

Role of Financial Service Usability in the Financial Health of Blue Economy Micro, Small and Medium Enterprises in Kenya

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Abstract: Blue economy MSMEs in Kenya face persistent financial vulnerability, despite expanded access to digital and conventional financial services. Usability the clarity, speed, transparency, and supportiveness of services determine whether financial access translates into financial health. This study examined the association between the usability of financial services and the financial health of micro, small, and medium enterprises (MSMEs) within the blue economy sector in Kenya. Employing a descriptive cross-sectional research design, a structured questionnaire was distributed to 323 blue economy MSMEs located in the coastal and inland lake region counties of Kenya. Quantitative data were analyzed using SPSS, with ordinary least squares and structural equation models employed to test both direct and indirect relationships. Results showed that higher usability significantly predicted improved financial health. Financial Literacy moderation analysis improved the relationship through usage intensity and financial capability. Women-led and digitally active enterprises demonstrated stronger associations. Findings highlight the need for user-centered financial service design to enhance MSME resilience and growth in Kenya's blue economy.

Keywords: Financial Service Usability, Financial Health, MSMEs, Blue Economy, Kenya, Financial Literacy, Structural Equation Modeling.

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I. INTRODUCTION

The blue economy is increasingly recognized as a key enabler of equitable and sustainable development outcomes. Globally, it is estimated to generate over USD 24 trillion by 2030, offering immense opportunities for livelihoods, food security, and economic transformation (World Bank, 2016). In Kenya, blue economy activities including fisheries, aquaculture, maritime transport, and coastal tourism contribute significantly to household income and national GDP (Government of Kenya, 2018). Micro, small, and medium enterprises (MSMEs) constitute the foundational support of this sector, yet they continue to face substantial barriers to growth owing to inadequate access to finance, vulnerability to climate shocks, and low levels of financial literacy (FAO, 2020; Mulwa, 2023; Ontumbi, 2024). These constraints hinder their ability to manage cash flows, build

resilience, and pursue sustainable investments, making financial inclusion and financial health key priorities.

Financial inclusion the process of ensuring individuals and enterprises have access to affordable and appropriate financial services has been widely promoted as a pathway to inclusive development (Kaur & Kapuria, 2020; Omar & Inaba, 2020). Studies demonstrate that financial inclusion contributes to the achievement of the Sustainable Development Goals by improving social inclusion, reducing poverty, and enhancing resilience (Neaime & Gaysset, 2018; Shah & Ali, 2022; Ozili, Ademiju, & Rachid, 2022). In Africa, mobile technologies and fintech innovations have driven a surge in financial access, particularly for underserved populations (Evans, 2018; Raji et al., 2024). Kenya stands out with financial inclusion rates rising from 27% in 2006 to 84.8% in 2024, largely due to innovations such as M-Pesa, regulatory reforms, and targeted government

policies (FinAccess, 2024; Nazeer, 2023). However, while financial inclusion has expanded rapidly, Kenya's financial health indicators have declined from 39.4% in 2016 to only 18.3% in 2024 highlighting a disconnect between access and actual financial well-being (FinAccess, 2024). This gap underscores the importance of focusing not only on access but also on financial service usability.

Usability captures the degree to which financial services are easy to understand, affordable, reliable, transparent, and user-friendly. Evidence suggested that usability strongly affects whether financial inclusion translates into tangible outcomes such as improved savings, credit management, and resilience (Karttunen, Lauri, & Peters, 2018; Refera, Dhaliwal, & Kaur, 2020). High usability fosters confidence and repeated use, while poor usability such as hidden fees, limited customer support, or complex onboarding processes discourages effective engagement (Ndaba, 2021; Abate & Sheferaw, 2023). Recent studies in Africa and Asia show that usability, coupled with digital adoption and financial literacy, has a significant impact on MSME growth, profitability, and long-term sustainability (Susan, 2020; Adeoye et al., 2024). For blue economy MSMEs in Kenya, usability is especially critical given their vulnerability to external shocks, high transaction costs, and structural exclusion from formal banking (Beckwith & Noah, 2018; Yahaya & Kolawole, 2022). While digital platforms and mobile wallets have enhanced financial access, challenges of affordability and service quality remain significant (Robert, Rango, Lomboy, & Box, 2020; Gertze & Petersen, 2024). Policy studies emphasize that without integrating usability, financial inclusion risks being superficial—providing accounts without improving financial health (Ozili, 2021; Ndung'u, 2018). This is particularly concerning in Kenya's blue economy, where MSMEs account for over 30% of national value-added and employ millions, yet continue to record low financial health despite high inclusion (MSME Survey Report, 2021; FinAccess, 2024).

This study therefore seeks to examine the role of financial service usability in shaping the financial health of blue economy MSMEs in Kenya. It explores whether usability directly improves financial outcomes and whether these effects are mediated by usage intensity and financial capability. It further investigates heterogeneity by gender of ownership and digital adoption. By shifting the focus from access to usability, this study contributes to financial inclusion literature, addresses a critical empirical gap, and provides actionable insights for policymakers, regulators, and service providers seeking to enhance the resilience and competitiveness of Kenya's blue economy enterprises.

