

## **BENCHMARKING VALUE CREATION OF COMPANIES LISTED ON THE JSE'S ALTX**

**John Beneke**

Vaal University of Technology, South Africa

E-mail: johnb@vut.ac.za

### **—Abstract —**

The primary objective of most companies in today's business world is to maximise shareholders' wealth. Value-based management (VBM) is a management approach that maximises long-term shareholder value using various metrics to determine if wealth was created (or destroyed). Small and medium enterprises (SMEs) are viewed as a means to achieving a dynamic and flourishing private sector as well as to ensure development that is more equitable. This then raises the following questions: can value-based management principles be applied in SMEs to create shareholder wealth; are SMEs able to create value; and, how does SMEs compare when benchmarked against each other? For this study companies listed on the AltX board of the Johannesburg Stock Exchange from 2007 to 2012 was used. Three VBM metrics was used to determine if valued was created or destroyed based on financial performance. Data Envelopment Analysis (DEA), which is a non-parametric linear programming technique, was used as the benchmarking tool. The results indicates that a very limited number of companies were deemed efficient in creating value. It was also established that the financial crisis of 2008 and 2009 had a significant negative impact on the AltX companies.

**Key Words:** *Value-based management, data envelopment analysis, small and medium enterprises, value-drivers, economic value added, market value added*

**JEL Classification:** M10

## 1. INTRODUCTION

In today's business world, the primary objective of most companies is to maximise shareholders' wealth (Brigham & Ehrhardt, 2011:67). Creating value is not the same as generating a profit, as a profit is simply stated as the difference between an income and expenses over a given period. According to Koller (1994:87), the only true measure of management actions to create wealth is when capital is invested at returns higher than the cost of the capital. This is known as value-based management (VBM). Creating value is one of the critical issues and problems that entrepreneurs face, and it has a bearing on the financing of entrepreneurial ventures (Spinelli & Adams, 2012:376).

SMEs and entrepreneurial micro-enterprises are credited as agents of innovation, wealth creation and employment generation (Wang & Poutziouris, 2010:332). This then lead to the questions: can value-based management principles be applied in SMEs to create shareholder wealth; are SMEs able to create value and how does SMEs compare when benchmarked against each other? For this study companies listed on the AltX board of the Johannesburg Stock Exchange was used. According to Scholtz and Smit (2015:30), companies listed on the AltX, are generally regarded as small and medium sized high-growth companies.

Zhu (2009:1) regards performance evaluation as an important tool in continuously improving performance in order to stay competitive. There are various methods that can be employed to evaluate performance, of which ratio analysis is arguably one of the most common and widely used methods employed by investors. In order to survive and prosper in a business environment facing global competition, performance evaluation and benchmarking positively forces any business to constantly improve and evolve (Zhu, 2009:1). Benchmarking a company's financial results against its own peers or industry averages enables management and investors to identify the relative strength and weaknesses of the company and as a result, ensure better future planning.

## 2. VALUE-BASED MANAGEMENT

Ryan and Trahan (1999:47) define value-based management as the adaptation of a corporate strategy to maximise shareholder value by the management of a company. In its most basic form, value-based management involves transforming behaviour in a way that encourages employees to think and act like owners (Martin & Petty, 2001:2). Beneke (2014:22) define value-based management as a management approach that maximises long-term shareholder value, which is

incorporated in the business' strategy and goals, through the identification and management of key value drivers, whereby all employees think and act like shareholders.

Hall (2002:2) describes that an understanding of the performance variables that drive shareholder value creation is required for VBM. A value driver is defined as any variable that affects the value of the company, and to be useful, value drivers need to be organised in such a way that those that have the greatest impact can be identified. Hall (2002:20) warns that the key value drivers are not static and must be reviewed periodically. These drivers cannot be considered on isolation and gives the example that an increase in price might have a large impact on value through an increased profit margin, but might result in a substantial loss of market share.

In addition to incorporating value creation in the company's culture and understanding what drives value in the company, it must be measured in one form or another. There are various metrics (Shanmuga (2009) used 14 different metrics) available to determine if wealth was created (or destroyed). It must be noted, there is no one-size-fits-all metric. Each of these metrics must be customised to fit the uniqueness of any given enterprise. Three of the more widely used metrics (Economic Value Added, Market Value Added and Return on Invested Capital) will be discussed in more detail in the following paragraphs. Economic Value Added (EVA) and Return on Invested Capital (ROIC) was also identified based on the simplicity of calculation it, as can be seen in Table 2. Market Value Added (MVA) was also included as it is calculated and published by INET BFA.

