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Effect of Fair Value Measurement Model on Financial Performance of Insurance Firms

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Abstract

The purpose of the study was to analyse the effect of the fair value measurement model on the financial performance of insurance firms. A descriptive research design was employed, targeting insurance companies listed on the Nairobi Securities Exchange (NSE). Primary data was collected, organised, coded, and analysed using Microsoft Excel and SPSS. Regression analysis was applied to test the relationships between variables, where the models under research showed a positive correlation with the Financial Performance. The fair value measurement model posits a statistically positive correlation of r=0.270 and a confidence level of 95% where the value of 0.000951 is reported. These results signify that the models offer a more realistic financial position of the firm. This model enhances investors' confidence level, transparency, and improved decisions that ultimately improve the financial performance, hence gaining a competitive advantage. Based on such grounds, the null hypothesis (H1) is rejected, affirming that FVM is elemental in driving financial performance. Fair Value Measurement (FVM) model demonstrated positive correlation and predictive power, suggesting that insurance firms that actively align asset valuation with current market realities and observable input hierarchies report stronger financial outcomes. This is especially relevant in the context of Kenya's transition to IFRS 13 and IFRS 17, which emphasize transparency, investor confidence, and compliance. Adopt and Institutionalize Fair Value Measurement (FVM) as a primary valuation standard, as it gives strong correlation with ROA; this model enhances transparency and alignment with IFRS 13. Companies should train valuation and finance teams on the application of the different hierarchies and invest in valuation software that ensures timely market-based revaluation.

Keywords: *Fair value measurement, financial performance, insurance firms*

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1. Introduction

Financial performance is evaluated using the financial health of a company, such as assets, liabilities, equity, expenses, revenues, and profitability. Financial performance is critical in showing the ability of the institution to generate profits, sustain long-term growth, and manage its exposures. All insurance firms are required by the Insurance Regulatory Authority (IRA) to furnish them with financial statements and publish their statements on their websites, and those

listed on the Nairobi Securities Exchange (NSE) to furnish the Equity Capital Management Authority with their statements (Mwangi, 2021).

In their study (Morara & Sibindi, 2021) Financial performance of insurance firms can be measured using various Profitability ratios such as Return on Assets (ROA), Liquidity ratios, gearing ratios, and credit ratings. This study will use the return on assets (ROA) as a measure of financial performance. ROA is preferred because it evaluates how efficiently a company utilizes its assets to generate profits. It provides a clear, comparable metric across firms. Unlike ROE, ROA isn't influenced by leverage (Mwangi, 2021).

The improved financial performance of an organization translates to positive effects on shareholders' wealth maximization. In this regard, effort should be directed towards improving the shareholders' wealth by addressing all the variables that may hinder the Insurance companies from reflecting the actual financial performance in each period. As observed by Kemboi (2019), a firm's financial success is not only because of one activity but rather out of synergistic actions that combine to create an enhanced value to the overall firm's performance.

In another study by Tsung-Kang Chen et al. (2020), they explained that adoption of the embedded value model in valuing assets has improved the accuracy of financial statements, leading to better decision-making regarding the profitability of the company and thus attracting investors. (Leslie et al., 2022) in their part argued that fintech models such as Fair Value Measurement Models provide accurate asset valuations, enhanced investment, and better pricing decisions. In a similar study, Jagannayaki et al. (2024) observed that discount cashflow analysis, a model, brought out the concept of financial valuation enhancement, thus the need to understand and explore how the adoption of this model in an insurance firm can contribute to the financial performance.

Regionally, valuation practices remain industry specific. As Olbert (2024) observed, there is a marked shift towards the use of more contextual, technologically enabled valuation approaches, such as multiple-period multiples, in many North and South American countries, which account for evolving market dynamics. Olbert's findings emphasize the need for insurers to adopt flexible and enhanced models that reflect real-time asset values, which in turn improve reporting accuracy and financial performance.