➤ *Statement of the Problem*

Kenya has attained a high level of financial inclusion, reaching 84.8% in 2024, primarily facilitated by mobile money, pro-innovation regulation, and the diffusion of fintech (FinAccess, 2024; Nazeer, 2023; Raji et al., 2024). However, financial health (FH) has declined, decreasing from 39.4% in 2016 to 18.3% in 2024, indicating a growing disparity between usability of financial services and actual financial well-being (FinAccess, 2024). This paradox is

particularly pronounced among blue economy micro, small, and medium enterprises (MSMEs) involved in fisheries, aquaculture, maritime transport, and coastal tourism, which encounter volatile cash flows, climate and market shocks, and narrow profit margins, yet remain vital to the livelihoods in coastal and inland lake regions. An increasing body of evidence suggests that the usability of financial services (FSU) encompassing affordability, transparency, reliability, and user-friendliness exerts a strong influence on whether financial inclusion leads to improved saving, cash-flow management, and resilience (Refera, Dhaliwal & Kaur, 2020; Susan, 2020; Ndaba, 2021; Abate & Sheferaw, 2023; Adeoye et al., 2024). Nonetheless, blue-economy MSMEs continue to report high fees, limited support, and inconsistent digital experiences, which hinder effective utilization (Robert, Rango, Lomboy & Box, 2020; Gertze & Petersen, 2024). Concurrently, recent studies caution that expanding access without considering usability and capability may exacerbate indebtedness and credit fragility (Ozili, 2021; Nsiah & Tweneboah, 2024; Avgeri, 2024). To date, most studies in Kenya focus on access, households, or general MSMEs; few are sector-specific, few measure multi-dimensional financial inclusion, and even fewer assess the role of financial service usability (FSU) and its interaction financial literacy and financial health among blue economy MSMEs. This empirical, conceptual, and policy gap limits the development of targeted interventions. Therefore, this study addresses the lack of sector-specific, enterprise-level evidence on how financial service usability affects the financial health of MSMEs operating in blue-economy value chain in Kenya, despite high national inclusion and declining FH. The study intended to quantify the FSU–FH association, evaluated moderating effect of financial literacy, and generated actionable insights for regulators and providers seeking to transform inclusion in form of financial service usability into genuine financial well-being for enterprises in coastal and inland lake regions.

➤ *Objective of the study*

To assess the relationship between financial service usability and financial health of Blue Economy MSMEs in Kenya

➤ *Research Hypothesis*

- H_{01} : Financial service usability has no significant effect on financial health of blue economy MSMEs in Kenya
- H_{02} : Financial Literacy does not have a significant effect on the relationship between financial service usability and financial health of blue economy MSMEs in Kenya

II. LITERATURE REVIEW

A. *Theoretical Framework*

➤ *Vulnerable Group Theory of Financial Inclusion*

The Vulnerable Group Theory of financial inclusion, recognized by Fineman (1990), advocates prioritizing marginalized groups; the elderly, women, children, rural populations, and low-income communities, who are the majority owners of blue economy MSMEs, in national financial inclusion agendas. The theory posits that these

vulnerable populations are disproportionately affected during economic crises, particularly as operators of micro, small, and medium enterprises (MSMEs) (Ozili, 2020). Integrating them into the formal financial system is essential for inclusive economic growth. The theory emphasizes that financial equity requires targeted policies and tailored products addressing specific barriers faced by marginalized populations, including limited financial literacy, lack of banking access, and institutional discrimination (Otioma et al., 2019). It maintains that financial products must be designed considering users' lived experiences, hence usability. For blue economy MSMEs, this means providing access hence account usage, savings and insurance coverage and financial literacy tools. Nimbrayan, Tanwar, and Tripathi (2018) demonstrated how financial exclusion perpetuates inequalities and limits MSME owners' capacity to build financial resilience (Nimbrayan et al., 2018). The theory advocates a holistic approach ensuring active participation in the financial system through appropriate services. However, it has limitations: it generalizes vulnerabilities without regional consideration and provides limited frameworks for assessing inclusion policies' impact. Implementation requires institutional cooperation and resources often scarce in developing economies. In Kenya, Ndung'u (2018) found that targeted services for coastal MSMEs improved access and financial behavior, emphasizing trust and education as critical factors (Ndung'u, 2018). Demirgüç-Kunt et al. (2022) showed that financial inclusion enhances firm outcomes when services are accessible and affordable (Demirgüç-Kunt et al.,

2022). Beck and Cull (2014) found that inclusive financial infrastructure supports MSME growth when combined with proper regulation (Beck & Cull, 2014).

In conclusion, the Vulnerable Group Theory of financial inclusion provides a framework for assessing financial services usability for marginalized blue economy MSME owners. While conceptually robust in promoting inclusion, its practical efficacy depends on local implementation, disaggregated data, and service innovation. Its significance to MSME financial health is considerable, particularly when usability factors like trust, literacy, and customized products are prioritized.

