



Diversification Strategy and Perceived Financial Sustainability of Commercial Banks in Nairobi County, Kenya

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Abstract

This study examined the association between diversification strategy and perceived financial sustainability of commercial banks in Nairobi County, Kenya. A cross-sectional survey was conducted among heads of department and branch managers of the 38 licensed commercial banks. A proportionate stratified random sample of 160 was drawn; 148 questionnaires were returned (92.5%) and 147 were analysed. After confirmatory factor analysis and common-method bias tests, Pearson correlation and simple linear regression tested the hypothesis, and a supplementary multiple regression controlled for market penetration, product development and strategic alliance strategies. Diversification strategy was positively associated with perceived financial sustainability ($r = .353, p < .001; B = 0.356, 95\% \text{ CI } [0.201, 0.511]; R^2 = .125$), and the association remained significant with robust standard errors, after a marker-variable adjustment and under design-effect adjustment for respondents nested in banks. When the other growth strategies were controlled, the unique association was positive but not significant ($B = 0.129, 95\% \text{ CI } [-0.027, 0.286], p = .104; \Delta R^2 = .013$). Both constructs were reported by the same managers at one-point in time, and several diversification items refer to perceived outcomes; the estimates are associations, not causal effects. Managers should evaluate diversification together with related growth strategies and against objective financial indicators. The study offers manager-level evidence on diversification and a three-dimensional measure of financial sustainability in Kenyan banking, and shows that the association weakens once related growth strategies are considered.

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Introduction

Commercial banks are the dominant financial intermediaries in Kenya: they mobilise deposits, extend credit and operate the payment infrastructure on which households and firms depend. As at December 2025, the banking sector comprised 38 commercial banks and one mortgage finance company licensed by the Central Bank of Kenya (Central Bank of Kenya, 2026). Nairobi County hosts the head offices of all the licensed commercial banks, where strategic decisions on products, markets and risk exposures are made for the entire branch and agent network. The sector has remained liquid in recent years, but asset quality has weakened: the gross non-performing loans ratio rose from 14.1% in December 2021 to 17.1% in December 2024 before easing to 16.0% in December 2025 (Central Bank of Kenya, 2022, 2026). Against this background, banks have pursued growth strategies, including diversification into new products, markets and risk exposures, to secure their long-term financial sustainability.



In Ansoff's (1957) product-market matrix, diversification is the strategy of entering new markets with new products, as distinct from market penetration (existing products in existing markets), product development (new products for existing markets) and market development (existing products in new markets). In banking, the term is used more broadly to describe a bank's expansion beyond traditional interest-based lending into new lines of business, new geographic markets and a wider spread of risk exposures, so as to reduce dependence on a single source of income (Elsas et al., 2010; Kimani et al., 2025). In this study, diversification strategy is understood as the deliberate broadening of a bank's business portfolio along three dimensions: product diversification (adding largely fee-based business lines such as bancassurance, trade finance and wealth management), geographic diversification (extending operations into new regions through branches, agents, digital platforms and subsidiaries) and risk diversification (spreading lending and investment across sectors, customer segments and asset classes).

The intended outcome of diversification is financial sustainability, defined as a bank's ability to generate sufficient income to cover its costs, meet its obligations and remain viable over the long-term (Kiptum, 2023). Financial sustainability is commonly assessed through three dimensions. Profitability reflects the ability to generate earnings from assets and equity; liquidity reflects the capacity to meet short-term obligations and regulatory liquidity requirements; and cost-efficiency reflects the ability to control operating expenses relative to income (Saunders & Cornett, 2021). Because this study measures these dimensions through the assessments of bank managers rather than through financial ratios, the term perceived financial sustainability is used throughout.

Kenyan banks have pursued all three forms of diversification. They have added bancassurance, digital lending and other fee-based services to their lending business, extended their reach through agency banking, mobile platforms and regional subsidiaries, and spread their lending across economic sectors (Kiptum, 2023; Ogetange et al., 2022; Thurania et al., 2024). Over the same period the sector held liquid assets well above the statutory minimum of 20%, with the average liquidity ratio ranging between 50.8% and 59.3% from 2021 to 2025 (Central Bank of Kenya, 2022, 2024, 2025, 2026), while asset quality deteriorated. Whether the broadening of banks' business portfolios is associated with stronger financial sustainability is therefore a question of practical importance for bank managers and for the regulator.

