“Internal determinants of financial performance among listed food supermarkets in the South African economy”

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INTERNAL DETERMINANTS OF FINANCIAL PERFORMANCE AMONG LISTED FOOD SUPERMARKETS IN THE SOUTH AFRICAN ECONOMY

Abstract

This study aims to examine the internal determinants of financial performance of food supermarkets listed on the South African stock exchange. Food supermarkets play an integral role in socio-economic development of the country. The study employed an econometric approach utilizing fixed effect panel data. Drawing information from audited financial statements, data were gathered from four major listed food supermarkets in South Africa covering the period from 1994 to 2022, resulting in a total of 116 observations over 29 years. The robust longitudinal statistics obtained from balanced data revealed a significant positive correlation between equity financing, size of corporate governance, and current debt with financial performance, as measured by sales revenue at 0.0000, 0.054, and 0.000 significance levels, respectively. The findings indicate that as these variables increase, the financial performance of the studied food supermarkets (Shoprite, Woolworths, Spar, and Pick n Pay) also increases. Conversely, a negative and significant relationship is noted between company age, current assets, and financial performance at significance levels of 0.007 and 0.002, respectively. This suggests that as these variables increase, financial performance will decrease. As per the research findings, it is imperative for supermarkets to uphold a well-rounded blend of equity and debt and adopt inventive business approaches as they mature to improve financial outcomes. Therefore, the study proposes a framework focusing on internal factors that impact the financial performance of listed food supermarkets in South Africa.

Keywords financial performance, listed food supermarkets, internal determinants, South African economy, stock exchange, fixed effect panel data

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INTRODUCTION

Corporate financial performance has emerged as a significant topic in corporate finance. It covers a company's financial state over a particular period, measured by indicators such as capital ratios, liquidity, solvency, profitability, shareholders return, and risk management. Financial performance reflects a company's ability to manage and preserve its limited resources. However, South African listed food supermarkets are struggling to maintain high financial performance standards due to operational complexities, weak corporate governance, and inadequate regulatory oversight. They face challenges with long-term impacts such as the climate change and global warming, along with economic shocks like the United States financial crisis of 2008, conflicts in Russia and Ukraine, and the ongoing Middle East war. The unforeseen obstacles presented by the COVID-19 pandemic further compound these challenges (Country-Commercial-Guide, 2024). Likewise, recent accounting scandals in South Africa, including the

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Spa Group Scandal in 2022, Sasol LCCP scandal in 2019, EOH Holdings scandal in 2018, VBS Bank Scandal in 2018, Tongaat Hulett scandal in 2018, and Steinhoff international scandal in 2017, have cast doubts on the credibility of companies (Obagbuwa et al., 2021; Manyane, 2022). Consequently, these scandals have eroded consumer trust and confidence in the accuracy of financial reports, leading to decreased investor support. Nevertheless, financial reports remain crucial for making informed financial decisions. They provide insights into management's use of resources to generate profits and create value for shareholders (Weygandt et al., 2019).

1. LITERATURE REVIEW AND HYPOTHESES

In the current study, the theoretical framework explores the relationship between internal factors and the financial performance of listed food supermarkets in South Africa. This investigation is guided by two main theories: financial analysis theory and agency theory. Financial analysis theory involved a structured approach to assess information derived from financial statements. Key concepts within this theory included: Current ratio, Current debt, Equity Firm age, and Corporate governance size. Ratio analysis, in general, involves the calculation and examination of various financial ratios such as liquidity ratios, profitability ratios, and debt ratios. These ratios offer insights into a company's past performance and future financial outlook (Weygandt et al., 2019). Further to that, the agency theory was utilized. Agency theory addresses the agency problem arising from potential conflicts of interest between shareholders and managers. Managers are entrusted with the responsibility to efficiently manage company operations, thereby improving its financial performance and maximizing shareholder returns. However, the agency problem emerges when there is a misalignment of objectives, leading managers to prioritize their interests over those of shareholders. This can result in managers disregarding financially viable projects as perceived by shareholders (Rozeff, 1982). Therefore, the agency theory provided an ideal framework for the present study, enabling an exploration of the correlation between the size of corporate governance and company financial performance.

Food supermarkets play a critical role in the South African economy, providing essential products necessary for daily living to households and contributing to job creation. Through their supply chain, local investors procure both locally produced and internationally sourced goods, distributing them to local businesses and households. Food supermarkets have the potential to bolster the country's export capacity, thereby augmenting foreign exchange earnings, stimulating job creation, facilitating technology transfer, and fostering overall economic growth within the nation. There are four primary channels through which local to foreign companies can operate, such as: imitation, competition, labor mobility, and linkage. Imitation entails a learning by observation approach, wherein local supermarkets enhance efficiency by emulating strategies employed by multinational counterparts, thereby engendering competition within the domestic supermarket landscape (Wang & Blomström, 1992). This means that domestic supermarkets are compelled to optimize existing resources and innovate new systems.