B. Conceptual Framework

A conceptual framework is a structure that delineates the relationship between dependent and independent variables, as derived from the theoretical framework (Chukwuere, 2021). According to Oluwabukunmi et al. (2024), a conceptual framework comprises the set of ideas, presuppositions, hypotheses, and theories that underpin and guide a study, thereby illustrating the logical components of the study. In this study, the independent variable was the financial service usability and dependent variable was financial health. The conceptual framework adopted for the study is presented in figure 1.

C. Empirical Review

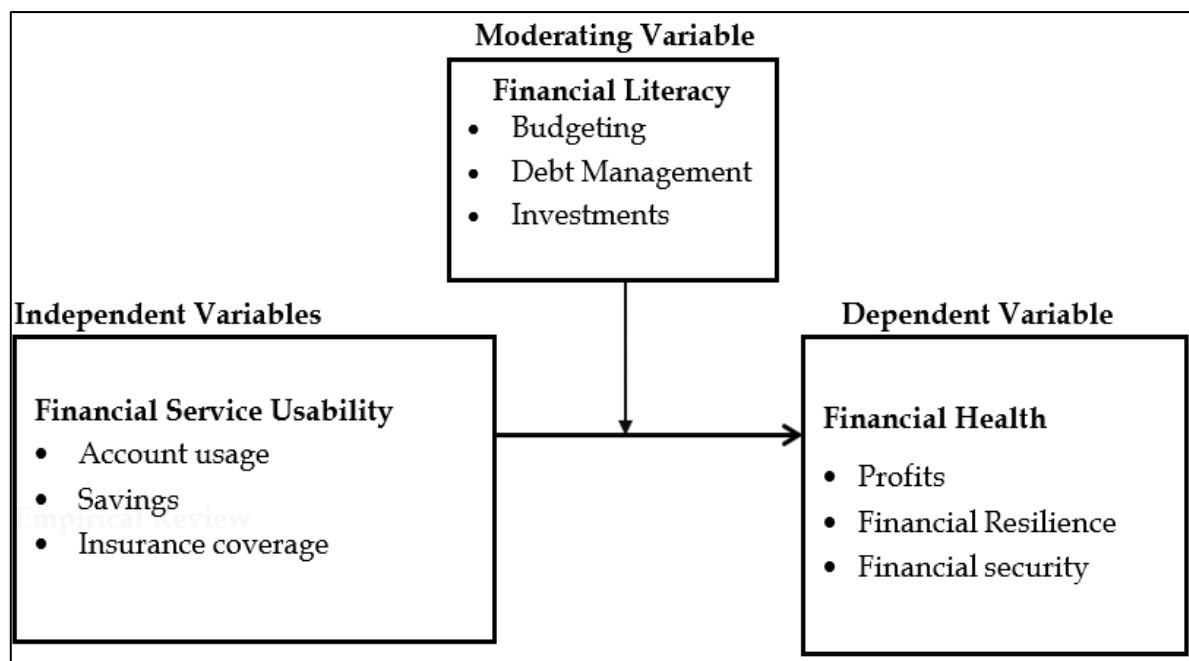


Fig 1: Conceptual Framework

D. Empirical review

The interconnection between financial inclusion in form of financial service usability and financial health has been widely studied across regions, though findings remain mixed and context-dependent. Le et al. (2019) found that financial inclusion enhances financial efficiency and sustainability across 31 Asian countries. Arner et al. (2020) emphasized the role of digital financial infrastructure for MSMEs, arguing it

is critical for advancing the SDGs. Tita and Meshach (2017) similarly linked inclusive financial systems to economic growth in 21 Asian countries. In Africa, Machdar (2020) reported no significant impact of financial inclusion on sustainable growth in South African banks, suggesting that access alone is insufficient without supportive factors. Tita and Aziakpono (2017), using World Bank Findex data, showed that financial inclusion may initially exacerbate

income inequality in Sub-Saharan Africa, as formal savings and digital payments tend to benefit wealthier groups first. Chipunza and Fanta (2022) and Ndaba (2021) provided evidence that “quality” financial inclusion, including women’s participation, reduces financial vulnerability. Arner et al. (2020) found an inverse relationship between credit availability and financial health in semi-manufacturing firms across 27 OECD countries, underscoring that access to credit does not always translate to better outcomes. Globally, studies (Ajide, 2017; Damane & Ho, 2023; World Bank, 2025) confirm that inclusive financial systems drive equitable growth, though risks remain.

Musau et al. (2018a) linked increased financial service usability to rising non-performing loans in Kenya, showing risks for bank stability. Bett and Kirui (2018) highlighted the negative impact of personal loans on financial health of teachers, while Wandeda et al. (2022) confirmed that access alone influences household financial health but does not guarantee resilience. Ntwiga & Wafula (2021) and Kilonzo et al. (2022) examined disparities in women’s and MSMEs’ financial health, pointing to barriers such as collateral requirements and high interest rates.