Fintech valuation models utilize technology to improve the accuracy and transparency of financial reporting by incorporating predictive analytics, automation, and real-time market data. These models support better risk management and capital allocation while promoting compliance with global financial standards. In the context of the insurance industry, four models stand out in their relevance and impact—Expected Credit Loss (ECL), Fair Value Measurement (FVM), Embedded Value (EV), and Discounted Cash Flow (DCF) (Maino et al., 2019). This paper focused on fair value measurement (FVM).

Closely related to transparency and market responsiveness is the Fair Value Measurement model. This model estimates the price at which assets or liabilities can be exchanged in an orderly market transaction at the measurement date. It employs a hierarchy of inputs—ranging from directly observable market prices to internal valuation models when market data is unavailable (Morara & Sibindi, 2021b). For insurance firms that hold a diverse mix of financial instruments, fair value measurement allows for better alignment of asset values with current market realities. It helps firms reflect the true economic worth of their assets, enhancing investor confidence and ensuring that financial statements present a realistic picture. However,

it also requires rigorous internal controls, especially when Level 3 inputs based on unobservable assumptions are used, as they may introduce subjectivity and potential for earnings manipulation. Despite these risks, fair value models remain indispensable in navigating volatile financial markets and upholding reporting integrity (Tracy, 2022).

1.1 Problem statement

The financial performance of insurance firms is essential to the stability of financial markets, investor confidence, and broader economic development. Despite the vital role played by Kenya's insurance sector, recent trends reflect a troubling decline in performance. The Aki Report (2020) noted a drop in GDP contribution from 2.79% in 2015 to 2.30% in 2020, alongside increased regulatory non-compliance cases amounting to Ksh. 94.85 million in fines, which raises critical concerns about financial reporting accuracy and corporate accountability.

Past studies in relation to the valuation of assets in insurance firms have relied on traditional methods such as market, income, and asset-based models. However, these valuation approaches rely on historical data, which are not sufficient in addressing the complexities brought by technological advancements (Tracy2022). This study investigated the effects of valuation of assets using fintech models among the insurance listed companies in Kenya.

Similarly, the inability of traditional approaches to account for dynamic market fluctuations and future risk exposure leads to inaccurate asset reporting and hampers sound financial decision-making. This, therefore, creates a contextual gap which the study has filled. By focusing on fintech valuation models such as Fair Value Measurement (FVM), the study seeks to provide a comprehensive understanding of how these models enhance valuation accuracy.

1.2 Objectives

To analyse the effect of the fair value measurement model on the financial performance of insurance firms.

1.3 Research hypothesis

$H0_1$: Fair Value Measurement model does not have a statistically significant effect on the financial performance of insurance firms in Kenya.

2. Literature Review

2.1 Theoretical Review

This study was informed by Diffusion of Innovation Theory. The Diffusion of Innovation theory was developed by Everett Rogers (1962). The theory explained how the new enhancement in technology spread across different industries (Mwangi, 2021). This theory is adapted in phases, first is the innovators who represent 2.5% of the individuals who are ready to take up the risk of fast trial technologies. The second group is the early adopters, who form 13.5% of individuals with higher social status and a high level of education. The early majority are the third group, who form 34% who need clear evidence that the innovation works, while the late majority only adopts the idea after it has been implemented successfully by the first three groups. Lastly, the laggards form 16% of the population, which is difficult to attract to innovation (Mwangi, 2021).

The theory of Diffusion of Innovation, as noted by Kemboi (2019), identified factors such as the complexity, relative advantage, compatibility, and observability that influence the adoption of innovation. Some of the setbacks of this theory include oversimplification, linear

assumption, biased pre-innovation, cultural context, and individual blame bias (Wanalo, Mande & Ngonga, 2020). Despite the setbacks, this theory is relevant to fintech valuation models as it shows the gradual adoption and implementation of the advanced valuation techniques in the insurance industry.

This theory anchors the main objective of examining the effects of fintech valuation models on financial performance. The theory illustrates how insurance firms gradually adopt technological innovations, such as asset valuation models, which influence operational efficiency and profitability.