International evidence on the outcomes of bank diversification is mixed. Studies of United States banks found that the shift towards non-interest income increased the volatility of earnings, so that the expected benefits of diversification were offset by greater exposure to volatile activities (DeYoung & Roland, 2001; Stiroh, 2004; Stiroh & Rumble, 2006). Similarly, European banks that expanded into fee and commission income were found to carry higher risk (Lepetit et al., 2008), and financial conglomerates that combine lending with other financial activities were found to trade at a discount (Laeven & Levine, 2007). Spreading loan portfolios across sectors did not guarantee better returns or lower risk for Italian banks (Acharya et al., 2006). In contrast, revenue diversification raised the profitability and market value of banks in nine developed countries (Elsas et al., 2010) and was positively associated with bank stability across 173 countries (Tran et al., 2023).

Evidence from emerging and African markets is equally mixed. In emerging economies, the gains from diversification differ by bank size and country (Moudud-Ul-Huq et al., 2023). In Kenya, income diversification was positively associated with the return on assets of commercial banks over 2013–2022 (Kimani et al., 2025), and economic diversification was positively associated with financial sustainability measured by return on assets, although high leverage weakened the association (Kiptum, 2023). However, Ogetange et al. (2022) found that income diversification was negatively



associated with the financial performance of Kenyan banks over 2011–2020, while geographic diversification was positively associated with it.

Three gaps follow from this literature. First, most studies measure diversification through income ratios and its outcome through a single profitability ratio, leaving the liquidity and cost-efficiency dimensions of financial sustainability largely unexamined (Kiptum, 2023; Ogetange et al., 2022). Second, the Kenyan studies rely on secondary-data, and little is known about how the managers who design and implement diversification assess its association with the sustainability of their banks. Third, the contradictory findings suggest that the association may depend on related growth strategies, yet diversification has rarely been examined alongside them. This study addresses these gaps by examining, from the perspective of heads of department and branch managers, the association between diversification strategy and perceived financial sustainability of commercial banks in Nairobi County, and by testing whether the association holds when market penetration, product development and strategic alliance strategies are taken into account. The perceptual approach is intended to complement, not replace, the secondary-data studies.

The objective of the study was to assess the association between diversification strategy and perceived financial sustainability of commercial banks in Nairobi County, Kenya. On the basis of Modern Portfolio Theory and the resource-based view, which are reviewed in the next section, a positive association was expected: banks whose managers report broader product, geographic and risk diversification were expected to be rated as more profitable, liquid and cost-efficient. Because the study is cross-sectional and both constructs are reported by managers, the hypothesis is framed as an association rather than an effect. The study tested the following null hypothesis at the 5% level of significance:

H_{01} : There is no statistically significant association between diversification strategy and perceived financial sustainability of commercial banks in Nairobi County, Kenya.

Literature Review

This section reviews the literature on which the study is built. It first clarifies how diversification strategy and financial sustainability have been conceptualised and measured, and how diversification differs from the related growth strategies of market penetration and product development. It then presents the theories that guide the study and the direction of the relationship they predict, reviews recent empirical studies from Kenya, other emerging markets and developed economies, and closes with the conceptual framework that links the variables and the gap that the study addresses.

Conceptual Review

Diversification strategy has been conceptualised in several ways. Corporate strategy distinguishes related diversification, which builds on existing resources and markets, from unrelated diversification into new businesses (Ansoff, 1957). Banking studies typically distinguish income or revenue diversification (the mix of interest and non-interest income), asset diversification (the mix of loans, securities and other assets) and geographic diversification (the spread of operations across regions) (Elsas et al., 2010; Ogetange et al., 2022), and measure them with income shares or Herfindahl–Hirschman indices. In this study, product diversification refers to entry into business lines outside the core lending and deposit business, which distinguishes it from product development (new or improved versions of core banking products for existing customers) and from market penetration (selling more of existing products in existing markets). Geographic diversification refers to entry into new regional markets, and risk diversification to the deliberate spreading of credit and investment exposures, which is closer to portfolio management than to market entry.



Financial sustainability has been conceptualised as a bank's long-term capacity to remain profitable, liquid and efficient (Kiptum, 2023; Thurania et al., 2024). Objective studies measure it with ratios such as return on assets, the liquidity ratio and the cost-to-income ratio, while survey studies measure managers' assessments of the same dimensions (Imbalo et al., 2025). Perceptual measures capture how decision-makers evaluate the position of their banks, but they are exposed to favourable self-assessment and common-method bias when the predictor and the outcome are reported by the same respondent (Podsakoff et al., 2003). The relationship between the two constructs is theoretically ambiguous: diversification may raise sustainability by spreading risk and exploiting economies of scope, or lower it through higher operating costs, managerial complexity and exposure to more volatile income (Laeven & Levine, 2007; Stiroh, 2004).

