mind-set. This entails that everyone in the organisation learns to prioritise decisions based on an understanding of how those decisions contribute to corporate value. It is argued that if VBM is correctly implemented; it will drive the company earnings and help create a goal directed workforce towards creating shareholders' value as the result. The corporate and business strategy will therefore become easily understood and implemented from the bottom up the organisation. To develop and implement strategies this will consistently create value. The company requires superior organisational capabilities, which means access to highly trained and skilled workers; the latest technological equipment; competitive research and development; common and consistent processes; an understanding of the market and core business activities, and value drivers. Value Based Management helps not only to create high earnings but to create an empowered workforce that can deliver in today's changing business environment.

In line with the above argument Sasol has implemented and managed its people to understand and work according to the Value Based Management approach. The move to VBM has been driven from the corporate strategy which instils new shared values that intends to shift the organisation towards Value Based Management. The Sasol sustainable stakeholder value is built on the foundation of developing people and improving assets. The group aims to further grow technology capabilities as the leader in GTL, CTL, upstream, chemicals and new energy projects. This is achieved through group imperatives that deliver functional, operational and capital project excellence supported by values driven leadership. According to Ackerman (2006:73), values-driven leadership is the deliberate incorporation of core values into everyday functioning. Ackerman also argues that leaders have a personal level of responsibility in the values roll down process that will be reflected in their verbal communication, their behaviour and in the application of organisational policies and procedures. Since leaders disagreed on the level of ownership, it is not surprising that inconsistency between what is communicated, lived

and applied in terms of policies and procedures most of the time contradict. In line with the above argument Sasol has created a set of values and one Sasol way of doing things that enable policies and systems to be implemented. VBM is used as an example in this regard.

3.7 Key success factors for VBM implementation

Sasol's Value Based Management programme is about instilling new sets of guiding frameworks and common values to achieve a lasting change that will improve decision making capabilities across the organisation. The intention with implementing VBM is to help the company increase the organisation's economic value. VBM implementation supports managerial decision making by creating a culture that supports value creation and by identifying which investment alternative creates or destroys value (Rapp *et al.*, 2010:4).

Changing people's perceptions at Sasol is done by means of the guiding framework of the influence model as presented in Figure 3.2 below. This includes role modelling; fostering understanding and conviction; reinforcing the formal mechanism; the role of personal, team and system insights, and the development of talents and skills.

Figure 3.2: Culture Change Influential Model.



Source: Company data.

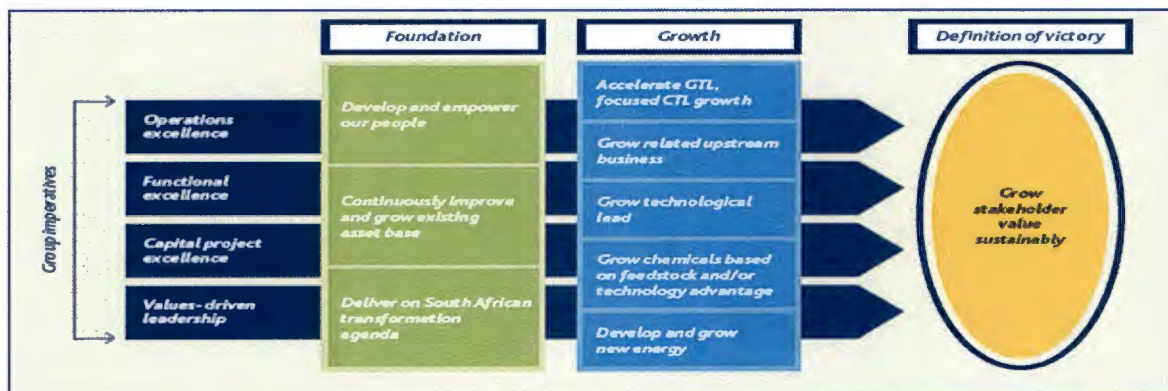
The influence model aims to shift the mind-set of all the stakeholders towards the behaviour of Value Based Management. The intention is that VBM is understood, implemented and lived at

all levels in the organisation. The ultimate goal is that VBM will flourish at any level in the organisation.

3.8 Value Based Management and the strategy in Sasol

Sasol's definition of victory is "Grow stakeholder value sustainability" as it appears in the strategic model in Figure 3.3.

Figure 3.3: Strategic Model.



Source: Company data.

Stakeholder sustainability through Value Based Management can only be possible through business growth that exists and enters new markets while exiting markets that destroy stakeholders' value. The growth that is projected to sustain the stakeholders' value can only be realised through a proper foundation. This foundation entails the proper development and empowerment of all Sasol people. It also involves continuous improvement, a growing exiting asset base and delivering on the South African transformation agenda.

This foundation can only be utilised if proper processes are in place. At Sasol some of those processes are driven from the strategy to sustain the value of the company. The outline is as follows (1) Operational excellence is a programme that aims to improve profitability across Sasol's value chains by developing standardised, world-class management systems and by implementing best practice in plants operations and businesses. The programme also seeks to develop competent and engaged people to adopt these practices and to deliver targeted programmes. (2) Functional excellence is aimed at assisting centralised enterprise functions to identify processes, structural and technological inefficiencies and to implement improvement to achieve simple, standardised and shared ways of working. It also aims to improve the cost effectiveness and service efficiency of all functional areas of Sasol businesses. (3) Capital Project Excellence is aimed at effectively using capital in the group project and funding only those projects that meet quality requirement in the shortest possible time, at the lowest cost,

yielding the greatest possible return on investment. (4) Value-driven leadership is a programme aimed at changing Sasol's people towards Value Based Management. This initiative also helps leaders to achieve effective culture change in day to day business decisions; and to initiate only decisions that enhance stakeholder value.

3.9 Value addition through projects

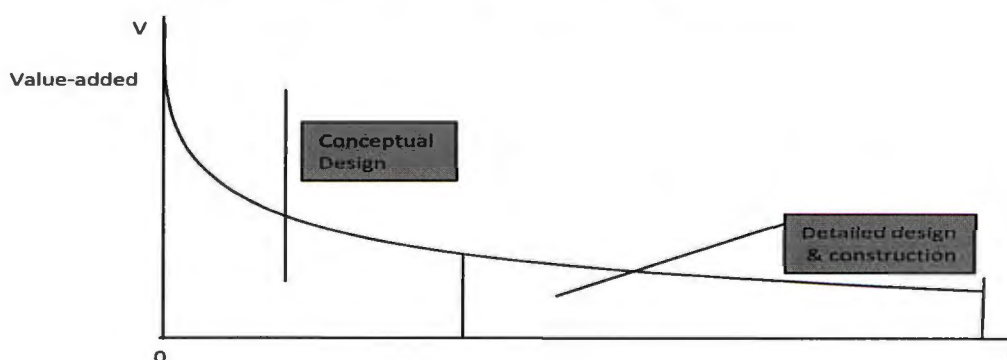
Stewart (1990:254) explains that corporate values actually rise from six essential factors. Four of them are under management's control through policies and performance. Two are market-determined. Taken together, they describe the magnitude, riskiness, growth, quality, duration, and financing of future free cash flow.

At operational level, value has to be delivered through chosen projects based on the value these projects can add to the overall company value. The projects are categorised based on the size or amount of money needed to invest and whether or not it is plant improvement projects (also called sustainability projects or so called capital projects), which mostly are new projects that bring even new business to the company.

3.9.1 Capital projects

There are several steps followed in capital projects. They include idea generation, pre-feasibility study, feasibility study, basic engineering phase, detailed engineering, construction and commission. All these stages have to prove less value compared to the value addition of the entire project in order for the project to be funded (See Figure 3.4 below). Only those projects that bring more value to the company and fit the strategic agenda get funded. According to Bausch *et al.* (2009:23), the potential for value creation that results from corporate strategy decisions must be fully tapped by consistent business unit strategies. He further argues that the focus should be on improving the relative profit margin; using technology based differentiation or cost optimisation as an example.

Figure 3.4: Value added project decision curve.

