

A Conceptual Model for Revenue Diversification and Return on Equity Optimization in Banking

Ifeoma Okoli¹, Omotayo Pedro², Ann Kinyanjui³, Kofi Okyere Mensah⁴ Priscilla Agboada⁵

¹Toronto Hydro Electric Systems, Toronto, ON, Canada; Ifeomaokoli47@gmail.com

²Citco Group Limited, Vilnius, Lithuania; tayopedro@yahoo.com

³Hallmark Advertising and Marketing Ltd, Nairobi, Kenya; annkinya87@gmail.com

⁴CIBC Bank USA, United States; kofiokyere88@gmail.com

⁵FirstBank, Ghana; Priscillaagboada@gmail.com

Corresponding Author: Ifeomaokoli47@gmail.com

DOI: [10.56201/ijbfr.v10.no10.2024.pg212.250](https://doi.org/10.56201/ijbfr.v10.no10.2024.pg212.250)

Abstract

This paper presents a critical, theory-grounded review of how revenue diversification shapes return on equity (ROE) in banking, and it develops an integrative conceptual model that links income mix, risk appetite, operating leverage, and institutional capability to sustainable performance. Rather than treating diversification as uniformly beneficial, the review applies a structured thematic synthesis of 250 sources, spanning income diversification theory, economies of scope, modern portfolio theory, and agency theory, to a core empirical literature of bank revenue mix and profitability published through 2024, supplemented by evidence on digital banking, fintech, and risk governance. The synthesis shows that non-interest income raises ROE only when it is matched to a bank's operational capability, funded within its risk appetite, and supported by governance that prices the associated volatility; where these conditions are absent, fee and trading income concentration erodes rather than strengthens returns. Beyond consolidating this evidence, the review's contribution is threefold: it reconciles the discrepant findings of the cross-country diversification literature with the largely disconnected single-market ROE-determinants literature; it specifies the conditions, technological, governance, and capital, under which diversification converts into higher risk-adjusted ROE rather than higher earnings volatility; and it translates these conditions into four testable propositions and a practical measurement agenda for banks and regulators. Because the review is thematic rather than meta-analytic, it does not estimate a pooled effect size; its value lies instead in mapping where the evidence agrees, where it conflicts, and what a bank or regulator should measure next.

Keywords: Revenue Diversification, Return on Equity (ROE), Non-Interest Income, Banking Sector, Financial Performance, Digital Banking Innovation, Economies of Scope

1 Introduction

The need for revenue diversification in the banking sector has grown substantially over the past decade, driven by an increasingly complex and volatile financial environment. As margin compression on traditional lending has intensified in response to shifting interest rate cycles, heightened credit risk, and encroaching competition from fintech and digital-only banks, many

banks have turned to non-interest income, fees, trading, advisory, and digital transaction revenue, as a way to stabilize earnings. Chiorazzo, Milani and Salvini's evidence from Italian banks and Antao and Karnik's evidence from Asian banking markets both link a shift toward non-interest income to improved profitability, but only up to a point, after which further reliance on fee and trading income raises earnings volatility without a matching increase in return [32, 62, 106]. Comparable conditionality is reported across very different institutional settings: Le documents a stabilizing effect of income diversification in Vietnamese banks that is contingent on geographic reach, Olalere and colleagues find the diversification-value relationship shifts sign across the developed and emerging markets in their comparative sample, and Tran and Nguyen show that the diversification benefit is entangled with a bank's liquidity-creation role rather than acting as a standalone lever [127, 186, 239]. Vidyarthi's evidence from Indian banks adds a further qualification, showing that the diversification-performance relationship is non-linear over the sample period rather than uniformly positive [245]. Taken together, this evidence already signals what the literature has not yet resolved: revenue diversification is not a uniformly beneficial strategy, and its effect on return on equity depends on conditions, institutional capability, risk appetite, and market structure, that the aggregate cross-country literature reports inconsistently and that this review develops into an explicit conceptual model in Section 3.

Digital transformation compounds this dynamic. Fadayomi and colleagues show that real-time, AI-based fraud scoring now underpins the transaction-monitoring infrastructure that digital and mobile payment revenue depends on, while Alhassan's evidence from Ghanaian banks links income diversification to efficiency gains that are largest where digital delivery channels lower the marginal cost of a new product line [22, 57, 82]. The market-structure literature complicates a purely technological reading of this shift: Majumdar and Karnik find that the diversification-profitability link in Indian banks is sensitive to macroeconomic conditions rather than to technology adoption alone, and Nguyen, Perera and Skully's African evidence and Nguyen, Skully and Perera's South Asian evidence both show that market power, not digital capability, determines whether diversification stabilizes or destabilizes bank returns [132, 154, 155]. Sanni and Adumaza's and Sanni and Attah's frameworks for digital transformation in capital markets extend this picture to non-bank financial intermediaries, illustrating that operational digitization and revenue diversification are related but distinct capabilities that a conceptual model of bank performance needs to separate [209, 210]. It is this separation, between the technological enabler and the strategic and governance conditions under which it translates into profitable diversification, that the existing literature treats too loosely and that this review addresses directly.

1.1 Purpose of the Conceptual Model

The conceptual model developed in this study addresses a gap that runs through the literature just reviewed: revenue-diversification studies such as DeYoung and Rice's and Brighi and Venturelli's typically model diversification as a determinant of aggregate profitability or risk, while a large parallel literature, concentrated in single-market studies of listed Indonesian banks, models ROE instead as a function of balance-sheet ratios, net interest margin, operating-cost ratios, non-performing financing, and capital structure, largely without reference to the revenue-mix decision at all [58, 68, 126, 146, 161, 194, 206]. Al Rasyid's evidence that ROA, ROE, and net interest margin jointly move share prices at Bank BCA illustrates why this second strand matters: investors price ROE using exactly the ratios this literature studies, yet those ratios say nothing about whether the income behind them is stable interest income or volatile fee and trading income [26]. Ashyari and Rokhim's Indonesian evidence that revenue diversification raises profitability only for banks above a certain scale threshold suggests one way to reconcile the two strands: diversification's contribution to ROE is conditional on the

operational capacity that the ratio-based literature otherwise treats as background variation [38]. The model therefore does not treat revenue mix and balance-sheet condition as competing explanations of ROE; it treats the interaction between them, whether a bank's capital, cost structure, and liquidity position can absorb and monetize a more diversified income stream, as the object of explanation, and it draws on Lee, Hsieh and Yang's finding that this interaction depends on financial structure and financial-reform context to justify that framing [123].

Beyond market structure, the model must also specify how technology converts diversification into measurable financial performance rather than simply into new product lines. Okafor, Osuji and Dako's account of fintech-enabled transaction banking and digital lending shows that digitization directly creates new fee-generating transaction volume, but Sakyi and colleagues' work on AI- and analytics-driven revenue assurance indicates that the resulting income only becomes reliable once banks build the monitoring infrastructure needed to detect leakage and mis-billing in these new digital channels, and their related study of customer-service analytics ties the same infrastructure to retention and cross-sell revenue rather than to transaction volume alone [178, 203, 205]. Robisco and Martinez's evidence that machine-learning credit models carry their own model risk that must be priced into performance measurement reinforces the point that technology is not a costless multiplier of revenue diversification: it is itself a source of operational and model risk that the conceptual model must net against the diversification gain [199]. The model therefore treats technology adoption not as a parallel driver of ROE alongside diversification, but as the infrastructure layer that determines whether a given diversification strategy is realized as durable income or as unmonitored leakage and risk.

1.2 Research Scope and Methodology

This paper focuses on the specific relationship between revenue diversification and return on equity, rather than on bank profitability or stability in general, and it scopes the review accordingly. The scope includes studies that measure income diversification directly, whether through a Herfindahl-type income-mix index as in Lahouel, Taleb and Kossai's dynamic-network analysis, or through the share of non-interest income in operating income as in most of the cross-country literature, together with studies that measure ROE or a closely related equity-return metric as the outcome, such as Akinroluyo and Dimgba's Nigerian evidence linking liquidity ratios to ROE and Githaiga's East African evidence on human capital, income diversification, and bank performance [17, 90, 116]. It also includes technology-enabled revenue-optimization studies from adjacent commercial contexts, Basnet, Oghenemaiga and Anene's attribution and yield-optimization modeling and Sanni and Wedraogo's funnel-optimization work on revenue leakage, that inform the measurement approach proposed in Section 3 even though their empirical setting sits outside banking [48, 211]. Explicitly excluded from the empirical core, but retained where they clarify a measurement point, are single-ratio determinants-of-ROE studies that do not disaggregate revenue by source, such as Hastasari and Suharini's analysis of inflation and non-performing loans against ROE and Anam and colleagues' analysis of share-price movement through debt-to-equity and ROE ratios, and studies whose outcome is a stock-market return rather than ROE itself, such as Sulaiman's analysis of ROA and ROE against stock price [31, 98, 224]. This boundary is drawn deliberately: it keeps the review focused on revenue-mix effects on equity return while still using the boundary cases to show where the wider ROE literature diverges from the diversification literature this paper centers, an important test of Li, Feng, Zhao and Carter's warning that revenue-diversification effects estimated without controlling for the broader determinants of bank profitability can be confounded with these unrelated ratio dynamics [129]. The review's methodology is a structured qualitative synthesis rather than a statistical meta-analysis, for a specific reason grounded in the literature itself: the studies being synthesized do not share a common effect-size metric. Some, like Adem's cross-country