Theoretical Framework

The study was anchored on Modern Portfolio Theory (MPT), developed by Markowitz (1952). The theory holds that an investor can obtain the highest expected return for a given level of risk by combining assets whose returns are not perfectly correlated, because losses on some assets are offset by gains on others (Francis & Kim, 2013). MPT was developed for investors' portfolios, and its application to firm-level strategy requires justification, because shareholders can diversify their own holdings and diversified firms may trade at a discount (Laeven & Levine, 2007). Its application to banks rests on the fact that a bank's balance sheet is itself a portfolio of loans, securities and fee-generating activities, and that depositors and regulators, unlike shareholders, cannot diversify away a bank's failure. MPT therefore predicts that spreading activities across imperfectly correlated income streams will stabilise earnings and reduce risk.

MPT predicts lower risk and more stable earnings, not necessarily higher levels of profitability, liquidity or efficiency. Because this study measures the perceived level of financial sustainability rather than its volatility, it does not test MPT's risk-reduction prediction directly; MPT is used to motivate the expectation that a more diversified bank will be regarded by its managers as more sustainable. The theory has also been criticised for assuming rational investors, normally distributed returns and stable correlations, and evidence that non-interest income is volatile and correlated with interest income suggests that diversification does not always reduce risk in banking (Stiroh, 2004).

To complement MPT, the study draws on the resource-based view (Barney, 1991) and its dynamic-capabilities extension (Teece et al., 1997). These perspectives hold that the benefits of a strategy depend on the firm's ability to deploy valuable resources and to reconfigure them as markets change. Applied to banking, diversification is expected to strengthen financial sustainability only where a bank has the capabilities, such as product-design, technology and risk-management, to exploit economies of scope without excessive cost. This lens also explains why diversification may overlap with product development, which draws on the same capabilities. Taken together, the two theories predict a positive association between diversification strategy and perceived financial sustainability, conditional on the bank's capabilities.

Empirical Review

Kimani et al. (2025) examined the influence of income diversification on the financial performance of commercial banks in Kenya. Using secondary-data for all 38 banks for 2013–2022, Herfindahl-Hirschman indices and panel regression, they found that both interest and non-interest income diversification were positively and significantly associated with return on assets. The study measured short-term performance with a single ratio.

Imbalo et al. (2025) investigated the effect of digital lending, one form of product diversification, on the financial sustainability of Tier 1, 2 and 3 commercial banks in Kenya using a structured questionnaire and stratified random sampling. The regression model was significant ($F(4, 98) = 27.600$,



$p < .05$) and explained about half of the variation in financial sustainability. The study examined a single product line rather than diversification as a whole.

Thuranira et al. (2024) examined digital channels and financial sustainability in Kenyan commercial banks using secondary-data for 2018–2023 and generalised method of moments estimation. Mobile, internet, agency and electronic banking were all positively associated with financial sustainability, with mobile banking having the largest effect. Digital channels are one means of geographic reach, but the study did not measure diversification.

Moudud-Ul-Huq et al. (2023) examined bank diversification, risk and performance in emerging economies using 542 bank-year observations for 2004–2015 and found that the benefits of diversification differed by bank size and country. Tran et al. (2023), using data for 173 countries over 2000–2020, found that revenue diversification was positively associated with bank stability, especially in concentrated markets.

Kiptum (2023) investigated whether Kenyan commercial banks can achieve financial sustainability through economic diversification, measured as the share of non-interest income in total income. Panel regression showed a positive and significant association with financial sustainability measured as return on assets, which was weakened by high leverage. Ogetange et al. (2022) assessed all 39 commercial banks in Kenya over 2011–2020 and found that income diversification was negatively, and geographic diversification positively, associated with financial performance, while asset diversification had no significant association.

Earlier international studies found that the gains from diversification can be offset by the volatility of non-interest income (DeYoung & Roland, 2001; Lepetit et al., 2008; Stiroh, 2004; Stiroh & Rumble, 2006), although revenue diversification raised the profitability of banks in developed countries (Elsas et al., 2010). Overall, the reviewed studies relied mainly on secondary-data, measured diversification through income or asset ratios, and assessed outcomes through profitability or stability ratios. Their mixed findings, and the absence of manager-level evidence that covers profitability, liquidity and cost-efficiency together, form the gap addressed by the present study.

Conceptual Framework

Figure 1 presents the hypothesised relationship between diversification strategy, measured through product, geographic and risk diversification, and perceived financial sustainability, measured through profitability, liquidity and cost-efficiency. Each construct is modelled as a composite score, computed as the mean of its six items. The hypothesised path (H_{01}) is expected to be positive and is tested in a simple regression. Market penetration, product development and strategic alliance strategies, which the resource-based view suggests share capabilities with diversification, enter a supplementary model as control variables so that the unique association of diversification can be estimated.