Overall, the literature demonstrates that financial inclusion measured by access, credit, and usage has both positive and negative implications for financial health. Outcomes are strongly influenced by contextual factors such as region, product quality, literacy levels, and sectoral characteristics.

Despite the breadth of studies, several limitations emerge; much of the evidence comes from Asia (Le et al., 2019; Arner et al., 2020) or South Africa (Machdar, 2020), limiting applicability to Kenya’s blue economy MSMEs. Few studies focus specifically on enterprises within fisheries, aquaculture, and maritime tourism, with many studies relying on traditional accounting or profitability indicators (Ndung’u & Mwenda, 2023) rather than comprehensive financial health dimensions such as profits, financial resilience and financial security. This undermines the ability to capture MSME sustainability holistically. Several studies employ cross-sectional or qualitative approaches (Kilonzo et al., 2022), offering limited causal inference and generalizability. Few employ longitudinal or mixed-methods designs to capture evolving dynamics of finance accessibility. Most literature emphasizes access accounts, credit availability while underexploring usability in form of account usage, savings and insurance coverage. This risks oversimplifying the financial services usability role in financial health. Even within Kenya, most studies (Musau et al., 2018; Bett & Kirui, 2018; Wandeda et al., 2022) focus on households or non-blue economy MSMEs, neglecting sector-specific realities such as seasonal income flows or vulnerability to climate shocks. While digital finance is widely acknowledged as transformative (Evans, 2018; Raji et al., 2024), studies rarely examine user experience, usability, or adoption barriers, particularly for blue economy MSMEs operating in rural or marginalized areas. Therefore, this study contributes by empirically examining the role of financial service usability in the financial health in the specific context of blue economy

MSMEs in Kenya, using multidimensional financial health measures, enterprise-level data, and incorporating financial literacy considerations.

III. METHODOLOGY

➤ Study Design and Population/Participants

This study utilized a descriptive cross-sectional survey design to investigate the relationship between financial service usability and financial health among micro, small, and medium enterprises (MSMEs) operating within Kenya’s blue economy. Although this design does not permit causal inference, it is suitable for identifying trends, patterns, and associations at a specific point in time. The target population comprised owners and managers of licensed MSMEs located in Kenya’s coastal and inland lake regions, which are economically significant hubs for the blue economy. Specifically, the study focused on the following counties: Coastal counties: Mombasa, Kwale, Kilifi, Lamu, Taita Taveta, and Tana River Lake region counties: Kisumu, Siaya, Homa Bay, Migori, and Busia. These counties were selected due to their contributions to blue economy sectors fisheries, aquaculture, transport, maritime services, and tourism and because they are among the most financially underserved regions in Kenya (FSD Kenya, 2024). This makes them suitable for examining the role of financial service usability in enterprise financial health. A total population of 9,632 formally licensed MSMEs in the selected counties constituted the sampling frame. This database was compiled from county business registries and local blue economy associations KEMSFED, ensuring the inclusion of only formally recognized blue economy MSMEs. A stratified random sampling technique was employed to ensure representation across scope. The sample size was determined using Cochran’s formula (Equation 1), with a 95% confidence level and a 5% margin of error. An estimated population proportion (p) of 0.3 was used based on preliminary data from FSD Kenya (2024), indicating that approximately 30% of MSMEs in the region actively engage with formal financial services.

$$n = \frac{z^2 pq}{e^2} \quad (1)$$

Using equation 1.1, the sample size is given as;

$$n = \frac{1.96^2 \times 0.3 \times 0.7}{0.05^2} \approx 323$$

In this context, n represents the sample size; z denotes the statistic corresponding to the confidence level; p signifies the estimated proportion of a characteristic present within the population; q is calculated as 1-p, representing an estimate of variance; and e indicates the acceptable margin of error. The study involved a sample of 323 MSMEs, selected from a total of 9,632 licensed blue economy MSMEs.

IV. RESEARCH FINDINGS

➤ Descriptive Statistics

Table 1 Descriptive Test Results for Financial Service Usability

Opinion Statement	SD	D	N	A	SA	MEAN	Std
Frequent use of bank accounts, money transfer services and mobile money services has improved the efficiency of our deposit and withdrawal activities.	(2.9%)	(2.1%)	(15.6%)	(27.2%)	(52.3%)	4.2387	.98366
Regularly checking our bank account balance helps us maintain financial accuracy and stability in our accounts.	(0.4%)	(1.6%)	(2.5%)	(55.6%)	(39.9%)	4.3292	.64815
Maintaining an active mobile money wallet contributes significantly to the financial health of our MSME.	(0%)	(3.3%)	(4.1%)	(49.0%)	(43.6%)	4.3292	.70904
We prioritize saving or setting aside funds after settling all business expenditures to ensure financial security.	(5.1%)	(1.3%)	(6.7%)	(65.0%)	(21.8%)	3.9753	.88573
Our MSME consistently closes accounts with savings or transfers unused funds into mobile accounts for future use.	(4.0%)	(5.1%)	(7.1%)	(74.5%)	(9.5%)	3.7901	.85835
We rely on savings to cover unexpected expenses, which impacts our financial management strategies.	(4.9%)	(14.1%)	(20.2%)	(41.2%)	(19.5%)	3.5679	1.10526
Insurance premiums for debt financing are a regular cost that Effects our financial decisions.	(2.5%)	(5.3%)	(21.0%)	(30.9%)	(40.3%)	4.0123	1.02643
The cost of insurance cover is a significant factor when deciding whether to use financial services for our enterprise.	(2.9%)	(3.3%)	(5.7%)	(38.3%)	(49.8%)	4.2881	.93118
We are generally satisfied with the insurance covers provided by our financial service providers.	(2.1%)	(15.6%)	(15.2%)	(18.9%)	(48.1%)	3.9547	1.20348
Financial Services Usability						4.0540	.50448