2.2 Empirical Review

Leslie et al. (2022), in their study, investigated the influence of Fair Value Measurement (FVM) discretion on earnings management practices within financial institutions. The independent variable was FVM discretion, measured through indicators such as valuation inputs' subjectivity levels (Level 1, 2, and 3 fair value hierarchy), while the dependent variable was earnings management, assessed through discretionary accruals and impairment avoidance metrics. Using regression analysis in STATA on a dataset covering 50 financial institutions over five years, the study concluded that while FVM enhances transparency and reflects real-time asset values, it also introduces opportunities for earnings manipulation, particularly under economic stress. However, the study focused solely on financial reporting quality and did not assess FVM's direct impact on profitability metrics such as Return on Assets (ROA). This omission presents a vital gap that the current study addresses by evaluating how FVM adoption affects financial performance in listed insurance firms in Kenya.

Luiza, Maria, and Mathurin (2018) examined the Impact of Inventory Valuation Methods on Financial Performance in Manufacturing Firms in Kenya, focusing on how different valuation techniques influence profitability. The independent variables were valuation methods (FIFO, LIFO, Weighted Average), and the dependent variable was financial performance, measured through gross profit margin, net profit margin, and ROA. Employing quantitative research design and multiple regression analysis, they found that valuation approaches significantly influence profitability, with FIFO producing more stable financial outcomes in volatile markets. Although the study provided valuable insight into the importance of valuation methodologies on firm profitability, it did not explore FVM nor focus on the insurance sector. The current study applies the same valuation logic but extends it by analyzing FVM's specific impact on ROA in the insurance industry, a sector that heavily relies on fair value estimates for asset and liability management.

Maino et al. (2019), in their policy paper, reviewed the role of fintech, including Fair Value Measurement techniques, in shaping financial policy formulation and institutional transparency. The variables examined included fintech adoption level, regulatory frameworks, and market efficiency, with data sourced through policy analysis and descriptive statistics from Sub-Saharan African countries. Their study emphasized that FVM models can enhance decision-making and improve investor confidence by providing more accurate asset valuations, thus supporting capital markets. However, they did not empirically assess the influence of FVM on firm-level financial performance, especially in insurance companies. This research builds on their work by providing empirical evidence on how FVM adoption impacts profitability (ROA), thereby translating theoretical and policy-level insights into firm-specific financial implications.

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Karim, Ashraf, and Eldin (2021) analysed the relationship between Economic Value Added (EVA) and financial performance in Egyptian listed firms, using regression models. The independent variable was EVA, a value-based performance measure, and the dependent variables included ROA and ROE. The study concluded that valuation metrics are key determinants of profitability, highlighting the importance of using accurate and reliable valuation tools. However, the study did not directly examine FVM and focused primarily on the manufacturing and services sectors rather than insurance. The current research bridges this gap by examining FVM as a valuation metric and its direct relationship with profitability in Kenya's listed insurance firms, an area overlooked in their study.

Fang (2023), in his study, explored various valuation techniques used in corporate finance, including Fair Value Measurement, through a case study approach. Variables considered included valuation method type, market volatility, and valuation accuracy. Fang noted that market volatility significantly affects the accuracy of FVM, and firms often face challenges in determining reliable fair values for illiquid assets. While his study provided important theoretical insights into how external factors influence valuation reliability, it did not empirically assess the effect of FVM adoption on financial performance indicators like ROA. This study fills that gap by offering a quantitative analysis of FVM's effect on profitability, contextualized within Kenya's insurance industry.