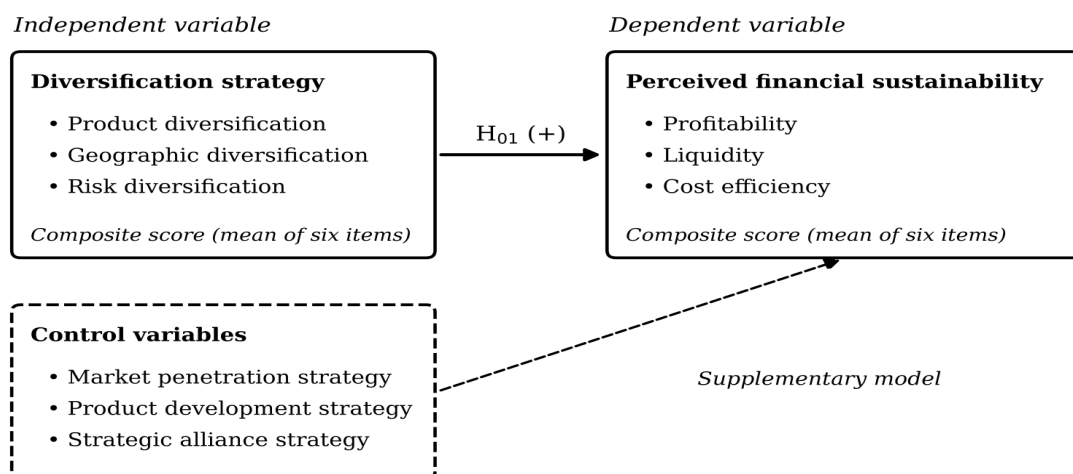


Figure 1: Conceptual framework

Method

This section describes how the study was conducted. It sets out the research design and its implications for inference, the target population, sampling frame and sampling procedure, the research instrument and the measurement of the two constructs, the steps taken to establish validity and reliability, the methods of data analysis, including the tests of regression assumptions and the sensitivity analysis for the clustering of respondents within banks, and the ethical safeguards applied to the participants.

Research Design

The study adopted a cross-sectional survey design with a quantitative approach. Data on diversification strategy and perceived financial sustainability were collected from the same respondents at one-point in time, which allows associations to be estimated but does not support causal inference. This article reports one objective of a wider research project on growth strategies and financial sustainability (Khalayi, 2026); the measures of the other three growth strategies from that project are used here only as control variables, and the other objectives have not been published.

Population and Sampling

The unit of analysis was the commercial bank, and the units of observation were the managers who formulate and implement strategy. The sampling frame was the list of the 38 licensed commercial banks published by the Central Bank of Kenya, together with six core head-office departments in each bank (operations, finance, credit, marketing, human resources and treasury) and the manager of each bank's principal branch. This gave a target population of 266 respondents (228 heads of department and 38 branch managers). The sample size of 160 was obtained using Slovin's formula at a 5% margin of error and is close to the 155 recommended for a population of this size by Krejcie and Morgan (1970). The sample was allocated proportionately to the two strata, and respondents were selected within each stratum by simple random sampling from the list of positions, as shown in Table 1.

Table 1: Population, sample and response rate

Stratum	Population	Sample	Allocation
Heads of department (6 × 38 banks)	228	137	$(228/266) \times 160$
Branch managers (1 × 38 banks)	38	23	$(38/266) \times 160$
Total	266	160	Slovin's formula, e = 0.05

Note. Questionnaires returned: 148 of 160 (92.5%); not returned or incomplete: 12 (7.5%); analysed: 147.

**Research Instrument**

Data were collected using a structured questionnaire with items rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Diversification strategy was measured by six items, two each on product, geographic and risk diversification, and perceived financial sustainability by six items, two each on profitability, liquidity and cost-efficiency (Table 2). Two items per construct describe the extent of diversification, whereas four describe its perceived contribution to performance, cost-efficiency, profitability or liquidity; this wording overlaps with the outcome and is considered in the interpretation and limitations. Each construct was scored as the mean of its six items and treated as an interval-level composite (Carifio & Perla, 2008). Market penetration, product development and strategic alliance strategies were each measured by six items.

Validity and Reliability

Content validity was assessed through expert review of the instrument by the two academic supervisors, who checked that the items covered the dimensions of each construct. The instrument was piloted with 16 respondents (12 heads of department and 4 branch managers) in four commercial banks in Kiambu County, which operate under the same regulatory framework as Nairobi banks; the pilot respondents were excluded from the main study. Cronbach's alpha from the pilot was .889 for diversification strategy and .878 for perceived financial sustainability, and between .814 and .899 for the three control constructs, above the threshold of .70 (George & Mallery, 2019). Reliability and construct validity were then re-established in the main sample through Cronbach's alpha, McDonald's omega and confirmatory factor analysis, as reported in the Results.