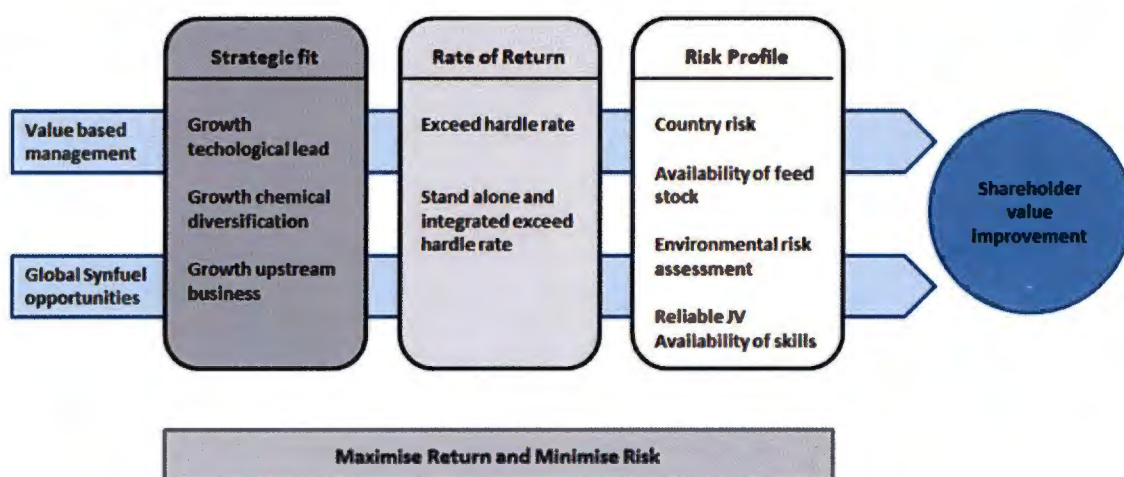


Source: Company data

Apart from value addition, the projects should be strategically fit, have a high return rate, and a low implementation risk. Those projects that bring new technology which pass environmental risk and other business risk and also have high return on investment should be considered. As presented in Figure 3.4; these processes are aimed at assisting management at all levels to take decisions that will add value to the company and boost the share price.

All business cases are evaluated by means of the economic analysis technique of Cost/Benefit analysis and Cost/Effectiveness analysis. Those that do not meet the requirement both economically and strategically are dropped. For capital projects, the net economic benefits of each option are assessed by calculating the Net Present Value (NPV) using the Cost/Benefit Analysis technique. Cost/Effectiveness Analysis is appropriate for projects with strong strategically or safety/social welfare objectives that may be difficult to value and which should only be used when the project and the benefits are of reasonable significance.

Figure 3.5: Value add project decision model.



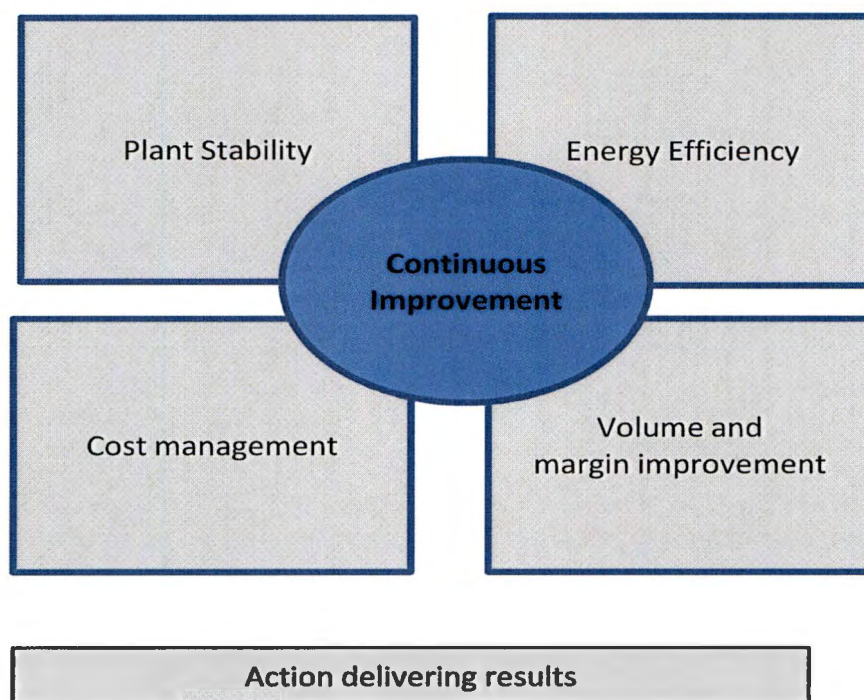
Source: Company data.

3.9.2 Sustainability projects

Sustainability projects refer to those projects that are implemented for plant improvement. They are aimed at achieving plant stability and low cost of operation, energy efficiency and volume and margin improvement (See Figure 3.6), which translates to value in the long run. These projects are usually small but need to be managed as more money can be lost if they are not properly managed due to agency cost. Engineers want to improve their skills by implementing changes that are not needed in order to blossom their careers.

Bausch *et al.* (2009:25) explains that value-based management cannot only be used for corporate strategy purposes but also to formulate and assess strategies at business unit level. In order to realise a sustained competitive advantage at business unit level, the consistent implementation of one of Porter's (1980) generic strategies is needed. A thorough analysis of a business unit's value drivers will assist in keeping a consistent strategy focus and in determining management priorities. The sensitivity of value drivers on the business unit value should be determined and compared to determine the influence that management has on those value drivers. If management has less influence on some value drivers; strategies to influence them need to be devised.

Figure 3.6: Continuous improvement model.



Source: Company data.

3.10 The Balanced score card

Balanced scored is the performance measurement system that considers not only financial measures but also customers, business processes and learning measures.

A traditional financial reporting system indicates how a company has performed in the past but offer little information about how it might perform in the future. For example, a company may decide to reduce the expenditure on marketing complains to boost the current earnings only to find out future loss of the market share; and dropped earnings.

Sasol's balanced scorecard consists of financial and value-add customer and partner, internal performance and learning, growth and culture.

- Financial and value-add. This measure ensures that business is financially sound on both the cost and income sides. In terms of the cash fixed costs, Sasol must ensure that the costs are competitive and managed within budget.
- Customers and partners. Sasol continuously assesses and improves the symbiotic relationships between Sasol and key service providers, technology partners, good suppliers and business partners.
- Internal performance. In order to be a sustainable business, Sasol assesses and continuously improves safety performance, business governance and compliance and production processes.
- Learning, growth and culture. The foundation for technology-driven growth is skills development. Besides the group's own human capital requirements, its significant investment in skills has an impact that extends far beyond its factory gates.

The balanced scorecard compares the current month to the target and suggests improvement per business unit up to the department. All these targets are linked to business unit performance bonus. It thus determines what percentage each business unit performs in each measure.

CHAPTER 4:

Research and empirical results discussion

4.1 Introduction

The aim of this chapter is to present a quantitative analysis of the empirical study carried out at a petrochemical company. The results of the quantitative analysis are reviewed to determine whether there is adequate support from the respondents for any statements in the questionnaire. The findings will be integrated with the theoretical information from the literature review in Chapter two. Based on the findings from the empirical study and literature review; the next chapter will conclude with recommendations regarding Value Based Management in a petrochemical company.

4.2 Research process

Cooper and Emory (1995:21) define research as a systematic inquiry aimed at providing information to solve problems. Sakunasingha (2006:76) defines research as a process of discovering new information or relationships amongst variables considered to expand existing knowledge for some specified purpose or to solve problems which may be theoretical or practical in nature. Research can furthermore be seen as a process to explore, describe, understand, explain, predict, change, evaluate and assess aspects of certain phenomena.

Business research on the other hand can be defined as a systematic inquiry that aims to provide guidelines for business decision making. According to Sakunasingha (2006:78), business research is undertaken by a wide variety of individuals and organisations. It is further argued that managers conduct business research in companies to reduce uncertainty through collecting information about organisational and environmental conditions. In addition, business research is also used to identify problems and/or opportunities, to diagnose causal factors, to evaluate current programmes and courses of action, to explain what went wrong in the past, to forecast future conditions and to suggest some possible alternatives (Sakunasingha, 2006:76).

In addition, research studies describe a flexible set of guidelines that connects theoretical paradigms to strategies of inquiry and methods for collecting empirical data. This chapter covers the study methods and deals with data collection, in particular how data is derived from the primary source of research.

The main objective of this research study is to determine the extent to which a petrochemical company embraces VBM, overall understanding and implementation at all levels in the organisation.

