Impact of Firm-specific Attributes on the Shareholder Value Creation of Listed South African Companies

Rika Nieuwoudt and John H. Hall

Department of Financial Management, University of Pretoria, Pretoria, Gauteng, Republic of South Africa

Corresponding author(s): Rika Nieuwoudt, Department of Financial Management, University of Pretoria, Pretoria, Gauteng 0002, Republic of South Africa. E-mail: rikan@akademia.ac.za

Abstract

This article identifies firm-specific attributes with a substantial impact on the capabilities of listed South African companies to create shareholder value. It shows that the firm-specific attributes that contribute to shareholder value creation differ when value is measured using economic-based shareholder value measures, such as Economic Value Added (EVA) and Market Value Added (MVA), versus using accounting-based shareholder value measures, such as earnings per share (EPS). Data cover financial years from 2000 to 2018 for 35 JSE-listed companies. Multiple regression analysis is employed to study the relationships. The study revealed different results on shareholder value creation utilizing accounting-based and economic-based performance measures. Shareholder value measured by EVA is created by larger companies with higher profitability, lower systematic risk and efficient asset management. MVA identifies increased shareholder value for larger firms and higher profitability. MVA also pinpoints enhanced investor value by firms with lower liquidity ratios which invest less in research and development (R&D). EPS achieved different results from EVA and MVA, indicating that according to accounting-based measures, companies add value through lower profitability (measured by return on investment), efficient asset management and a higher risk profile. Understanding the effect of firm-specific attributes on shareholder value creation can assist managers in developing strategies and decision-making.

Keywords: Shareholder value creation, Economic value added, Market value added, Earnings per share, Firm-specific attributes

Many aspects and variables play a role in the shareholder value creation process. One of these is firm-specific attributes, some of which fall outside management's control. Decision-makers need to understand which attributes are manageable, and which fall outside of their control, but can still be used to their advantage to create shareholder value. Venugopal, Ravindar Reddy and Bhanu Prakash Sharma (2018) state that the creation of value for shareholders has become a primary objective for organisations. The argument is that if a company maximises the value of their shareholders, those shareholders will most likely reinvest in the company, contributing to the wealth (share price) of the company and the shareholders. The agency theory for corporate governance argues that one of the actions required of management is to maximise shareholder returns. The quest for long-term value creation has shifted all managements' decisions towards the most fundamental objective, which is to maximise the value of the shareholders' For a company to be able to create shareholder wealth, the fundamental factors which lead to long-term sustainable shareholder value needs to be understood. However, in order to investigate these drivers of shareholder value, one must be able to measure shareholder value. The literature on the best measures of shareholder value creation was therefore considered first, to establish the measures to be used, before reaching conclusions on the drivers of value. The focus of the present article is not identifying the most accurate measure of shareholder value, but rather which firm-specific attributes drive shareholder value.

Management needs to be aware of the overall performance of a firm and develop the ability to act on poor performance or further enhance good performance. Performance can be improved by creating value, or, as Bititci et al. (2004) put it, 're-inventing value.' McKinsey et

al. (2015) point out that knowing value drivers assists companies to understand their current and future performance. Bititci et al. (2004) explain that to retain its competitive advantage and maintain performance, a business should focus on creating new and unique value propositions based on a unified approach to value creation. It is therefore vital for management to understand what drives shareholder value in the organization. Using shareholder value measures as dependent variables and different firm-specific attributes as independent variables, we can study which independent variables have the biggest impact on a firm's ability to create shareholder value. If such an attribute (or multiple attributes) exist(s), management can focus on those aspects of the business and continuously create shareholder value.

The findings of this study are helpful to any company's financial manager whose mandate is to maximize the value of the firm. Identifying which firm-specific attributes have an impact on firm value can guide decision-makers in key decisions and trade-offs to create and measure shareholder value. The article can also inform fund managers who need to make strategic and tactical decisions to improve investors' portfolio performance. Lastly, it also contributes to the literature regarding drivers of shareholder value, by adding new empirical evidence on a managers' ability to create value for shareholders by focusing on specific attributes and can be used for further studies in different contexts and industries.

The remainder of the article reviews the literature on shareholder value creation measurement, and specific firm attributes that could influence value creation. The research methodology and analysis are presented, followed by the results and recommendations.

Literature Review

If value creation is a firm's main objective, management must be able to assess whether it has achieved this objective. There are several different measures of value creation, so recent research focuses more on which measure of value creation best articulates a firm's ability to create value for shareholders. These measures can be categorized as traditional accounting-

based measures, such as ROE, ROA and EPS, or as economic-based measures, such as EVA and MVA.

Traditionally, decision-makers used accounting performance measures to determine the financial performance of a company, but these measures were criticized, for instance, because they did not include the cost of capital resources or the effect of inflation and risk. Accounting-based measures are also vulnerable to manipulation to manage earnings and other expenses (profit window dressing) when managers are compensated for such window dressed profits (Maditinos et al., 2009; Obeidat, 2020; Panigrahi et al., 2014). To overcome such weaknesses, several firms adopted economic-based performance measures, such as EVA, MVA and shareholder value added (SVA).

Several studies have reported contradictory results on which performance-based measure best describes value added. Accounting-based measurements outperformed economic-based measurements in explaining shareholder value creation in the German stock market (Günther et al., 2000) and in the Australian stock market (West & Worthington, 1999). Similar results were found for the United States stock market by Biddle et al. (1997) and Chen and Dodd (2001). Peixoto (2002) studied the informational content of economic-based performance measures versus traditional performance measures in explaining equity market value in the Portuguese stock market, and found that economic-based measures did not carry more informational content.

The study was performed within the context of listed South African companies, consequently, it is necessary to refer to the literature on shareholder value measures in the context of South Africa. De Wet (2005) studied companies listed on the Johannesburg Stock Exchange (JSE), the largest stock exchange in Africa and located in Johannesburg South Africa, for the period from 1994 to 2004 and tested the correlation between EVA and MVA. On a year-on-year basis, changes from standardized cash flow from operations had a stronger

correlation to MVA than the correlation of EVA to MVA (De Wet, 2005). By contrast, Van der Poll et al. (2011) claim that ROI and EVA are proxies for changes in market value. Van der Poll et al. (2011) argue that EVA is a strong indicator of a company's share performance, but acknowledged that despite its advantages, EVA measurement was not widely used in South Africa. They conclude that EVA is more useful to capital intensive industries, and admit to some difficulties in implementing EVA. Van der Poll et al. (2011) also report that using EVA in conjunction with other metrics and understanding their advantages may result in wider use of EVA by South African firms. Maditinos et al. (2009) found that using accounting-based measures, such as EPS, together with economic-based measures such as EVA, increases the explanatory power of stock returns.

Most of the studies regarding shareholder value creation focus on establishing the best measure of shareholder value, comparing accounting-based and economic-based measures. The focus of the article is not identifying the most accurate measure of shareholder value, but rather which firm-specific attributes drive shareholder value.

Biddle et al. (1997), Chen and Dodd (1997), Stewart (1993) and Hall (2018) have attempted to identify the best drivers of shareholder value created by firms. These studies used different measures of shareholder value and their results varied considerably.

De Villiers and Auret (1998) tested the explanatory power of EPS and EVA in explaining share prices withing the context of South Africa. They found that EPS has more explanatory power than EVA in explaining share prices.

Hall (2016) studied different categories of industries listed on the JSE in an attempt to refine variables determining shareholder value creation. He found that the shareholder value creation measure may differ for different industries because of unique firm characteristics and called for further studies to find an optimal set of variables for management to concentrate on when enhancing shareholder value creation. Erasmus used the information of industrial shares

on the Johannesburg Stock Exchange (JSE) to "investigate the relationship between the measure Cash Value Added (CVA) and market-adjusted share returns and compares it to that of EVA, residual income, earnings and operating cash flow". The results showed that CVA and EVA provide more significant information than residual income, but also noted that the significance is low.

Narang and Kaur (2014) tested the impact of different firm-specific attributes (such as listing age, size, profitability, liquidity, marketing expenditure, research and development (R&D) and risk) on shareholder value creation in listed companies in India. They found that 'investors tend to reward the companies which have higher profitability, lower market risk, efficient resource management, high leverage, more liquidity, higher marketing expenditures and robust market capitalization' (Narang & Kaur, 2014, p. 847).

Tsuji (2006) conducted a study over a period of 21 years and found that, although higher EVA levels moved together with higher corporate values, the correlation between corporate values and general accounting measures were more correlated especially to cash flow, operating income and profit after tax.