Data Analysis

Descriptive statistics comprised frequencies, percentages, item means and standard deviations, and the mean and standard deviation of each composite score. A five-factor confirmatory factor analysis (CFA) of the 30 items was estimated by maximum likelihood to assess convergent validity through standardised loadings, composite reliability (CR) and average variance extracted (AVE) (Fornell & Larcker, 1981), and discriminant validity through the heterotrait-monotrait ratio (HTMT) (Henseler et al., 2015); model fit was judged against the criteria of Hu and Bentler (1999). Common-method bias was assessed with Harman's single-factor test, a comparison of one-factor and two-factor CFA models for the diversification and financial sustainability items, and the marker-variable adjustment of Lindell and Whitney (2001) (Podsakoff et al., 2003). The hypothesis was tested using Pearson correlation and the simple linear regression $Y = \beta_0 + \beta_1 X + \epsilon$, where Y is perceived financial sustainability and X is diversification strategy. A supplementary multiple regression added market penetration, product development and strategic alliance strategies to establish the unique association of diversification, and the change in R^2 attributable to diversification (ΔR^2) was tested with an F -change test. Unstandardised (B) and standardised (β) coefficients, standard errors, 95% confidence intervals and exact p -values are reported (Pallant, 2020). Descriptive statistics were computed in SPSS version 25, and the CFA and regression diagnostics in Python (semopy and statsmodels).

The regression assumptions were examined before interpretation. The composite scores were negatively skewed (skewness -0.67 to -1.08), but the residuals of both models did not depart materially from normality (Kolmogorov-Smirnov $p = .262$ and $.196$), and the normality of the sampling distribution of the coefficients is supported by the sample size. A quadratic term for diversification was not significant ($p = .422$), supporting linearity. The Breusch-Pagan test indicated heteroscedasticity in the simple model ($\chi^2 = 5.930$, $df = 1$, $p = .015$) but not in the multiple model ($\chi^2 = 2.510$, $df = 4$, $p = .643$), so heteroscedasticity-consistent (HC3) standard errors are also reported (Hayes & Cai, 2007). Variance inflation factors ranged from 1.156 to 1.411, indicating no harmful multicollinearity, and the models were re-estimated without the cases with Cook's distance above $4/n$. Because respondents were nested in 38 banks (about 3.9 per bank on average), their responses



may not be independent. As bank identifiers were not recorded on the questionnaires, the sensitivity of the main result to clustering was assessed by inflating its standard error with the design-effect, $deff = 1 + (m - 1)\rho$, where m is the average number of respondents per bank and ρ the intra-class correlation, for values of ρ from .05 to .30 (Kish, 1965).

Ethical Considerations

Ethical approval was granted by the Kabarak University Research Ethics Committee (approval no. KUREC-320526, 28 May 2026), and a research licence was issued by the National Commission for Science, Technology and Innovation (licence no. NACOSTI/P/26/4190838, 17 June 2026). Introduction letters were presented to the head-office of each participating bank. Respondents received an information and consent form explaining the purpose of the study, that participation was voluntary and that they could withdraw at any stage without penalty. No names or bank identifiers were recorded on the questionnaires, the data were stored in password-protected files accessible only to the researcher and used for academic purposes only, and results are reported in aggregate so that no respondent or bank can be identified.

Results

This section presents the results of the study in the order of the analysis. It first reports the response rate and the profile of the respondents, then the descriptive statistics for the diversification strategy and perceived financial sustainability scales, and finally the results of the correlation and regression analyses used to test the hypothesis, including the supplementary model with control variables and the sensitivity of the main result to the clustering of respondents in banks. Interpretation of the results is reserved for the Discussion.

Response Rate and Respondent Profile

Of the 160 questionnaires administered, 148 were returned complete, a response rate of 92.5% (Table 1); the remaining 12 (7.5%) were not returned or were incomplete and were excluded listwise. The dataset available for analysis contains 147 of the 148 returned questionnaires, so all analyses are based on $n = 147$. Of these respondents, 83 (56.5%) were male and 64 (43.5%) female. Most were aged 31–40 years (42.2%) or 41–50 years (29.9%), 132 (89.8%) held at least a first degree, and 125 (85.0%) had worked in their bank for more than five years, which suggests that the respondents were experienced in their banks' operations.