4.3 Research design

Empirical research has either implicit or explicit, research design. In the most elementary sense, the design is a logical sequence that connects empirical data to a study's initial research questions and ultimately to its conclusion. In business research, a universe or population represents a group of potential participants relevant to the research project. A sampling frame or working population is the list of population elements that can be worked with operationally (Sakunasingha, 2006:79). A sample is a subset or selected part of a population upon which research can be conducted upon. The process of sample selection must be aimed at minimising bias in the sample. The research focuses on the overall understanding of Value Based Management in the petrochemical company.

The questionnaire for this research was divided into three parts. Part one is demographic details and consists of Section A and Section B. Part two comprises Section C up to Section F and outlines the general understanding of VBM and its application. Part three consists of Section G and measures the understanding and use of value based metrics. The four areas covered in this study are based on the literature study, which includes various publications on the successful implementation of the VBM. The following four points were examined

- **Understanding value-based management.** In order for the company to maximise its share price through the effort of value-based management implementation; the whole organisation should understand and commit to its principles.
- **VBM implementation and strategy.** The trade-off between financial strategies and operation strategy should be maintained at all times. The ten basic governance principles for value creation by Rappaport (2006:68) should be used as guidelines during implementation.
- **The scope and component of VBM.** The special component of Value Based Management (like incentive schemes; training and incentives) should be included where applicable to enhance commitment.
- **Perceptions of VBM success.** The perception on VBM's successful implementation should be managed from the outset so that everybody is committed to the process.

Section G (Annexure) sets the scene for the dependent variable, which is based on the empirical study carried out by Ryan and Trahan (1999:48-52).

4.4 Data collection and preparation

Different methods can be used to collect data in the business research, and the selection of these methods depends on the type of the research design being conducted. Data collection could be by observation, experiment, or a survey from primary and secondary sources. Primary sources or data refer to information obtained first-hand by the research on the variables of interest for specific purpose of the study. Secondary data refers to information gathered from sources that already exist, such as the annual reports of companies or government publications of economic indicators, industry studies and syndicated information services. Secondary research also includes traditional books and journal founds in libraries (Sakunasingha, 2006:99).

The study was done at a petrochemical company and it was generalised by including for research purpose respondents coming from different business units within the company. The larger part of the respondents comes from the Group Services at the company. This division represented the only business unit that operates to all business units. This unit is likely to understand the different processes followed in almost all the business units within the Sasol Group. The sample included individuals holding positions at level 4 to level 3 in the organisation (these are considered senior officials). Level 7 to Level 5 are regarded as middle management or senior management and also consist of specialists. The latter levels were chosen as they were identified as implementers of strategies within the company.

In essence, the survey instrument, attached to this dissertation, was designed to obtain information on the respondent's job title, department, and familiarity with the following value-based management, use of value-based management, areas where it is used, scope of use, and employee education on Value Based Management. The survey also searched whether value-based management is used to determine compensation.

This quantitative study was conducted to collect the primary data through the use of a standardised questionnaire that was distributed to respondents as outlined earlier. Anonymity was assured to each respondent. The responses were subjected to statistical analysis to examine the system as it appeared and was gathered from the literature review in Chapter two following the research objectives in Chapter one. The obtained information was processed by the Statistical Consultation Services of the North West University (Potchefstroom campus).

4.5 Results and discussion

This section presents the results of the research study that was conducted using two groups differentiated by demographic classifications. The first demographic classification group consists of top management, middle management and the specialist. The second demographic classification was grouped according to the departments, and it consists of the production department, engineering department and support services department. The study was based on division in groups in order to see how comparable groups are about the Value Based Management.

The data collected from the research was tested for reliability using Cronbach's Alpha coefficient, before it was further processed. The inferential statistics were interpreted, and p-values were reported as if random sampling was done. This was possible by erroneous analysis. Only medium effect (noticeable with the naked eye) $d=|0.5|$ and large effect (practical significant) $d=|0.8|$ were reported in the results. Another part of analysis was testing the understanding on the value based metrics. Only frequencies were reported.

4.5.1 Practical significance / effect size combined with statistical significance

An advantage of drawing a random sample is that it enables one to study the properties of a population. In such cases the statistical significant test (e.g. t-test) is used to show that the result (e.g. difference between the means) is significant. The p-value is a criterion of this, giving the probability that the obtained value (or more extreme) could be obtained under the assumption that the null hypothesis (e.g. no difference between the populations means) is true. A small p-value less than 0.05 is considered as sufficient evidence that the result is statistically significant. This implies that statistical significance does not necessarily mean that the result is important in practice as these tests tend to yield small p-values as the size of the data sets increase. In other cases the data obtained from convenience sampling is erroneously analysed as if it were obtained by random sampling.

As a result of the fact that no random sampling was done, the interpretation of the comparison between group means, was done according to Cohen's effect size guidelines (Field, 2005:32; Ellis & Steyn, 2003:52; Cohen, 1992:155-159). Effect size indicates practical significance. Thus no inferential statistics were interpreted, although p-values are reported as if random sampling was assumed.

The following guidelines were used for d-values regarding differences between means small effect $d=|0.2|$; medium effect (noticeable with the naked eye) $d=|0.5|$; large effect (practical significant) $d=|0.8|$.

4.5.2 Reliability and validity

The questionnaire was distributed in the petrochemical company after the approval for the research was granted. The study was done between December 2011 and February 2012. About 450 copies of the questionnaire were distributed to the different departments targeting middle management and specialist professionals. Only 98 (22%) responses were collected, as some of the departments withdrew from the study because their leaders did not approve it as they were not aware of company approval for the research. This response rate compares favourably to other surveys of this population, (see for example Ryan & Trahan, 1999:48)

The reliability of a test refers to the consistency of scores obtained by the same persons when they are re-examined with the same test on different occasions, or with different sets of equivalent items, or under other variable examining conditions (Anastasi & Urbina, 1997:84).

The validity of a test concerns what the test measures and how well it does so (Anastasi & Urbina, 1997:113). If a test is valid it measures then what it is supposed to measure.

Because "reliability is a characteristic of data" (Eason, 1991:84) researchers must attend to the influence that the participants themselves have on score quality in every study. Eason (in Thompson, 1994:839) explains that since total score variance is an important aspect of reliability, the participants involved in the study will themselves affect the score reliability "the same measure, when administered to more heterogeneous or more homogenous sets of subjects, will yield scores with differing reliability".

Pedhazur and Schmelkin (1991:86) explain as follows "Researchers who bother at all to report reliability estimates for the instruments they use (many do not) frequently report only reliability estimates contained in the manuals of the instruments or estimates reported by other researchers. Such information may be useful for comparative purposes, but it is imperative to recognise that the relevant reliability estimate is the one obtained for the sample used in the study under consideration".

The same argument holds for validity. According to Nunnally and Bernstein (1994:84) validity is a matter of degree rather than an all or none property and validation is an unending process.

The reliability and validity on the different constructs was determined using Cronbach's Alpha coefficients and content.

4.6 Cronbach's Alpha Coefficient

In order to assess the internal consistency between the items of the measuring instrument, it is necessary to calculate the Cronbach Alpha coefficient (Reynaldo & Santos, 1999:3). The Cronbach Alpha coefficient is based on the average correlation of variables within the test (SAS Institute, 2005:295). The greater Cronbach's Alpha coefficient, the more reliable the scale is.

According to Nunnally (1978:295), an overall score for each participant can be obtained by summing interrelated items. The reliability of this type of scale can be estimated through Cronbach's Alpha coefficient by determining the internal consistency of the test or through the average correlation of items within the test (in other words, how closely related a set of items are as a group). The greater the Cronbach Alpha coefficient, the more reliable the scale is. Field (2009:675) explains that for cognitive tests such as intelligence tests, a Cronbach Alpha coefficient of 0.8 is generally appropriate. For ability tests, the cut-off point of 0.7 is more suitable. Nunnally and Bernstein (1994:265) suggest the Cronbach Alpha value above the customary cut-off value of 0.70 for internal consistency. Field (2009:675), however, indicates that a Cronbach Alpha value as low as 0.60 can be acceptable when attitudes are measured.

For the purpose of this study, the average number of (96 respondents) of sample was analysed. Given that the nature of the study is attitude orientated, it was concluded that a Cronbach value of 0.5 would be acceptable.

The Cronbach Alpha coefficients were determined through statistical analysis for the constructs measuring the overall understanding and use of Value Based Management in a petrochemical company. These coefficients are presented in Table 4.1 below.