Key Scale: Ranked 1-1.5 Strongly Disagree (SD); 1.6-2.5Disagree(D), 2.6-3.5:3.6-4.5 Agree(A); 4.6-5.0 Strongly Agree (SA)

The overall usability of financial services among MSMEs in the blue economy was rated highly, with a mean score (μ) of 4.05 and a relatively low standard deviation (σ) of 0.50, indicating strong consensus among respondents regarding the accessibility and practicality of financial tools such as bank accounts, mobile wallets, and insurance services. A significant majority of respondents (79.5%) reported active use of bank accounts and mobile money services, supported by a high mean score ($\mu = 4.24$, $\sigma = 0.98$), reflecting widespread adoption. This finding is consistent with recent studies that highlight the pivotal role of mobile money and digital wallets in enhancing financial inclusion among MSMEs, particularly in contexts where cultural acceptance is high (Bongomin & Munene, 2019). A near-universal 95.5% of respondents reported frequent checking of account balances, with the highest item mean score ($\mu = 4.33$, $\sigma = 0.65$), reinforcing the notion that digital banking services have become integral to the daily operations of MSMEs. Similar patterns were observed with mobile wallets ($\mu = 4.33$, $\sigma = 0.71$, 92.6% agreement), echoing recent findings that ease of use, symbolic utility, and digital readiness drive the adoption of financial technologies in developing economies (Raj et al., 2024). Regarding financial discipline, 86.8% of respondents agreed that they save after expenses ($\mu = 3.98$, $\sigma = 0.89$), while 84.0% indicated they leave money behind when closing accounts ($\mu = 3.79$, $\sigma = 0.86$), reflecting moderate but positive saving behaviors. However, only 61.0% reported frequently withdrawing from savings, with the lowest item score ($\mu = 3.57$, $\sigma = 1.11$), indicating high behavioral variability. The use of insurance services was also notable. A majority (71.2%) were aware of being charged premiums ($\mu = 4.01$, $\sigma = 1.03$), while 88.1% viewed insurance costs as a key decision factor ($\mu = 4.29$, $\sigma = 0.93$). Satisfaction with insurance coverage (67.0%) scored $\mu = 3.95$ ($\sigma = 1.20$), indicating broader usage, though variable satisfaction. These findings support calls for improved digital consumer protection frameworks, as trust and transparency are crucial for the adoption of fintech and mobile insurance products (Bongomin & Ntayi, 2020). Notably, geographic and cultural factors significantly influenced the variability in financial service usage. MSMEs in urban areas demonstrated greater utilization of financial services due to easier access to infrastructure and internet connectivity. This observation aligns with empirical findings from Nigeria, where rural MSMEs faced significant barriers to access due to distance and poor infrastructure (Ibor et al., 2017), and from China, where digital financial inclusion varied by region and digital infrastructure availability (Sun & Zhang, 2024). In some instances, religious or ethnic values

also influenced service uptake, particularly concerning interest-bearing financial products, a trend also noted in studies emphasizing the need for culturally sensitive financial services design (Bongomin & Munene, 2019).

Table 2 Descriptive Test Results for Financial Health Dependent Variable

Opinion	SD	D	N	A	SA	MEAN	Std
Customer invoices for our MSME have increased over the past 48 months.	(0.4%)	(3.3%)	(9.1%)	(61.3%)	(25.9%)	4.0905	.71584
Gross revenue for our MSME has steadily risen over the past 48 months.	(2.1%)	(13.2%)	(16%)	(39.1%)	(29.6%)	3.8107	1.06657
Profits generated by our MSME have significantly contributed to its growth over the past three years.	(4.5%)	(0.8%)	(6.2%)	(57.2%)	(31.3%)	4.0988	.89910
Our MSME has effectively managed loan repayments and avoided any risk of CRB listing.	(1.6%)	(19.3%)	(42.0%)	(21.4%)	(15.6%)	3.3004	1.00632
We have maintained our workforce without cutting staff, hours, or downsizing operations in the past three years.	(5.3%)	(15.6%)	(31.3%)	(36.6%)	(11.1%)	3.3251	1.03914
Our MSME has not relied on additional loans or asset liquidation to cover expenses or settle debts.	(7%)	(21.8%)	(21%)	(29.2%)	(21%)	3.3539	1.22906
Our MSME has hired additional employees in the past three years, reflecting growth.	(1.2%)	(23.9%)	(25.1%)	(41.2%)	(8.6%)	3.3210	.97269
Sales have increased through a wider variety of inventory and the addition of new business lines.	(2.1%)	(10.3%)	(16%)	(50.2%)	(21.4%)	3.7860	.96396
Offering discounts to clients who pay early has helped us improve cash flow and attract more clients.	(2.1%)	(9.1%)	(20.6%)	(41.6%)	(26.7%)	3.8189	.99593
Financial Health						3.6561	.57063