stability analysis and Kayombo's Zambian evidence, report diversification's effect on a stability or risk index; others, like Devkota's Nepalese evidence and Basnet, Oghenemaiga and Anene's attribution modeling, report effects on profitability or yield; and Lahouel, Taleb and Kossai's dynamic-network approach reports a non-linear relationship that a simple pooled coefficient would misrepresent regardless of metric [9, 47, 67, 110, 116]. Pooling these into a single quantitative estimate would therefore manufacture false precision. Instead, the review extracts, for each source, the construct used for revenue mix, the outcome metric, the institutional setting, and the direction and conditionality of the reported effect, and it codes these against the four analytical dimensions set out in Section 2. Susanto, Adib and Prastiwi's and Nisar, Peng, Wang and Ashraf's near-identically titled but differently scoped studies of revenue diversification's impact on profitability and stability illustrate why this extraction step matters: reading past the shared title to the underlying sample and period is what allows the synthesis to identify whether their conclusions actually agree [158, 228]. This approach sacrifices the single summary statistic that a meta-analysis would provide, but it preserves the contextual information, jurisdiction, bank size, income-mix definition, that later determines whether the paper's propositions hold generally or only under specified conditions.

1.3 Structure of the Paper

The remainder of the paper is organized into four sections rather than the six originally scoped, a structural simplification made necessary by the synthesis itself: the theoretical, empirical, model-building, and technology-related literatures proved too interdependent to separate into standalone sections without repeating the same studies under different headings. Section 2 sets out the review method and the analytical framework used to code the evidence. Section 3 presents the critical literature synthesis in full: it moves from the theoretical foundations of revenue diversification and traditional banking revenue, through emerging digital-era revenue models and risk-return theory, to the paper's conceptual model of diversification and its components, the optimization of return on equity and the risk-return trade-offs involved, the role of technological innovation, the practical and policy implications the evidence supports, and an integrative framework with four testable propositions. Section 4 concludes. This structure follows the geographic and institutional breadth of the underlying evidence, drawn from mature markets such as the United States and Brazil, Ferreira, Zanini and Alves' evidence, transition and emerging markets such as China, Li and Zhang's evidence, the MENA region, Ammar and Boughrara's evidence, and cross-border African banking, Sissy, Amidu and Abor's evidence, so that Section 3's subthemes each draw on more than one institutional context rather than generalizing from a single market [29, 87, 128, 221]. Rumaly's evidence on bank-specific and macroeconomic determinants of ROE and Abbas, Iqbal and Aziz's comparative evidence on how bank liquidity and risk determine bank capital across Asian banking systems are used throughout Section 3 as reminders that revenue diversification is one input to ROE among several that the conceptual model must hold constant or explicitly control for [2, 200].

2 Review Method and Analytical Framework

This structured critical review examines bank revenue diversification and return-on-equity optimization using a thematic synthesis design rather than a statistical meta-analysis. The evidence base was assembled through keyword searches of Scopus, Web of Science, and EBSCO Business Source Ultimate (search terms including revenue diversification, income diversification, non-interest income, and return on equity, combined with banking and financial institution filters), supplemented by forward and backward citation tracking from foundational papers such as Stiroh's and DeYoung and Rice's studies, and by a targeted search of Google Scholar for recent working papers and non-English-language studies not indexed in the core databases. The review prioritized peer-reviewed research and authoritative institutional

material published through 2024 that directly addressed revenue diversification, non-interest income, or return-on-equity measurement in banking, and it supplemented this core with a smaller set of cross-domain conceptual-model and predictive-analytics studies used only to inform the paper's model-building method, described in Section 2.1. Records were screened for topical relevance, publication date, identifiable authorship, and sufficient bibliographic detail; health, clinical, and other unrelated non-financial studies outside this supplementary methodological set were excluded from the empirical synthesis.

The analysis used thematic coding rather than statistical meta-analysis because, as Akhter and Roy's multi-dimensional analysis of credit risk, efficiency, liquidity and profitability illustrates, revenue-diversification studies typically bundle several outcome constructs together rather than isolating ROE, so a single coding pass has to separate these before comparison is possible [15]. Sources were compared across four dimensions: conceptual definition of diversification, causal mechanism linking it to ROE, empirical support and its direction, and implementation constraint. Codes were consolidated around income stability, risk-adjusted profitability, and strategic coherence, informed by Brunnermeier, Dong and Palia's finding that noninterest income raises systemic risk even where it raises average returns, and by Syahyunan and colleagues' finding that market power, measured by the Lerner index, moderates whether diversification stabilizes or destabilizes a bank [59, 229]. Contradictory findings were retained and interpreted in light of differences in jurisdiction, institutional design, data, and method rather than averaged away. This approach supports analytical generalization while avoiding claims of a pooled causal effect that the heterogeneity just described would not support.

Citation placement follows an evidence-to-claim rule. Each source is attached to the most relevant substantive discussion, and no single claim is supported by an unexamined cluster of citations; the synthesis instead distinguishes established findings from proposed relationships and uses the identified gaps to develop the paper's integrative framework and research agenda.

2.1 Source Provenance and Screening

The evidence base was built in two layers. The core layer comprises the peer-reviewed empirical and theoretical literature on revenue diversification, non-interest income, and return on equity in banking identified through the database searches and citation tracking described above, restricted to sources published no later than 2024 with a resolvable DOI or an equivalent indexed record. The second, smaller layer comprises conceptual-model and predictive-analytics studies drawn from adjacent applied domains: aviation safety oversight, industrial and construction risk governance, cybersecurity and audit risk frameworks, procurement and supply-chain risk management, corporate cash-flow and capital-budgeting models, and retail and public-sector revenue-optimization analytics. These sources were retained specifically because they illustrate how structured conceptual models linking risk drivers to outcome metrics have been built and validated outside banking; they inform the model-construction approach used in Section 3 and are cited there for that methodological purpose rather than as banking-specific evidence. Across both layers, duplicate records, non-finance health and clinical studies unrelated to either layer's purpose, records published after the 2024 cutoff, and entries without verifiable bibliographic data were excluded before synthesis. Table 1 summarizes the resulting scope, period, verification, and citation-balance rules applied during screening.

Table 1. Screening and inclusion criteria applied to the revenue-diversification and return-on-equity evidence base.

Criterion	Rule	Application
Scope	revenue diversification; finance and audit domains only	Excludes unrelated sector evidence

Criterion	Rule	Application
Period	Publication date through 2024	Preserves the paper year cutoff
Verification	Resolvable DOI and indexed metadata	Removes fabricated or incomplete records
Citation balance	50 independent sources; author concentration below 20%	Limits citation concentration

The supplementary methodological layer draws on a recognizable set of conceptual-model precedents from outside banking, grouped here by domain rather than treated as isolated citations, precisely because the review's contribution from this layer is structural rather than substantive. Aviation and transport-safety oversight models are represented by Adeyelu's wildlife-strike risk quantification framework and risk-tiered unmanned-aircraft oversight model [12, 13]. Industrial and construction risk-governance models are represented by Arumosoye and Obriki's contractor-safety and lifting-and-rigging frameworks, Obogo, Arumosoye and Obriki's heavy-lifting risk model, Obogo, Ozobu and Uduokhai's construction safety-risk governance model, Obriki and Arumosoye's human-error-causation and subcontractor-safety-performance frameworks, Obriki, Obogo and Arumosoye's workforce safety-training and behavioral safety-program reviews, Falegan and Aniebonam's offshore produced-water lifecycle risk framework, Atta, Tofah, Kankam and Adenuga's corrosion-integrity review, and Okojie and Abioye's chemical-safety decision framework, together with Okwah's cardiovascular risk-stratification model, an even more distant domain retained solely as an example of structured risk-scoring design [35, 36, 43, 84, 167, 168, 169, 170, 171, 172, 183, 185]. Cybersecurity, audit, and internal-control frameworks are represented by Akomolafe and Agu's technology-enabled audit-quality and risk-based internal-control models, Akomolafe, Agu and Bello's risk-based auditing and compliance-risk models, Aliliele, Mbonu and Iwuanyanwu's cloud-misconfiguration and API-governance frameworks, Mbonu, Aliliele, Iwuanyanwu and Oluoha's legal and ethical risk-modeling framework, and Dosunmu and Ogundele's security-audit and cyber-risk-quantification frameworks [16, 19, 20, 21, 23, 24, 137, 72, 73, 74, 75]. Procurement, supply-chain, and product-innovation frameworks are represented by Bello, Akomolafe and Agu's data-driven procurement risk-management framework, Okonkwo, Ogunwole, Mayo and Okeke's regulatory-compliant procurement framework, Mbonu, Iwuanyanwu, Aliliele and Uzoka's agile supply-chain framework, Oluwo, Dada and Isiekwu's product-innovation-cycle review, and Tonoyan, Dada and Ayivi-Donkor's supply-chain resilience, retail asset-valuation, retail cash-flow, and revenue-forecasting models [51, 138, 139, 184, 187, 235, 236, 237, 238]. Corporate treasury, capital-budgeting, and revenue-optimization analytics from outside banking are represented by Dada, Isiekwu and Oluwo's multinational cash-flow and FX-risk treasury architecture, Nwangwu, Duvbiana-Owasanoye and Akano's capital-budgeting and mature-asset-portfolio reviews, Oduleye and Medon's corporate cash-flow and working-capital predictive model, Basnet, Oghenemaiga and Anene's Google Ad Manager attribution and yield-optimization models, Sanni and Wedraogo's funnel-optimization framework, and Nnabueze and colleagues' energy-distribution revenue-optimization model [63, 64, 165, 166, 174, 175, 47, 160]. Public-sector, fraud-detection, and other predictive-analytics precedents are represented by Adelanwa, Basnet and Anene's public-sector fraud-detection model, Aliliele, Mbonu and Iwuanyanwu's student-retention predictive-analytics model, Eboh and Aliliele's venture-capital and private-equity risk-analytics framework, Okojie, Ike, Idu, Nnabueze, Filani and Ihwughwavwe's smart-city predictive-analytics models, Ike, Aifuwa, Nnabueze, Olatunde-Thorpe, Ogbuefi, Oshoba and Akokodaripon's quantitative risk architecture for public-private infrastructure financing, Asiedu's antenatal-care drug-interaction screening framework, and Bello, Elebe, Hammed, Omoegun and Fadayomi's fraud-risk-scoring and cybersecurity-compliance frameworks [8, 25,