However, the South African economy reportedly faces a slowdown, attributed to various factors (ADB, 2023) resulting in substantial pressure and abnormal operations. Reflecting on the political transition of 1994 in South Africa, this period precipitated significant changes in economic structures, prompting divergent reactions among different groups, with some celebrating newfound economic opportunities while others expressing concerns about potential capital losses. Historically, the South African formal market was designed to serve the white population exclusively, while informal outlets were limited to townships and rural areas (Das Nair, 2020). This transformation influenced the management approach for businesses. Economic challenges further continued, as reported during the 2008 United States financial crisis, which worsened inequalities as food prices soared, particularly affecting marginalized groups (ADB, 2023). South Africa also noted a decline in the proportion of packaged grocery products distributed in supermarkets, from 69.7% in 2003 to 65.2% in 2017 (Das Nair, 2020).

Furthermore, in 2020, reports indicated a reduction in internal trade within Africa due to trade barriers imposed by governments (Pasara & Diko, 2020). The retail sector is also facing challenges related to poor infrastructure, including insufficient transportation and communication networks (Geda & Yimer, 2023). Varying regulations related to food safety and standards make compliance difficult for supermarket businesses in the South African economy. A dozen years later, the global community, including South Africa, faced the challenges of the COVID-19 pandemic and conflicts between Russia and Ukraine, which further exacerbated the economic challenges in the country (ADB, 2023). Despite numerous challenges faced by companies in South Africa, the previous studies on supermarkets are primarily concentrated within the regional blocs of East Asia, Europe, and North America, with limited participation from South Africa and different methodologies (Baldwin, 2012; Foster-McGregor et al., 2015). Studies by Das Nair within the South African supermarket industry have not specifically targeted food supermarkets but rather the retail industry in general (Das Nair, 2018; Das Nair & Dube, 2016).

Measuring financial performance is a complicated process whether you are using historical (accounting) information or forward-looking information (market). However, there is a current debate that using market measures provide relevant information than accounting information because it can still be manipulated by managers (Alexander & Buchholz, 1978; Vance, 1975). This study contends that the notion of rendering accounting ineffective due to the actions of a few individuals who fail to uphold their assigned roles by shareholders is flawed. The integrity of accounting persists notwithstanding human errors and dishonesty. Organizations exhibiting strong corporate governance should be acknowledged and rewarded for their commendable efforts. If accounting were truly irrelevant due to human errors and dishonesty, companies would not continue to report their financial transactions. Therefore, this study advocates for recognizing the positive role of accounting in society. Accounting information retains its value when preparers adhere precisely to internal controls and accounting principles and standards, as stated by Fitrios (2016) and Rashid and Jaf (2023). Furthermore, financial reports of major corporations, such as listed food supermarkets, undergo auditing before publication in the public domain. This process subjects them to scrutiny by a range of stakeholders, including independent analysts, commentators, and rating agencies. There are various accounting metrics to measure financial performance, which may include profitability ratios and shareholder returns. In this study, sales revenue is employed as a financial performance measure for listed food supermarkets in South Africa. Sales revenue offers comparatively more informative insights into the performance of companies, particularly supermarkets that adhere to a growth-focused strategy (Huang et al., 2015; Festus & Ayoola, 2022).

Company age denotes the duration since a company's establishment, development, and survival. Company age is presumed to impact its operations. A longer company lifespan implies greater exposure to the market. However, if company age is mismanaged, it can work against the company. It is advisable for older companies to periodically review their products and relevance over time (Fitranita et al., 2023). There is a perspective suggesting that younger companies experience more robust performance growth compared to older ones (Santarelli & Tran, 2017). However, age confers certain advantages, as mature companies may possess better resources for innovation, proactiveness, and risk-taking due to their established routines, structures, and processes. Conversely, younger companies might leverage fresh market insights and demonstrate greater adaptability, enabling them to capitalize on new entrepreneurial opportunities, as highlighted by (Van de Ven, 1986). Thus, they may achieve superior growth outcomes compared to their older counterparts. There is scientific evidence of a positive correlation between the company's financial performance and its age (Ramasamy et al., 2005; Ganda, 2021).

Equity financing involves business individuals investing their personal funds into their businesses (Githire & Muturi, 2015). Equity financing is defined as the disparity between a business's total assets and total liabilities (Muturi & Njeru, 2019). Equity financing encompasses various elements such as retained profits, reserves, and capital contributions from shareholders (Njagi et al., 2017). This form of financing enables companies to re-

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tain full control, with shareholders responsible for ensuring efficient resource allocation, thus enhancing financial performance (Githire & Muturi, 2015). Research observes that businesses utilizing equity financing tend to exhibit a positive correlation with performance, attributed to the lower risk associated with equity financing due to the absence of fixed loan repayments (Njagi et al., 2017). This positive performance is largely linked to the direct control exerted by equity holders in their business (Githire & Muturi, 2015). Additionally, empirical findings from various studies support the notion of a positive relationship between equity financing and the financial performance of businesses (Chepkemoi, 2013; Githaigo & Kabiru, 2015; Muturi & Njeru, 2019).