2.3 Conceptual Framework

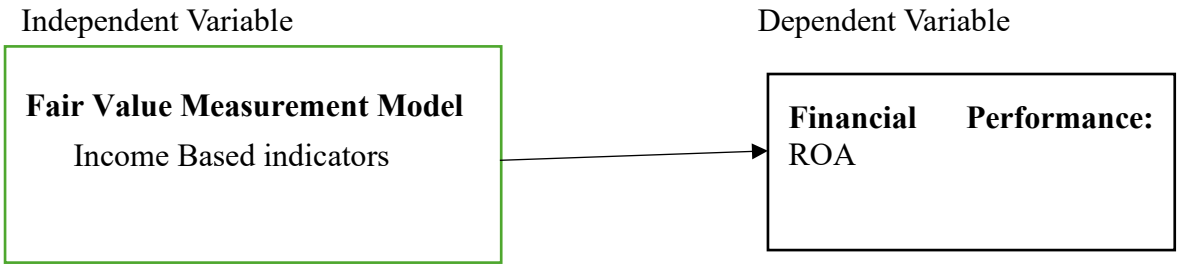

Figure 1: Conceptual Framework

3. Methodology

The study adopted a mixed-method approach to analyze the relationship between the Fair Value Measurement Model and financial performance, measured by Return on Assets (ROA). This study adopted a descriptive research design. Descriptive design was appropriate for this research as it allowed for the collection of detailed information through observation and analysis, which enabled a comprehensive understanding of the influence of fintech valuation models on Return on Assets (ROA). The target population for this study comprised all six insurance firms listed on the Nairobi Securities Exchange (NSE) as of the year 2024. Additionally, the study targeted 30 key personnel within these insurance firms who are directly involved in the implementation and management of fintech valuation models, based on prior evidence from Otiso (2020) and Mwangi (2021), who confirmed that listed insurers in Kenya have increasingly adopted fintech tools in core financial functions, including asset valuation. These individuals, through purposive sampling, were selected based on their roles in finance, risk, and actuarial departments, as they possess relevant knowledge and experience with the valuation models under investigation. The sample included 12 participants from finance departments, 10 from risk management units, and 8 from actuarial teams, ensuring broad

functional representation. Furthermore, selection also considered academic and professional qualifications, with a preference for individuals holding at least a bachelor's degree in finance, actuarial science, accounting, or economics, and/or professional certifications such as CPA, CFA, or actuarial credentials. These individuals provided primary data through structured questionnaires and a survey aimed at capturing firm-specific insights on fintech adoption and usage. As of 2024, there are approximately 6 listed insurance firms on the NSE, and these formed the entire population for the study. Given this manageable size, a census approach was adopted, whereby data collected from all listed firms.

This study employed the use of closed-ended questionnaires that were designed with an ordinal value of the Likert scale. This primary data ensured comprehensive and accurate findings from 30 key personnel in listed insurance firms, including finance officers, risk officers, and actuarial analysts. The questionnaires and the survey were designed in a way where the respondent would give their demographic information, such as age, gender, level of education, the organisation they are in, and years of service in the organisation. The demographic was key as it helped understand the socioeconomic status of the respondents. The subsequent section captured detailed information on the adoption, implementation, and perceived impact of fintech valuation models, specifically Expected Credit Loss (ECL), Fair Value Measurement (FVM), Embedded Value (EV), and Discounted Cash Flow (DCF), where every model was rated alongside the financial performance that was in line with the objectives of the study.

The data collected through questionnaires and survey was cleaned, coded, and entered into Excel, where descriptive statistics such as means, frequencies, percentages, and standard deviations were calculated to summarize responses and identify trends in the adoption of fintech valuation models. The analysis of the data was systematic, where the demographic analysis was first, which gave a clear picture of the respondents' background and helped to categorise the number of respondents per firm and per department as stated in the research design. Descriptive statistics were done to summarise the variables of the study and to explore the relationship among variables and the impacts of the models on the financial performance. The analysed data have been presented through tables allowing for clear interpretation and visualization of the results in line with the study objectives and hypotheses. Regression analysis was also conducted. The regression model applied was:

$ROA=\beta_0+ \beta 1FVM + \epsilon$

Where:

- ROA = Return on Assets (dependent variable)
- ECL = Expected Credit Loss
- ε = Error term

4. Results and Discussion

4.1 Descriptive Analysis

The section on descriptive statistics serves as a basis for subsequent inferential analyses that provide a detailed summary of the measures of central tendency such as such as frequencies, mean, median, mode, standard deviation, variance, Kurtosis, skewness, maximum, and minimum (Min), and a significant level of 95% or 0.05 for each construct and variability across the constructs. The study specifically analysed the fintech valuation models: Expected Credit

Loss (ECL), Fair Value Model (FVM), Embedded Value (EV), and Discounted Cash Flow (DCF) alongside the Return on Assets (ROA) as the dependent variable.