Narang and Kaur (2014) added that there is a need to 'explore the relationship between firm-specific attributes and their contribution to shareholder value' (Narang & Kaur, 2014, p. 849). Berthon et al. (2002, p. 423) advocate determining whether theories 'that predict well in one context will be as effective in another, and whether methods that work in one environment will work equally well when applied in another environment'. Hence, our study attempts to identify specific factors that can have a significant impact on the capabilities of listed South African companies to create shareholder value, bearing in mind that previous studies have measured a firms' capability to maximize shareholder value.

Hall (2013) argues that no single shareholder value creation measure should be applied to all types of firms. This article looks at a large spread of different companies listed on the

JSE and therefore used both economic-based (EVA and MVA) and accounting-based (EPS) measurements of value creation.

Firm-specific attributes

The aim of the present study is to ascertain what firm-specific attribute(s) has(have) the biggest impact on the creation of shareholder value for the sample of South African firms considered.

Firm age

Studies on firms' age often assume that older firms may resist change and are insensitive to changes in the environment, arguing that, where older firms display inflexibility, newer and smaller firms, despite disadvantages such as lack of capital, can still take away market share from older firms (Kakani & Kaul, 2002; Malhotra & Singh, 2007; Sørensen & Stuart, 2000). Sørensen and Stuart (2000), testing the effect of firm age on innovation, reported conflicting results. Older firms have an advantage because they can refine and improve their management routines, as managers learn from previous decisions and/or processes. However, older firms may struggle to keep up with constant external developments. The age of a firm probably influences its performance through mechanisms such as routinization, accumulated reputation and organizational rigidity (Coad et al., 2018), making a firm's age a relevant variable for theoretical and empirical studies on determinants of firms' performance.

The listing age of a firm is reportedly the best way to measure the age of a firm (Chun, Kim, Morck, & Yeung, 2008; Pástor and V. Pietro, 2002, Shumway, 2001). Therefore, the present study measured the age of the company from the date it was listed on the JSE until 2018.

Firm size

A key factor in a firm's financial performance is its size (Kakani & Kaul, 2002), which is expected to contribute positively to value for shareholders (Narang & Kaur, 2014). Narang

and Kaur (2014) posit that larger firms have a competitive advantage when securing finance, because they have greater access to resources and higher market power. Because of their larger economies of scale in financing and production capacity, they may reduce production cost and increase return on capital, thereby increasing value for shareholders. Studies to determine the effect of firm size on profitability and performance found a positive relationship between firm size and profitability (Jónsson, 2007; Lee, 2009).

Firm size is measured in different ways. Dang et al. (2018) tested three different proxies which measure firm size, namely market capitalization (reflecting ownership of equity), total sales (reflecting the firm's product market) and total assets (reflecting total assets). Our study adopts these measures of firm size listed by Dang et al. (2018), because these three measures present a broad and varied view of firms' size and ability to expand.

Profitability

Varaiya et al. (1987) found that higher economic returns may arise from customer satisfaction with high-quality goods. Highly satisfied customers (shareholders) tend to reinvest in the firm, hence growing profits. The ability of a firm to grow strong revenues is what differentiates its performance in terms of total shareholder return (Narang & Kaur, 2014). An empirical analysis by Lee (2014) shows that growth affects profit positively, but that because of institutional circumstances, results across different countries may differ. Chari and Banalieva (2015) tested the effect of pro-market reforms on company profitability, using ROA as a dependent variable. The use of return on total assets (ROTA) incorporates the risk derived from leverage, while return on capital employed (ROCE) expresses the return of the capital invested by shareholders. Ichsani and Suhardi (2015) found that ROE and ROI are preferable as a benchmark to measure profitability. Each industry sector has key ratios that are critical to the drivers of value.

Because our study considered listed companies in different industries, different ratios to measure profitability were a good choice, and hence, ROTA, ROI, ROCE, profit margin (PM), and ROE were used to reflect on a firm's capability to create shareholder value.

Risk

Systematic risk can be expressed by means of a firm's beta, measuring the volatility of a security in comparison to the market. The higher the systematic risk (beta), the higher the cost of equity, resulting in lower shareholder value (Narang & Kaur, 2014). Risk is an important factor to consider when measuring firm performance and shareholder value creation, so we employed a firm's beta to quantify the level of systematic risk of a firm.

Efficient asset management

Valuable and rare resources give a firm a competitive advantage, but several studies note that a firm does not create value by *owning* resources, but only by managing them effectively (Barney & Arikan, 2001; Priem & Butler, 2001; Sirmon & Hitt, 2003; Sirmon et al., 2007). Narang and Kaur (2014) argue that the effective management of assets, inventory and capital can help a company to create value for shareholders.

These resources are measured using three measures, namely the working capital turnover ratio (WCTO), the inventory turnover ratio (ITO) and the asset turnover ratio (ATO) (Narang & Kaur, 2014). ATO measures the efficiency of assets in generating sales or revenues that a company generates. A company with a higher turnover ratio clearly performs better, since it is using its assets effectively to generate revenue or income. If a company can generate higher sales levels without increasing its assets, it creates value for shareholders (Narang & Kaur, 2014). The working capital management measure WCTO shows how effectively a firm creates value by indicating the solvency of a company and whether it can fund growth and create value. Singh (2015) believes that WCTO indicates how effectively working capital has been used in generating sales. According to Gill et al. (2010), firms may have an optimal level

of working capital that maximizes their value. Research shows that the management of working capital has a large impact on the value for shareholders (Agha, 2014; Mathuva, 2010; Samiloglu & Akgün, 2016; Ukaegbu, 2014)

Based on the literature, we considered efficient asset management as an important firm attribute to drive shareholder value, and also used WCTO, ATO and CTO to reflect on a firm's capability to efficiently use their assets in generating revenue or income.

Liquidity

Lower liquidity costs reduce a firm's cost of capital, and therefore increase its market value (Brockman & Chung, 2003). It may be assumed that a liquid firm may have higher (liquidity) costs to maintain a sound liquidity position. Saleem and Rehman (2011) explain that non-liquid firms may have trouble in continuing operations, but liquid firms (where the majority of assets are current assets) do not operate in an environment that generates a perfect return on investment. Therefore, liquidity is likely to have an impact on shareholder wealth creation.

In our study, the quick ratio was used as a proxy for liquidity to indicate whether a firm can cover its current debt without selling any inventory (Saleem & Rehman, 2011).

Research and development (R&D) expenditure

R&D expenditure is expected to be a determining factor for corporate growth and shareholder value creation (Narang & Kaur, 2014). The purpose of R&D is to stimulate innovation, improve the firm's productivity and earn a competitive advantage (Ferdaous & Rahman, 2017), and enhance the quality of products and return on investment. The question is whether the expenditure in R&D contributes to firm performance Ferdaous and Rahman (2017) studied pharmaceutical companies listed on the Bangladesh Stock Exchanges (2001 to 2015), testing firm performance against R&D expenditure, and found a positive, but non-linear, relationship between R&D and firm performance. Sougiannis (1994) found that R&D

expenditure may generate future returns; thus R&D may be seen as a hidden investment rather than an immediate expense. According to Narang and Kaur (2014, p. 8), '[a] successful R&D initiative allows a firm to go for new product development, improved methods and upgraded technology which leads to a secure market share as well as high economic profitability that ultimately generates more shareholder value'.

The most valuable contribution of this article is towards the literature regarding drivers of shareholder value. Different firm characteristics determine shareholder value creation of a firm and this article analyse these different firm-specific attributes, which may contribute to the value of shareholders. One can then assume that this specific independent variable will drive shareholder value in South African listed companies.

This article contributes to the literature in three important value creating areas of business, that is the market share of the company, how well a company manages its assets and do companies that invest in R&D add more value to their shareholders.

The first focus is the market share of the company and includes the listing age of firms. Contributing to existing literature and testing whether the age of a firm drive's shareholder value. Additionally to firm age, the size of a firm may also have an impact on the result of performance measures. Testing if bigger firms have greater performance for-, and bigger responsibility towards shareholders. Profitability and risk are other variables to take into consideration and the question arises whether it is true that firms with a higher profitability, generate more value for its shareholders? If it is true that a firms' success is tied to profitability, then understanding the effect of firm profitability on value added measures can assist with an approach for strategies and decisions by managers. In contrast to profit, one needs to know how the risk associated with a higher profitability influences shareholders' decision making.

The second focus is to contribute to literature regarding how efficient asset management and liquidity can have an impact on shareholder value. The last focus is R&D expenditure together with their effect on the dependent variables and in return shareholder value.