Table 4.1: Cronbach's Alpha Coefficient.

Factor	Item	Cronbach's Alpha values
Section C		
Factor C1: Value drivers and strategic decisions making.	C-15, C-16, C-17, C-7, C-14, C-1	0.82
Factor C2: Top-down understanding of the VBM.	C-6, C5, C-10	0.78
Factor C3: Definition and understanding VBM.	C-3, C-2, C-13	0.67
Factor C4: VBM implementation.	C-20, C-21, C-12	0.76
Factor C5: The effect of human capital in VBM.	C-19, C-18, C-11	0.54
Factor C6: The effect of human capital in VBM.	C-8, C-9	0.36
Section D		
Factor D1: Rewards and VBM.	D-13, D-12, D-11	0.67
Factor D2: Reward executive for long term rewards	D-10, D-9, D-3	0.73
Factor D3: Do not manage earnings or provide guidance on earnings.	D-1, D-2	0.81
Factor D4: Managing assets and earnings.	D-7, D-5, D-4	0.59
Factor D5: Application of VBM in executive decision	D-6, D-8	0.40
Section E		
Factor E1: Value based management practice.	E-1, E-6, E-7, E-8	0.70
Factor E2: VBM Culture	E-11, E-10, E-2	0.70
Factor E3: VBM Communication and Growth	E-3, E-4, E-5	0.68
Section F		
Factor F1: VBM Implementation	F-5, F-6, F-3, F-7, F-2, F-1	0.74
Factor F2: Managing a Value based management company	F-12, F-13, F-14, F-8	0.77
Factor F3: VBM Failure	F-11, F-4	0.51
Factor F4 Attitude towards VBM	F-9, F-10	0.23

The following two constructs yielded Cronbach Alpha coefficients lower than 0.5.

- *Factor C6 Effect of human capital in VBM ($\alpha = 0.36$).*
- *Factor F4 Attitude towards VBM ($\alpha = 0.23$).*

According to Field (2005:668), it is however, not necessary to ignore constructs if the Cronbach Alpha coefficient is smaller than 0.7 if attitude rather than ability is measured. As the study was measuring the attitude towards Value Based Management, all the Cronbach values above 0.5 were regarded as reliable. Factor C6, the effect of human capital in VBM ($\alpha = 0.36$ and Factor F4 Attitude towards VBM ($\alpha = 0.23$) were regarded as unreliable and all the components under them were analysed individually; C-8 and C-9 for Factor C6 and F-9 and F-10 for Factor F4, respectively.

4.7 Part 1: Demographic information

Part one of the questionnaire measured the demographic information of the respondents within the company and it was divided into two sections

- Section A, the respondent's position within the organisation
- Section B, the department in which respondent belongs.

4.7.1 Position within the organisation

This question determines the position occupied by the correspondents within the organisation. The aim was to determine whether the different positions within the company have different views on Value Based Management topic at hand.

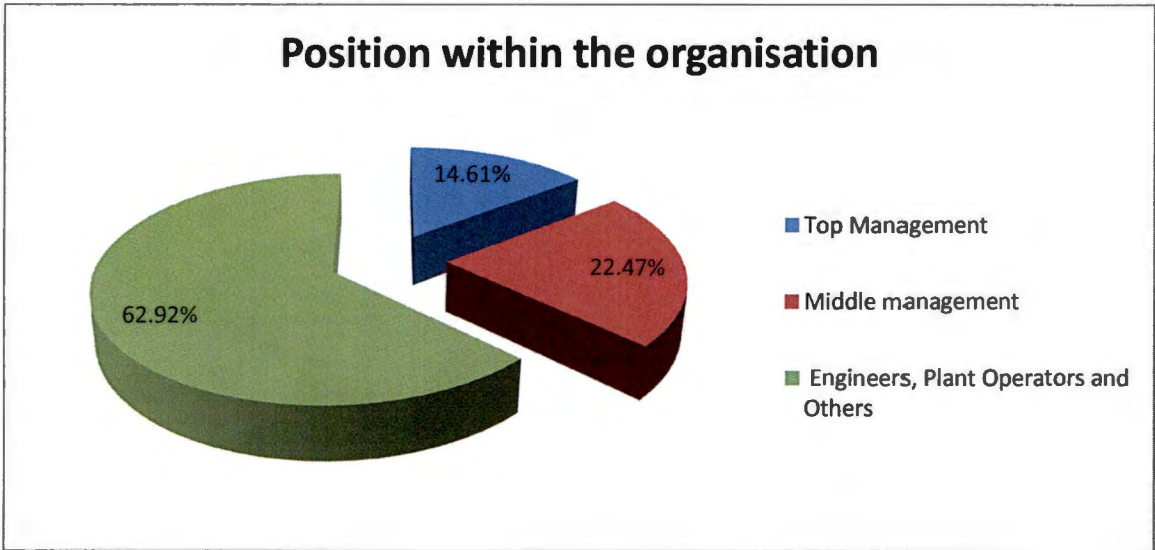
Table 4.2: Position occupied within the organisation.

Sequence	Occupation	Frequency	Percentage
1	General Manager	2	2.25%
2	Area Leader	2	2.25%
3	Section Leader/ Production Manager	9	10.11%
4	Middle Management	20	22.47%
5	Plant Operator	6	6.74%
6	Engineer	21	23.60%
7	Union Representative	0	0.00%
8	Other (Specify)	29	32.58%

Of the 96 participants who completed the survey questionnaire, 2.25 % were general managers and another 2.25% were area leaders; 10.11% comprised of section leaders or production managers; 22.47% comprised of middle management; 6.74% comprised of plant operators; 23.60% comprised of engineers; 0% comprised of union representatives. The largest group (32.58%) did not specify their positions.

The questionnaires were distributed to upper level managers as well as to specialist professionals. In essence the respondents were managers (top and middle managers) and engineers and other specialist professionals. The respondents that did not specify their positions were identified as specialist professionals. To simplify the statistical analysis, the positions were further grouped into three main groups, as can be seen in Figure 4.1 below.

Figure 4.1: Position occupied within the organisation.



From the figure above, the positions occupied by the respondents were as follows 62.92% were engineers, plant operators and other professionals; 22.47% were middle management and 14.61% were top management.

4.7.2 Department in which the respondents affiliates

This question determines the department occupied by the correspondents within the company. The aim was to determine if the different departments within the company have different views on Value Based Management topic at hand.

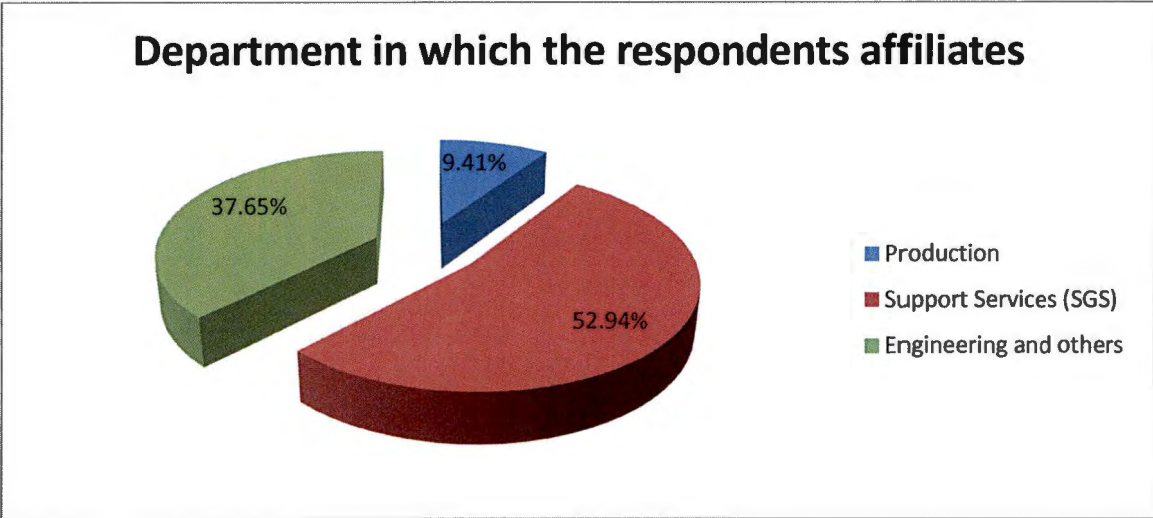
Table 4.3: Department affiliated by respondents.