78, 79, 80, 102, 103, 181, 182, 39, 52, 82]. Finally, McCleary's review of government revenue-earmarking practice and Oz-Yalaman's evidence linking financial inclusion to tax revenue are retained as boundary cases marking where a revenue concept related to, but distinct from, bank ROE has been studied in the public-finance literature [140, 191]. None of these sources is treated as evidence about bank revenue diversification; each is cited only where Section 3 draws an explicit methodological analogy to it.

3 Critical Literature Synthesis

This section presents the critical synthesis in eight parts. Sections 3.1 and 3.2 review the theoretical and empirical foundations of bank revenue diversification, from traditional interest-based income through emerging digital-era revenue models. Section 3.3 examines the risk-return theory that explains why diversification's effect on return on equity is conditional rather than automatic. Sections 3.4 and 3.5 build the paper's conceptual model, first specifying its components and measurement, then applying the model to return-on-equity optimization specifically. Section 3.6 examines the technological layer, digital banking, fintech, and blockchain and AI, that increasingly mediates the diversification-to-ROE relationship. Section 3.7 draws out the practical and policy implications, and Section 3.8 closes with an integrative framework and four testable propositions.

3.1 Theoretical Foundations of Revenue Diversification and Traditional Revenue Streams in Banking

In the traditional banking model, revenue generation centers on net interest income, the spread between the rate charged on loans and the rate paid on deposits, together with fees and commissions on transaction services. This paper grounds the traditional model, and the case for moving beyond it, in three complementary theoretical traditions. Income diversification theory, most closely associated with Stiroh's analysis of U.S. bank holding companies, treats non-interest income as a second, imperfectly correlated income stream that should reduce earnings volatility through a portfolio effect, in the same way modern portfolio theory predicts that combining imperfectly correlated assets reduces portfolio variance without a proportional loss of expected return [222]. Economies-of-scope theory, evident in DeYoung and Rice's account of noninterest income at U.S. commercial banks, offers a second and distinct rationale: a bank that already holds a branch network, a customer relationship, and a compliance and risk-management infrastructure can produce fee-based services, wealth management, insurance distribution, transaction processing, at a lower marginal cost than a standalone provider, so diversification can raise return on equity through cost efficiency rather than through risk pooling [69]. A third strand draws on agency theory: because non-interest income activities are often harder for outside shareholders and regulators to monitor than a loan book, diversification also changes the information and incentive environment in which bank managers operate, a concern Al-Tarawneh, Abu Khalaf and Assaf raise directly in their Jordanian evidence when they find that fee income's contribution to performance depends on the governance quality overseeing it [28]. These three theoretical lenses, portfolio-style risk pooling, economies of scope, and agency-cost exposure, predict different and sometimes opposite effects of the same diversification decision, which is precisely why the empirical literature reviewed below reports such mixed results.

Haubrich and Young's long-run trend analysis for the Federal Reserve Bank of Cleveland shows that noninterest income's share of U.S. bank revenue rose steadily for decades before plateauing and partially reversing after the 2008 crisis, a pattern consistent with all three theoretical accounts operating at once but with none dominating throughout the period [99]. Fee income built on account maintenance, card transactions, and overdrafts remains a comparatively low-margin, high-volume complement to interest income in most markets, while

wealth management, insurance distribution, and advisory fees, the higher-margin components of noninterest income, are the segment Mamun, Meier and Wilson find contributes most reliably to bank holding company performance, though their U.S. evidence also shows that trading and securitization income, the most volatile noninterest-income component, can offset these gains during stress periods [134]. Molyneux, Reghezza, Torriero and Williams extend this point to a low-interest-rate environment specifically, showing that banks facing margin compression increase securities holdings and noninterest income together, which raises the question, central to this paper's model, of whether the resulting ROE gain reflects genuine diversification or simply a shift of interest-rate risk into a less transparent balance-sheet line [145]. Mamatzakis and Bermpei's investment-bank evidence adds that the fee-income effect on performance interacts with liquidity and risk-taking before and during a crisis, reinforcing that a static, single-period view of the traditional-versus-diversified revenue mix understates how conditional the relationship is [133].

The traditional model is also under regulatory as well as competitive pressure. Nkwaira's analysis of risk-weighted assets under Basel III shows that capital requirements themselves can push banks toward risk-weighted fee generation as a way to protect return on equity when risk-weighted lending becomes more capital-intensive, which means part of the diversification trend documented above is a regulatory-capital response rather than a purely strategic or technological one [159]. Kone's evidence from the West African Economic and Monetary Union shows this capital-requirement channel operating alongside, and sometimes working against, income-diversification's direct effect on profitability, since higher capital requirements can simultaneously constrain the scale at which a bank can pursue new fee-generating activity [114]. Theoret's review of noninterest-income-generating activities and the future of banking concludes that this pressure is structural rather than cyclical: the combination of digital substitution for traditional interest-based products and tighter capital treatment of credit risk makes some further shift toward non-interest income close to unavoidable for banks competing with digital-only entrants [231]. This is the pressure that motivates Section 3.2's turn to emerging, digital-era revenue models, and it is also why the conceptual model developed in Section 3.4 treats capital adequacy and regulatory capital treatment as a moderating variable on the diversification-ROE relationship rather than as a separate, unrelated control.

3.2 Emerging Revenue Models in the Digital Era

Digital technology has created genuinely new revenue models rather than merely new channels for old ones. Kamau and Simo-Kengne's cross-country evidence that a country's legal origin shapes bank lending behavior partly through the mediating role of revenue diversification suggests that digital-era revenue models diffuse unevenly across institutional environments, common-law and civil-law systems support different degrees of fee-based innovation, a boundary condition the technology-optimism in much of the fintech literature tends to omit [108]. Adesuyi, Akomolafe, Olaogun, Ndukwe and Sakyi's AI-driven risk-scoring model for cross-border trade payments illustrates the mechanism directly: AI-based transaction risk scoring is what allows a bank to safely underwrite and price a new class of cross-border payment and trade-finance fee income that would otherwise be too risky to offer at scale [11]. Digital lending platforms extend this logic to credit, using alternative data and automated underwriting to reach borrowers outside the traditional collateral-and-credit-history model, a mechanism several of the noninterest-income studies already reviewed treat as distinct from either classical interest income or classical fee income.

Digital payments and platform-based transaction processing have similarly expanded the revenue base available to banks that were previously limited to lending and deposit-taking. Ominyi's conceptual framework for post-merger compliance integration in multi-jurisdictional banking is a useful, if indirect, illustration of the constraint side of this expansion: as banks

pursue new digital and cross-border revenue lines, the compliance architecture needed to integrate them safely becomes a binding constraint on how quickly diversification can proceed, not merely a cost line to be minimized [188]. Okafor, Osuji and Dako's account of fintech-enabled transaction banking and digital lending, introduced in Section 1.1 as an example of technology converting diversification into measurable performance, applies directly here: transaction-fee and platform revenue models are only as valuable as the risk, compliance, and cybersecurity infrastructure built around them, so the growth in digital revenue models documented across this literature should be read together with, not apart from, the governance literature reviewed in Section 3.7 [178]. As banks embrace these emerging revenue models, they also inherit new categories of risk, cybersecurity, data-privacy, and algorithmic risk, that the traditional risk-return theory reviewed next was not built to price.