Hypothesis Development

The study analysed the measures of shareholder value (EVA, MVA and EPS) as dependent variables, along with seven independent variables (listing age of the firm, firm size, profitability of the firm, risk cluster, efficient asset management, liquidity of the firm, and R&D expenditure). We aimed to determine which of these different firm-specific attributes contribute to value for shareholders. To achieve the objectives of this study, 21 hypotheses were tested to evaluate firm attributes that might contribute to shareholder value creation:

- H_1 to H_3. Listing age has a statistically significant influence on a firm's EVA, MVA and EPS respectively.
- H_4 to H_6. Firm size has a statistically significant influence on a firm's EVA, MVA and EPS respectively.
- H_7 to H_9. Profitability has a statistically significant influence on a firm's EVA, MVA and EPS respectively.
- H_{10} to H_{12}. Efficient asset management has a statistically significant influence on a firm's EVA, MVA and EPS respectively.
- H_{13} to H_{15}. Risk has a statistically significant influence on a firm's EVA, MVA and EPS respectively.
- H_{16} to H_{18}. Liquidity has a statistically significant influence on a firm's EVA, MVA and EPS respectively.
- H_{19} to H_{21}. R&D has a statistically significant influence on a firm's EVA, MVA and EPS respectively.

Research Methodology

In this section, the sampling and data variables are discussed, followed by the statistical methods. The aim of this article is to test which factors drive shareholder value within the South African corporate sector. A quantitative secondary data analysis approach is followed.

The limitations of using secondary data, is that the data may not meet the objective of the study or, the data is not accurate for the intended study (Jansen van Vuuren, 2015). Another consideration is whether the secondary data used, is reliable and suitable for the study.

The data that was used in this article is the financial information taken from companies listed on the JSE. For a company to be listed on the JSE, it must comply with specific requirements and part of these requirements is the way in which the company reports its financial information. The data was obtained from IRESS, an online provider of financial data. This database is a trusted data source of financial information for South African listed companies and the reliability statement is supported by the fact that previous studies, requiring financial information from companies listed on the JSE, have also used IRESS as a data source (Bradfield & Gopi, 2016; Carstens & Freybote, 2018; Kwenda, 2017; Lambrechts & Roos, 2017; van Rensburg & Krige, 2018).

According to Walliman, 2017, some of the problems a researcher may face when using secondary data is locating and accessing the data, authenticating the sources, assessing credibility, gauging how representative they are and selecting methods to interpret it. The credibility of the data source is already explained, and as it is an online data source, it is easily accessible from any internet connection.

The initial sample consisted of the top 100 companies listed on the JSE, ranked by market capitalization, but companies with insufficient financial data were excluded from the analysis. Companies in the financial, banking and insurance sectors were also excluded, as their financial statements are structured differently and their ratios are not comparable to those of

other sectors (Greenblatt, 2006; Lambrechts & Roos, 2017). The final range of 35 companies makes the findings of this study relevant to most of the companies listed on the JSE, touching on a wide spectrum of shareholders' interests. All the financial data needed in the present study were obtained from IRESS (a reliable supplier of financial data) for a 19-year period ranging from 2000 to 2018. The final list of companies is given in Appendix A (the top100 companies, according to 2018 rankings, are not reported here due to space limitations, but are available from the authors upon request).

The dependent variables of this study, EVA, MVA and EPS, were analysed by change from one year to the next over 19 years. Firstly, various assumptions regarding multivariate analysis were tested. The normality of the variables in the regression analysis were assessed by applying descriptive statistics (skewness, kurtosis, and the Jarque-Bera statistical test for normality). To test for the presence of autocorrelation, the Durbin-Watson statistic test was performed. To test for multicollinearity among the independent variables, the Pearson's correlation coefficient matrix was used to detect and solve multicollinearity. The independent variables of this study, as identified in the literature discussion, were calculated as indicated in Table 1 (see Table 1).

Both the dependent and independent variables were calculated for each of the 19 years. EVA (Y_1), MVA (Y_2) and EPS (Y_3) were used as the dependent variables. The independent variables were the firm's listing age (X_1), the firm size (X_2), the profitability of the firm (X_3), the risk cluster (X_4), efficient asset management (X_5), the liquidity of the firm (X_6), and the firm's R&D expenditure (X_7). Therefore, this study aimed to test the relationship between the different independent variables on all three of the dependent variables.

Table 1. *Description of Dependent and Independent Variables*

(Total Income Investment ÷ Total Long-term Investment) x 100

Labels	Variable Name	Notation	Description
	Dependent variables		
Y_1	Economic Value Added	EVA	*NOPAT – Invested Capital (CI) x Weighted Average Cost of Capital (WACC)*
Y_2	Market Value Added	MVA	*Market Capitalization + Book Value of Debt – Economic Capital*
Y_3	Earnings per Share	EPS	*(Net Income – Preferred Dividends) ÷ End of Period Ordinary Shares Issued*
	Independent Variables		
X_1	Listing age	AGE	*2018 – (Year of Incorporation)*
X_2	Size		
	Sales	TS	*Total sales*
	Assets	TA	*Total assets*
	Market Capitalization	MC	*365 Days' Average Market Capitalization*
X_3	Profitability		
	Return on Total Assets	ROTA	*(Profit before Interest and Taxes (EBIT) – Total Profit Extraordinary Nature) ÷ Total Assets (excluding intangible assets) x 100*
	Return on Capital Employed	ROCE	*(Profit Attributable to Ordinary Shareholder ÷ Average Capital Employed) x 100*
	Return on Investment	ROI	*(Total Income Investment ÷ Total Long-term Investment) x 100*
	Operating Profit Margin on Sales	PM	$((Profit\ Before\ Interest\ and\ Tax\ (EBIT) - Total\ Profits\ Extraordinary\ Nature) \div Turnover) \times 100$
	Return on Equity	ROE	$(Profit\ After\ Taxation \div Total\ Owners\ Interest) \times 100$
X_4	Risk		
	Systematic Risk	BETA	$Covariance\ (R_i R_m \div Variance\ (Rm)$ $Where, R_i\ is\ the\ Return\ on\ Security\ i\ and\ Rm\ is\ the\ market\ return$
	Leverage Factor	LF	$(Profit\ After\ Taxation \div Total\ Owners\ Interest) \div ((Profit\ Before\ Interest\ And\ Tax\ (EBIT) - Total\ Profits\ Extraordinary\ Nature - Taxation) \div Total\ Assets)$
X_5	Asset Management		
	Assets Turnover Ratio	ATO	$Total\ Sales \div Fixed\ Assets$
	Working Capital Turnover Ratio	WCTO	$Total\ Sales \div (Current\ Assets - Current\ Liabilities)$
	Capital Turnover Ratio	CTO	$Total\ Sales \div Capital\ Employed$
	Inventory Turnover Ratio	ITO	$Net\ Sales \div Average\ Inventory$
X_6	Liquidity	QR	$Quick\ Assets \div Current\ Liabilities\ and\ Provisions$
X_7	Research and Development	R&D	*Dummy variable* $1 = R\&D\ Expenditure\ in\ Financial\ Statements$ $0 = No\ R\&D\ Expenditure\ in\ Financial\ Statements$

Source: Authors' own compilation

In order to determine the relationship and the predictive power of specific firm attributes on the shareholder value of a company, we used multivariate regression analysis. Regression analyses were also used by Biddle et al. (1997) to test whether EVA is more highly associated with returns and firm values than accrual earning. Chen and Dodd (2001) also used regression analysis to examine the value-relevance of three profitably measures. To analyse the results of companies listed on the JSE Securities Exchange South Africa, using market value added (MVA) as a proxy for shareholder value De Wet (2005) also used regression analysis. Dang et al. (2018) measured firm size in empirical corporate finance using regression models. Other studies using regression analysis include Gill et al. (2010); Ichsani and Suhardi (2015); Hall (2018); Lee (2014); Narang and Kaur (2014); Obeidat, 2020.

The firm-specific attributes employed as explanatory variables are described in Table 1. For the statistical analysis, an average was determined for all the variables over a period of 19 years, from 2000 to 2018. The independent (explanatory) variables representing firm-specific attributes, for each case, remained the same. The independent variables, firm size (X_2), the profitability of the firm (X_3), the risk cluster (X_4) and efficient asset management (X_5) had various proxies, as explained in the literature review. Three proxies representing firm size (total assets, total sales and market capitalization), five proxies to measure the profitability of a firm (ROTA, ROCE, ROI, ROE, PM), three measures of the ability of a firm to manage its assets effectively (ATO, WCTO and ITO), and two variables representing risk (the beta and the leverage factor) were used. For every shareholder value creation measure (the dependent variables), different regression models were presented. Each model representing one proxy of each independent firm-specific attribute resulted in 90 regression models for all three dependent variables, a total of 270 regression models. Each model represented different combinations of the independent firm-specific attribute proxies of size, profitability, efficient asset management and risk. Therefore, shareholder value creation equalled a function of

(Listing age, Size, Profitability, Risk, Asset management, Liquidity and R&D). The regression formula is the following:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \mu$$

where

Y is the shareholder value (EVA or MVA or EPS);

$X_1, X_2, \ldots X_7$ are the various firm-specific attributes (as defined in Table 1);

$\beta_1, \beta_2, \ldots \beta_7$ are coefficients of independent variables to be estimated;

α is the constant (the value of Y when the β of all independent variables is zero); and

μ is the error term which is used as a collective surrogate for all those variables that are omitted from the model but affect the dependent variable.