Working capital management involves the strategic oversight of four key components within a company's current assets and liabilities. These components encompass the management of the inventory holding period, accounts receivable period, accounts payable period, and the cash conversion cycle. In essence, working capital management entails the efficient administration of these elements to optimize the company's liquidity, operational efficiency, and financial performance (Afrifa, 2013). In contrast to the traditional belief of a negative relationship between working capital management and company performance, several theories suggest otherwise. A high level of investment in current assets can be negatively related to company profitability (Javid & Zita, 2014; Asaduzzaman & Chowdhury, 2014). However, a study conducted in Southeast Asia by Zariyawati et al. (2009) revealed a positive association between working capital management and financial performance. They further demonstrated that reducing the cash conversion period leads to higher profits. Similarly, studying companies listed on the Thai stock market, Napompech (2012) found that profitability is enhanced by speeding the cash recovery from customers and improving cash sales. Other studies from developing countries found a positive link between working capital management and company profitability (Le et al., 2018; Kasozi, 2017). Specifically, while Le et al.'s (2018) study was conducted from Ho Chi Minh Stock Exchange (HOSE), Kasozi's (2017) study focused on the manufacturing sector in South Africa. These findings challenge the traditional notion and suggest that effective working capital management can indeed contribute positively to company performance.

Prior to 1994, the South African economy operated under complete exclusivity for certain racial groups, leading to heightened scrutiny of corporate governance within the present economic landscape. This scrutiny extends beyond the confines of individual companies and reflects broader societal expectations for a substantial transformation in the industry. The aspiration is for South Africa to evolve into an inclusive economic environment, as highlighted by (Das Nair, 2020). Corporate governance is about everything that affects how a company works in all its parts (Turnbull, 1997). Corporate governance is also about ensuring that everyone who cares about the company is treated (Ehikioya, 2009). Recent global events, such as the scandals at Wells Fargo and Equifax, underscore the enduring scrutiny faced by prominent U.S. corporations. These incidents join a historical narrative marked by notable crises, including the 2008 financial meltdown sparked by major bank failures. Reflecting on the early 2000s, scandals involving Enron, WorldCom, Tyco, and Qwest precipitated their downfall. In the aftermath, policymakers confronted the efficacy of corporate governance frameworks, prompting calls for delicate regulation and legal oversight to control corporate conduct (Bhagat & Bolton, 2019).

In places where economies are still growing, like emerging countries, corporate governance is getting more important. This is because companies are getting bigger, hiring more people, selling things to communities, and doing other important tasks like reporting taxes. What is really surprising is how often we hear about corporate scandals in the news, usually blamed on bad leadership. These scandals happen almost every day. Enhanced corporate governance within companies correlates with improved financial performance, thereby generating broader benefits for society as a whole otherwise, people's hopes about the company can vanish quickly, and there can be job losses, as mentioned by Mallin (2016). The relationship between corporate governance and company financial performance is inconclusive. However, many studies present evidence of a negative correlation between board size and company financial performance such as those conducted by Bhagat and Black (1999) and Paniagua et al. (2018).

The agency theory postulates that by implementing robust corporate governance mechanisms, the alignment of interests between shareholders (principals)

and management (agents) can be achieved, ultimately contributing to enhanced company performance (Rozeff, 1982). Kibtiyah and Maryanti's (2022) study of 11 retail companies listed on the IDX reveals that good governance can indeed influence company performance. Similarly, Ongore and Kusa (2013) show that governance significantly affects the financial performance of commercial banks in Kenya. However, based on the researcher's comprehension, the relationship between financial performance and CG remains unexplored within the context of listed food supermarkets in South Africa, highlighting a gap that this study aims to address.

After analyzing numerous empirical research studies, it is evident that no scientific evidence has been found regarding the internal determinants influencing the financial performance of food supermarkets in South Africa. This emphasizes the importance of conducting this study. Such a study is vital for listed food supermarkets, as it can offer valuable insights into the factors that genuinely impact their financial performance.