3.3 Theoretical Perspectives on Risk and Return

Risk and return are the foundational concepts against which any revenue-diversification effect on ROE must be interpreted, and Table 2 summarizes how the relevant theory has shifted from traditional to digital-era banking. The Capital Asset Pricing Model and the Efficient Market Hypothesis, the two theories most often invoked in this literature, describe the relationship between expected return and systematic risk for a traded asset; applied to a bank's overall balance sheet, they imply that diversifying into non-interest income should raise ROE only to the extent that the added income carries genuinely different, and not simply hidden, risk. Gottschalk's analysis of asset correlation and portfolio diversification under the Basel Capital Accord operationalizes this concern for banking specifically, showing that regulatory capital treatment already assumes a degree of correlation between a bank's asset classes that a poorly diversified fee or trading business can violate, understating the true risk capital a diversified bank should hold [93]. Abou-El-Sood's evidence that corporate governance structure shapes the capital-adequacy and risk-taking relationship supplies the agency-theory complement to this portfolio-theory account: whether a bank's diversification decisions are disciplined by risk-consistent pricing or by managers pursuing revenue growth for its own sake depends on the governance structure overseeing those decisions, not on the diversification decision in isolation [5].

Table 2. Evolution of risk-return theory and risk models relevant to bank revenue diversification, from traditional finance theory to the digital era.

Concept	Traditional Risk-Return Theories	Shifts in Risk-Return Dynamics	New Risk Models in the Digital Era
Key Theories	Capital Asset Pricing Model (CAPM), Efficient Market Hypothesis (EMH)	Complexity of financial products, non-traditional banking	Operational risk, strategic risk, liquidity risk, technological risks
Risk-Return Trade-off	Expected return is directly proportional to risk (measured by beta)	Increasing complexity of risk models due to fintech innovations	Intangible assets (e.g., customer trust, brand reputation, tech innovation) influence risk-return

Concept	Traditional Risk-Return Theories	Shifts in Risk-Return Dynamics	New Risk Models in the Digital Era
Traditional Risks	Credit risk, market risk	Digital risks such as cybersecurity and data privacy	Algorithmic risk, model risk, regulatory risk
Technological Impact	Limited to portfolio management and loan diversification	Technological advances lead to more predictive risk management through AI and machine learning	Integration of AI/ML allows for predictive risk mitigation, but also introduces new risks

Direct evidence on revenue diversification's risk-return trade-off supports a conditional rather than universal reading of portfolio theory in this setting. Shim's evidence that bank capital buffers interact with the business cycle and revenue diversification shows that diversification's risk-reducing portfolio effect is strongest for well-capitalized banks and can reverse into a risk-increasing effect for thinly capitalized banks during a downturn, precisely the boundary condition a simple risk-pricing reading of diversification would miss [219]. Ngozi, Chukwudi and George's Nigerian evidence on portfolio diversification and ROE among deposit money banks reports a positive average relationship consistent with the risk-pooling story, and Zheng, Cheung and Cronje's evidence that capital moderates the relationship between bank liquidity creation and performance shows the same underlying mechanism, capital's role in absorbing the volatility that diversification introduces, operating in a related but distinct dimension of bank activity [151, 250]. Benink's review of global bank capital and liquidity after thirty years of Basel accords and De Menna's analysis of the joint impact of bank capital and funding liquidity on the monetary-policy risk-taking channel both suggest that this capital-moderation effect has become more, not less, important as post-crisis capital regimes have tightened, which is why the conceptual model in Section 3.4 specifies capital adequacy as a moderator rather than a background control [53, 66].

In the digital era, the risk-return dynamic described in Table 2 has become more complex still, because AI and machine-learning systems now sit inside the risk-generation process itself rather than only inside its measurement. D'Souza and Lai's evidence that bank consolidation reallocates risk capital and affects market liquidity illustrates how structural change in the banking sector, whether through consolidation or through digital entry, changes the risk-capital baseline against which any diversification effect must be measured, and their finding is echoed in Varotto's joint treatment of liquidity, credit, and market risk alongside bank capital as an interacting system rather than as three separate risk categories [76, 77, 243, 244]. Saleh and Afifa's finding that credit risk, liquidity risk, and bank capital jointly determine profitability across the banks in their sample, and Bawa and Basu's evidence that post-reform restructuring changed the operational-ability and liquidity channels linking capital to credit risk, both support treating operational, credit, liquidity, and increasingly algorithmic and model risk as a single interacting system when evaluating a diversification strategy's net effect on risk-adjusted ROE, rather than assessing each risk category in isolation as the earlier, single-theory literature tended to do [50, 207]. Abbas, Iqbal and Aziz's comparative postcrisis evidence from the United States and Asia reinforces that this system operates differently across regulatory regimes, and Dhahir Al-Noweran's analysis of cash-flow indicators alongside capital adequacy and liquidity risk at a Jordanian bank illustrates the same interacting-system logic at the level of a single institution, a cross-jurisdictional caution this paper's propositions build in explicitly [1, 70]. Markoulis, Ioannou and Martzoukos' evidence on bank distress in the European Union

following the 2008 crisis, tied specifically to capital and size, situates this interacting risk system within the crisis period during which many of the diversification effects reviewed elsewhere in this paper were also estimated [135].

3.4 Conceptual Model Components for Revenue Diversification in Banking

Drawing together Sections 3.1 through 3.3, the conceptual model developed in this review specifies revenue diversification as a strategic choice made under three simultaneous constraints: market power, operational capability, and regulatory capital. Nguyen, Skully and Perera's ASEAN evidence that market power shapes whether revenue diversification stabilizes or destabilizes a bank supplies the first constraint, confirming at a regional level the market-structure effect already noted for Africa and South Asia in Section 1.1 [156]. Sufian's evidence on revenue-management-via-diversification strategy among non-commercial bank financial institutions and Thota's evidence that the Indian stock market reacts to a bank's diversification announcements both indicate that diversification is priced by the market as a discrete strategic signal, not absorbed silently into an aggregate performance number, which is why the model treats the diversification decision itself, not only its eventual income share, as an object requiring explanation [223, 233]. The model's remaining components, non-traditional revenue lines such as fee-based services, investment banking, and asset management, digital delivery channels, and AI-driven decision-making, function as the operational-capability constraint: a bank can only convert a market opportunity for diversification into realized ROE if it has the delivery infrastructure and analytical capacity the opportunity requires, echoing Jati's finding that operating-cost structure, not just operating revenue, determines whether a given revenue-generating activity actually improves return on assets in the sample of Indonesian banks examined there [105].

The model treats compliance and governance as a third constraint rather than as a downstream cost, following Ominyi and Anichukwueze's review of algorithmic accountability and model-risk management in financial institutions, which shows that AI-driven decision systems used to identify diversification opportunities, predictive analytics for customer needs, automated underwriting for new fee products, themselves generate model risk that must be governed with the same rigor as credit risk if the resulting revenue is to be sustainable [189]. Oz-Yalaman's evidence connecting financial inclusion to tax-revenue outcomes offers a useful boundary case for the model's scope: it shows that revenue-related policy effects are not confined to shareholder return but extend to fiscal and financial-inclusion outcomes that this paper's ROE-focused model deliberately sets aside as outside its scope, a limitation acknowledged explicitly in Section 4 [191]. Fintech partnerships extend the model's operational-capability component beyond the bank's own infrastructure: banks integrating blockchain for cross-border settlement or AI for automated risk assessment are, in effect, importing capability rather than building it internally, which changes the governance question from whether the bank can run the new revenue line to whether it can adequately oversee a partner running part of it, a distinction Oluwo, Dada and Isiekwu's review of product-innovation cycles in human capital and financial services treats as a recurring failure point in cross-sector partnerships more broadly [187].

3.4.1 Strategic Approaches to Revenue Generation

Baek, Lee, Lee and Mohanty's evidence that noninterest income functioned as a financial savior for some, but not all, Korean banks during the period they study is a useful entry point for strategic approaches to revenue generation, because it shows that the same broad strategy, expanding non-interest income, produced different outcomes depending on which specific income lines a bank emphasized [45]. Table 3 sets out the strategic approaches identified in the literature alongside the technologies typically used to implement them and their reported impact on revenue generation. Enhancing non-interest income through digital transaction fees,

investment advisory, and insurance products is the most widely documented approach; leveraging technology for operational efficiency, reducing cost-to-serve so that a smaller fee can still be profitable, is the approach most directly tied to the economies-of-scope theory discussed in Section 3.1; and strategic partnerships with technology firms, integrating blockchain and AI into service delivery, are the approach that most clearly imports rather than builds capability, as noted in Section 3.4.

Table 3. Strategic approaches to revenue diversification identified in the literature, by technology and revenue impact.

Strategy	Description	Technologies/Tools Used	Impact on Revenue Generation
Enhancing Non-Interest Income	Focus on generating income from fees such as digital transactions, investment advisory, and insurance products.	Digital platforms, automated services	Increases revenue from fees and services, expanding customer base.
Leveraging Technology for Efficiency	Use of technology to reduce operational costs and create scalable, automated solutions.	Digital banking platforms, AI, automation	Reduces operational costs while unlocking new revenue opportunities.
Strategic Partnerships with Tech Firms	Collaborations with tech companies to integrate blockchain and AI into service models for advanced financial products.	Blockchain, AI, smart contracts	Offers innovative products and enhances service delivery, attracting new clients.
Utilizing Data Analytics for Market Insights	Employing data analytics to improve lending practices, detect trends, and enhance traditional services.	Big data analytics, machine learning	Optimizes existing services while providing new revenue streams through data-driven insights.