Table 1: Descriptive Analysis

Statistic	***Fair Value Measurement (FVM)***	***Financial Performance (ROA)***
Mean	3.53	3.41
Median	3.6	3.28
Mode	3.6	3.28
Standard Deviation	0.31	0.22
Sample Variance	0.09	0.05
Minimum	3	3
Maximum	5	5
Count(N)	155	155
Kurtosis	-0.34	0.81
Skewness	0.04	1.44
Confidence Level (95%)	0.049	0.03

*Significant at the 0.05 level (2-tailed).

The findings from the 155 respondents on the ROA as the financial performance metrics showed a mean of 3.41, a median and mode of 3.28, a standard deviation of 0.22, which shows low variability among the listed firms. The results pustules a minimum of 3 and a maximum of 4, indicating that all the firms use this metric to value their financial performance. For the skewness was 1.44, this positively skewed distribution with non-normal tails this implies that the responses spread around the mean, which shows an even and flatter distribution than normal, and a kurtosis of 0.81 and a confidence level of 0.03, which is below the threshold of 95% level of confidence, revealing that ROA is the most adopted metric of financial performance.

The findings showed an FVM averaged 3.53, which suggested moderate alignment with valuation measures as well as a high degree of symmetry from the median of 3.6 and mode of 3.6. The collected data showed a standard deviation of 0.31. This shows consistency in the implementation of the model and how it affects the financial performance. Symmetry is present as skewness had a value of 0.04. Kurtosis showed a flat distribution that shows diverse and evenly spread responses with a figure of -0.34. These results ascertain that most insurers employ fair value Measurement approaches that are in accordance with the reporting standards.

4.2 Diagnostic Tests

Prior to estimating the regression model, a series of diagnostic tests was done to ensure that the assumptions of Ordinary Least Squares (OLS) regression were not violated. These tests validated the robustness of the model, explaining the influence of fintech valuation models on the financial performance of listed insurance companies in Kenya. These tests involved: Multicollinearity test through the use of VIF, Normality test through the Shapiro-Wilk test

Table 2: Diagnostic Tests

Test	*Variable / Model*	*Statistic*	df	*Sig. (p)*	*Interpretation*
Multicollinearity test	FVM_score	Tolerance = 0.715; VIF = 1.398	–	–	Low multicollinearity
Normality (Shapiro–Wilk)	FVM_score	W = 0.958	155	0.024*	Violates normality

4.2.1 Multicollinearity test

The Variance Inflation Factor (VIF) values for FVM were 1.398, which was substantially below the cutoff point of 10, and even below the conservative width of 5 as recommended. These findings, therefore, imply that multicollinearity was not a challenge in the regression model and that the items in the construct were correlated; therefore, each model contributed unique explanatory power to the analysis.

4.2.2 Normality test

Normality of residuals is a fundamental diagnostic requirement in regression analysis, as it underpins the validity of the classical linear regression model (CLRM) assumptions it also provides for statistical inferences. The Shapiro–Wilk test for normality returned W≈<1), where values close to 1 signify that the distribution is approximately normal. the Fair Value Measurement (FVM) had W≈0.958, p=0.024 implies that the residuals violate normality; thus, null hypothesis was rejected despite the deviations from normality, the regression results remain valid.

4.3 Inferential Statistics

The inferential statistics were conducted to understand the relationship between the dependent variable (ROA) and the independent variables Fair Value Measurement (FVM), Embedded Value (EV), and Discounted Cash Flow (DCF), which aids in generalizing the findings. The inferential statistics employed were Pearson correlation and multiple linear regression, which showed the relationship between the fintech valuation models and financial performance.