The hypotheses of the study are:

H_1: *There is a relationship between company age and financial performance.*

H_2: *There is a relationship between equity financing and financial performance.*

H_3: *There is a relationship between current assets and financial performance.*

H_4: *There is a relationship between current debts and financial performance.*

H_5: *There is no relationship between corporate governance size and financial performance.*

2. RESEARCH METHODOLOGY

This study employed an explanatory approach utilizing a panel research design. Through purposive sampling, four Johannesburg Stock Exchange (JSE) listed food supermarkets in South Africa were selected for inclusion in the study. Data were gathered from McGregor using audited group financial statements. The data included four listed food retail companies such as Shoprite, Woolworths, Spar, and Pick n Pay. The data covered the period of 1994 to 2022, resulting in a total of 116 observations over 29 years. 1994 marked the period of the new era in the South African economy because of the political reform. Ratios were calculated from information derived from these financial statements. Research studies show that a sample size exceeding 30 is considered acceptable for quantitative (Nzuza, 2015). Also, a response rate of 15% to 20% or above is generally deemed acceptable, with a minimum of 10% (Nyamita, 2014). In this study, the data collection achieved a 100% response rate, as the data equaled the sample size. Subsequently, the data underwent analysis utilizing Stata software. The study employed descriptive statistics and correlation matrix tests to examine the direction of the relationship between internal factors and financial performance, which was measured by sales revenue. The study variables tested are shown in Table 1.

Table 1. Research variables

Variable	Measure
Dependent variable (Y)	
Sales	Sales revenue
Financial performance	
Independent variable (X)	
Internal factors	
Current ratio (CR)	Total current assets
Current debt (CD)	Total current liabilities
Equity	Total owners' equity
Firm age (Age)	Number of years company has been operating
Corporate governance size (CG)	Number of board of directors + board secretary

2.1. Model specification

The fixed effects models were employed due to the fixed nature of the selected companies and the specified years. The results were extrapolated specifically to four major listed food supermarkets in South Africa, covering the period from 1994 to 2022.

The fixed effect model is as follows:

$$Y_{it} = \alpha + X_{it}\beta + \pi_i + \mu_{it}, \qquad (1)$$

where π_i represents disturbances (fixed effects) and μ_{it} represents time varying idiosyncratic shock. Y_{it} is the vector of overall factor return on

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assets across the firms, the unobserved firms' specific effect is, β is a vector of estimating parameter for each of the explanatory variables, while constant X_{it} is K-dimensional row vector of explanatory variables.

The model for the study is as follows:

$$Sales_{it} = \alpha + \beta_1 AGE_{it} + \beta_2 CG_{it} + \beta_3 Equity_{it} + \beta_4 CA_{it} + \beta_5 CD_{it} + \pi_i + \mu_{it}. \quad (2)$$

2.2. Estimating techniques

2.2.1. Kao tests

The study used Kao tests to confirm cointegration. Kao (1999) predicts cointegration vector $\beta_i = \beta$ so that all panels share a joint slope coefficient. This means that a joint long-run covariance matrix given by $\Omega = \Sigma + \Gamma' + \Gamma$. Fitting Kao tests into the current study involved assessing whether there is evidence of cointegration is the Sales variable as a time series variable, which can provide valuable insights into its long-term relationship with *AGE*, *CG*, *Equity*, *CA*, and *CD* dynamics.

The original regression model is:

$$\gamma_{it} = \gamma_i + X'_{it}\beta + e_{it}, \quad (3)$$

where γ_i signifies panel specific fixed effects, and β is the identical cointegrating vector. There are five test statistics explored in this study as recommended by Kao (1999).

The model for the study drawn from model 1 is:

$$Sales_{it} = \gamma_i + \left[AGE_{it}, CG_{it}, Equity_{it}, CA_{it}, CD_{it}\right]' \beta + e_{it}. \quad (4)$$

These are *DF t*, the modified *DF t*, the unadjusted *DF t*, and the unadjusted modified *DF t*, but all are based on the DF regression:

$$\hat{e}_{it} = \rho \hat{e}_{i,t-1} + v_{it}, \quad (5)$$

where ρ is the joint AR parameter of the Sales variable of the study. The test data based on DF regressions are:

$$DF\ t = \frac{t_\rho + \frac{\sqrt{6N}\hat{\sigma}_v}{2\hat{w}_v}}{\sqrt{\frac{w_v^2}{2\hat{\sigma}_v^2} + \frac{3\hat{\sigma}_v^2}{10\hat{w}_v^2}}} \quad (6)$$

$$modified\ DF\ t = \frac{\sqrt{NT}\left(\hat{\rho}-1\right) + \frac{3\sqrt{N}\hat{\sigma}_v^2}{\hat{w}_v^2}}{\sqrt{3 + \frac{36\hat{\sigma}_v^4}{5\hat{w}_v^4}}}, \quad (7)$$

where $\hat{p}$ is the Sales variable of ρ, $\hat{\sigma_v}^2$ and $\hat{w}_v^2$ are scalar terms that are constant estimates of $\sigma_v^2 = \sigma_v^2 - \Sigma'_{u\in}\Sigma_{\in}\Sigma_{u\in} and\ w_v^2 = w_u^2 - \Omega'_{u\in}\Omega_{\in}\Omega_{u\in}$. t_ρ is the *t* statistic for assessing the null hypothesis H_0: $\rho = 1$ that financial performance (Sales) is not influenced by AGE, CG, Equity, CA, and CD.