Section B	Occupation	Frequency	Percentage
1	Production	8	9.41%
2	Engineering	23	27.06%
3	Support Services (SGS)	45	52.94%
4	Other (Specify)	9	10.59%

The respondents were asked whether they come from production, engineering or support services departments. If not, they were asked to specify. Out of 96 respondents, 52.94 % of the

respondents come from the support services department; 27.06% from the engineering department; 9.41% from the production department. 10.59% did not specify their actual departments. During the research study, the questionnaires were distributed to three main departments within Sasol, namely the production, support services, and engineering departments. To simplify this question, the departments were further grouped into three main groups, as can be seen in Figure 4.2 below.

Figure 4.2: Departments affiliated by respondents.



The figure above depicts that the departments occupied by the respondents were as follows 52.94% respondents were from support services (SGS); 37.65% were from engineering and other departments and 9.41% were from the production department.

4.8 Part 2: Testing the overall understanding and use of VBM (Section C-F).

4.8.1 Demographic variable, position and VBM factors.

The table summarises and outlines the p-values and the d-values. These values tested for statistical and practical significant differences respectively for the demographical variable positions occupied within the organisation as seen by three different groups (top management; middle management and specialists groups). The results are summarised below the table.

Table 4.4: Effect of position on respondents on the measured contrasts (factors).

Factors	Positions	Mean	Std. Dev.	n	Comparisons significant at the 0.05 level*	d-value		
						(1)	(2)	(3)
Factor D4 Managing assets and earnings.	1-Top Man.	3.10	0.53	13	1-3 2-3	-	0.22	0.80 [▲]
	2-Middle Man.	2.98	0.49	20		0.22	-	0.60 ^Δ
	3-Specialists	2.62	0.60	56		0.80 [▲]	0.60 ^Δ	-
Factor E1 Value based management is practiced.	1-Top Man.	3.21	0.45	13	1-2 1-3	-	0.50 ^Δ	0.50 ^Δ
	2-Middle Man.	2.99	0.39	20		0.50 ^Δ	-	0.04
	3-Specialists	2.97	0.51	56		-	0.04	-

(a) : *p*-value yielded by t-test for independent groups in case of random sampling.

Specialists: Engineers, operators and others

* : Statistically significant on a 0.05 level.

Δ : Medium effect size.

▲ : Practical significant

Factor D4: Managing assets and earnings

Based on the results appearing on the table above, only top management and specialist (engineers operators and others) (1-3) showed practical significant differences (*p*-value=0.80) with the construct which states that **VBM can be better implemented by managing assets and earnings**. Middle managers and specialist (2-3) showed some medium effect differences (*p*-value=0.60). Top managers tend to agree more with the construct, with the mean (\bar{x} =3.10). The mean for middle managers and specialists was (\bar{x} =2.98) and (\bar{x} =2.62) respectively.

Factor E1: Value Based Management is practiced

There is a medium effect between top management and middle management (1-2) with *p*-value=0.50. Also, from top managers to specialists there was the same *p*-value of 0.5. Top management also agreed more with the construct, \bar{x} (mean) =3.21 as compared to middle managers and specialists with the mean (\bar{x} =2.99) and (\bar{x} =2.97) respectively.

4.8.2 Demographic variable, department and the VBM factors.

This table outlines the *p*-values and the *d*-values. These values tested for statistical and practical significant differences respectively for demographical variable positions occupied within the organisation, as seen by three different groups (top management, middle management and specialists groups). The results are summarised below the table.

Table 4.5: The effect of department on respondents on the measured contrasts (factors).

Factors	Department	Mean	Std. Dev.	n	Comparisons significant at the 0.05 level*	d-value		
						(1)	(2)	(3)
Factor C2 VBM should be a top management exercise.	1-Production	1.50	0.50	8	1-2 1-3	-	0.50 ^Δ	0.50 ^Δ
	2-Suport Services(SGS)	1.77	0.58	23		0.50 ^Δ	-	0.08
	3-Engineering and others	1.82	0.67	54		0.50 ^Δ	0.50 ^Δ	-
Factor D1 Rewards and VBM.	1-Production	2.50	0.53	8	1-2 1-3	-	0.72 ^Δ	0.92 ^Δ
	2-Suport Services(SGS)	2.90	0.55	23		0.72 ^Δ	-	0.22
	3-Engineering and others	3.02	0.49	54		0.92 ^Δ	0.22	-
Factor D3 Do not manage earnings or provide guidance on earnings.	1-Production	3.69	0.37	8	1-2 1-3	-	0.95 ^Δ	0.55 ^Δ
	2-Suport Services(SGS)	3.24	0.47	23		0.95 ^Δ	-	0.30
	3-Engineering and others	3.40	0.53	54		0.55 ^Δ	0.30	-
Factor D4 Managing assets and earnings.	1-Production	2.38	0.65	8	1-2 1-3	-	0.54 ^Δ	0.63 ^Δ
	2-Suport Services(SGS)	2.72	0.48	23		0.54 ^Δ	-	0.09
	3-Engineering and others	2.78	0.63	54		0.63 ^Δ	0.09	-
Factor D6 Paying dividends are the best option when the company share price is high.	1-Production	2.38	1.06	8	1-2 1-3	-	0.59 ^Δ	0.55 ^Δ
	2-Suport Services(SGS)	3.00	0.60	23		0.59 ^Δ	-	0.04
	3-Engineering and others	2.96	0.95	54		0.55 ^Δ	0.04	-
Factor E1 Value based management practice.	1-Production	2.81	0.46	8	1-3 2-3	-	0.04	0.68 ^Δ
	2-Suport Services(SGS)	2.79	0.53	23		0.04	-	0.63 ^Δ
	3-Engineering and others	3.02	0.43	54		0.68 ^Δ	0.63 ^Δ	-
Factor F1 VBM Implementation.	1-Production	3.45	0.33	8	1-2 1-3	-	0.55 ^Δ	0.50 ^Δ
	2-Suport Services(SGS)	3.18	0.49	23		0.55 ^Δ	-	0.18
	3-Engineering and others	3.27	0.41	54		0.50 ^Δ	0.18	-
Factor F9 The implementation failed largely because the measurements become more important than the decisions that they support.	1-Production	3.14	0.38	7	1-2 1-3	-	0.70 ^Δ	0.50 ^Δ
	2-Suport Services(SGS)	2.70	0.63	23		0.70 ^Δ	-	0.10
	3-Engineering and others	2.78	0.79	54		0.50 ^Δ	0.10	-

(b) : p-value yielded by t-test for independent groups in case of random sampling.

* : Statistically significant on a 0.05 level.

Δ : Medium effect size.

▲ : Practical significant

Factor C2: VBM should be a top management exercise

There was a medium effect (p-value= 0.50) from the group (1-2) production department and support services department and also group (1-3) production department and engineering and other departments. Production department respondents disagreed more ($\bar{x}=1.50$) as compared to support service and engineering departments with means ($\bar{x}=1.77$) and ($\bar{x}=1.82$) respectively. However, all the departments disagreed with the notion above.

Factor D1: Rewards and VBM

Only the production department and support services department showed medium effect with p-value=0.72 to the construct (Factor D1) which states that **employees and managers should be rewarded for delivering value through VBM**. Practical significant differences (p-value=0.92) with the factor was seen in departments (1-3), the production department and engineering department. The engineering department seemed to agree more ($\bar{x}=3.02$) as compared to the support service and production departments with mean values of ($\bar{x}=2.90$) and ($\bar{x}=2.50$) respectively.

Factor D3: Do not manage earnings or provide guidance on earnings.

The medium effect was recorded in the support service department to the engineering department with p-value= 0.55. Practical significant differences were seen in the production and support service (1-2) departments, p-value=0.95. All the departments agreed with Factor D3 and all have the mean values above 3.20.

Factor D4: Managing assets and earnings & Factor D6: Paying dividends are the best option when the company share price is high

Both factors (D4 & D6) showed medium effect (p-value= 0.54 and p-value= 0.59) from group (1-2) the production department and the support services department and also group (1-3) production department and the engineering departments (p-value= 0.63 and p-value= 0.55). All the departments tend to agree with both factors on the statements provided with slightly differences noticeable.

Factor E1: Value Based Management practice.