Stern (2011:57) defines Economic Value Added (EVA) as a measure of operating income that provides a measure of economic profit by including a charge for the cost of capital employed in the enterprise. Primarily, according to Mohanty (2006:266), EVA serves three purposes: a performance measurement tool; a valuation tool, and a reporting tool. EVA is defined as the NOPAT less a capital charge, computed by multiplying the company's adjusted book value of capital items with the company's market-determined cost of capital (Ryan & Trahan, 1999:48). EVA measures both the cost of equity and the cost of debt capital whereas existing financial accounting regards the cost of equity capital as income distribution and only confirms the cost of debt capital (Xuefeng, Tiantian and Rensel, 2014:21).

The second metric in this study is MVA. Kamalaveni and Kalaiselvi (2010:229) define MVA as the excess of market value of a company over the company's

invested capital, and MVA cumulatively measures the value created by management in excess of the shareholders' investment. In principal, MVA is the equivalent of the present value of all the expected future EVA a company will generate (Kramer & Pushner, 1997:45). Ameels, Bruggeman, and Scheipers (2002:14) gives a more simplified definition of MVA – it is the difference between a company's equity market valuation and the sum of the invested equity and adjusted book value of the debt, by taking into account the debt and equity invested in a company. Vélez-Pareja (2001:24) defines MVA as the value in excess of what the market assigns to the stock of a company, over its book value and can also be calculated as the present value of the future EVAs.

The third and last metric used in this study is ROIC. Lloyd and Davis (2007:56) state that value creation relies on two critical components – revenue growth and return on invested capital (ROIC) in excess of the cost of capital. The calculation of ROIC, according to Lloyd and Davis, is done by dividing the company's after tax net operating profits by the sum of working capital and fixed assets. Ryan and Trahan (2007:114) define ROIC as the ratio of net operating profits less adjusted taxes to invested capital. Ryan and Trahan (1999:47) define invested capital as the sum of operating working capital, net fixed assets, and the net of other assets. Economic value is created when ROIC exceeds the weighted average cost of capital (WACC) of the company. WACC is the basic rental charge paid to investors for the use of the invested capital (Tortoriello, 2009:10).

### **3. SMALL AND MEDIUM ENTERPRISES**

SMEs are viewed as a means to achieving a dynamic and flourishing private sector through increased exports and enhanced industrial competitiveness, as well as to ensure development that is more equitable. Equitable development is the result of a broader distribution of assets, through job creation resulting in increased income, and in the end, improving the well being of poor and marginalised groups (Wang & Poutziouris, 2010:332).

Large companies achieve static efficiency by being more capital-intensive in order to exploit economies of scale and large companies mostly are more integrated vertically than small companies. In contrast, small companies gain a competitive advantage through output flexibility (Fiegenbaum & Karnani, 1991:103). Small companies would exploit this advantage by varying output over time in response to the changing market conditions, while large companies are more likely to maintain a relatively constant level of output (Fiegenbaum & Karnani, 1991:104). SMEs are renowned for a more cohesive culture and simpler organisational

structure, therefore, diminishing the coordinating benefits of a strong market orientation culture. It can therefore be argued that adapting value-based management as part of the SME's strategy to maximise shareholder value should be easier and more achievable than it is the case in a corporate environment. The need for formal activities designed to gather and process market information for marketing decision-making by SMEs is reduced due to the fewer product lines and customers (Pelham & Wilson, 1996:28). The management practices of large corporations have long been recognised as being different to those of small companies (Longenecker, McKinney & Moore, 1989:27). According to Longenecker et al. (1989:27), small companies employ fewer professional specialists, operate with less formality and reflect to a greater degree the personality and attitude of the entrepreneur.

It has been established that incorporating value creation in the culture of the business is one of the key aspect of VBM. When a business culture is valuable, rare, and difficult to imitate, it can be regarded as a source of competitive advantage (Slater, 2001:230). According to Fiegenbaum and Karnani (1991:102), it is accepted generally that small companies should seek viable market niches that are big enough for the small company, but at the same time unattractive to large companies. By utilising a unique business culture, and capitalising on a viable market niche, SMEs are in a position to create value if VBM principles are applied.