The DF test data that predict strict exogeneity and absence of serial correlation are given by unadjusted

$$DFt = \sqrt{\frac{5t_\rho}{4} + \sqrt{\frac{15N}{8}}}, \quad (8)$$

Unadjusted modified

$$DFt = \frac{\sqrt{NT}\left(\hat{p}-1\right) + 3\sqrt{N}}{\sqrt{\frac{51}{5}}}. \quad (9)$$

The ADF regression is given by

$$\hat{e}_{it} = \rho \hat{e}_{i,t-1} + \sum_{j=1}^{p} \rho j \Delta_{\hat{e}_{i,t-j}} + v_{it}^*, \quad (10)$$

where ρ is the sum of lagged difference in the Sales value.

The test data based on ADF regression are:

$$DF\,t = \frac{t_{ADF} + \frac{\sqrt{6N}\hat{\sigma}_v}{2\hat{w}_v}}{\sqrt{\frac{w_v^2}{2\hat{\sigma}_v^2} + \frac{3\hat{\sigma}_v^2}{10\hat{w}_v^2}}}, \quad (11)$$

where

$$t_{ADF} = \frac{\hat{\rho}}{\widehat{SE}\left(\hat{\rho}\right)}, \quad (12)$$

is calculated from the ADF regression and the asymptotic distribution of all test statistics converge to $N(0,1)$.

2.2.2. *Units-root test*

The study employed Kao tests to ascertain whether all panels contain unit roots or not. In time series analysis, before running the causality test, the variables must be tested for stationarity. For this purpose, this current study used the Im-Pesaran-Shin method, incorporating time trend and subtracting cross-section means, to evaluate the stationarity of variables.

Im-Pesaran-Shin model is explained as follows:

$$\Delta y_{it} = \varnothing_i y_{i,t-1} + z'_{it}\gamma_i + \varepsilon_{it}, \quad (13)$$

Δy_{it} denotes the first alteration of the Sales variable y for individual i at time t. Considering the initial difference is an eminent method to eradicate movements and make the Sales series stationary if it comprises a unit root. $\varnothing_i y_{i,t-1}$ signifies the lagged variable y for distinct i at time $t-1$, multiplied by a coefficient $\varnothing_i$. This lagged variable considers the tenacity of the variable over time. $z'_{it}\,\gamma_i$ signifies a collection of exogenous AGE, CG, Equity, CA, and CD variables studied marked as z' for individual i at time t, reordered and multiplied by a coefficient vector γ_i. These exogenous variables have the power to include extra factors that influence the Sales variable y and are explicit to each individual. ε_{it} is an error term for individual i at time t, which has the capacity to absorb the overlooked variable that are not captured by the other terms in the model. Im-Pesaran and Shin assume that ε_{it} is autonomously distributed normal for all i and t, and they permit it to have varied variances σ^2_i across panels.

2.2.3. *Heteroskedasticity for PCSEs*

Given that the variables show cross-sectional dependence, the utilization of the PCSEs heteroskedasticity technique is justified. To compute the transformed residuals $\tilde{u}_{it}$ for each cross-sectional unit, the study utilized the Beck and Katz (1995) procedure:

$$\tilde{u}_{it} = \frac{\hat{u}_{it}}{\sqrt{\hat{a}_i(1-\hat{a}_i}}, \quad (15)$$

where $\hat{u}_{it}$ represents the Sales variable, and $\hat{a}_i$ represents the estimated individual-specific effect for cross-sectional unit i.

This model is further validated by employing FGLS regression as follows:

$$Sales_{it} = \beta_0 + \beta_1 AGE_{it} + \beta_2 CG_{it} + \beta_3 Equity_{it} + \beta_4 CA_{it} + \beta_5 CD_{it} + \alpha_i + \mu_{it}, \quad (16)$$

Moreover, the CD model was created by De Hoyos and Sarafidis (2007). The study applied the CD test to examine the null hypothesis of no cross-sectional dependence against the alternative hypothesis of cross-sectional dependence. In the CD model, β_0, β_1 ,β_2 ,β_3, β_4, and β_5 are the coefficients that were estimated. ε_{it} is the error term, which can be decomposed into two components such as $\varepsilon_{it=} a_{i+}\mu_{it}$. a_i captured the individual-specific effects, whereas μ_{it} represented the idiosyncratic error term.

For the dynamic panel data analysis, the study utilized the command *'xtset id YEAR'* to integrate the time series data (Sales) with the panel data (AGE, CG, Equity, CA, and CD), which displayed strong data balance.

3. RESEARCH RESULTS

This section aims to analyze the study results utilizing correlation matrix and dynamic panel data analysis.