Medium effect was recorded from the production department to the engineering department (1-3) with p-value= 0.68. This was also recorded in the support service and engineering (1-3) departments, with p-value=0.63. All the departments agreed with Factor E1. The engineering

department seemed to agree more ($\bar{x}=3.02$) as compared to the support service and production departments with mean values of ($\bar{x}=2.79$) and ($\bar{x}=2.81$) respectively.

Factor F1: VBM Implementation & Factor F9: The implementation failed largely because the measurements became more important than the decisions that they support.

Both factors (F1 & F9) showed medium effect (p-value= 0.55 and p-value= 0.50 from group (1-2), the production department and support services department and also group (1-3), the production department and engineering departments (p-value= 0.63 and p-value= 0.55). All the departments tend to agree with both factors on the statements provided with slight differences. In Factor F9, the production respondent department seemed to agree more with the mean value of $\bar{x}=3.14$, as compared to the support services and engineering departments with mean values of ($\bar{x}=2.70$) and ($\bar{x}=2.78$) respectively.

4.9 Part 3: Value Based Metrics

4.9.1 Section G: Testing the familiarity and use of value based metrics

This section tested how familiar the respondents were with using Value Based Metrics within their work environment

Table 4.6: Testing the familiarity and use of value based metrics.

	<u>DCF</u>		<u>CFROI</u>		<u>ROIC</u>		<u>EVA</u>		<u>NPV</u>		<u>WACC</u>	
	71 users		71 users		71 users		71 users		71 users		71 users	
	N	%	N	%	N	%	N	%	N	%	N	%
I am familiar with	34/71	47	43/71	60.6	42/71	59	32/71	45	56/71	79	39/71	55
I have used the method before	25/71	35	18/71	25.4	24/71	34	15/71	21	51/71	72	31/71	44
I attended a course on	25/71	35	11/71	15.5	20/71	28	15/71	21	40/71	56	29/71	41
I used it for long term planning	17/71	24	13/71	18.3	14/71	20	6/71	8.5	22/71	31	19/52	27
I used it for capital budgeting	19/71	27	14/71	19.7	18/71	25	4/71	5.6	30/71	42	25/71	35
Is used for investment decision	13/71	18	13/71	18.3	23/71	32	13/71	18	33/71	46	15/71	21
Is used for performance measurement	7/71	10	13/71	18.3	12/71	17	10/71	14	16/71	23	8/71	11
Is used for incentive bonus payment	4/71	6	8/71	11.3	8/71	11	20/71	28	13/58	18	5/71	7
Participants	71											
Missing	25											

Out of the 96 who responded to the entire questionnaire collected during the research, there were only 71 responses usable under this section. Respondents were presented with a statement regarding their familiarity and use of value-based management metrics. They were asked to indicate in terms of all metrics to which the statement applied, whether they agreed with it or not. These metrics were used as follows DCF was indicative of discounted cash flow

and CFROI of cash flow return on investment; ROIC indicated return on invested capital, EVA indicated economic value added, NPV indicated net present value and WACC indicated the weighted average cost of capital.

The respondents were asked whether they were familiar with the metrics or methods in the first question. The response ranged from as high as 79% to the lowest 45 %. The highest of 28% agreed that the EVA is used as a tool for their incentive bonuses, while the lowest of 6% agreed to DCF as being used in incentive bonus. The highest of 79% and 72% percent agreed that NPV is familiar and that they have used if before. 56% high to 15.5% low agreed to have attended the course on these metrics or systems. Long term planning, capital budgeting and investments decision were also forming the statements in the study. The following was revealed NPV was high (40%) on average, DCF 23% average, CFROI 18.8% average, ROIC 25.7 % average and EVA 10.7 % average.

Table 4.7: Testing the perceived usage of this metrics within the company.

	<u>DCF</u>		<u>CFROI</u>		<u>ROIC</u>		<u>EVA</u>		<u>NPV</u>		<u>WACC</u>	
	72 users		72 users		72 users		72 users		72 users		72 users	
	N	%	N	%	N	%	N	%	N	%	N	%
It is used at corporate level	20/72	28	37/72	51.4	39/72	54	34/72	47	35/72	49	26/72	36
It is used at divisional level	26/72	36	12/72	16.7	24/72	33	15/72	21	38/72	53	24/72	33
It is used at departmental level	17/72	24	11/72	15.3	18/72	25	9/72	13	35/72	49	21/72	41
Participants	72											
Missing	24											

This part of section G was testing the percieved perception that respondents have on the VBM metrics and whether these metrics are used in their depatments. The highest of 54% (ROIC) and the lowest of 28% (DCF) believed that the systems or symbols are used at corporate level . The highest of 53% (NPV) and the lowest of 16.7% (CFROI) think that these signs are mostly used at divisional level. The remainder, which included the highest with 49 % and the lowest with 13% agreed that they were used at departmental level.

Table 4.8: To what extent have you been exposed to VBM?

		YES	YES	NO	NO
12	I have received training on Value Based Management (VBM) systems.	35	48.61%	37	51.39%
13	I have attended awareness training on economic value addition.	29	31.52%	63	68.48%
14	I have read an article about VBM	49	53.26%	43	46.74%
15	I have dealt with VBM intensively at work.	14	15.22%	78	84.78%
16	I have read a book about VBM	26	28.26%	66	71.74%
17	Economic value add measurement is part of my performance agreement	30	33.33%	60	66.67%

This table presents the findings of Section G, namely exposure to Value Based Management. The respondents were asked to respond with a yes or no answer to the statements as they appeared on the graph. The highest number of respondents disagreed with the statements as compared to the actual numbers of respondents that agreed with the statement. Overall, the highest percentage of respondents that disagreed (**I have dealt with VBM intensively at work**) was 84% higher and 47% lower (**I have read an article about VBM**). The highest percentage who agreed (**I have read an article about VBM**) with the statement was 53% higher to the lowest of 15% (**I have dealt with VBM extensive at work**). Less than half of the respondents (49%), agreed to have received training on VBM. 33% of the respondents agreed that EVA was being used in their performance agreements.

4.10 Summary

The main goal of this study as discussed in Chapter one, was to determine the extent to which Sasol as a petrochemical company embraced VBM, overall understanding and implementation in all its levels of management. To accomplish this goal as well as the sub-objectives as outlined in Chapter one, a literature study was conducted and a questionnaire was formulated.

Firstly, the assessment of the constructs measured in the study was done by analysing the arithmetic mean and standard deviation values obtained. The p-value was used to identify the differences within the groups used in the study. The reliability and validity of the constructs measured within this study were examined by calculating the Cronbach Alpha coefficients for reliability.

As the study was measuring attitude towards Value Based Management, all the Cronbach values above 0.5 were regarded as reliable. This value was accepted even though it was below the normal cut-off point of 0.7. It was accepted on the basis that only attitude was measured. The NWU statistic department agreed on 0.5 alpha values as acceptable in this case. Only two values were less than 0.5, Factor C6: The effect of human capital in VBM ($\alpha = 0.36$) and Factor F4: Attitude towards VBM ($\alpha = 0.23$). These were regarded as unreliable and all the

components under them were analysed individually C-8 and C-9 for Factor C6 and F-9 and F-10 for Factor F4, respectively.

Three groups were analysed based on the positions they occupied as well as the department they affiliate within the company. The inferential statistics were interpreted. P-values are reported as if random sampling was done. This was possible by erroneous analysis. The analysis based on the positions occupied (top management, middle management and specialist) showed less different when these two factors was observed, first **"VBM can be better implemented by managing assets and earnings"** Top managers tend to agree more with the construct, mean (\bar{x} =3.10) as compared to middle managers and specialists with the mean (\bar{x} =2.62) and (\bar{x} =2.62) respectively and with the second one **"Value Based Management is practiced in the company"**. Top management also agreed more with construct, \bar{x} (mean) =3.21 as compared to middle managers and specialist with the mean (\bar{x} =2.99) and (\bar{x} =2.97) respectively.

The groups were further analysed based on the departments (Production; support services and engineering) within the organisation. There was a lot of medium effect and less practical significant in the analysis. All the groups agreed overall with fewer differences on the mean values of all groups based on medium effect and practical significant analysis; less than \bar{x} =0.02 in average difference.

The respondents were also tested for familiarity with Value Based Management metrics. The overall highest figure in this regard was 80% and the overall lowest figure was 6%. The figures were balanced to all the metrics. This showed positivity towards the understanding of the value based metrics in general. 28% of the respondents confirmed that EVA was used in their incentive bonuses. The highest with 53% (NPV) and the lowest with 16.7% (CFROI) thought that these signs were mostly used in divisional levels. The remainder of respondents (the highest with 49% and lowest with 13%) agreed that they were used in departmental level.