After the analysis of the different combination of regression models, the model with the most statistical significance (the model that maximizes the adjusted R^2) for each dimension of shareholder value was selected and analysed further. Applying the backward elimination method, firm attributes with non-statistical value were excluded, starting with the attribute with the lowest T-value. After analysing these results, a preferred independent variable could be established. The preferred independent variable was selected based on the significance of the overall independent variable, determined by the T-test, the adjusted R^2 value and the presence of serial correlation. Through the identification of the independent variable that best explained shareholder value creation, the main objective of the study was achieved: to determine the firm-specific attributes that drives value creation for shareholders.

Empirical Results

The empirical results deal firstly with the descriptive statistics and then with the results of the multivariate regression analysis of the various shareholder value creation measures. The section concludes with a summary of the results in respect of the hypotheses.

Table 2 . *Descriptive Statistics for the Variables of Age, Size and Profitability*

	Age (Years)	Size (R'm)			Profitability (%)				
	Listing Age	Total Sales	Total Assets	Market Cap	ROTA	ROCE	ROI	ROE	PM
Observations	35	35	35	35	35	35	35	35	35
Mean	29,1	45,63	70,76	71100,00	15,0	15,9	6021,1	20,7	4929,2
Median	21,0	23,06	23,56	22700,00	15,0	15,7	31,3	20,3	13,7
Maximum	73,0	349,00	765,00	390000,00	28,9	31,9	176360,8	44,2	115358,2
Minimum	9,0	1,88	2,07	5720,00	5,4	0,5	7,3	-0,2	2,5
Std. Dev.	21,1	65,08	144,00	103000,00	5,8	9,0	30114,9	11,5	21468,4
Skewness	1,0	3,3	3,7	1,9	0,7	0,2	5,4	0,1	4,5
Kurtosis	2,4	14,9	17,5	5,4	3,1	2,1	31,0	2,3	22,2
Jarque-Bera	6,0	270,0	387,6	29,4	3,2	1,4	1314,9	0,7	655,2
Probability	0,0	0,0	0,0	0,0	0,2	0,5	0,0	0,7	0,0

Source: Author's own compilation, research data available on request

Table 3. *Descriptive Statistics of the Variables Risk, Asset Management, Liquidity and Shareholder Value Measures*

	Risk		Asset Management (%)			Liquidity (%)	Shareholder Value Measures		
	Beta	**Leverage Factor (%)**	**ATO**	**WCTO**	**ITO**	**QR**	**EVA (Rand)**	**MVA (%)**	**EPS (Cent)**
Observations	35	35	35	35	35	35	35	35	35
Mean	0,8	2,2	15,3	14,9	10,8	1,1	829855,2	2,9	805,1
Median	0,7	1,3	5,3	7,8	8,4	1,0	419785,1	2,7	513,4
Maximum	1,5	18,3	106,6	229,5	46,8	3,6	18108651,0	6,6	3537,3
Minimum	0,3	0,1	1,1	-62,1	2,3	0,4	-6038062,0	1,1	22,9
Std. Dev.	0,3	3,1	26,6	48,9	8,6	0,6	4162566,0	1,4	820,5
Skewness	0,4	4,5	2,7	2,6	2,8	2,1	2,6	1,0	1,7
Kurtosis	2,1	24,0	9,0	12,4	11,0	9,0	11,1	3,4	5,7
Jarque-Bera	1,9	760,2	95,3	169,7	139,3	78,1	132,9	5,8	28,9
Probability	0,4	0,0	0,0	0,0	0,0	0,0	0,0	0,1	0,0

Source: Authors' own compilation, research data available on request

Descriptive statistics

We sampled a total of 35 companies for a period of 19 years, from 2000 to 2018, after excluding companies with missing data and companies in the financial sector from the original sample of 100 companies (see Appendix A). The descriptive statistics for the mean values of all the dependent variables (shareholder value measures) and independent variables (firm-specific attributes) are presented in Tables 2 and 3 (see Table 2 and 3). Skewness and kurtosis were used to measure the degree of symmetry and analyse the degree of presence of outliers in the distribution.

Observing the proxies for firm size (total sales, total assets and market capitalization), all three are skewed to the right, but market capitalization seems to be less skewed, albeit with a greater spread in the data (higher standard deviation). The Jarque-Bera test for normality shows that none of the three proxies for firm size are normally distributed. Analysis of the five proxies for profitability (ROTA, ROCE, ROI, ROE and PM) showed that three variables with a Jarque-Bera probability value higher than 0.05 seem to be normally distributed. ROTA displays moderate skewness and a mesokurtic distribution (Kurtosis = 3.1). Both ROCE and ROE seem to be platykurtic (Kurtosis < 3) and closer to a normal distribution, with Jarque-Bera probabilities of 2.1 and 2.3 respectively. The other two proxies (ROI and PM) are non-normally distributed and highly skewed. Evaluating risk, the beta seems to be more normally distributed than the leverage factor, and with little difference between the mean and median, the data of the beta seems to have a lower spread. None of the variables for efficient asset management or liquidity is normally distributed. The data provided for MVA showed signs of normal distribution, with a kurtosis of 3.4 and Jarque-Bera probability of 0.1 (higher than 0.05). The data indicate that MVA is not entirely normally distributed but is more skewed to the right.

To test whether there is multicollinearity between variables, the correlation between variables is presented in Table 4 (see Table 4).

Table 4. *Correlation Between All Variables (Test for Multicollinearity)*

	AGE	ATO	BETA	EPS	EVA	ITO	LF	L	MC	MVA	PM	ROCE	ROE	ROI	ROTA	Total Assets	Total Sales	WCTO
AGE	1,000	-0,016	-0,259	0,075	-0,116	-0,274	-0,222	0,047	-0,319	-0,011	0,041	0,104	0,143	-0,073	0,074	-0,265	-0,252	-0,102
ATO	-0,016	1,000	0,277	0,262	-0,174	-0,209	-0,150	0,128	-0,118	0,084	-0,085	0,085	0,062	0,580	0,124	-0,151	-0,180	-0,100
BETA	-0,259	0,277	1,000	0,576	0,137	-0,017	0,134	0,087	0,655	-0,127	-0,140	-0,295	-0,231	0,130	-0,201	0,594	0,538	-0,166
EPS	0,075	0,262	0,576	1,000	0,075	-0,181	-0,112	0,060	0,339	-0,118	-0,099	0,061	0,112	-0,155	0,100	0,229	0,214	-0,020
EVA	-0,116	-0,174	0,137	0,075	1,000	0,283	-0,284	-0,054	0,350	0,006	-0,025	0,011	0,002	-0,071	0,187	0,604	0,638	-0,116
ITO	-0,274	-0,209	-0,017	-0,181	0,283	1,000	0,072	-0,062	0,242	-0,043	-0,067	-0,171	-0,258	-0,114	-0,067	0,070	0,076	0,208
LF	-0,222	-0,150	0,134	-0,112	-0,284	0,072	1,000	-0,101	0,133	-0,091	-0,064	-0,180	-0,102	-0,115	-0,273	0,106	0,142	0,061
L	0,047	0,128	0,087	0,060	-0,054	-0,062	-0,101	1,000	-0,039	-0,085	-0,076	0,202	0,054	0,282	0,461	-0,067	-0,184	-0,129
MC	-0,319	-0,118	0,655	0,339	0,350	0,242	0,133	-0,039	1,000	0,139	-0,125	-0,239	-0,171	-0,106	-0,088	0,831	0,790	0,089
MVA	-0,011	0,084	-0,127	-0,118	0,006	-0,043	-0,091	-0,085	0,139	1,000	-0,131	0,568	0,582	-0,093	0,421	-0,001	0,036	0,047
PM	0,041	-0,085	-0,140	-0,099	-0,025	-0,067	-0,064	-0,076	-0,125	-0,131	1,000	-0,117	-0,079	-0,047	-0,117	-0,095	-0,100	-0,078
ROCE	0,104	0,085	-0,295	0,061	0,011	-0,171	-0,180	0,202	-0,239	0,568	-0,117	1,000	0,937	-0,063	0,689	-0,231	-0,240	-0,004
ROE	0,143	0,062	-0,231	0,112	0,002	-0,258	-0,102	0,054	-0,171	0,582	-0,079	0,937	1,000	-0,096	0,560	-0,152	-0,132	-0,044
ROI	-0,073	0,580	0,130	-0,155	-0,071	-0,114	-0,115	0,282	-0,106	-0,093	-0,047	-0,063	-0,096	1,000	0,106	-0,082	-0,127	-0,040
ROTA	0,074	0,124	-0,201	0,100	0,187	-0,067	-0,273	0,461	-0,088	0,421	-0,117	0,689	0,560	0,106	1,000	-0,115	-0,182	-0,110
Total Assets	-0,265	-0,151	0,594	0,229	0,604	0,070	0,106	-0,067	0,831	-0,001	-0,095	-0,231	-0,152	-0,082	-0,115	1,000	0,969	-0,103
Total Sales	-0,252	-0,180	0,538	0,214	0,638	0,076	0,142	-0,184	0,790	0,036	-0,100	-0,240	-0,132	-0,127	-0,182	0,969	1,000	-0,051
WCTO	-0,102	-0,100	-0,166	-0,020	-0,116	0,208	0,061	-0,129	0,089	0,047	-0,078	-0,004	-0,044	-0,040	-0,110	-0,103	-0,051	1,000