In Table 2, each correlation coefficient is followed by its associated p-value. For example, company age, equity, and current debt show a statistically significant association with financial performance, as measured by Sales. This indicates that as the company ages, its financial performance declines, while an increase in equity financing and current debt financing enhances the financial performance of the company. The other independent variables showed no significant relationship. However, the significant associations observed among the independent variables suggest the presence of heteroskedasticity in the independent variables, indicating the need for further analysis.

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Table 2. Correlation matrix results

	Sales	Company age	Size of corporate governance	Equity	Current assets	Current debts
Sales	1.0000					
Company age	–0.4593	1.0000				
	0.0000					
Corporate governance size	0.0275	–0.1691	1.0000			
	0.7697	0.0696				
Equity	0.9705	–0.3884	0.0049	1.0000		
	0.0000	0.0000	0.9584			
Current assets	0.0076	0.0029	–0.0566	–0.0044	1.0000	
	0.9355	0.9758	0.5463	0.9629		
Current debts	0.9954	–0.4487	0.0165	0.9638	0.0378	1.0000
	0.0000	0.0000	0.8601	0.0000	0.6872	

Table 3. ANOVA results

Source	SS	df	MS	Number of obs	=	116
				F (5, 110)	=	3430.93
Model	7.9228e+15	5	1.5846e+15	Prob > F	=	0.0000
Residual	5.0803e+13	110	4.6185e+11	R-squared	=	0.9936
				Adj R-squared	=	0.9933
Total	7.9736e+15	115	6.9336e+13	Root MSE	=	6.8e+05

Coefficient

Sales	Coefficient Std.	Error	t	P>t	95% confidence	Interval
Company age	–8189.355	3218.485	–2.54	0.012	–14567.64	–1811.073
Corporate governance size	5066.791	5005.926	1.01	0.314	–4853.779	14987.36
Equity	1.872581	.3477584	5.38	0.000	1.183405	2.561756
Current Assets	–.0711651	.0242455	–2.94	0.004	–.119214	–.0231161
Current Debts	4.254088	.1550726	27.43	0.000	3.946771	4.561406
_cons	204136.3	223881.9	0.91	0.364	–239545	647817.6

Table 3 shows that the model's F-statistic is 3,430.93 with a very low p-value (Prob > F = 0.0000), indicating that the overall model is statistically significant (see Table 3). The R-squared value is 0.9936, indicating that approximately 99.36% of the variance in Sales is explained by the independent variables in the model. The Adjusted R-squared value is 0.9933, which adjusts for the number of predictors in the model. The t-statistic for company AGE is –2.54 with a corresponding p-value of 0.012, signifying a statistically significant negative impact on Sales at a 95% confidence level. Equally, Equity, CA, and CD show t-statistics of 5.38, -2.94, and 27.43, respectively, with p-values of 0.000, 0.004, and 0.000. These results indicate that Equity, CA, and CD are statistically significant predictors of Sales at a 95% confidence level.

Based on the Kao test for cointegration in Table 4, in all cases, the p-values are 0.0000. Therefore, the study rejects the null hypothesis of non-stationarity and concludes that the time series data are likely stationary. This suggests that the data do not have

Table 4. Kao test for cointegration

Cross sectional means removed	Statistic	*p*-value
Modified Dickey-Fuller *t*	–7.6365	0.0000
Dickey-Fuller *t*	–6.3155	0.0000
Augmented Dickey-Fuller *t*	–6.1679	0.0000
Unadjusted modified Dickey-Fuller *t*	–12.3047	0.0000
Unadjusted Dickey-Fuller *t*	–7.0321	0.0000

Note: *H0*: No cointegration. *Ha*: All panels are cointegrated.

Table 5. Im-Pesaran-Shin unit-root test

Variables	Im-Pesaran-Shin unit-root test	Im-Pesaran-Shin unit-root test for first Difference
Sales	0.2526	0.0000
Company age	0.0161	0.0000
Corporate governance size	0.0000	0.0000
Equity	0.0410	0.0000
Current Assets	0.0057	0.0000
Current Debts	0.2125	0.0000

Note: *H0*: All panels contain unit roots. *Ha*: Some panels are stationary.

Table 6. Cross-section dependence, CD ~ N(0,1)

Variable	CD-test	p-value	average joint T	mean ρ	mean abs(ρ)
Sales	+ .87	0.384	29.00	+ 0.07	0.47
Company age	+ 13.183	0.000	29.00	+ 1.00	1.00
Corporate governance size	+ 3.193	0.001	29.00	+ 0.24	0.24
Equity	+ 2.867	0.004	29.00	+ 0.22	0.46
Current assets	+ 1.878	0.060	29.00	+ 0.14	0.27
Current debts	+ –.107	0.915	29.00	+ –0.01	0.47

a unit root and do not exhibit trends or systematic patterns over time. Instead, they fluctuate around a constant mean.

Table 5 shows that all variables are significant at first difference. The null hypothesis is that the series has a unit root (i.e., is non-stationary). Therefore, with p-values of 0.0000 for all variables in both levels and first differences, the study rejects the null hypothesis for all variables, suggesting that all the series are stationary.