About 35% in average of the respondents confirmed to be exposed in VBM practices when they were asked to confirm with a yes or no answer.

CHAPTER 5|

Conclusion and recommendations

5.1 Outlook to the main goals and objectives

Chapter one set out the following objectives:

- The main objective was to determine the extent to which a petrochemical company embraces VBM, overall understanding and implementation in all levels of management.
- The following sub-objectives were examined in support of the main objective:
 - Agency cost and other factors that lead to the focus on value creation.
 - The organisational scope and components of VBM.
 - Familiarity and use of prominent VBM metrics.
 - Information on how VBM is perceived and implemented; and
 - Application of VBM at organisational level.

5.2 Conclusion

The literature review demonstrates that Value Based Management is a crucial tool in balancing the interest of stakeholders and ensuring the long term viability of a business. It is a management philosophy that uses analytical tools and processes to focus an organisation to the single objective of creating shareholders' value. Research reveals that value based management is the only system that brings together workers, executive management and shareholders to work for a single goal that benefits all. The majority of the respondents agreed that the rewards of executives, management and all workers create sustainability and focus to shareholders' value while also reducing agency cost.

The literature concluded that Value Based Management can only be successfully implemented if management and all the workers are given incentives that are aligned to the Value Based Management strategies or processes. It was concluded that Value Based Management should be driven from the executive management (top management) and that there should be a balance between the interest of the shareholders; company management and the workers in general.

The study was conducted using two groups differentiated by demographic classifications. The first demographic classification group consisted of top management, middle management and a

specialist. The second demographic classification was grouped according to the departments, and consisted of the production department, engineering department and the Sasol support services department. The division in groups was done to see how comparable the groups felt about the Value Based Management.

Looking at the first group, it can be said that top management was expected to know more about Value Based Management since they are involved in strategy development. This group made up 14.61% of the participants of the study. The middle management made up 22.47% and was expected to be well trained in Value Based Management as they are implementers. More than 60% consisted of specialists. Had Sasol not implemented Value Based Management properly, it was expected that this group would not understand Value Based Management principles. In this case the test results would be negative towards the objectives as this group made up more than 60% of the respondents. From the literature, it was argued that Value Based Management is a strategy driven process by its nature and that it is most of the time initiated by the board to protect their interest as it is proven to maximise shareholder wealth and reduce agency cost. Best implemented, Value Based Management practice should be understood in any level in the organisation as is concluded in the literature review. Based on argument that a well-conceived Value Based Management in a company will mean that everybody is trained in the process within the company followed by how to do strategies at operational level; with 62.92% of specialist, it is expected that the positivity of the results will mean that the Value Based Management at Sasol is at work.

The second group was made up from different departments with the biggest member of this group being support services with 52.94% participants and others being production and engineering departments forming 9.41% and 37.65% respectively. However, it was expected that the results might go either way due to the mixture of respondents in a group based on the superiority in positions occupied. Support services consisted of more specialists (they are consultants by the nature of their job). This group is expected to be better trained in all the processes within Sasol. They were expected to influence the results in a positive way towards Value Based Management as they formed a majority and were expected to know more about VBM. Negative results towards the objectives would mean that Value Based Management was not being implemented properly in line with the literature study conducted in Chapter three.

From the results obtained, only top management and specialists (engineers, operators and others) showed practical significant differences ($p\text{-value}=0.80$) with the construct on how to **manage assets and earnings in VBM**. Middle managers and specialist showed some medium effect differences ($p\text{-value}=0.60$). Top managers were inclined to agree more with the construct, mean ($\bar{x}=3.10$) as compared to middle managers and specialists with the mean ($\bar{x}=2.62$) and (

$\bar{x}=2.62$) respectively. In line with the theory that states that Value Based Management should be linked to strategy, the result obtained was expected to favour top management. The management of asset and earnings is a strategy driven policy by its nature and is expected to be better understood in top management as compared to middle management and specialists. The understanding of strategic vision declines rapidly with the individual's level in the organisational hierarchy. It is therefore critical that corporate strategy be translated, unity by unity, to concrete, measurable and widely understood goals and tactics (Ryan & Trahan, 2007:57).

Top management also agreed more on how Value Based Management should be practiced, \bar{x} (mean) =3.21 as compared to middle managers and specialist with the mean ($\bar{x}=2.99$) and ($\bar{x}=2.97$) respectively. All the groups agreed that the entire capital application requests should be based on value creation and that the incentive bonus payment should be tied to value addition. The fundamental premise underlying VBM system is simple, what a firm measures and what reward gets done (Martin & Petty, 2000:171).

As the respondents were grouped in their department, they also agreed with all factors examined. These departmental views were scattered with most of them showing medium effect due to the fact that positional hierarchy was scattered to all departments, which in effect diluted the views of the top management from all departments. In general all the groups showed general understanding of Value Based Management and indicated that they have used it in their work environment.

Finally, the overall key findings reveal that the majority of the respondents are familiar with Value Based Management and that they have confessed to have attended a course on it. The majority of respondents are also familiar with the value based metrics and they have confessed to be using it in their work environment. 28% confirmed that they are using economic value added (EVA) in their performance agreement. This number is highest when compared with other responses studied in this question. This number reveals an acceptable understanding that EVA is the only true measure of Value Based Management. The majority of respondents agreed that Value Based Management at Sasol is applied mainly in the long term planning, investment decisions and performance measurement. Almost all respondents agreed that it is used in all levels on corporate management e.g. on departmental level, corporate level and divisional level. This is in line with the literature findings and the argument by Ryan and Trahan (2007:57) that in theory, Value Based Management systems should span all levels of a company and be used across all decisions.

The conclusion on Value Based Management implementation from Sasol's perspective is that it is implemented by following the guiding framework of the influential model through the following Role modelling; fostering understanding and conviction; reinforcing the formal mechanism; personal insights; team and system insights and developing talents and skills. This helps to create a culture that supports decision making and increases stakeholders' value sustainability.

5.3 Recommendations

The results suggest that Value Based Management systems need to be more fully integrated into the organisation if they are to meet the objectives of reducing the agency cost, increase the shareholders' value and better relate operating decisions to corporate strategy. Furthermore, operational personnel management should be involved in the early stages of Value Based Management programmes.

Training on Value Based Management systems need to be intensified mainly within the operational level of the organisation. Statistical analysis revealed that more than 60% of the respondents have not received training on Value Based Management systems.

Even though the Value Based Management in Sasol is well received, it is recommended that Sasol should focus on building organisational structure that reduces centralised decision making and increases Value Based Management sustainability that favours vigorous training and culture change.

5.4 Suggestions for further studies

The recommendation from this dissertation is to formulate a more comprehensive survey, and consequently focus on specific aspects with resultant statistical analysis. In this type of analysis further specific parameters as well as criteria for evaluation would again be vigorously defined and statistically processed.

This study has focused on general understanding and practice in VBM. Future studies could investigate the effect of organisational structure in VBM within a petrochemical company.

Similar research study could be carried out on another petrochemical company to benchmark the findings.

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APPENDIX A

To Colleagues

Research Survey Questionnaires on Value Based Management

Introduction

The questionnaire is conducted as part of my research for an MBA degree at the Potchefstroom Business School of the North-West University.

Dear Colleague

I am currently studying towards an MBA degree at the North-West University. My research theme is Value-Based Management (VBM).

It will be greatly appreciated if you would assist me in completing the following questionnaire.

Background

In order to become a respected global enterprise, Sasol needs to go beyond its ambition of creating value to the goal of maximising value and capabilities.

The aim of VBM is to help with decision-making and to ensure that strategies that maximise value are pursued.

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Research Study: Implementing a value-based management system in a petrochemical company

Part 1 Demographic Information

SECTION A Position within the organisation

1.	General Manager	
2.	Area Leader	
3.	Section Leader/Production Manager	
4.	Middle Management	
5.	Plant Operator	
6.	Engineer	
7.	Union Representative	
8.	Other (Specify)	

SECTION B. Department

1.	Production	
2.	Engineering	
3.	Support Services (SGS; SSS, etc.)	
4.	Other (Specify)	

I would like to receive feedback from the research (Yes/No). If yes, please fill in your details.