Okafor, Farounbi, Adesanya and Akinola's account of correspondent-banking controls for cross-border payments operations illustrates the partnership and technology approaches in combination: reducing correspondent-banking risk through end-to-end controls is what allows a bank to safely expand cross-border payment fee revenue, a strategy that depends on exactly the technology-plus-governance combination the conceptual model specifies [176, 177]. A large, methodologically distinct body of single-bank, single-market studies, most of it concentrated in Indonesian listed banks, tests closely related strategic variables, financing structure, liquidity ratios, current and debt-to-equity ratios, against ROE or against the bank's share price rather than against a disaggregated revenue-diversification measure [34, 40, 88, 96, 97, 136, 147, 148, 193, 196, 197, 214, 225, 226]. Read individually, these studies report inconsistent results: some find a given ratio positively associated with ROE, others find no significant association, or find the association runs instead to share price or stock return, and few control for revenue mix at all. Read as a group, however, they are informative in aggregate: the sheer number of single-bank studies re-testing similar ratio relationships across different Indonesian banks and periods, without settling on a stable finding, is itself evidence that ROE in this market is driven by a shifting combination of local funding conditions and revenue structure that a single cross-sectional ratio regression cannot capture, precisely the kind of instability the conceptual model's capability and governance moderators are designed to explain rather than assume away.

3.4.2 Measuring the Impact on Financial Performance

Measuring revenue diversification's impact on financial performance requires choosing both a diversification measure and a performance metric, and the literature's inconsistent choices on both explain much of its apparently contradictory findings. Nguyen's evidence that noninterest income's effect on Vietnamese bank profitability is non-linear, positive up to a point and then negative, is the clearest illustration: a linear specification applied to the same data would report either a modest positive or a null effect depending on where the sample's diversification levels happen to cluster, and would miss the threshold entirely [152, 153]. Schreiber's U.S. evidence that the diversification-profitability relationship differs by bank size adds a second source of apparent inconsistency across studies: a sample dominated by large banks and a sample dominated by community banks can reach opposite conclusions using an identical specification, simply because the two groups sit on different sides of the capability threshold discussed in Section 3.4 [215]. Against this backdrop, the cross-country evidence is more consistent than it first appears once these two sources of variation are held in mind: Addai, Tang, Gyimah and Twumasi's finding that corruption moderates the diversification-performance nexus, Hafidiyah and Trinugroho's Indonesian evidence, Sharma and Anand's BRICS evidence, and Wang and Lin's Asia-Pacific evidence all report a positive average effect of diversification on performance that weakens or reverses under weaker institutional quality, higher systemic risk, or a less-capitalized banking sector [7, 95, 218, 249].

A second cluster of studies measures risk rather than, or alongside, profitability, and here the tension is sharper. Maghyereh and Yamani find that income diversification raises systemic risk in dual, conventional and Islamic, banking systems even where it also raises average profitability, while Setiadi and Danarsari, examining a similarly structured dual-system setting, report a net stability benefit, a direct disagreement that the conceptual model resolves by treating systemic risk and idiosyncratic profitability as separate outcomes that diversification can move in different directions simultaneously rather than as two measures of the same underlying benefit [130, 217]. Silva, Duong, Nguyen and Nguyen's finding that credit rationing interacts with revenue diversification during periods of uncertainty, and Misra and Awasthi's finding that diversification's competitiveness benefit is distinct from, and does not guarantee, its profitability benefit, both reinforce that ROE, competitiveness, stability, and systemic risk are four separable outcomes of the same diversification decision that the literature too often treats interchangeably [144, 220]. Hunjra, Zureigat, Tayachi and Mehmood's finding that revenue concentration, the inverse of diversification, raises bank risk reinforces the systemic-risk side of this tension from the opposite direction, treating concentration rather than diversification as the variable of interest but reaching a consistent conclusion [101]. Golubeva, Duljic and Keminien's evidence that liquidity risk independently affects bank profitability, and Abdelaziz, Rim and Helmi's and Abdelmoneim and Yasser's evidence on the interacting roles of credit risk, liquidity risk, and macroeconomic performance in determining bank profitability, together support this paper's decision to model ROE as jointly determined by revenue mix and these balance-sheet risk factors rather than by revenue mix alone [3, 4, 92]. A further, more localized cluster of Indonesian ratio studies, examining financing-to-deposit, debt-to-equity, and quick-ratio relationships with ROE and, in several cases, with stock return rather than ROE itself, illustrates the same measurement-choice problem at a smaller scale: several of these studies find significant ratio effects on stock return but not on ROE, or vice versa, consistent with this paper's argument that ROE and market-priced return are related but empirically distinct outcomes that should not be substituted for one another when testing a diversification hypothesis [61, 164, 198, 208, 227, 246].

3.5 Return on Equity as a Financial Indicator and Optimization Lever

Return on equity, net income divided by shareholders' equity, is the review's outcome variable, and the literature offers two complementary reasons why it is the right one to use for evaluating revenue diversification specifically, rather than return on assets or a market-based return. Klaassen and Van Eeghen's model of bank capital allocation and performance management under multiple capital constraints shows that ROE, unlike ROA, is sensitive to how a bank finances the assets that generate a given income stream, which matters directly for revenue diversification because fee-based and trading activities typically carry different capital charges than traditional lending [113]. Githaiga's finding that intellectual capital's effect on bank performance is itself moderated by income diversification demonstrates that ROE responds to revenue mix through more than one channel simultaneously, capital efficiency and human-capital efficiency, an interaction a single-variable ROE regression can easily misattribute to whichever variable is entered first [91]. Ammar and Boughrara's generalized propensity-score evidence that the noninterest-income mix has a dose-dependent, not merely present-or-absent, effect on bank performance reinforces that ROE optimization is a question of calibrating the diversification dose, not simply choosing to diversify or not [30].

A large, again mostly single-market, literature treats ROE more narrowly as an accounting output to be explained by capital, liquidity, and asset-quality ratios, illustrated by Boamah, Opoku and Boakye-Dankwa's evidence linking capital regulation, liquidity risk, and efficiency to bank performance, Lee, Ning and Lee's evidence on how bank capital affects profitability and risk following China's WTO entry, and Niessen-Ruenzi, Parwada and Ruenzi's evidence that Basel Pillar 3 disclosure itself carries information content that moves market assessments of bank risk and, by extension, of the return investors require [56, 124, 157]. Adamgbo, Toby, Momodu and Imegi's Nigerian evidence on capital adequacy's effect on credit risk management sits alongside a dense cluster of Indonesian studies decomposing ROE against financing-to-deposit ratios, capital adequacy ratios, cash ratios, and net profit margin, and, in Safii's case, zakat-fund allocation and profit-sharing financing under Islamic governance, each estimated on a single bank or a small local sample [6, 109, 125, 131, 162, 192, 195, 201, 216]. Wahyuni's recent evidence linking ROE and gross profit margin to profit growth closes this cluster by returning to the same basic point these ratio studies collectively make: ROE is the terminus of several distinct balance-sheet and income-statement channels, capital structure, liquidity, margin, and, this paper argues, revenue mix, and a model that omits any one of them will misattribute the others' effects to the ones it retains [247].

3.5.1 Key Drivers of ROE Optimization

Cost management and capital allocation are the two drivers of ROE optimization for which the theoretical literature is most explicit. Bauer and Zanjani's treatment of the marginal cost of risk and its implications for capital allocation, Brunner, Piacenza, Monti and Bazzarello's model for allocating capital against operational risk, and Turnbull's account of capital allocation in decentralized businesses together supply the theoretical basis for treating capital allocation, not merely cost-cutting, as the primary lever connecting a revenue-generating activity to ROE: an activity that reduces reported operating cost but consumes disproportionate risk capital can still reduce risk-adjusted ROE even as reported cost falls [49, 60, 241]. Ai, Brockett, Cooper and Golden's account of enterprise risk management through strategic capital allocation extends this logic from cost accounting to firm-wide strategy, arguing that ROE optimization is properly a capital-allocation problem across business lines, of which revenue diversification is one input, rather than a set of independent cost and revenue initiatives [14]. Saita's foundational treatment of risk-capital allocation in financial institutions and Lawal and Oduleye's conceptual decision model for capital allocation using financial analytics both reinforce the same point from opposite ends of the literature, one classical and one recent, that capital allocation is

properly an analytics-driven optimization exercise conducted at the business-line level rather than a top-down accounting formality [117, 118, 202].

On asset management specifically, Mendoza and Rivera's evidence that credit risk and capital adequacy jointly determine rural bank profitability in the Philippines, Bace's account of liquidity, capital, and asset quality as the three pillars of bank profitability, and De Alcantara's evidence on how liquidity considerations shape banks' capital allocation decisions collectively support treating asset-quality management as inseparable from capital allocation rather than as a parallel driver, consistent with this paper's insistence that ROE drivers interact rather than add [44, 65, 143]. Farhana Rob's evidence that working capital management affects ROE in Bangladeshi Islamic banks, and Khairi, Atika and Rahmani's evidence on capital adequacy and financing-to-deposit effects on ROE, extend the same asset-management logic to smaller and Islamic banking contexts, while Adesina and Mwamba's South African evidence that higher Basel III common equity requirements affect risk-taking behavior shows that the regulatory capital constraint on asset allocation, not only the bank's own risk appetite, increasingly sets the boundary within which these drivers operate [10, 86, 111].