Table 6 shows that the cross-sectional dependence test statistic, with a p-value of 0.05 or lower, suggests that a variable is statistically significant. The results indicate that, aside from sales, current assets, and current debts, all other variables such as company age, size of corporate governance, and equity financing show statistical significance at levels of 0.000, 0.001, and 0.004, respectively.

Robust statistical tests, including Heteroskedasticity for PCSEs and FGLS regression, were conducted to

Table 7. Linear regression, heteroskedastic PCSEs

Sales	Coefficient	Het-corrected		P>z	[95% conf.	interval]
		Std. error	z			
Company age	–8189.355	3306.051	–2.48	0.013	–14669.1	–1709.614
Corporate governance size	5066.791	2088.433	2.43	0.015	973.5377	9160.045
Equity	1.872581	.4522241	4.14	0.000	.986238	2.758924
Current assets	–.0711651	.0297629	–2.39	0.017	–.1294994	–.0128308
Current debts	4.254088	.1995413	21.32	0.000	3.862994	4.645182
_cons	204136.3	220282.2	0.93	0.354	–227608.9	635881.5

Note: Estimated covariances = 4. R-squared = 0.9936. Estimated autocorrelations = 0. Wald chi2(5) = 9235.68. Estimated coefficients. = 6. Prob > chi2 = 0.0000.

Table 8. Cross-sectional time-series FGLS regression

Sales	Coefficient	Std. error	z	P>z	[95% conf.	Interval]
Company age	–6475.671	2413.578	–2.68	0.007	–11206.2	–1745.144
Corporate governance size	1269.226	659.8798	1.92	0.054	–24.11513	2562.566
Equity	1.248819	.2185073	5.72	0.000	.8205527	1.677086
Current assets	–.0700804	.0226241	–3.10	0.002	–.1144229	–.0257379
Current debts	4.440076	.1027886	43.20	0.000	4.238614	4.641538
_cons	284384	117329.4	2.42	0.015	54422.65	514345.3

Note: Wald chi2(5) = 11922.69. Prob > chi2 = 0.0000.

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validate the study's hypotheses. The results, illustrated in Table 7, reveal that company age, corporate governance size, equity financing, current assets, and current liabilities display statistical significance concerning financial performance (Sales), with significance levels of 0.013, 0.015, 0.000, 0.017, and 0.000, respectively.

The utilization of FGLS regression in Table 8 corroborates the heteroskedastic PCSEs model in Table 7, validating the statistical significance of company age, corporate governance size, equity financing, current assets, and current debts concerning financial performance (Sales) at a significance level below 0.007, 0.054, 0.000, 0.002, 0.000, respectively.

The results obtained have confirmed the hypotheses of the study:

H_1: *There is a negative and significant relationship between company age and financial performance.*

H_2: *There is a significant and positive relationship between CG and financial performance.*

H_3: *There is a positive and significant relationship between equity financing and financial performance.*

H_4: *There is a negative and significant relationship between current assets and financial performance.*

H_5: *There is a positive and significant relationship between current debts and financial performance.*

Based on the hypotheses results, the study proposes model 17 on the internal determinants influencing financial performance for the listed food supermarkets in South Africa:

$$\begin{aligned} Sales_t &= \alpha - \beta_1 Company\ age_{it} \\ &+ \beta_2 Size\ of\ \ corporate\ governance_{it} \\ &+ \beta_3 Equity_{it} - \beta_4 Current\ assets_{it} \\ &+ \beta_5 Current\ debts_{it} + \pi_i + \mu_{it}. \end{aligned} \quad (17)$$

And the *a priori* expectation is that $\beta_2, \beta_3, \beta_5 > 0$, whereas $\beta_1, \beta_4 < 0$.

The study results are discussed in the next section.

4. DISCUSSION

The results of the analysis provide insights into the relationship between various independent variables and company performance, as measured by sales revenue. The study hypotheses, which aimed to investigate the impact of AGE, CG, Equity, CA, and CD on financial performance, have been examined through rigorous statistical analysis. The results on the relationship between company age and financial performance indicate that for every unit increase in AGE, there is a decrease in Sales revenue. This coefficient demonstrates statistical significance at the 0.05 level (p-value = 0.007). Therefore, the positive hypothesis asserting that AGE influences the financial performance of listed food supermarkets is rejected, and the null hypothesis is accepted. These findings stand in contrast to those of other authors (Ramasamy et al., 2005; Ganda, 2021) who identified a positive correlation between a company's financial performance and its age. The results suggest several implications for the management of listed food supermarkets. Firstly, the negative association between AGE and Sales revenue underscores the importance of implementing proactive measures to counteract the adverse effects of aging on financial performance. As companies grow older, they may encounter challenges such as outdated business models, increased competition, and evolving consumer preferences, which can hamper revenue generation. In response, listed food supermarkets should prioritize innovation and adaptability in their operations. This may involve investing in technology to enhance operational efficiency, diversifying product offerings to cater to changing consumer demands, and implementing strategic marketing initiatives to maintain competitiveness in the market.