Name	
E-mail	

Part 2 Testing the overall understanding and usage of VBM

Instruction Please rate the extent to which you agree/disagree with the following statements by making an "X" over the appropriate number on the 1 to 5 point scale next to the statement.

SECTION C Understanding VBM In order for the company to maximise its share price through the effort of value-based management implementation; the whole organisation should understand and commit to its principles.

	1 = Strongly Disagree	2 = Disagree	3 = Agree	4 = Strongly Agree
	STATEMENT			SCALE
1.	Value Based Management can be best defined by creating value.			1 2 3 4
2.	Value Based Management can be best defined by managing for value outcome.			1 2 3 4
3.	Value Based Management can be best defined by measuring value.			1 2 3 4
4.	VBM assists management to make informed decisions when deciding on investment opportunity.			1 2 3 4
5.	Value Based Management is a process that involve top management only.			1 2 3 4
6.	Employees should be trained enough to do their work and leave Value Based Management to the top management.			1 2 3 4
7.	VBM creates goal congruence between internal stakeholders and external stakeholders through the single objective of creating value that benefits all.			1 2 3 4
8.	Human capital affects investment decision.			1 2 3 4
9.	All employees should be trained on Value Based Management principle.			1 2 3 4
10.	VBM is a top management exercise that has no effect on operating managers.			1 2 3 4
11.	VBM helps operating managers to implement project that add value to the business.			1 2 3 4
12.	A value creation mind-set means that operating managers are aware of financial value maximization.			1 2 3 4
13.	A value creation mind-set means that lower level employees are aware of their roll in value addition in the business.			1 2 3 4
14.	VBM leads to better decision making among operational employees.			1 2 3 4
15.	VBM leads to structured training among operational employees.			1 2 3 4
16.	VBM involve the deep understanding of performing variables that drives company's value.			1 2 3 4
17.	VBM involve identifying performing variables that drives company's value.			1 2 3 4
18.	Value drivers can be used to build forward-looking managerial reporting systems that help the company to understand how the decisions taken are likely to affect the progress.			1 2 3 4

	1 = Strongly Disagree	2 = Disagree	3 = Agree	4 = Strongly Agree
19.	To successfully implement Value Based Management; value drivers should be efficiently identified.			1 2 3 4
20.	To successfully implement Value Based Management; value drivers should be managed.			1 2 3 4
21.	Actual performance is measured against a set target on the identified value drivers.			1 2 3 4

SECTION D VBM implementation and strategy The trade-off between financial strategies and operation strategy should be maintained at all times. The basic governance principles for value creation by Rappaport (200668) should be used as guidelines during implementation.

	1 = Strongly Disagree	2 = Disagree	3 = Agree	4 = Strongly Agree
	STATEMENT			SCALE
1.	Earnings must be properly managed.			1 2 3 4
2.	Clear guidance must be provided on how earnings should be managed.			1 2 3 4
3.	The company should invest in decisions that maximise the expected value, even at the expense of lowering near-term earnings.			1 2 3 4
4.	The company should carry only assets that maximise value.			1 2 3 4
5.	The company should outsource low value-added activities that can be reliably performed by others at lower cost.			1 2 3 4
6.	Paying dividends is the best option when the company share price is high.			1 2 3 4
7.	Paying dividends is the best option when there is no credible value creating opportunity to invest.			1 2 3 4
8.	The company should preserve cash instead of paying dividends if there is no credible value creating opportunity to invest in the business.			1 2 3 4
9.	CEOs are rewarded for delivering superior long-term returns.			1 2 3 4
10.	Senior executives are rewarded for delivering superior long-term returns.			1 2 3 4
11.	CEOs and senior executives are only rewarded when the returns on company shares outperform the indexed returns of the company's peers.			1 2 3 4

1 = <i>Strongly Disagree</i>		2 = <i>Disagree</i>		3 = <i>Agree</i>		4 = <i>Strongly Agree</i>			
12.	Operating unit executives should be rewarded for adding value to the company.					1	2	3	4
13.	Employees are rewarded for delivering superior performance on the key value drivers.					1	2	3	4

SECTION E The scope and components of VBM This includes special components of Value Based Management like incentive schemes; training and incentives (where applicable) to enhance commitment.

1 = <i>Strongly Disagree</i>		2 = <i>Disagree</i>		3 = <i>Agree</i>		4 = <i>Strongly Agree</i>			
	STATEMENT					SCALE			
1.	Top management is active in supporting the VBM processes of my company					1	2	3	4
2.	VBM needs to have impact on the various managerial processes to instil change within an organisation.					1	2	3	4
3.	All the business units enforce the career development plan to equip all the workers with skills needed to make informed decisions that maximise value.					1	2	3	4
4.	Managing for value or value addition is emphasised in all work assignments or projects.					1	2	3	4
5.	Improving information technology (IT) support helps management to focus on value creation.					1	2	3	4
6.	The incentive bonus payment is tied to value addition.					1	2	3	4
7.	Entire capital application requests are based on value creation.					1	2	3	4
8.	Human resource requests are justified based on value creation.					1	2	3	4
9.	Non-financial measures like safety are indirectly linked to economic value added (EVA).					1	2	3	4
10.	Business units that performed well should be rewarded.					1	2	3	4
11.	Employees need to be trained in value based-management principles in order to install value creating behaviour.					1	2	3	4

SECTION F Perceptions regarding the success of VBM Perceptions regarding the successful implementation of VBM should be managed from the outset so that everybody is committed to the process.

	1 = Strongly Disagree	2 = Disagree	3 = Agree	4 = Strongly Agree
	STATEMENT			SCALE
1.	VBM is just another crazy term from corporate management.			1 2 3 4
2.	Successful implementation of VBM is critical for today's business success.			1 2 3 4
3.	Senior management must be directly involved in VBM programmes, in order for it to succeed.			1 2 3 4
4.	Senior management must delegate VBM programs to lower managers if they want success.			1 2 3 4
5.	All employees are allowed to participate in VBM programmes in order to make it a success.			1 2 3 4
6.	VBM build awareness of ownership of the company from all levels of employees.			1 2 3 4
7.	Successful communication programmes require the message to be repeatedly delivered. Therefore company communication must be improved for the success of VBM programmes.			1 2 3 4
8.	Expectations should be managed to avoid the perception that VBM programmes will provide instant results.			1 2 3 4
9.	The implementation of VBM failed largely because the measurements become more important than the decisions that they support.			1 2 3 4
10.	Some managers believe that VBM does not work in some businesses.			1 2 3 4
11.	If the company manages its earnings, the value will take care of itself.			1 2 3 4
12.	Top management should get commitment from operating managers in order to successfully implement VBM.			1 2 3 4
13.	Value Based Management is a change process that needs to be managed in order to be effective.			1 2 3 4
14.	VBM encourages managers to focus on facts not opinions.			1 2 3 4

Additional Comments**Part 3 Value based metrics****SECTION G Testing the familiarity and use of value based metrics**

Instructions Please place a cross (X) in the appropriate box.

Check the abbreviations below for the statement description.

		DCF	CFROI	ROIC	EVA	NPV	WACC	Other specify
1.	I am familiar with it.							
2.	I have used the method before.							
3.	I attended a course on.							
4.	I used it for long term planning.							
5.	I used it for capital budgeting.							
6.	It is used for investment decisions.							
7.	It is used for performance measurement.							
8.	It is used for incentive bonus payment.							

Frequency of use		DCF	CFROI	ROIC	EVA	NPV	WACC	Other specify
9.	It is used at corporate level.							
10.	It is used at divisional level.							
11.	It is used at departmental level.							

How far have you been exposed to VBM? Mark with X (yes/no)		YES	NO
12.	I have received training on Value Based Management (VBM) systems.		
13.	I have attended awareness training on economic value addition.		
14.	I have read an article about VBM.		
15.	I have dealt with VBM intensively at work.		
16.	I have read a book about VBM.		
17.	Economic values add measurement is part of my performance agreement.		

Reference Elements of Value Based Management

<i>VBM—Value Based Management</i>
<i>DCF—Discounted Cash Flow</i>
<i>CFROI—Cash flow Return on Investment</i>
<i>ROIC—Return On Invested Capital</i>
<i>EVA—Economic Value Added</i>
<i>NPV—Net Present Value</i>
<i>WACC—Weighted Average Cost of Capital</i>