Customer experience and retention form a third driver, one the capital-allocation literature above does not directly address. Sakyi, Nnabueze, Filani, Okojie and Okereke's evidence that customer-service analytics function as a strategic driver of revenue growth supports treating retention not as a soft, marketing-side outcome but as a measurable input to the fee-income component of ROE [205]. Le and Moore's finding that audit quality reduces earnings management and lowers the cost of equity capital adds a governance-side driver operating through the denominator of the ROE ratio rather than the numerator: a bank that manages earnings less aggressively and discloses more reliably should, all else equal, face a lower cost of equity and therefore report a more sustainable ROE even without any change in underlying profitability [121]. The remaining single-bank ratio evidence on ROA, ROE, and earning-per-share relationships with share price, Octovian's, Tj, Aryansyah and Ruhyanto's, and Wahyuti and Pratiwi's studies among them, is consistent with, though it does not directly test, this customer-and-governance-driven view of ROE, since each finds that the market-facing signal moves with ROE in ways not fully explained by the balance-sheet ratios these studies use as predictors [100, 173, 234, 248].

3.5.2 Balancing Risk and Return in ROE Strategies

Balancing risk and return is where revenue diversification's contribution to ROE is most directly tested, and the diversification-specific evidence here is more directly comparable than the broader ROE literature reviewed above. Doan, Lin and Doong's finding that income diversification interacts with ownership structure to determine bank efficiency, Kim and Kim's finding that income-diversification effects are heterogeneous across U.S. bank holding companies rather than uniform, Sari's evidence that diversification, liquidity, and financial leverage jointly determine profitability, Tariq and colleagues' finding that the diversification-performance relationship depends on bank maturity, and Uddin, Majumder, Akter and Zaman's evidence that diversifying both income and assets, not income alone, is what spurs bank performance, together sketch a single underlying pattern: diversification's risk-return effect is conditional on ownership, maturity, leverage, and whether the asset side of the balance sheet diversifies along with the income side [71, 112, 213, 230, 242]. This pattern is precisely what the conceptual model's capability and governance moderators are built to capture.

Direct evidence on the risk-return trade-off itself is similarly conditional rather than uniform. Edirisuriya, Gunasekarage and Dempsey find that income diversification's effect on Australian bank performance depends on bank-specific features rather than applying uniformly across the sector, while Lee, Chen and Zeng find that diversification raises asset correlation and, through it, systemic risk in the market they study, a finding that qualifies any reading of diversification

as an unambiguous risk-reducer [81, 122]. Nepali's evidence on the income-diversification risk-return trade-off in Nepalese commercial banks and Ovi, Perera and Colombage's finding that market power and credit risk jointly shape the diversification-stability relationship in South Asian banking both support treating the trade-off as market- and institution-specific, consistent with the theoretical grounding in Section 3.3 [150, 190]. Thonse Hawaldar, Kumar Meher, Kumari and Kumar's modelling of how capital adequacy interacts with credit risk to shape bank outcomes, and Turnbull's separate account of capital allocation and risk-performance measurement in a financial institution, provide the measurement tools, risk-adjusted performance metrics applied at the business-line level, that let a bank apply this trade-off operationally rather than only observe it after the fact [232, 240].

Stress testing and scenario analysis extend this measurement logic to tail outcomes rather than average conditions. The remaining single-bank Indonesian evidence relating asset, equity, and cost ratios to profitability and, in several cases, to intellectual capital, Al Rasyid and Sosrowidigdo's, Ari Sukmawati Diningrat, Leksono and Hendratmoko's, Ash-Shiddiqy's, Bafah and Muniarty's, Fajria, Nailiah and Hikmah's, Falinda and Muniarty's, Gusvarizon, Ningsih and Imaniah's, Iskandar's, Kurniyanto, Suprihanto and Nador's, Naufallita and Hendratmi's, and Santika's studies among them, is best read collectively as a robustness check rather than individually as new theory: across dozens of banks, periods, and ratio combinations, capital adequacy and asset quality remain positively associated with reported profitability far more consistently than any single fee- or leverage-based ratio does, an empirical regularity this paper's model treats as close to a boundary condition rather than as a variable still open to debate [27, 33, 37, 46, 83, 85, 94, 104, 115, 149, 163, 212]. Robisco and Martinez's evidence that machine-learning credit-scoring models themselves carry model risk that must be incorporated into risk-adjusted performance measurement, together with the predictive-analytics precedents in retail demand forecasting and cash-flow modeling described methodologically in Section 2.1, indicates that as banks adopt these tools for stress testing and scenario analysis, the models used to manage the risk-return trade-off must themselves be treated as a source of risk under scrutiny, not only as a solution to it [199].

3.6 Technological Innovation and Revenue Diversification

Technology does not sit outside the model developed in Sections 3.4 and 3.5; it is the mechanism through which most contemporary revenue diversification is implemented and through which much of the risk discussed in Section 3.3 is now generated. This section reviews digital banking and fintech, blockchain and AI specifically, and the likely future trajectory of technology-enabled revenue models, before Section 3.7 turns to what this implies for practice and policy.

3.6.1 Role of Digital Banking and Fintech

Digital banking and fintech have changed both the cost and the risk side of revenue diversification simultaneously. Atakpa and Abetoh's systematic review of machine-learning advances in financial fraud detection for banking systems shows that the same analytical capability banks use defensively, to detect fraud, also underpins the underwriting and monitoring infrastructure that makes new digital fee and lending products viable in the first place, echoing Adesuyi and colleagues' cross-border payment risk-scoring evidence discussed in Section 3.2 [42]. Bhuiyan, Salma, Roudaki and Tavite's evidence that financial reporting quality and audit fees are shaped by risk-committee characteristics is a useful governance counterpart to this technological picture: as digital channels create new, faster-moving revenue lines, the internal audit and risk-committee oversight of those lines, not only the technology itself, determines whether the resulting fee income is reported reliably enough for ROE to be measured accurately [54, 55].

Blockchain-enabled recordkeeping is the technology most directly tied to regulatory compliance and cross-border transaction cost, both of which matter to the revenue-diversification decision. Akomolafe and Agu's model for technology-enabled internal audit quality provides a useful analogue for how a bank should govern a blockchain-based system's audit trail: their model, developed for internal audit generally, treats technology-enabled recordkeeping as something to be audited and validated on an ongoing basis rather than trusted by default, a discipline this paper argues should extend to blockchain-based transaction records used to support new cross-border fee revenue [18]. As with the AI-driven underwriting discussed above, the personalization and customer-insight capabilities that digital platforms increasingly offer function as a revenue enabler only to the extent that the bank has also built the governance layer to monitor what these systems are doing, a theme that connects directly to blockchain and AI's more advanced applications in Section 3.6.2.

3.6.2 Blockchain and AI in Enhancing Financial Performance

Bello, Elebe, Hammed, Omoegun and Fadayomi's cybersecurity risk-management and regulatory-compliance framework for financial institutions is directly applicable here: blockchain and AI both expand a bank's attack surface even as they expand its revenue base, so the framework's insistence on integrating cybersecurity risk management with regulatory compliance, rather than treating them as separate functions, applies directly to any bank using these technologies to pursue revenue diversification [52]. Jones and Mingo's foundational account of credit-risk modeling and internal capital-allocation processes remains relevant precisely because AI-based credit models have not changed its central lesson: a model's output is only as good as the capital-allocation process built around it, and a bank that adopts AI-driven credit or fraud scoring without correspondingly updating its internal capital-allocation process risks mispricing the very risk the new technology is meant to manage [107].

The synergy between blockchain and AI is best understood as complementary rather than substitutable: blockchain's contribution is largely to recordkeeping integrity and settlement speed, particularly valuable for cross-border transactions, while AI's contribution is to pattern detection in the resulting transaction data, fraud detection, risk assessment, and customer-behavior prediction. Akin-Oluyomi, Atima, Akinleye and Akokodaripon's use of dashboard-based analytics tools for comprehensive profitability analysis in retail procurement operations, though drawn from outside banking, illustrates the general principle that combining a reliable transaction record with real-time analytical dashboards is what allows an organization to monitor profitability at the granularity a diversified revenue base requires [16]. For banks specifically, this combination is what turns blockchain and AI from two separate technology investments into a single capability for monitoring, in close to real time, whether a given digital revenue line is contributing to or eroding risk-adjusted ROE.

3.6.3 The Future of Banking Revenue Models with Technology

The future trajectory of technology in bank revenue models is best read through the predictive-analytics capability it increasingly depends on, rather than through blockchain or AI as isolated technologies. Adelanwa, Basnet and Anene's predictive-analytics model for financial risk detection and fraud prevention in public-sector systems demonstrates a transferable design principle, combining transaction-level data with a risk-scoring layer to catch problems before they materialize, that banks are adapting to their own emerging revenue lines, from decentralized-finance-adjacent products to tokenized asset services [8]. Eboh and Aliliele's AI-driven data-analytics framework for risk assessment in venture-capital and private-equity investment, while built for a different asset class entirely, is structurally the same kind of framework banks will need as they move further into advisory and asset-management fee income that behaves more like alternative-asset risk than like traditional credit risk [79, 80].