LF = Leverage Factor; L = Liquidity; MC = Market Capitalization

Source: Authors' own compilation, research data available on request

There seems to be no multicollinearity between the different variables. Only two sets of variables seem to correlate, namely total assets and market capitalization with a correlation of p = 0.831, and total assets and total sales with a correlation of p = 0.969. These independent variables are all proxies for firm size. Because each regression model includes only one proxy for each variable, choosing one regression model of best fit for each dependent variable, this correlation does not have a negative effect on the results of this study. This means that the results of each independent variable and their effect or predictive power over each dependent variable is not misleading, and probability values for the independent variables are reliable. The results of the analysis of the regression models for every shareholder value creation measurement are presented and discussed next.

The results of the impact of firm-specific attributes on EVA

The influence of different firm-specific attributes on EVA is shown in Table 5 (see Table 5). The impact of firm-specific attributes was analysed by evaluating different regression model combinations of surrogates for firm-specific attributes, such as size, profit, asset management and risk. After analysing the R^2 of each model, the model with the most significant statistical value was selected. The model that best explain the dependent variable EVA, with an adjusted R^2 of 59.35%, were age, total sales (as the proxy for size), ROTA (as the proxy for profit), leverage factor (as the proxy for risk) and ITO (as the proxy for asset management), liquidity, and R&D. There seems to be no autocorrelation between the variables, according to the Durbin-Watson test statistic of 1.678.

The firm-specific attributes age, R&D and liquidity seem to have no significant impact on shareholder value measures with EVA. Thus, we can conclude that the change in shareholder value of selected JSE-listed companies measured by EVA can be explained at a significant level (about 62.65%) by firm size (in terms of total sales), risk (in terms of leverage factor), profitability (in terms of ROTA), and efficient asset management (in terms of ITO).

Table 5. *Results of the Impact of Firm-specific Attributes (Independent Variable) on EVA (Dependent Variable)*

	Model 1	Model 2	Model 3	Model 4
Age	11522,05	10155,52		
Total_Sales	0,046284*	0,045638*	0,044931*	0,045387*
ROTA	197525,1**	195973,2**	195064,3**	173279,7**
Leverage	-434920,9**	-444839*	-457587,7*	-461155,6*
ITO	139582,5**	136013,8**	129842,7**	130699**
Liquidity	-527475,3	-469429,3	-474639,5	
R&D	-297914,1			
R-squared	0,677213	0,676218	0,673991	0,670445
Adjusted R-squared	0,593527	0,606836	0,617782	0,626505

*, ** and *** indicate a statistical significance at the 1%, 5% and 10% levels respectively.

The model represents the combinations of independent firm-specific attributes with the most statistical significance (the model that maximizes the adjusted R^2).

Source: Authors' own compilation, research data available on request

These results are in line with the findings of previous studies which reported that if the total sales of a firm increase, the firm has greater access to resources, and because of larger economies of scale the firm may reduce the production costs and increase return on capital, thereby increasing the value of shareholders (Narang & Kaur, 2014; Panigrahi et al., 2014). Our results imply that if total sales can be increased through effective use of total assets and inventory, the return on invested assets will be higher and more value will be added for the shareholders. It will be more valuable if the assets and inventory are funded with less debt, thereby reducing investment risk. The results imply that EVA can be enhanced by improving total sales through efficient asset and inventory management and reduced risk.

The results of the impact of firm-specific attributes on MVA

The results considering MVA as proxy for shareholder value differ slightly from those for EVA. These results are presented in Table 6 (see Table 6). They display a satisfactory Durbin-Watson statistic of 1.507.

The results of the analysed regression model of best fit suggest the same combination of firm-specific attributes as the EVA proxy of shareholder value, namely a firm's age, total sales as a proxy for size, ROTA as a proxy for profit, the leverage factor as a proxy for risk, ITO as a proxy for efficient asset management, liquidity and R&D. Although the combination of independent variables is the same as for EVA, the firm-specific attributes that are statistically significant differ slightly. The results indicate that at a 1% level of significance, profit in terms of ROTA best explains the variation in shareholder value measured by MVA. The size of a firm (represented as total sales) again shows a statistically positive impact (at a 1% level of significance) on shareholder value, but not as strong as with EVA. These results demonstrate that larger JSE-listed companies are better equipped to create shareholder value. MVA have two other firm-specific attributes that are significant predictors of changes in shareholder value, namely liquidity (at a 5% level of significance) and R&D (at a10% level of significance). These

Table 6. *Results of the Impact of Firm-specific Attributes (Independent Variable) on MVA (Dependent Variable)*

	Model 1	Model 2	Model 3	Model 4
Age	0,004542			
Total_Sales	0,00000000000873*	0,00000000000841*	0,00000000000756*	0,00000000000559*
ROTA	0,092442*	0,092816*	0,095691*	0,102168*
Leverage	-1,272622	-1,295052	-0,909748	
ITO	0,00791	0,007949		
Liquidity	-0,608146***	-0,593273***	-0,602702***	-0,671**
R & D	-0,81461***	-0,773623***	-0,862048**	-0,815281***
R-squared	0,552125	0,548227	0,532535	0,506884
Adjusted R-squared	0,43601	0,451418	0,451938	0,441135

*, ** and *** indicate a statistical significance at the 1%, 5% and 10% levels respectively.

The model represents the combinations of independent firm-specific attributes with the most statistical significance (the model that maximizes the adjusted R^2).

Source: Author's own compilation, research data available on request

firm specific attributes had significant negative coefficients, contradicting the hypothesized effect of liquidity and R&D on shareholder value with MVA as the proxy. This implies that JSE-listed companies investing more in R&D and higher liquidity reduced shareholder value. Our regression models confirm Brockman and Chung's (2003) claim that lower liquidity costs may reduce a firm's cost of capital, and that therefore less liquid firms have lower liquidity costs and reduced cost of capital, and higher market value. Our findings thus suggest that higher liquidity has a negative impact on shareholder wealth creation. Age showed no significant relationship with driving shareholder value. Unlike for EVA, the firm-specific attributes risk (leverage factor) and asset management (ITO) were found insignificant in respect of changes in shareholder value when regressed against MVA. The firm-specific attributes discussed above collectively contribute to 44.11% of the variation in MVA.

The results of the impact of firm-specific attributes on EPS

The results of the regression analysis of the accounting-based measure of shareholder value creation (EPS) are shown in Table 7 (see Table 7).

Table 7. *Results of the Impact of Firm-specific Attributes (Independent Variable) on EPS (Dependent Variable)*

	Model 1	Model 2	Model 3	Model 4	Model 5
Age	7,410843	7,285271	7,555615	7,850607	
Total_Assets	-0,000000431	-0,000000452			
ROI	-0,011897**	-0,011957**	-0,012086**	-0,011366**	-0,011968**
Beta	1519,001*	1504,531*	1378,095*	1395,895*	1261,626*
ATO	9,748107	9,994183***	10,87749**	10,66269**	11,44245**
Liquidity	92,79526	101,808	111,8728		
R & D	-38,04531				
R-Squared	0,518316	0,517919	0,514636	0,50871	0,471168
Adjusted R-Squared	0,393435	0,414615	0,430953	0,443205	0,41999

*, ** and *** indicate a statistical significance at the 1%, 5% and 10% levels respectively.
The model represents the combinations of independent firm-specific attributes with the most statistical significance (the model that maximizes the adjusted R^2).