#### **4. DATA AND METHOD**

Performance evaluation is an important tool for any enterprise to continuously improve performance in order to stay competitive in the case if VBM it is a tool that can used to determine if management actions are indeed leading to wealth creation. It was decided to benchmark the wealth creation capabilities of AltX companies by utilising data envelopment analysis (DEA). Feroz, Kim and Raab (2003:48) argue that DEA can complement traditional ratio analysis to provide information regarding operating and technical efficiency of the firm. Feros et al. (2003:48) demonstrated that there is a correspondence between the measurement of efficiency using ratios and the direction of the relative efficiency trends of firms as captured by DEA. DEA is defined by Avkiran (1999:206) as a non-parametric linear programming technique that computes a comparative ratio of outputs or inputs for each unit, which is reported as the relative efficiency score. A priori definitions of the relationship between the input and output parameter are not required, nor is it necessary to assign weights prior to modelling (Pätäri, Leiv

& Honkapuro, 2012:788). The concept of relative efficiency is employed by DEA and as a result, a comparison of companies within a pool of known efficient and inefficient companies is possible (Malhotra & Malhotra, 2008:27).

Through DEA, multiple inputs and outputs can be selected in accordance with a managerial function. This function can be useful to the management of accompany, as a variety of inputs and outputs can be used in order to benchmark performance. DEA is a non-parametric linear programming technique. DEA works with variables of different units (inter alia, monetary value, percentage, number of employees, and so on) without the need for standardisation (Theunissen & Oberholzer, 2013, 1512). It allows the management the freedom to choose the variables it wants to access and benchmark it against the company's peers.

The advantage of using DEA compared to financial ratios, according to Halkos and Salamouris (2004:221) is that DEA provides the user with an overall, objective numerical score. In addition to the score, DEA also provides a ranking and efficiency potential improvement targets for each one of the inefficient units. DEA assists in efficiency comparisons with the simultaneous use of multiple criteria, which determines efficiency for each decision-making unit (Halkos & Salamouris, 2004:221). The result is a rounded judgement on decision-making unit (DMU) efficiency, as it takes into consideration a variety of efficiency dimensions and combines it into a single performance measure. An analyst has the model option of input minimisation and output maximisation. Avkiran (1999:211) describes input minimisation as the examination of the extent to which inputs can be reduced while maintaining output levels. Output maximisation, as described by the same author (Avkiran, 1999:211), investigates the extent to which outputs can be raised given the current input levels. The results under output maximisation suggest raising outputs as well as reducing inputs (for example input slacks) (Avkiran, 1999:211). If the results suggest reducing inputs, it implies that the inputs are over-utilised.

Theunissen and Oberholzer (2013:1512) highlight a feature of DEA for which the analyst should make some assumptions concerning the nature of the two types of returns to scale that best reflect the operations of the units in the sample. The two types are constant return to scale (CRS) and variable return to scale (VRS). CRS implies, according to Avkiran (1999:211), that there is a proportionate rise in outputs when inputs are increased, whereby the scale of operations does not influence the efficiency of the unit. VRS implies a disproportionate rise or fall in

outputs when inputs are increased whereby as a unit grows in size, the unit's efficiency would be disproportionately affected (Avkiran, 1999:211).

The DEA model developed for the study is as follows: inputs are turnover; total net operating capital (TNOC); weighted average cost of capital (WACC) and earnings per share (EPS). Outputs are three value-based management metrics: EVA, MVA and (ROIC). The reasons for selecting the variables can be seen in Table 1. The input variables represent operating activities (turnover, EPS and TNOC) and the cost of the company's capital (a key component, based on the literature, of VBM).

**Table 1: Model variables**

Item	Reason
Turnover	Turnover represents the income statement in the study. Turnover is the first item in the income statement and all other items in the income statement are in one way or the other related to, or representative of turnover.
Total net operating capital (TNOC)	One of the methods to judge managerial performance is to evaluate management's ability to generate earnings with the operating assets under its control. Modigliani & Miller's first proposition asserts that a firm's total market value is independent of a firm's capital structure (Megginson, Smart, & Graham, 2010:418).
Weighted average cost of capital (WACC)	WACC represents the way in which the firm is funded and how the mix of debt and equity affects the ability to create wealth. Indicates what the required return of investors would be. According to Modigliani & Miller's second proposition, even though debt is less costly than equity, issuing debt causes the required return on the remaining equity to rise (Megginson et al., 2010:421).
Earnings per share (EPS)	Stock value is derived from expected dividends, and growth in dividends occurs primarily because of growth in EPS. Therefore, EPS was selected in order to determine to what extent does a company's EPS affects its value creation potential.
Economic value added (EVA)	EVA is one method to measure a firm's true profitability and focusses on managerial effectiveness in a given year.
Market value added (MVA)	MVA represents the difference between the market value of a firm's shares and the amount of equity capital supplied by shareholders. It measures the effect of managerial actions since the very inception of a firm.
Return on invested capital (ROIC)	Companies that generate high levels of ROIC are applying invested funds profitably and ROIC is used to determine if a company's growth is profitable or not.