What this technological trajectory means for revenue diversification specifically is that the boundary between a bank's traditional credit-risk expertise and the risk types embedded in its newer revenue lines, market risk in trading and advisory income, operational and model risk in AI-driven underwriting, counterparty and settlement risk in blockchain-based products, is dissolving. Banks that build a single, technology-enabled risk-and-revenue monitoring capability across these lines, rather than bolting AI or blockchain onto otherwise unchanged risk functions, are the ones best positioned to convert diversification into durable ROE gains rather than into the unmonitored leakage or the systemic-risk exposure documented in Sections 3.3 and 3.4. This is the technological precondition for the practical and policy implications developed next.

3.7 Toward an Integrative Framework: Practical and Policy Implications

3.7.1 Strategic Insights for Banking Executives

Banking executives face a coordination problem more than a technology-adoption problem: Section 3.6 has shown that AI and blockchain create revenue opportunities largely in proportion to how well a bank governs the risk they introduce, and Atakpa's review of predictive-analytics models for anti-money-laundering detection in commercial banking makes the same point from the compliance side, effective AML analytics is what allows a bank to safely expand cross-border and correspondent-banking fee revenue without incurring the regulatory and reputational risk that has historically limited it [41]. Sakyi, Nnabueze, Filani, Okojie and Babatope's evidence that digital transformation in service delivery reduces risk while improving service, when automation and risk reduction are pursued together rather than automation alone, offers executives a concrete operating principle: digital-transformation investment should be evaluated on its joint contribution to revenue and to risk reduction, not on revenue potential alone [204].

Lawal and Oduleye's review of decision-analytics models for sustainable profitability in technology firms and Medon and Oduleye's financial-planning model for sustainable profitability in dynamic business environments, though developed outside banking, both support a second operating principle directly relevant to executives implementing this paper's model: sustainable profitability requires a planning process that revisits its assumptions as conditions change, rather than a static plan executed once and left unmonitored [119, 120, 141, 142]. McCleary's review of government revenue-earmarking practices, another source drawn from outside banking, illustrates a caution executives should heed when pursuing dedicated new revenue lines: earmarking or ring-fencing a new revenue stream for a specific purpose, common practice when a bank stands up a new digital or advisory unit, can create rigidities that make the unit harder to wind down or redirect if the diversification strategy underperforms, a risk this paper's framework treats as part of the strategic cost of diversification rather than a purely administrative detail [140].

3.7.2 Policy Considerations for Regulators

For regulators, Okafor, Osuji and Dako's framework for harmonizing risk governance, technology infrastructure, and compliance for future-ready banking systems is the most directly applicable source in the review: it argues that regulatory frameworks addressing digital and AI-driven banking need to treat governance, technology, and compliance as a single integrated system rather than as separate supervisory workstreams, consistent with this paper's own insistence that technology, capital, and governance jointly determine whether diversification benefits ROE or merely relocates risk [179, 180].

Data-privacy and algorithmic-fairness standards are the second policy priority the literature supports. Mbonu, Aliliele, Iwuanyanwu and Oluoha's conceptual framework for legal and ethical risk modeling, again developed outside banking specifically, nonetheless offers

regulators a transferable structure for assessing whether an AI-driven underwriting or pricing model used to support a new fee-based product treats customers fairly, a question this paper's framework leaves to regulatory rather than managerial judgment. Regulators pursuing this agenda should also promote structured data-sharing standards between banks and fintech partners. A related, and so far separate, disclosure agenda is emerging around ESG-linked revenue and valuation: Giese, Lee, Melas, Nagy and Nishikawa's evidence that ESG characteristics affect equity valuation and risk suggests that as banks diversify into sustainability-linked lending and advisory fees, regulators will eventually need to extend the same integrated governance-technology-compliance logic to ESG-related revenue disclosure, rather than treating it as a reporting exercise separate from prudential supervision [89].

3.8 An Integrative Framework and Testable Propositions

The synthesis in Sections 3.1 through 3.7 converges on four conditions under which revenue diversification raises rather than erodes return on equity, which this paper states as four testable propositions for future empirical work.

Proposition 1, the capability condition: revenue diversification raises ROE only where a bank's existing infrastructure, branch network, customer relationships, compliance capacity, allows the new revenue line to be produced at a lower marginal cost than a standalone provider would incur, consistent with the economies-of-scope mechanism identified in Section 3.1 and the size-and-scale thresholds reported by Ashyari and Rokhim and by Schreiber [38, 215].

Proposition 2, capital and governance moderation: the ROE effect of a given increase in non-interest income share is moderated by capital adequacy and by the governance quality overseeing the new revenue line, such that the same diversification strategy raises ROE for a well-capitalized, well-governed bank and lowers risk-adjusted ROE for a thinly capitalized or weakly governed one, consistent with Shim's and Abou-El-Sood's findings in Section 3.3 [219, 5]. Proposition 3, non-linearity and threshold effects: the diversification-ROE relationship is non-linear, positive at low to moderate levels of non-interest income share and flattening or reversing beyond a market- and institution-specific threshold, as shown directly by Nguyen's Vietnamese evidence and indirectly by the size-dependent effects Schreiber and Tariq and colleagues report [153, 230].

Proposition 4, technology as a conditioning infrastructure rather than an independent driver: digital, AI, and blockchain adoption raise ROE from diversification only when paired with commensurate investment in risk-and-revenue monitoring infrastructure; absent that investment, technology adoption increases the volatility and model-risk components of ROE without a matching increase in its expected value, consistent with the technology-governance interaction developed in Section 3.6.

Together, these four propositions define the paper's conceptual model: revenue diversification's contribution to ROE is not a direct effect but one conditioned jointly by operational capability, capital and governance, the diversification level itself through its non-linear form, and the monitoring infrastructure built around the technology that increasingly delivers it. A bank, or a future study, can use the four propositions as a checklist for diagnosing why a given diversification strategy is or is not converting into sustainable ROE, which is the practical contribution this review offers beyond the individual empirical findings it synthesizes.

4 Conclusion

This review shows that revenue diversification's contribution to return on equity in banking cannot be settled by a single coefficient, a single country's evidence, or a single risk metric. Across the theoretical foundations reviewed in Section 3.1, the empirical evidence reviewed in Sections 3.2 through 3.5, and the technological and governance evidence reviewed in Sections 3.6 and 3.7, the same pattern recurs: non-interest income raises ROE where it is matched to

institutional capability and risk appetite, and it erodes ROE, or raises systemic risk even while raising average profitability, where it is not. The four propositions developed in Section 3.8 formalize this pattern rather than adding a new claim to it.

The review's theoretical contribution is to integrate three frameworks that the literature has largely applied separately, income diversification theory's portfolio-style risk-pooling logic, economies-of-scope theory's cost-efficiency logic, and agency theory's governance logic, into a single account of when diversification helps ROE and when it does not. This integration explains why studies using similar diversification measures on different banking systems, Stiroh's and Chiorazzo, Milani and Salvini's U.S. and Italian evidence, Nguyen's Vietnamese evidence, and the Indonesian, Nepalese, and Nigerian ratio-based literature reviewed throughout Section 3, report such different results: they are implicitly testing the same relationship under different values of the capability, capital, and governance conditions this paper makes explicit.

For bank executives, the practical implication is not to pursue or avoid revenue diversification as a blanket strategy, but to run the diagnostic implied by the four propositions before committing capital to a new fee, trading, or digital-advisory line: does the bank's existing infrastructure give this specific line a genuine cost or capability advantage; is the line's capital charge and governance oversight calibrated to the volatility it will introduce, not only to the volume of income it is expected to generate; where does the bank's current non-interest income share sit relative to the threshold beyond which the diversification literature reports diminishing or negative returns; and has the technology delivering the new line been paired with equivalent investment in monitoring and model-risk oversight. For regulators, the corresponding implication is to supervise revenue diversification as a single integrated system, in the manner Okafor, Osuji and Dako's framework for harmonizing risk governance, technology infrastructure, and compliance recommends, rather than through separate capital, conduct, and technology workstreams that each see only part of the picture [179, 180].

The review has limitations that follow directly from its thematic design. It does not estimate a pooled effect size, so it cannot report a single average magnitude for revenue diversification's effect on ROE, only the conditions under which the sign and size of that effect vary. The evidence base is bounded by the 2024 publication cutoff and is heavily weighted toward a small number of national contexts, particularly Indonesia within the single-market ROE-ratio literature and the United States and a handful of Asian and European banking systems within the cross-country diversification literature, so the propositions in Section 3.8 should be tested, not assumed, in banking systems outside these contexts. The review also relies on published revenue-diversification measures that vary in construction across studies, an income-share ratio in most cases, a Herfindahl-type index in others, which limits direct numerical comparison across the studies synthesized even as it supports the qualitative pattern the review identifies. Future research should prioritize four extensions that follow directly from the propositions above rather than from a generic call for more evidence. First, studies should test the capability threshold in Proposition 1 directly, using bank-level measures of branch network, digital infrastructure, and compliance capacity as moderators of the diversification-ROE relationship, rather than inferring capability indirectly from bank size. Second, studies should jointly estimate the capital and governance moderation in Proposition 2, since the evidence reviewed in Section 3.3 treats these as separate controls more often than as an interacting pair. Third, longitudinal studies spanning at least one full credit cycle are needed to test whether the non-linear, threshold pattern in Proposition 3 is stable across cycles or itself shifts with the interest-rate and competitive environment. Fourth, and most directly tied to the technology evidence in Section 3.6, studies should measure model risk and monitoring investment explicitly, rather than treating AI or blockchain adoption as a binary variable, to test Proposition 4's claim that technology raises ROE only when paired with commensurate monitoring capacity.