Source: Author's own compilation, research data available on request

After analysis of the different regression models, the best regression model with an adjusted R^2 of 39.34% was further refined through the backward elimination method, firstly eliminating the firm-specific attribute with the lowest significant statistical value.

Three statistically insignificant firm specific attributes were eliminated, namely R&D, total assets (as proxy for size) and liquidity. Model 5, with an adjusted R^2 of 41.99% and a Durbin-Watson statistic of 2.24, was selected as the model with the most significant attributes which drive and explain shareholder value, as measured by EPS. No multicollinearity was found between the different variables.

Among the determinants of risk, beta seems to have a positive effect on shareholder value, which contradicts the hypothesized effect of risk on shareholder value (H_{15} posits that risk has a negative impact on shareholder value). Beta indicates the sensitivity of a firm's share price in relation to the market index; the regression analysis suggests that JSE-listed companies with higher volatility in share price create more value for shareholders. These results show that investors expect a higher return with higher volatility in share price to reward them for accepting higher risk. The regression analysis considering EPS as a proxy for shareholder value further show that firms can create additional value by managing fixed assets efficiently. ATO as a proxy for efficient asset management has a positive effect on shareholder value of a company, at a 5% level of significance, which means that those companies that use their assets best to generate sales add value for shareholders. Contrary to the positive effect of ATO, at a 5% level of significance, ROI demonstrated a significant negative effect on the creation of shareholder value (proxied as EPS). Therefore, as return on investment rises, the shareholder value is diluted, which also contradicts the hypothesis that a higher ROI generates more value for shareholders (H_9). Overinvestment is thus a value-reducing strategy.

Summary of results by hypothesis

The study investigates which firm-specific attributes drive shareholder value, proxied by two economic-based measure (EVA and MVA) and one accounting-based measure (EPS). The regression analysis revealed differences in the results for these three measures.

The data demonstrate that firm-specific attributes such as profitability, risk, efficient asset management, size, liquidity and R&D expenditure have a significant effect on shareholder value, as do the combination and the composition of firm-specific variables. Profitability was the only firm-specific attribute that displayed a significant influence for both the economic-based and the accounting-based measures on shareholder value, but the composition for each dimension differed. For instance, both EVA and MVA revealed ROTA to be the best proxy for profit, but according to EPS, ROI was the best proxy for profit to measure the influence on shareholder value. Both the economic-based dimensions, EVA and MVA, presented four variables that are significant regarding influence on shareholder value, but their combination differed. For EVA, the leverage factor, total sales, ROTA and ITO were the four firm-specific attributes that best described increased shareholder value. For MVA, the four firm-specific variables were ROTA, total sales, liquidity and R&D. There are three significant predictors of shareholder value as far as EPS is concerned, namely beta, ATO and ROI. In respect of all the 21 hypotheses, the results were mixed for each shareholder value creation measure. A summary of the hypothesis-related results is presented in Table 8 (see Table 8).

For H_4 and H_5, which relate to firm size, we found a significant influence for EVA and MVA (H_4 and H_5 were accepted), but no significant evidence of influence for EPS. The hypothesis on profitability can be accepted for all three measures of shareholder value, because they all showed evidence of the hypothesized relationship. However, ROI (the variable for profit) negatively affects shareholder value when EPS is used as a proxy for shareholder value. The hypothesis for efficient management of assets can be accepted for EVA and EPS, as they had a statistically significant influence on shareholder value. However, with MVA as the

shareholder value creation measure, efficient asset management had no significant influence on changes in MVA. The risk hypothesis posited that risk has have a significant influence on shareholder value, as was the case with the shareholder value measures, EVA and EPS, but interestingly, risk showed a significant positive influence with EPS.

Table 8. *Hypotheses: Testing Results*

No.	Hypothesis	Influence	Results
Listing Age			
$H_{1.}$	Listing age has a statistically significant influence on a firm's EVA.	+	Rejected
$H_{2.}$	Listing age has a statistically significant influence on a firm's MVA.	+	Rejected
$H_{3.}$	Listing age has a statistically significant influence on a firm's EPS.	+	Rejected
Size			
$H_{4.}$	Size has a statistically significant influence on a firm's EVA.	+	Accepted
$H_{5.}$	Size has a statistically significant influence on a firm's MVA.	+	Accepted
$H_{6.}$	Size has a statistically significant influence on a firm's EPS.	-	Rejected
Profitability			
$H_{7.}$	Profitability has a statistically significant influence on a firm's EVA.	+	Accepted
$H_{8.}$	Profitability has a statistically significant influence on a firm's MVA.	+	Accepted
$H_{9.}$	Profitability has a statistically significant influence on a firm's EPS.	-	Accepted
Efficient asset management			
$H_{10.}$	Efficient asset management has a statistically significant influence on a firm's EVA.	+	Accepted
$H_{11.}$	Efficient asset management has a statistically significant influence on a firm's MVA.	+	Rejected
$H_{12.}$	Efficient asset management has a statistically significant influence on a firm's EPS.	+	Accepted
Risk			
$H_{13.}$	Risk has a statistically significant influence on a firm's EVA.	-	Accepted
$H_{14.}$	Risk has a statistically significant influence on a firm's MVA.	-	Rejected
$H_{15.}$	Risk has a statistically significant influence on a firm's EPS.	+	Accepted
Liquidity			
$H_{16.}$	Liquidity has a statistically significant influence on a firm's EVA.	-	Rejected
$H_{17.}$	Liquidity has a statistically significant influence on a firm's MVA.	-	Accepted
$H_{18.}$	Liquidity has a statistically significant influence on a firm's EPS.	+	Rejected
Research and development			
$H_{19.}$	R&D has a statistically significant influence on a firm's EVA.	-	Rejected
$H_{20.}$	R&D has a statistically significant influence on a firm's MVA.	-	Accepted
$H_{21.}$	R&D has a statistically significant influence on a firm's EPS.	-	Rejected

Source: Authors' own compilation

Liquidity displayed a statistically significant negative influence on MVA (H_{17}) but did not have any significant impact on measures of EVA and EPS (H_{16} and H_{18}). There was no evidence that R&D (H_{19} and H_{21}) influenced shareholder value, but R&D did have a significant impact, at a 10% significance level, on MVA. Therefore, H_{20} is accepted.

Listing age (H_1, H_2 and H_3) was the only attribute that had no significant effect; these hypotheses were therefore rejected. We concluded that being an older or younger firm does not alter a firm's ability to maximize shareholder value, so listing age is not a significant predictor of shareholder value. Instead, value depends on better sales and effective asset management.

Conclusion

The objective of the present study was to identify firm-specific attributes that have a significant impact on the capabilities of listed South African companies to create shareholder value. From the literature, three shareholder value creation measurements were identified, namely EVA, MVA and EPS. Seven different firm-specific attributes were identified and some firm-specific attributes (size, profitability, risk and asset management) were proxied by more than one measure (e.g. size was proxied by total assets, total sales and market capitalization, to test different aspects of company size, namely assets, sales and capital). In total, 16 measures of firm-specific attributes were included to determine how corporate decision-makers should steer fundamental choices to create more shareholder value.

The leading limitation of this article is missing financial- or capital market data which forced the exclusion of certain companies from the list of companies to be analysed. Another limitation is when mergers or acquisitions took place between companies during the period under evaluation. These limitations and constraints perhaps do not affect the worth of the research work significantly.

Firm age was not a significant driver of shareholder value. This result confirms findings by Kakani and Kaul (2002), Malhotra and Singh (2007) and Sørensen and Stuart (2000). Shareholder value creation as measured by EVA revealed shareholder value creation by larger companies with higher profitability, lower risk and efficient asset management. Thus firms do not create value by owning assets, but only by managing assets effectively (Barney & Arikan,

2001; Priem & Butler, 2001; Sirmon & Hitt, 2003), allowing the firm to generate higher sales with the same level of assets, creating value for shareholders.

The MVA measure revealed increased shareholder value with larger and more profitable firms. The proxy for size, which had the most significant relationship with MVA, was total sales, which, according to Dang et al. (2018) reflects the product market. Larger firms have more access to resources, and because of larger economies of scale in financing and the product market, can reduce production costs and increase return on capital, and thus value for shareholders. The MVA metric also shows value is enhanced by firms with lower liquidity ratios and lower R&D investment. Interpreting the results of MVA as a shareholder value measurement suggests companies should use their assets effectively to create more sales and hold less working capital, thriving on a more aggressive working capital policy, and using assets to generate sales.