Source: Adapted from Beneke (2014:114)

The input and output data in this study were gathered from the data provider INET BFA which is Africa's leading provider of financial data feeds and analysis tools

(INET BFA, 2014). A comprehensive list of previously and currently listed AltX companies was obtained from the JSE. Due to the small number of companies listed on the AltX, the entire population was used for the study, and no sample selection was required. This list formed the basis for extracting data from INET BFA. The data were further refined to contain only companies that had a value other than zero for the variables to be used in the DEA model. The master list subsequently was refined to only contain the relevant companies. The data was collected for the period 2007 to 2012. The reason for this is to benchmark the two years prior to the financial crises, the two years during the crises (2009 to 2010) and the two years post the crises (2011 to 2012). The sources of the data collected for this study are summarised in Table 2.

**Table 2: Data collection summary**

ITEM	SOURCE	FORMULA
Turnover	INET BFA	
Total Net Operating Capital (TNOC)	Calculation	Net operating working capital + Operating long term assets
WACC	INET BFA	
EPS	INET BFA	
EVA	Calculation	NOPAT – (TNOC x WACC)
MVA	INET BFA	
ROIC	Calculation	NOPAT/TNOC

In order to address the issue of relevance, the data were indexed. The data points per variable were summed, and divided by an index value of 100, resulting in an index divisor. The individual data points were divided by the index divisor, creating an indexed value. This was done in line with the JSEs method of indexing the ASI (JSE Limited, 2013:3). These results were subsequently scrutinised for negative values. To negate negative values, the data were transformed, by adding a constant to all the indexed data values of a variable. This practice is in line with previous research conducted by Bowlin (1999), Silva Portela, Thanassoulis and Simpson (2004) and Cook and Seiford (2009). Bowlin (1999:295) handled negative values in two output variables by adding a constant to the specific output for each entity in the analysis in order to have value greater than zero for every organization. In the presence of negative data, efficiency assessment cannot be used without transforming the data, as negative inputs/outputs are moved in the wrong direction (Silva Portela et al., 2004:1120). Cook and Seiford (2009:6) render all negative numbers positive by adding a fixed number to the value of each DMU thereby rendering all values positive. The data used for the DEA models are the input and output variables post transformation.



**Table 3: Results**

<b>Model</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>
Number of companies	50	71	75	67	70	60
Efficient companies	18	9	21	14	16	13