Regarding the CG size, the coefficient indicates that for each unit increase in CG size, there is a corresponding increase in Sales revenue. However,

the coefficient is marginally significant (p-value = 0.054). Although the study found a slight significance, the hypothesis asserting that there is no relationship between CG size and financial performance remains inconclusive. These results are consistent with previous findings by authors such as Bhagat and Black (1999) and Paniagua et al. (2018). Even though an increase in the number of executive management members assigned with responsibility to take critical decisions may enhance the pool of talent, skills, and knowledge available, the agency theory suggests there will be challenges related to conflict management. Moreover, there is a potential for increased bureaucracy and delays in decision-making processes. This fragmentation of authority may impede an organization's ability to make timely and effective decisions. The weak relationship found between these variables indicates the presence of challenges even though the results are subject to further experiment by other scholars.

The coefficient implies that for each unit increase in Equity financing, Sales revenue increases. This coefficient holds high statistical significance (p-value < 0.001). Thus, in this case, the hypothesis postulating that equity financing influences the financial performance of listed food supermarkets in South Africa is accepted. These findings align with those of Njagi et al. (2017), which lend credibility to the relationship between equity financing and financial performance in the context of listed food supermarkets. It suggests that the positive impact of equity financing on financial performance is a consistent phenomenon across different studies and contexts. The implications of these results are significant for listed food supermarkets in South Africa and their stakeholders because it emphasizes the importance of equity investment as a source of capital for these supermarkets. Equity financing allows companies to raise funds without incurring debt, thereby reducing financial risk and potentially enhancing profitability.

The negative relationship observed between CA and financial performance implies that for each unit increase in CA, there is a corresponding decrease in Sales revenue of listed food supermarkets in South Africa. This coefficient carries statistical significance (p-value = 0.002). Therefore, the null hypothesis positing a negative relationship between CA and financial performance, measured by sales revenue, is accepted, while the alternative hypothesis is rejected. These findings are consistent with the studies by Asaduzzaman and Chowdhury (2014) and Javid and Zita (2014). the results underscore the importance of optimizing the management of current assets. Listed food supermarkets may need to reassess their inventory management practices, streamline accounts receivable processes, and negotiate favorable payment terms with suppliers. By doing so, they can improve cash flow efficiency and enhance overall financial performance. In conclusion, the consistency of these results with prior research adds credibility to the observed relationship and that the negative impact of excessive current assets on financial performance is a persistent phenomenon across different studies and contexts. The findings suggest that as the listed food supermarkets mature in age, they become irrelevant in the market.

The positive and significant associations observed between CD (Current Debt) and financial performance indicate that for each unit increase in CD, there is a corresponding increase in Sales revenue. This coefficient carries high statistical significance (p-value < 0.001), thereby confirming the hypothesis that there is a relationship between CD and financial performance. These results are consistent with the findings of previous studies by Le et al. (2018) and Kasozi (2017). The positive association between CD and financial performance suggests that judicious use of short-term debt can contribute to increased sales revenue for listed food supermarkets. Debt financing allows organizations to leverage external funds to finance operations, investments, and growth opportunities. By strategically utilizing short-term debt, supermarkets can expand their operations, invest in marketing initiatives, and capitalize on emerging market trends, thereby driving sales revenue growth. However, while short-term debt financing offers opportunities for growth and expansion, it also comes with risks. Excessive reliance on debt can increase financial leverage and interest expenses, potentially impacting profitability and financial stability.

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CONCLUSION

The purpose of this study was to examine the internal determinants of financial performance of food supermarkets listed on the Johannesburg Stock Exchange in South Africa. Using a balanced panel data, the study employed a fixed effect method to achieve its goal. Data were gathered from four major listed food supermarkets in South Africa covering the period from 1994 to 2022, resulting in a total of 116 observations over 29 years. The study found that there is a significant positive correlation between equity financing, corporate governance size, and current debt with financial performance, as measured by Sales revenue. In contrast, a negative and significant relationship is observed between company age, current asset, and financial performance. This study contributes to the existing body of knowledge by exploring previously untested grounds, providing insights into financial performance factors, and the role of size of corporate governance. Previous studies have generated varying results, justifying the necessity of this study, as it indicates that food supermarkets operate differently from other businesses. Based on the proposed model 17, the study concludes that listed food supermarkets must maintain a balanced mix of equity and debt and embrace innovative business strategies as they ageing to optimize financial performance. Future research is recommended to use a different methodology and incorporate data from other businesses for a broader understanding of the dynamics affecting financial performance across different sectors.

AUTHOR CONTRIBUTIONS

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