Key Scale: Ranked 1-1.5 Strongly Disagree (SD); 1.6-2.5 Disagree(D), 2.6-3.5:3.6-4.5 Agree(A); 4.6-5.0 Strongly Agree (SA)

The surveyed blue economy MSMEs exhibited generally robust financial health ($\mu = 3.66$), with moderate variability, corroborating research that associates strong governance and competent leadership with enhanced financial outcomes (Roffia et al., 2021). Notably, 87.2% reported an increase in customer invoices ($\mu = 4.09$), and 68.7% observed rising gross revenue ($\mu = 3.81$), aligning with studies that link sustainable business practices and operational efficiency to revenue growth (Malesios et al., 2018). Profit growth was widely reported (88.5%, $\mu = 4.10$), although variability reflects differing capacities across firms, often influenced by firm age and managerial education (Karadag, 2017). However, credit risk remains a concern, with only 36.9% feeling secure from CRB listing ($\mu = 3.30$), a sentiment echoed in literature emphasizing creditworthiness challenges and the value of predictive models such as the Omega Score (Altman et al., 2023), and supply chain finance tools (Belhadi et al., 2021). Workforce trends were mixed, with approximately half reporting no reductions or increases in hiring. These findings reflect broader labor conservatism in blue economy MSMEs during uncertain periods (Serrasqueiro et al., 2018). Similarly, while 50.2% avoided additional debt, variation suggests differing financial strategies, consistent with post-crisis debt aversion among SMEs (Veiga & Mccahery, 2019). Inventory expansion (71.6%) and the use of early payment discounts (68.3%) reflect active cash flow management strategies, commonly adopted to improve liquidity and competitiveness (Malesios et al., 2018). In summary, while many blue economy MSMEs report solid financial growth, significant variability across key indicators points to uneven experiences, affirming broader research that blue economy MSMEs success is highly context-dependent, shaped by leadership, access to finance, and adaptive strategy.

➤ Inferential Results

Table 3 Pearson's Correlation Results

Variables		1	2	3
Financial Services Usability (1)	Pearson Correlation	1		
	Sig. (2-tailed)	.000		
	N	297		
Financial Literacy (2)	Pearson Correlation	.338**	1	
	Sig. (2-tailed)	.000		
	N	297	297	297

Financial Health (3)	Pearson Correlation	-.250**	.562**	1
	Sig. (2-tailed)	.000	.000	
	N	297	297	297
**. Correlation is significant at the 0.01 level (2-tailed).				

The results of the Pearson's correlation analysis, as presented in Table 3, reveal a moderate positive correlation ($r=0.385$, $p < 0.01$) between the usability of financial services and financial health. This suggests that improvements in the usability of financial services are associated with enhancements in financial health. These findings are statistically significant at the 0.01 level (two-tailed).

➤ Regression Analysis

Table 4 Model for Multiple Linear Regression (Direct Relationship)

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	.628 ^a	.395	.384	.44772	2.262
a. Predictors: (Constant), Financial Services Usability (FSU)					
b. Dependent Variable: Financial Health (FH)					

The R Square (Coefficient of Determination) value of 0.395, as presented in the direct relationship model in Table 4, indicates that the regression model accounts for approximately 39.5% of the variance in financial health ($R^2 = 0.395$), thereby suggesting moderate explanatory power. Although a significant portion of the variance (approximately 60.5%) remains unexplained, implying the potential omission of other relevant factors from the model, the R^2 value nonetheless underscores the relevance of the included predictors. Consequently, the model offers a reasonably adequate fit for the data, particularly within the context of social science research, where lower R^2 values are prevalent due to the inherent complexity of human and economic behavior.

Table 5 ANOVA Test Results for Direct Relationship

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	31.092	4	7.773	38.776	.000 ^b
	Residual	47.709	292	.200		
	Total	78.800	296			
a. Dependent Variable: Financial Health(FH)						
b. Predictors: (Constant), Financial Services Usability(FSU)						

Table 5 indicated that the F Value, 38.776 with a P-Value of 0.000. This result suggested that the null hypothesis is rejected and the FSU had a statistically significant effect on the FH. These findings demonstrated the robustness of the study and corroborated the validity of the relationship between the two variables. Regression coefficients were subsequently generated to facilitate decision-making processes, policy formulation, and academic reference based research findings.