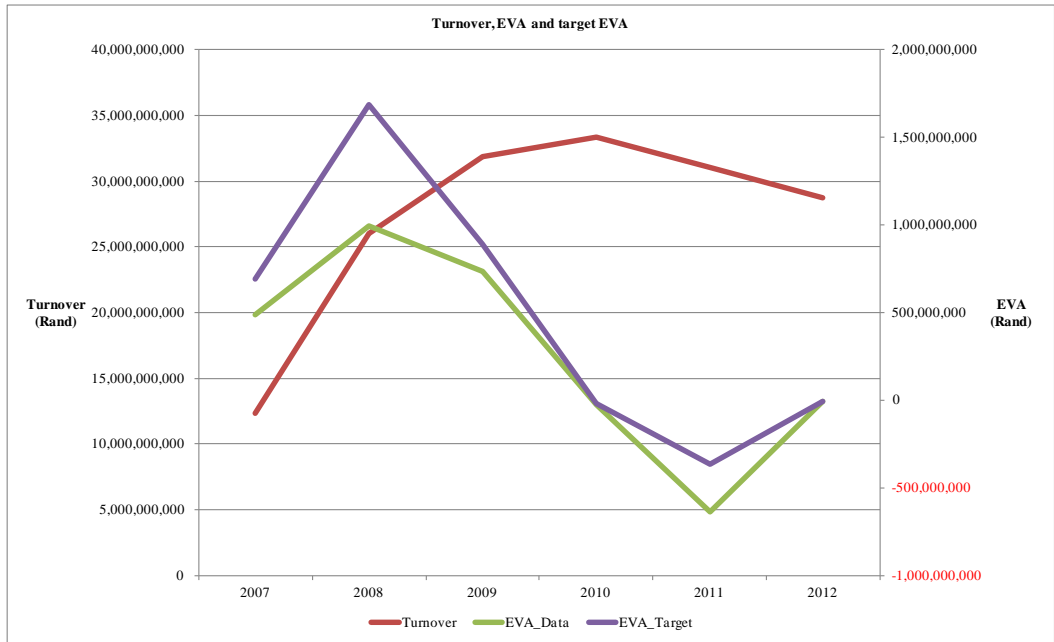
## 5. RESULTS

The DEA model was calculated for each year of the study, and as a result, 6 models were calculated. The models was calculated as output orientated models thereby, in addition to measuring efficiency, the extent to which outputs can be raised given the current input levels was also calculated. Due to the large number of results across the years of the study, it was decided to only present the number of companies that were identified as being efficient (efficiency score of one). The results are summarised in Table 3. The number of companies per year used in the models can be seen in Table 3 as well as the number of companies deemed efficient. It is clear from the results that a limited number of companies were able to achieve an efficiency score of one. Using EVA as the indicator of the amount of value created or destroyed, each year's EVA amount (per company) was summed to calculate the total value created or destroyed per annum. The results can be seen in Diagram 1. In addition to the actual EVA (EVA\_Data) per year, the target EVA (EVA\_Target), as calculated by the DEA model, is also displayed in Diagram 1. The annual total Turnover per year is also displayed in Diagram 1.

## 6. CONCLUSION

It was established that DEA is as a non-parametric linear programming technique that computes a comparative ratio of outputs or inputs for each unit, which is reported as the relative efficiency score. Furthermore, DEA employs the concept of relative efficiency, and as a result, a comparison of companies within a pool of known efficient and inefficient companies is possible. By benchmarking a company against its own peers enables management to identify the relative strength and weaknesses of the firms and as a result, ensure better future planning.

**Diagram 1: Turnover and EVA**



This study is the first of its kind to benchmark AltX companies' ability to create value by utilising DEA. The study contributes towards developing an understanding of the AltX companies' ability to create value. AltX companies were benchmarked against each other. Based on the efficiency frontier in terms of value creation, a very limited number of companies listed on the AltX are deemed efficient in terms of value creation. The highest number, in terms of percentages, was in 2007, when 36% of the companies evaluated were deemed efficient. The majority of the companies are not able to create value at the levels of the efficient companies. In general, there seems to be an upward trend in terms of the percentage of efficient companies, but on a very small scale. It can be argued that, based on the theory of VBM, if more AltX companies are efficient in creating value, it should reflect in these companies' share price.

It was established that AltX companies are able to create shareholder value, as is evident in Diagram 1. Prior to the financial crises of 2008 to 2009, AltX companies were able to and increase the amount of value created per year. The financial crises had a significant impact on the AltX companies, not only during the crises, but also for the two years (2010 and 2011) after the crises. During 2010 and 2011 value was destroyed (negative EVA in Diagram 1) and only in 2012 was

there some form of recovery. Even though, in 2012, there was a turnaround, the amount of value created has still not reached the levels prior to the financial crises. This finding highlights the sensitivity of small and medium enterprises, such as those listed on the AltX to financial and economic crises. Even though the companies were able to increase turnover during and after the crises, the ability to create value for its shareholders is severely affected. Increased turnover does not automatically lead to creating value and highlights the fact that the management of AltX companies, and therefore SMEs, must understand what the key value drivers are in the respective companies are. Without understanding what drives value, creating value for shareholders becomes a difficult task.

This study was done utilising secondary data. In order to develop a better understanding of why there is such a low efficiency score, it is recommended, that for a future study, a qualitative approach is followed. This will allow gaining an understanding of the underlying reasons, opinions and motivations by management teams of AltX companies for not being able to create value at efficient levels. It will provide an insight into the problems resulting in the inability of the majority of AltX companies to create value at the levels deemed efficient measured amongst peers. It will also provide insights into the negative impact the financial crises had on the AltX companies and provide answers as to why value was destroyed and why the recovery to pre-crises levels took so long for the period under review.

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