Measurement Model and Common-Method Bias

In the main sample, Cronbach's alpha was .822 for diversification strategy and .846 for perceived financial sustainability, and McDonald's omega (composite reliability) was .826 and .846, respectively; for the control constructs, alpha ranged from .786 to .805. The five-factor CFA fitted the data acceptably ($\chi^2 = 478.064$, $df = 395$, $p = .003$; CFI = .941; TLI = .935; RMSEA = .038). Standardised loadings ranged from .559 to .755 for diversification, from .606 to .764 for financial sustainability and from .514 to .790 across all 30 items, and composite reliability ranged from .789 to .846. The AVE ranged from .389 to .479, below the .50 benchmark, so convergent validity is modest, although Fornell and Larcker (1981) accept an AVE below .50 when composite reliability exceeds .60. Discriminant validity was supported: all HTMT ratios were below .85 (highest .588, between product development and financial sustainability; .425 between diversification and financial sustainability), and the square root of the AVE of each construct exceeded its correlations with the other constructs. The two-item dimension scores had low reliability (Spearman-Brown coefficients from .544 to .725), which confirms that the dimensions should not be analysed separately.

Common-method bias was examined in three ways. In Harman's test, the first unrotated factor accounted for 25.1% of the variance in the 30 items and 37.6% of the variance in the 12 diversification and financial sustainability items, below the 50% threshold. A single-factor CFA of these 12 items



fitted poorly (CFI = .686; RMSEA = .153), whereas the two-factor model fitted well ($\chi^2 = 65.846$, $df = 53$, $p = .111$; CFI = .978; TLI = .973; RMSEA = .041), and the difference was significant ($\Delta\chi^2 = 173.229$, $df = 1$, $p < .001$). Using the smallest correlation between the five constructs ($r = .129$, between diversification and strategic alliance strategy) as a marker of method variance (Lindell & Whitney, 2001), the adjusted correlation between diversification and financial sustainability was .257 ($p = .002$). These tests do not rule out common-method variance, but they indicate that it is unlikely to account for the whole association.

Descriptive Statistics

Table 2 presents the distribution of responses, item means and standard deviations, and the composite scores. Respondents generally agreed with the diversification items (composite $M = 3.913$, $SD = 0.721$) and the financial sustainability items (composite $M = 3.965$, $SD = 0.727$). Responses were concentrated at points 4 and 5 of the scale, with between 61.9% and 81.0% of respondents agreeing or strongly agreeing with each diversification item, which indicates a ceiling effect. Because four diversification items describe perceived outcomes and each dimension rests on two items of low reliability, differences between dimensions were not tested and are not interpreted.

Table 2: Descriptive statistics for diversification strategy and perceived financial sustainability

Statement	SA	A	N	D	SD	M	SD
Diversification strategy							
D1. The bank has introduced a variety of products to meet diverse customer needs	57 (38.8)	62 (42.2)	18 (12.2)	7 (4.8)	3 (2.0)	4.109	0.937
D2. Expanding our product offerings has enhanced the bank's performance	50 (34.0)	64 (43.5)	22 (15.0)	8 (5.4)	3 (2.0)	4.020	0.947
D3. The bank has expanded its operations into multiple regions to reach new markets	43 (29.3)	61 (41.5)	26 (17.7)	13 (8.8)	4 (2.7)	3.857	1.027
D4. Geographic diversification has strengthened the bank's cost-efficiency	34 (23.1)	57 (38.8)	35 (23.8)	16 (10.9)	5 (3.4)	3.673	1.054
D5. Diversifying risk has contributed to improved profitability	46 (31.3)	62 (42.2)	26 (17.7)	10 (6.8)	3 (2.0)	3.939	0.974
D6. Risk diversification has enhanced liquidity stability	43 (29.3)	62 (42.2)	27 (18.4)	11 (7.5)	4 (2.7)	3.878	1.006
<i>Composite score</i>						3.913	0.721
Perceived financial sustainability							
F1. The bank has maintained a competitive ROA and ROE	41 (27.9)	63 (42.9)	29 (19.7)	10 (6.8)	4 (2.7)	3.864	0.991
F2. The bank's profitability is sufficient to support long-term expansion plans	42 (28.6)	63 (42.9)	28 (19.0)	10 (6.8)	4 (2.7)	3.878	0.992
F3. The bank maintains sufficient liquidity to meet short-term obligations	53 (36.1)	65 (44.2)	19 (12.9)	7 (4.8)	3 (2.0)	4.075	0.930
F4. The bank's liquidity ratio meets regulatory and internal standards	56 (38.1)	63 (42.9)	18 (12.2)	7 (4.8)	3 (2.0)	4.102	0.934
F5. The bank effectively controls operational costs relative to revenue	45 (30.6)	62 (42.2)	26 (17.7)	10 (6.8)	4 (2.7)	3.912	0.999
F6. The bank has implemented strategies to reduce unnecessary expenditures	46 (31.3)	64 (43.5)	25 (17.0)	9 (6.1)	3 (2.0)	3.959	0.957
<i>Composite score</i>						3.965	0.727