4.3.1 Pearson Correlation

The Pearson correlation is an inferential statistic tool that is employed to quantify how strongly variables correlate, where it ranges from -1 to +1, where a positive figure shows that one variable increases as the other reduces, while a negative value posits there is an inverse relationship, and a value close to 0 shows that there is no linear relationship.

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Table 3: Pearson Correlation

Pearson Correlation	ROA
ROA	1
FVM	0.27*

There exists a positive correlation between the FVM and ROA, where $r = 0.270$ and $p < 0.01$. This relationship supports the importance of fair valuation in enhancing transparency and investor confidence, which in turn promotes profitability as assets are aligned with the market conditions. FVM is an influential fintech valuation model in driving financial outcomes for insurers.

4.3.2: Simple Linear Regression

From Table 4, simple linear regression analysis was used to test the Fair Value Measurement and financial performance of insurance firms: a case of listed insurance firms in Kenya.

Table 4: Simple Linear Regression

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Fair Value Measurement (FVM)	0.242	0.055	4.375	0.000951

From the findings, there was a significant effect of Fair Value Measurement (FVM) on financial performance of insurance firms ($\beta=0.242$, $p=0.000951$).

4.4 Hypothesis Testing

This research hypothesis stated that H_2: Fair Value Measurement model does not have a statistically significant effect on the financial performance of insurance firms in Kenya. H_3: Embedded Value does. Reference is made to tables 3 and 4, where the hypothesis testing was conducted and reported as follows where if $r<1$ and $p<0.05$ you reject the hypothesis.

Table 5: Hypothesis Testing

	Hypothesis Statement	Correlation Result (r, p-value)	Decision	Interpretation
H_1	Fair Value Measurement (FVM) model does not have a statistically significant effect on the financial performance of insurance firms in Kenya.	$r = 0.270$, $p= 0.000951$	Rejected	FVM significantly enhances financial performance by aligning assets with market realities.

The fair value measurement model posits a statistically positive correlation of $r=0.270$ and a confidence level of 95% where the value of 0.000951 is reported. These results signify that the models offer a more realistic financial position of the firm. This model enhances investors'

confidence level, transparency, and improved decisions that ultimately improve the financial performance, hence gaining a competitive advantage. Based on such grounds, the null hypothesis (H1) is rejected, affirming FVM is elemental in driving financial performance.

4.5 Discussion of Findings

The results showed that FVM had an impact on financial performance. According to the relevance theory of accounting, fair value improves decision usefulness and transparency. Scholars like Leslie et al. (2022) found that FVM enhances financial reporting quality, while Fang (2023) confirmed its critical role in volatile markets, which is in line with the literature review. However, in the context of this investigation, previous criticisms that FVM can cause volatility did not predominate. Rather, the findings imply that fair valuation increases profits for Kenyan insurers by acting as an indicator for financial stability.

5. Conclusion

Fair Value Measurement (FVM) model demonstrated positive correlation and predictive power, suggesting that insurance firms that actively align asset valuation with current market realities and observable input hierarchies report stronger financial outcomes. This is especially relevant in the context of Kenya's transition to IFRS 13 and IFRS 17, which emphasize transparency, investor confidence, and compliance.

6. Recommendations

Adopt and Institutionalize Fair Value Measurement (FVM) as a primary valuation standard, as it gives strong correlation with ROA; this model enhances transparency and alignment with IFRS 13. Companies should train valuation and finance teams on the application of the different hierarchies and invest in valuation software that ensures timely market-based revaluation.

Policy makers should Support Research and Development in Localized Valuation Innovation. Funding should be allocated to public universities, fintech hubs, and actuarial societies to research African-specific adaptations of the FVM, EV, and DCF models. These efforts will build valuation approaches that better reflect the volatility, demographic structure, and investment behaviour in Kenya.

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