The EPS measure for shareholder value revealed that an accounting-based measure will show when companies add value for shareholders through lower profitability (measured by ROI), efficient asset management and higher risk. This result indicates that higher risk can guarantee more value for the investment. Therefore, investors who seek more risk can be rewarded by increased shareholder value. Managers should focus on using assets effectively rather than on profitability.

It should be considered that the Covid-19 pandemic might have a short-term effect on the empirical results but that the long-term effect will be limited. It is known that the quick spread of Covid-19 and restrictions on economic activities saw enormous impacts on economies and financial markets around the world. The long-term effect is still unknown, but researchers do believe that there is a comparison between the outburst of Covid-19 and the global financial crisis (GFC) and that lessons can be learned from the GFC of 2008 (Brada, Gajewski & Kutan, 2021; Chen & Yeh, 2021; Foroni, Marcellino & Stevanovic, 2021). Chen and Yeh (2021) tested the reaction of industries to both the GFC of 2008 and the Covid-19 pandemic and found that stock performance of most industries recovered from the negative impacts of both events following quantitative easing (QE) announcements. The South African

Reserve Bank did make a QE announcement during 2020 to help industries to recover from the effects of Covid-19 (Lawlor, 2020).

It is believed that because the data used to compute the empirical results of the present study is data from 2000 till 2018 and therefore incorporate the impact of the global financial crisis in the results and with the help of QE announcements in South Africa, the empirical results will still be relevant after the Covid-19 pandemic. It is also anticipated that the impact of R&D on shareholder value might increase. We did find that the R&D did not have a significant effect on shareholder value creation, and this might change after the pandemic as companies need to find more innovative ways to conduct and continue business (Li, Farmanesh, Kirikkaleli & Itani).

The findings of this study can help financial managers to maximize firm value for shareholders in line with agency theory for corporate governance by showing managers that the three main firm-specific attributes they must focus on to create shareholder value are risk, total sales and asset management, and especially managing of assets to create more sales for better current and future performance. These results can assist fund managers regarding a firm's ability and future likelihood to create superior shareholder value through strategic and tactical investment decisions; for example, fund managers should focus on firms which manage their assets efficiently to generate more value. Firm-specific attributes affect specific shareholder value measures, helping fund managers to make decisions; for example, fund managers using EPS as a proxy for shareholder value creation might invest in companies with a higher beta factor, efficient asset turnover and lower ROI; those using MVA would look at ROTA, higher sales and companies which invest less in working capital and R&D; those using EVA would invest in companies with more leverage and a higher ROTA, total sales and inventory turnover. The study contributes to the literature on different shareholder value measurements for different firm-specific attributes that add shareholder value and especially filling the gap in the literature regarding drivers of shareholder value.

Further research avenues can be explored by expanding the research to include more shareholder value creation measures, different economic cycles, as well as further analysis and comparison of specific industries.

To conclude, a firm's success in creating shareholder value is linked to firm-specific attributes, so understanding the effect of those attributes on shareholder value can assist in developing an approach for managers to optimize strategies and decision-making.

References

Agha, H. (2014). Impact of working capital management on profitability. *European Scientific Journal, 10*(1). https://eujournal.org/index.php/esj/article/view/2568

Barney, J. B., & Arikan, A. M. (2001). The resource-based view: Origins and implications. In M. A. Hitt, R. E. Freeman, & J. S. Harrison, J.S. (Eds.), *The Blackwell handbook of strategic management* (pp. 124–188). Wiley-Blackwell.

Berthon, P., Pitt, L., Ewing, M., & Carr, C. L. (2002). Potential research space in MIS: A framework for envisioning and evaluating research replication, extension, and generation. *Information Systems Research, 13*(4), 416–427. https://dx.doi.org/10.1287/isre.13.4.416.71

Biddle, G. C., Bowen, R. M., & Wallace, J. S. (1997). Does EVA ® beat earnings? Evidence on associations with stock returns and firm values. *Journal of Accounting and Economics, 24*(3), 301–336. https://EconPapers.repec.org/RePEc:eee:jaecon:v:24:y:1997:i:3:p:301-336

Bititci, U. S., Martinez, V., Albores, P., & Parung, J. (2004). Creating and managing value in collaborative networks. *International Journal of Physical Distribution & Logistics Management, 34*(3/4), 251–268. https://doi.org/10.1108/09600030410533574

Bradfield, D., & Gopi, Y. (2016). A note of the predictive power of the variance risk premium: South African evidence benchmarked against the USA. *Studies in Economics and Econometrics, 40*(2), 53-70. https://hdl.handle.net/10520/EJC193296

Brada, J. C., Gajewski, P., & Kutan, A. M. (2021). Economic resiliency and recovery, lessons from the financial crisis for the COVID-19 pandemic: A regional perspective from Central and Eastern Europe. *International Review of Financial Analysis*, *74*, 101658. https://doi.org/10.1016/j.irfa.2021.101658

Brockman, P., & Chung, D. Y. (2003). Investor protection and firm liquidity. *The Journal of Finance, 58*(2), 921–937. https://doi.org/10.1111/1540-6261.00551

Carstens, R., & Freybote, J. (2018). The Impact of Introducing REITs on Foreign Investments and Liquidity in South Africa. *Journal of Real Estate Literature, 26*(1), 103-128.

Chari, M. D., & Banalieva, E. R. (2015). How do pro-market reforms impact firm profitability? The case of India under reform. *Journal of World Business, 50*(2), 357–367. https://doi.org/10.1016/j.jwb.2014.05.004

Chen, H. C., & Yeh, C. W. (2021). Global financial crisis and COVID-19: Industrial reactions. *Finance Research Letters*, *42*, 101940. https://doi.org/10.1016/j.frl.2021.101940

Chen, S., & Dodd, J. L. (1997). Economic value added (EVA): An empirical examination of a new corporate performance measure. *Journal of Managerial Issues, 9*(3), 318–333. https://www.jstor.org/stable/40604150

Chen, S., & Dodd, J. L. (2001). Operating income, residual income and EVA™: Which metric is more value relevant? *Journal of Managerial Issues*, 65–86. https://www.jstor.org/stable/40604334

Chun, H., Kim, J. W., Morck, R., & Yeung, B. (2008). Creative destruction and firm-specific performance heterogeneity. *Journal of Financial Economics, 89*(1), 109–135. RePEc:eee:jfinec:v:89:y:2008:i:1:p:109-135

Coad, A., Holm, J. R., Krafft, J., & Quatraro, F. (2018). Firm age and performance. *Journal of Evolutionary Economics, 28*(1), 1–11. https://doi.org/10.1007/s00191-017-0532-6

Dang, C., Li, Z. F., & Yang, C. (2018). Measuring firm size in empirical corporate finance. *Journal of Banking & Finance, 86*, 159–176. https://doi.org/10.1016/j.jbankfin.2017.09.006

De Villiers, J. U., & Auret, C. J. (1998). A comparison of EPS and EVA as explanatory variables for share price. *Studies in Economics and Econometrics*, *22*(2), 47-63. https://doi.org/10.1080/03796205.1998.12129124

De Wet, J.H. (2005). EVA versus traditional accounting measures of performance as drivers of shareholder value – A comparative analysis. *Meditari Accountancy Research, 13*(2), 1–16. https://doi.org/10.1108/10222529200500009

Erasmus, P. (2008). The relative and incremental information content of the value-based financial performance measure Cash Value Added (CVA). *Management Dynamics: Journal of the Southern African Institute for Management Scientists*, *17*(1), 2-15. https://hdl-handle-net.uplib.idm.oclc.org/10520/EJC69734

Ferdaous, J., & Rahman, M. M. (2017). The effects of research and development expenditure on firm performance: An examination of pharmaceuticals industry in Bangladesh. *Business & Entrepreneurship Journal, 6*(2), 1–20. RePEc:spt:busent:v:6:y:2017:i:2:f:6_2_1

Foroni, C., Marcellino, M., & Stevanovic, D. (2020). Forecasting the Covid-19 recession and recovery: Lessons from the financial crisis. *International Journal of Forecasting*. https://doi.org/10.1016/j.ijforecast.2020.12.005

Gill, A., Biger, N., & Mathur, N. (2010). The relationship between working capital management and profitability: Evidence from the United States. *Business and Economics Journal, 10*(1), 1–9. https:// doi.org/10.20409/berj.2016217492

Greenblatt, J. (2006). *The little book that beats the market*. Wiley.