Table 6 Regression Coefficients Results (Direct Relationship)

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
	(Constant)	2.262	.261		8.650	.000
	Financial Services Usability(FSU)	.593	.077	.524	7.722	.000
a. Dependent Variable: Financial Health (FH)						

Table 6 indicates that the overall coefficients for the constant has a beta value of $\beta_0 = 2.262$ and a p value of 0.000 that financial services usability (FSU) has a regression coefficient of $\beta_1 = 0.593$ with a P-Value of .000; Therefore, the finding suggested that financial service usability (FSU) had significant ($p < 0.05$) positive effect financial health (FH) in Kenyan blue economy MSMEs. The multiple regression model was derived from Table 6 as represented by Equation 2.

$$FH = 2.262 + 0.593FSU \quad \dots\dots\dots (2)$$

Where;

FH: Financial health (Dependent variable)

FSU: Financial service usability (Independent variable)

A unit increase in Financial Services Usability, the dependent variable Financial Health increases by 59.3%, ceteris paribus.

Table 7 Model Summary for Moderated Relationship.

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.776 ^b	.602	.587	.36680
a. Predictors: (Constant), FSU, MFSU				
b. Dependent Variable: Financial Health (FH)				

The analysis as shown in Table 7, with an R value of 0.776 after considering the moderating effect of financial literacy resulted in a 20.7% increase in the variation of financial health (FH) attributed to the model. This observation suggests that financial literacy exerted a moderating influence in the relationship of financial service usability (FSU) and Financial Health (FH). This emphasizes the importance of the moderating variable in strengthening the relationship between these elements within the model.

As shown in Table 7, the inclusion of financial literacy as a moderating variable in the regression model increased the explained variance (R^2) in financial health from R^2 of 0.395 to 0.602, corresponding to a $\Delta R^2 = 0.207$ (20.7%). This substantial increase indicates that financial literacy significantly enhances the predictive strength of the model. The interaction term (FSU $\times$ Financial Literacy) was statistically significant confirming that financial literacy moderates the relationship between financial service usability and financial health. These findings underscore the importance of considering financial literacy when designing interventions aimed at improving the financial wellbeing of Blue Economy MSMEs.

Table 8 ANOVA Results for the Moderated Relationship Models

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	47.451	9	5.272	39.187	.000 ^c
Residual	31.349	287	.135		
Total	78.800	296			
a. Dependent Variable: Financial Health (FH)					
b. Predictors: (Constant), FSU, MFSU.					

Moreover, the model's significance was further validated by the produced F-score. Table 8 indicated that the incorporation of financial literacy (M) as a moderating variable has increased the F value from 38.776 to 39.187. This suggests that both models demonstrated a relatively good fit. Likewise, the model yielded a p-value of less than 0.005, signifying its accuracy in presenting the examined correlation among the dependent variable, predictor variable and the interaction effect of the moderator.

Table 9 Regression Coefficients for the Moderated Variable

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	5.516	1.602		3.443	.001
	Financial Services Usability	.308	.074	.272	4.187	.000
	Interaction between Financial Service Usability and Financial Literacy	.057	.024	-.204	-2.342	.020
a. Dependent Variable: Financial Health						

Table 9 demonstrates that financial literacy significantly moderated the relationship between the usability of financial services and financial health.

The resultant moderated regression model is given by equation 3 as;

$$FH = 5.516 + 0.308FSU + +0.057Mfsu.....(3)$$

Where;

FH: Financial health

FSU: Financial service usability

fsuM Interaction between Financial Service Usability and Financial Literacy

Equation 3 demonstrates that financial literacy exerts a positive moderating effect on the relationship between financial service usability and financial health. Specifically, a one-unit increase in the interaction between financial service usability (FSU) and financial literacy (M) results in a 0.057 unit enhancement in financial health (FH), assuming all other variables remain constant.

Table 10 Summary of Research Hypotheses

Hypothesis Statement	B	P value	Comments
H₀₁: Financial services usability has no significant effect on financial health of blue economy MSMEs in Kenya.	.593	.000	Rejected
H_{02a}: Financial literacy does not have a significant effect on relationship between financial services usability and financial health of blue economy MSMEs in Kenya	.057	.020	Rejected

The p-values derived from the regression model (Table 6) were used to test the study hypotheses at a 0.05 significance level. The study investigated the role of financial service usability in the financial health of Blue Economy MSMEs in Kenya. The results from the direct effect model revealed a statistically significant positive relationship, with a regression coefficient of $\beta_1 = 0.593$ and $p < .001$, thereby leading to the rejection of the null hypothesis ($H_{01}: \beta_1 = 0$). This indicates that increased usability of financial services is significantly associated with improved financial health outcomes among these MSMEs. Furthermore, when financial literacy was introduced as a moderating variable, the interaction term remained statistically significant, suggesting that financial literacy positively moderates the relationship between service usability and financial health. As shown in Table 10, this led to the rejection of the moderation null hypothesis. These findings underscore the importance of enhancing both usability and financial literacy to improve MSME financial wellbeing.