Note. $N = 147$. Cells show frequency (percentage). SA = strongly agree; A = agree; N = neutral; D = disagree; SD = strongly disagree. D1–D2 = product, D3–D4 = geographic and D5–D6 = risk diversification; F1–F2 = profitability, F3–F4 = liquidity and F5–F6 = cost-efficiency. Composite score = mean of the six items; its



standard deviation is computed across respondents. Cronbach's $\alpha = .822$ (diversification) and $.846$ (financial sustainability).

Correlation and Regression Results

Diversification strategy was positively correlated with perceived financial sustainability ($r = .353$, 95% CI [.203, .487], $p < .001$). Table 3 presents the regression results. In Model 1, diversification strategy explained 12.5% of the variation in perceived financial sustainability ($F(1, 145) = 20.627$, $p < .001$). A one-point increase in the diversification score was associated with a 0.356-point increase in perceived financial sustainability ($B = 0.356$, 95% CI [0.201, 0.511], $\beta = .353$, $p < .001$). The association remained significant with HC3 standard errors ($SE = 0.095$, $p < .001$) and when the 11 cases with Cook's distance above $4/n$ were excluded ($B = 0.355$, $p < .001$).

The result was also robust to the clustering of respondents in banks. With an average of 3.9 respondents per bank, the design-effect ranged from 1.143 ($p = .05$) to 1.861 ($p = .30$), which reduced the t -statistic for diversification from 4.542 to between 4.248 and 3.330; the association remained significant at $p < .01$ in all cases. To check whether the outcome wording of four diversification items drove the result, the model was re-estimated with a score based only on the two items that describe the extent of diversification (D1 and D3). The association was almost unchanged ($r = .349$; $B = 0.300$, 95% CI [0.168, 0.432], $p < .001$), so the overlap in item content does not explain the bivariate association.

In Model 2, which added market penetration, product development and strategic alliance strategies, the four strategies jointly explained 32.7% of the variation ($F(4, 142) = 17.277$, $p < .001$). The unique association of diversification was positive but not significant ($B = 0.129$, 95% CI [-0.027, 0.286], $\beta = .128$, $p = .104$), and adding diversification to the other three strategies increased R^2 by only .013 (F -change (1, 142) = 2.674, $p = .104$). Product development ($\beta = .306$, $p < .001$) and market penetration ($\beta = .230$, $p = .003$) retained significant associations. The result for diversification depended on how it was measured: with the two-item extent score, its unique association in Model 2 was small but significant ($B = 0.143$, 95% CI [0.012, 0.273], $\beta = .166$, $p = .033$).

Table 3: Regression of perceived financial sustainability on diversification strategy

Predictor	B	SE	HC3 SE	β	t	p	95% CI for B	VIF
Model 1: Diversification strategy only								
(Constant)	2.573	0.312	0.392		8.258	< .001	[1.957, 3.189]	
Diversification strategy	0.356	0.078	0.095	.353	4.542	< .001	[0.201, 0.511]	
$R^2 = .125$, adjusted $R^2 = .119$, $F(1, 145) = 20.627$, $p < .001$								
Model 2: With control variables								
(Constant)	0.588	0.416	0.415		1.412	.160	[-0.235, 1.411]	
Diversification strategy	0.129	0.079	0.088	.128	1.635	.104	[-0.027, 0.286]	1.303
Market penetration	0.251	0.084	0.083	.230	2.994	.003	[0.085, 0.417]	1.249
Product development	0.340	0.091	0.088	.306	3.749	< .001	[0.161, 0.520]	1.411
Strategic alliance	0.127	0.074	0.081	.127	1.710	.089	[-0.020, 0.274]	1.156
$R^2 = .327$, adjusted $R^2 = .308$, $F(4, 142) = 17.277$, $p < .001$; ΔR^2 for diversification = .013, F -change(1, 142) = 2.674, $p = .104$								

Note. $N = 147$. Dependent variable: perceived financial sustainability (composite score). B = unstandardised coefficient; SE = standard error; $HC3 SE$ = heteroscedasticity-consistent standard error; β = standardised coefficient; CI = confidence interval; VIF = variance inflation factor. Model 1 tests H_{01} . Design-effect adjustment for clustering in 38 banks ($p = .05$ to $.30$) gives $t = 4.248$ to 3.330 for diversification in Model 1 (all $p < .01$).