Hall, J. H. (2013). Toward improved use of value creation measures in financial decision-making. *Journal of Applied Business Research (JABR), 29*(4), 1175–1188. https://doi.org/10.19030/jabr.v29i4.7924

Hall, J. H. (2016). Industry-specific determinants of shareholder value creation. *Studies in Economics and Finance, 33*(2), 190–208. https://doi.org/10.1108/SEF-08-2014-0155

Hall, J. H. (2018). Value creation measures: An industry-based study. *International Journal of Productivity and Performance Management, 67*(2), 426–444. https://doi.org/10.1108/IJPPM-08-2016-0178

Ichsani, S., & Suhardi, A. R. (2015). The effect of return on equity (ROE) and return on investment (ROI) on trading volume. *Procedia—Social and Behavioral Sciences, 211*, 896–902. https://doi.org/10.1016/j.sbspro.2015.11.118

Jansen van Vuuren, L. (2015). *Assessing the impact of regulatory changes on the role of risk management in insurance companies* (Doctoral dissertation, University of Pretoria). http://hdl.handle.net/2263/52985

Jónsson, B. (2007). Does the size matter?: the relationship between size and profitability of Icelandic firms. *Bifröst Journal of Social Science Working Paper, 1, 43-55.* https://skemman.is/bitstream/1946/7752/1/bjss-vol1-2007.pdf#page=43

Kakani, R. K., & Kaul, M. (2002). *Firm performance and size in liberalized era: The Indian case*. XLRI Jamshedpur School of Business Working Paper, (2002–06). https://papers.ssrn.com/sol3/papers.cfm?abstract_id=905001

Kwenda, F. (2017). Working Capital Investment and Firm Value Relationship: A Non-Linear Perspective. *Journal of Insurance and Financial Management, 3*(4), 44-65.

Lambrechts, H., & Roos, M. (2017). Applying Joel Greenblatt's value investment strategy to the Johannesburg Stock Exchange. *Management Dynamics: Journal of the Southern African Institute for Management Scientists, 26*(1), 2–15. https://hdl.handle.net/10520/EJC-827f45e6e

Lawlor, P (2020, March 25). QE comes to SA as Reserve Bank steps in to provide liquidity to the market. *Investec.* https://www.investec.com/en_za/focus/economy/quantitative-easing-comes-to-sa.html

Lee, J. (2009). Does size matter in firm performance? Evidence from US public firms. I*nternational Journal of the Economics of Business, 16*(2), 189–203. https://doi.org/10.1080/13571510902917400

Lee, S. (2014). The relationship between growth and profit: Evidence from firm-level panel data. *Structural Change and Economic Dynamics, 28*, 1–11. https://doi.org/10.1016/j.strueco.2013.08.002

Li, Z., Farmanesh, P., Kirikkaleli, D., & Itani, R. (2021). A comparative analysis of COVID-19 and global financial crises: evidence from US economy. *Economic Research-Ekonomska Istraživanja*, 1-15. https://doi.org/10.1080/1331677X.2021.1952640

Maditinos, D. I., Šević, Ž., & Theriou, N. G. (2009). Modelling traditional accounting and modern value-based performance measures to explain stock market returns in the Athens Stock Exchange (ASE). *Journal of Modelling in Management, 4*(3), 182–201. https://doi.org/ 10.1108/17465660911006431

Malhotra, P., & Singh, B. (2007). Determinants of internet banking adoption by banks in India. *Internet Research, 17*(3), 323–339. https://doi.org/10.1108/10662240710758957

Mathuva, D. M. (2010). The influence of working capital management components on corporate profitability: A survey on Kenyan listed firms. *Research Journal of Business Management, 4*(1), 1–11. https://doi.org/10.3923/rjbm.2010.1.11

McKinsey and Company, Koller, T., Goedhart, M. H., & Wessels, D. (2015). *Valuation: Measuring and managing the value of companies* (6th ed.). Wiley.

Narang, S., & Kaur, M. (2014). Impact of firm-specific attributes on shareholder value creation of Indian companies: An empirical analysis. *Global Business Review, 15*(4), 847–866. https://doi.org/10.1177/0972150914543422

Obeidat, M. I. (2020). *Accounting versus economic based measures of performance and the share market value: The evidence of the industrial listed firms at Abu Dhabi Stock Exchange.* ISSN: 1109-9526, E-ISSN: 2224-2899

Panigrahi, S. K., Zainuddin, Y., & Azizan, A. (2014). Comparing traditional and economic performance measures for creating shareholder's value: A perspective from Malaysia. *International Journal of Academic Research in Accounting, Finance and Management Sciences, 4*(4), 280–289. http://dx.doi.org/10.6007/IJARAFMS/v4-i4/1345

Pástor, Ľ., & Pietro, V. (2003). Stock valuation and learning about profitability. *The Journal of Finance*, *58*(5), 1749–1789. https://doi.org/10.1111/1540-6261.00587

Peixoto, S. M. (2002). Economic value added (R)-application to Portuguese public companies. http://dx.doi.org/10.2139/ssrn.302687

Priem, R. L., & Butler, J. E. (2001). Is the resource-based "view" a useful perspective for strategic management research? *Academy of Management Review, 26*(1), 22–40. https://doi.org/10.2307/259392

Saleem, Q., & Rehman, R. U. (2011). Impacts of liquidity ratios on profitability (Case of oil and gas companies of Pakistan). *Interdisciplinary Journal of Research in Business, 1*(7), 95–98. https://journaldatabase.info/articles/impacts_liquidity_ratios_on.html

Samiloglu, F., & Akgün, A. İ. (2016). The relationship between working capital management and profitability: Evidence from Turkey. *Business and Economics Research Journal, 7*(2), 1–14. https://doi.org/10.20409/berj.2016217492

Shumway, T. (2001). Forecasting bankruptcy more accurately: A simple hazard model. *The Journal of Business, 74*(1), 101–124. http://dx.doi.org/10.1086/209665

Singh, V. (2015). Significance of working capital turnover ratio: A case study of BHEL and Crompton Greaves. *International Journal of Management (IJM), 6*(3), 1–7.

Sirmon, D. G., & Hitt, M. A. (2003). Managing resources: Linking unique resources, management, and wealth creation in family firms. *Entrepreneurship Theory and Practice, 27*(4), 339–358. https://doi.org/10.1111/1540-8520.t01-1-00013

Sirmon, D. G., Hitt, M. A., & Ireland, R. D. (2007). Managing firm resources in dynamic environments to create value: Looking inside the black box. *Academy of Management Review, 32*(1), 273–292. https://doi.org/10.5465/AMR.2007.23466005

Sørensen, J. B., & Stuart, T. E. (2000). Aging, obsolescence, and organizational innovation. *Administrative Science Quarterly, 45*(1), 81–112. https://doi.org/10.2307/2666980

Sougiannis, T. (1994). The accounting based valuation of corporate R&D. *Accounting Review*, 44–68. http://www.jstor.org/stable/248260

Stewart, S. (1993). *The Stern Stewart Performance 1000 Database Package: Introduction and documentation*. Stern Stewart Management Services.

Tsuji, C. (2006). Does EVA beat earnings and cash flow in Japan? *Applied Financial Economics, 16*(16), 1199-1216. https://doi.org/10.1080/09603100500447537

Ukaegbu, B. (2014). The significance of working capital management in determining firm profitability: Evidence from developing economies in Africa. *Research in International Business and Finance, 31*, 1–16. https://doi.org/10.1016/j.ribaf.2013.11.005

Van der Poll, H. M., Booyse, N. J., Pienaar, A. J., Büchner, S., & Foot, J. (2011). An overview of the implementation of Economic Value Added (EVA™) performance measures in South Africa. *Southern African Business Review, 15*(3), 122–141. https://www.ajol.info/index.php/sabr/article/view/76408

van Rensburg, C. J., & Krige, J. (2018). Paying the high price of active management: a new look at unit trust fees. *Studies in Economics and Econometrics, 42*(1), 23-40.

Varaiya, N., Kerin, R. A., & Weeks, D. (1987). The relationship between growth, profitability, and firm value. *Strategic Management Journal, 8*(5), September-October, 487–497. https://doi.org/10.1002/smj.4250080507

Venugopal, M., Ravindar Reddy, M., & Bhanu Prakash Sharma, G. (2018). Shareholder Value Creation: A Review of the Theoretical and Empirical Literature. *Asia Pacific Journal of Management Research and Innovation, 14*(3-4), 74-80. doi:10.1177/2319510X18817189

Walliman, N. (2017). *Research methods: The basics*: Routledge.

West, T., & Worthington, A. C. (1999). The usefulness of economic value-added in the Australian context. *Accounting, Accountability and Performance*, 73-90. https://eprints.qut.edu.au/2570/