➤ *Key Findings*

The descriptive results for the role of financial service usability on financial health of blue economy MSMEs in Kenya revealed that respondents generally agreed FSU affects FH with the very high overall mean of 4.0540. Digital infrastructure, particularly mobile wallets and online banking platforms, was heavily utilized by blue economy MSMEs. High mean scores of 4.24 and 4.33 for the use of bank accounts and checking account balances indicated strong engagement with these services though affordability of some services was a concern ($SD = 1.11$). MSMEs found the digital platforms user-friendly and efficient for day-to-day financial management. MSMEs reported saving after expenses, with a mean score of 3.98. This demonstrated that many businesses prioritize savings, although some still struggle to maintain consistent savings practices, as indicated by variability in the responses.

Despite the high usage of digital financial services, some MSMEs raised concerns about the affordability of these services, particularly in terms of fees and transaction costs. This suggested that while usability is high, cost considerations may limit access for some businesses, especially those in marginalized blue economy regions.

Financial services usability positively influences financial health. This was strongly supported, with usability having the highest positive influence ($\beta = 0.385$), compared to other variables.

There was a moderate positive correlation ($r = 0.385$, $p < 0.01$) between financial services usability and financial health. A moderate positive relationship showed that improved usability of financial services; user-friendly systems or digital platforms enhanced financial health. This supports findings by Karttunen, Lauri, & Peters (2018), emphasizing that MSMEs actively pursue financial services that are accessible and usable, overcoming barriers to foster their financial well-being. The findings also suggested that the better the usability of financial services; mobile banking, account management, and transaction flexibility, the more likely MSMEs are to experience improved financial health. Usability, quality, and literacy strongly affect financial health positively, underscoring the importance of designing user-centric, high-quality financial services and enhancing financial literacy (Karttunen et al., 2018; Hendriks, 2019).

The hypothesis testing for the direct relationship in Table 6 resulted in the rejection H_{01} because the p-value of 0.000 was less than the minimum threshold of 0.05 and $\beta_1 \neq 0$ 0.593. This conclusion implied that financial service usability had very high significant effect on the financial health of blue economy MSMEs in Kenya. Upon the introduction of the moderating variable (M), the FSU retained a positive significant effect in FH. The study observed that blue economy MSMEs with better knowledge of financial services were more likely to utilize them effectively. The findings are in agreement with those of a study by Osarfo, Kodom, Quartey and Darkwah (2025); Abate and Sheferaw (2023) which showed that usability was highly dependent on the availability of financial literacy programs and the integration of digital financial tools into existing business operations, (Muthama, Gal and Farkas, 2023; as well as Banerjee et al; 2023). Study on MSMEs in Indonesia by Susan (2020) found a direct correlation between financial service usability and business growth. The study revealed that MSMEs with higher financial literacy levels and better digital adoption strategies were more likely to benefit from available financial services, leading to increased profitability and business expansion, hence financially healthy.

V. CONCLUSION AND RECOMMENDATIONS

A. Conclusions

The findings indicate a significant and positive correlation between the usability of financial services and the financial health of micro, small, and medium enterprises (MSMEs) operating within Kenya's Blue Economy. This underscores the critical role that accessible and intuitive financial services play in sustaining these enterprises. While digital financial platforms have enhanced usability in certain regions, obstacles such as financial illiteracy, complex service interfaces, and inadequate infrastructure continue to impede wider adoption. Moreover, the analysis reveals that both financial literacy and service usability are significantly linked to improved financial health, leading to the rejection of the null hypothesis, which posited no relationship among these variables.

B. Recommendations

Given the statistically significant positive relationship identified between financial service usability and the financial health of Blue Economy MSMEs in Kenya, the study recommends strengthening financial literacy programs and implementing clear, supportive regulatory frameworks. These measures are essential to ensure the continued uptake of financial services and promote the long-term financial wellbeing of MSMEs operating in this sector. Findings underscore the importance of prioritizing financial service usability as a central pillar of financial inclusion strategies for MSMEs in Kenya's blue economy. By ensuring that financial tools are not only accessible but also affordable, user-friendly, and tailored to the unique needs of small enterprises, policymakers can significantly strengthen MSME financial health and resilience. This has direct implications for economic development, poverty reduction, and gender equity, given the critical role of women- and youth-led enterprises in the sector. At the policy level, regulators should explore interventions such as reducing transaction costs, incentivizing digital adoption, and embedding financial literacy into MSME capacity-building programs. Economically and socially, stronger MSME financial health translates into improved enterprises stability, reduced vulnerability to shocks, and more sustainable community development. Looking forward, future research should test targeted interventions that enhance usability, such as simplified digital interfaces or subsidized transaction models, to determine their impact on MSME financial sustainability. By advancing usability-centered policies and practices, Kenya has the potential to fully harness its blue economy, thereby fostering inclusive growth and contributing to the attainment of both national and global development objectives.

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