On the basis of Model 1, the null hypothesis H_{01} was rejected at the 5% level of significance: diversification strategy has a statistically significant positive association with perceived financial sustainability of commercial banks in Nairobi County. Model 2 shows, however, that this association is not independent of the other growth strategies, because its unique contribution was small and not



statistically significant once market penetration, product development and strategic alliance strategies were held constant. The hypothesis decision therefore rests on the bivariate association, and the supplementary model qualifies how that association should be interpreted.

Discussion

The positive bivariate association between diversification strategy and perceived financial sustainability is consistent in direction with secondary-data studies that found income diversification to be positively associated with the profitability, sustainability or stability of banks (Elsas et al., 2010; Kimani et al., 2025; Kiptum, 2023; Tran et al., 2023). The comparison is one of direction only: those studies estimated the effect of measured diversification on financial ratios, whereas this study estimates the association between managers' assessments of both constructs. The association is modest ($R^2 = .125$), and the finding does not test the risk-reduction prediction of Modern Portfolio Theory, because earnings volatility and risk were not measured.

The loss of significance once the other growth strategies were controlled can be interpreted in several ways. Diversification shares variance with product development ($r = .462$; latent correlation .559), which, from the resource-based view, draws on the same product-design, technology and risk-management capabilities (Barney, 1991; Teece et al., 1997), although the HTMT ratio of .570 indicates that the two constructs remain empirically distinct. The result may also reflect measurement error or limited statistical power to detect a small unique effect ($\Delta R^2 = .013$). Because the extent-only score retained a small unique association, the evidence on whether diversification adds to the other growth strategies is inconclusive rather than negative. The pattern is consistent with international evidence that the benefits of diversification are not automatic and depend on how new activities relate to a bank's existing business (Lepetit et al., 2008; Stroh & Rumble, 2006).

Alternative explanations must also be considered. Because both constructs were reported by the same managers, common-method variance and a general favourable evaluation of one's own bank may have inflated the association (Podsakoff et al., 2003). The tests reported above suggest that method variance does not account for the whole association, and the result held when the items that refer to perceived outcomes were excluded, but neither test can remove a shared halo effect. Reverse causality is also plausible, since more sustainable banks have the resources to diversify, and bank characteristics such as size, tier, ownership and capital were not controlled. The findings should therefore be read as evidence of an association in managers' assessments rather than of an effect of diversification on financial sustainability.

Conclusion

Among managers of commercial banks in Nairobi County, diversification strategy was positively and significantly associated with perceived financial sustainability. The association was robust to heteroscedasticity, influential cases, plausible levels of clustering within banks, a marker-variable adjustment and the exclusion of outcome-worded items. However, it was modest, and once market penetration, product development and strategic alliance strategies were controlled, its unique contribution was small and its significance depended on how diversification was measured. Diversification therefore cannot be shown to add to perceived financial sustainability independently of the other growth strategies. The findings are specific to managers' perceptions in Nairobi-based head offices and should not be generalised to measured financial outcomes or to other markets.

The study has several limitations. Both constructs were measured through the perceptions of the same respondents at one-point in time; the common-method tests reduce but cannot remove this concern. Four of the six diversification items refer to perceived outcomes, each dimension was measured by two items of low reliability, and the AVE of all constructs was below .50, so convergent validity is modest. Respondents were nested in banks, but bank identifiers were not recorded, so the clustering



was addressed only through a design-effect sensitivity analysis rather than multilevel estimation, and response rates by stratum and bank could not be reported. One of the 148 returned questionnaires is not in the analysis dataset. Bank characteristics such as size, tier, ownership and capital were not controlled, and the sample was limited to Nairobi head offices and to managers, some of whom work in functions removed from financial reporting.

Future studies should measure diversification directly with bank-level indicators, such as the non-interest income share, income and asset concentration indices, the regional distribution of branches and agents and the sectoral concentration of the loan book, and link them to objective measures of financial sustainability and risk, such as return on assets, its volatility and Z-scores, using panel data for all licensed banks. Survey-based studies should use behaviourally worded items, obtain the predictor and the outcome from different sources, establish construct validity through confirmatory factor analysis, and use multilevel models with controls and moderators such as bank size and ownership.

Declarations

Ethics approval: Kabarak University Research Ethics Committee (KUREC-320526); National Commission for Science, Technology and Innovation research licence (NACOSTI/P/26/4190838).

Data availability: The anonymised survey dataset supporting the findings of this study is available from the corresponding author on reasonable request.

Use of AI tools: Generative AI tools were used to assist with language editing and formatting during revision. The authors reviewed all content and take full responsibility for the manuscript.

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