Comparative, cross-jurisdictional designs that hold the diversification measure constant while varying the institutional context would do the most to resolve the apparent contradictions this review has catalogued rather than merely adding another single-country estimate to an already large literature.

LIBR

References

1. Abbas, F., Iqbal, S., & Aziz, B. (2019). The impact of bank capital, bank liquidity and credit risk on profitability in postcrisis period: A comparative study of US and Asia. *Cogent Economics & Finance*, 7(1), 1605683. <https://doi.org/10.1080/23322039.2019.1605683>
2. Abbas, F., Iqbal, S., & Aziz, B. (2020). The Role of Bank Liquidity and Bank Risk in Determining Bank Capital: Empirical Analysis of Asian Banking Industry. *Review of Pacific Basin Financial Markets and Policies*, 23(03), 2050020. <https://doi.org/10.1142/s0219091520500204>
3. Abdelaziz, H., Rim, B., & Helmi, H. (2020). The Interactional Relationships Between Credit Risk, Liquidity Risk and Bank Profitability in MENA Region. *Global Business Review*, 23(3), 561. <https://doi.org/10.1177/0972150919879304>
4. Abdelmoneim, Z., & Yasser, M. (2023). The impact of bank performance and economic growth on bank profitability: CAMEL model application in middle-income countries. *Banks and Bank Systems*, 18(3), 205-220. [https://doi.org/10.21511/bbs.18\(3\).2023.17](https://doi.org/10.21511/bbs.18(3).2023.17)
5. Abou-El-Sood, H. (2017). Corporate governance structure and capital adequacy: implications to bank risk taking. *International Journal of Managerial Finance*, 13(2), 165-185. <https://doi.org/10.1108/ijmf-04-2016-0078>
6. Adamgbo, D. S., Toby, P. A. J., Momodu, D. A., & Imegi, P. J. (2019). The Effect of Capital Adequacy on Credit Risk Management among Commercial Banks in Nigeria; Within the Basel Capital Adequacy Framework. *International Journal of Contemporary Research and Review*, 10(07). <https://doi.org/10.15520/ijcrr.v10i07.714>
7. Addai, B., Tang, W., Gyimah, A. G., & Twumasi, M. A. (2022). Income diversification and bank performance nexus: Does corruption matter?. *Journal of Multinational Financial Management*, 65, 100757. <https://doi.org/10.1016/j.mulfin.2022.100757>
8. Adelanwa, A., Basnet, A., & Anene, U. N. (2023b). Predictive analytics models for financial risk detection and fraud prevention in public systems. *International Journal of Advanced Multidisciplinary Research and Studies*, 3(6). <https://doi.org/10.62225/2583049X.2023.3.6.5969>
9. Adem, M. (2022). Impact of income diversification on bank stability: a cross-country analysis. *Asian Journal of Accounting Research*, 8(2), 133. <https://doi.org/10.1108/ajar-03-2022-0093>
10. Adesina, K. S., & Mwamba, J. M. (2016). Do Basel III Higher Common Equity Capital Requirements Matter for Bank Risk-taking Behaviour? Lessons from South Africa. *African Development Review*, 28(3), 319. <https://doi.org/10.1111/1467-8268.12208>
11. Adesuyi, M. O., Akomolafe, O., Olaogun, B. O., Ndukwe, V. U., & Sakyi, J. K. (2024). AI-driven risk scoring model for global cross-border trade payment transactions. *International Journal of Advanced Multidisciplinary Research and Studies*, 4(1), 1569-1581. <https://doi.org/10.62225/2583049X.2024.4.1.5281>
12. Adeyelu, O. O. (2020). An artificial intelligence-driven conceptual model for wildlife strike risk quantification and aircraft airworthiness impact assessment at high-traffic African airports. *Iconic Research and Engineering Journals*, 4(1), 339-368. <https://doi.org/10.64388/IREV4I1-1718482>
13. Adeyelu, O. O. (2023). A risk-tiered oversight model for unmanned aircraft operations in shared controlled airspace over Nigerian airports. *International Journal of Scientific Research in Civil Engineering*, 7(4), 147-184. <https://doi.org/10.32628/IJSRCE237419>
14. Ai, J., Brockett, P. L., Cooper, W. W., & Golden, L. L. (2011). Enterprise Risk Management Through Strategic Allocation of Capital. *Journal of Risk and Insurance*, 79(1), 29. <https://doi.org/10.1111/j.1539-6975.2010.01403.x>

15. Akhter, S., & Roy, J. K. (2017). Analysis of Credit Risk, Efficiency, Liquidity, and Profitability of Selected Non-Bank Financial Institution: An Empirical Study. *Journal of Business*, 2(2), 16. <https://doi.org/10.18533/job.v2i2.70>
16. Akin-Oluyomi, O. T., Atima, M. E., Akinleye, O. K., & Akokodaripon, D. A. (2020). Using Tableau and Excel for comprehensive profitability analysis in retail procurement operations. *International Journal of Multidisciplinary Research and Growth Evaluation*, 1(5), 385-393.
17. Akinroluyo, B. I., & Dimgba, C. (2022). BANKS LIQUIDITY RATIO AND RETURN ON EQUITY OF NIGERIA DEPOSIT MONEY BANK IN NIGERIA. *International Journal of Management & Entrepreneurship Research*, 4(1), 36-47. <https://doi.org/10.51594/ijmer.v4i1.283>
18. Akomolafe, O., & Agu, M. U. (2018). A conceptual model for enhancing internal audit quality through technology-enabled risk assessment frameworks. *Iconic Research and Engineering Journals*, 1(9), 458-475.
19. Akomolafe, O., & Agu, M. U. (2019). A conceptual framework for developing risk-based internal control models in the insurance and banking sectors. *Iconic Research and Engineering Journals*, 2(8), 335-354.
20. Akomolafe, O., Agu, M. U., & Bello, A. (2023a). A conceptual model for implementing risk-based auditing in strategic financial management. *International Journal of Advanced Multidisciplinary Research and Studies*, 3(6), 2274-2286. <https://doi.org/10.62225/2583049X.2023.3.6.5359>
21. Akomolafe, O., Agu, M. U., & Bello, A. (2023b). A quantitative conceptual model for assessing compliance risk in emerging economies. *International Journal of Advanced Multidisciplinary Research and Studies*, 3(6), 2287-2296. <https://doi.org/10.62225/2583049X.2023.3.6.5360>
22. Alhassan, A. L. (2015). Income diversification and bank efficiency in an emerging market. *Managerial Finance*, 41(12), 1318. <https://doi.org/10.1108/mf-12-2014-0304>
23. Aliliele, C., Mbonu, I. S., & Iwuanyanwu, U. (2023a). A conceptual framework for continuous cloud misconfiguration monitoring and enterprise risk mitigation strategies. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 9(10), 373-394. <https://doi.org/10.32628/CSEIT2361071>
24. Aliliele, C., Mbonu, I. S., & Iwuanyanwu, U. (2023b). A review of API governance and risk prioritization frameworks in modern financial institutions. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 9(10), 395-433. <https://doi.org/10.32628/CSEIT2361072>
25. Aliliele, C., Mbonu, I. S., & Iwuanyanwu, U. (2023c). Advances in predictive analytics models for student retention and institutional risk management systems. *International Journal of Advanced Multidisciplinary Research and Studies*, 3(6), 2692-2711. <https://doi.org/10.62225/2583049X.2023.3.6.5990>
26. Al Rasyid, H. (2022a). Pengaruh Return On Assets(ROA),Return On Equity(ROE) Dan Net Interest Margin(NIM) Terhadap Harga Saham Pada Bank BCA Tbk. *Owner*, 6(3), 1390-1401. <https://doi.org/10.33395/owner.v6i3.965>
27. Al Rasyid, H. A. R., & Sosrowidigdo, S. (2022b). Pengaruh Return On Assets(ROA) Dan return On Equity(ROE) terhadap Kinerja Kesehatan Capital Adequacy Ratio(CAR) Pada Bank BTPN. *Owner*, 6(1), 620-631. <https://doi.org/10.33395/owner.v6i1.634>
28. Al-Tarawneh, A., Abu Khalaf, B. K., & Assaf, G. A. (2016). Noninterest Income and Financial Performance at Jordanian Banks. *International Journal of Financial Research*, 8(1), 166. <https://doi.org/10.5430/ijfr.v8n1p166>
29. Ammar, N., & Boughrara, A. (2019). The impact of revenue diversification on bank profitability and risk: evidence from MENA banking industry. *Macroeconomics and*

- Finance in Emerging Market Economies, 12(1), 36.
<https://doi.org/10.1080/17520843.2018.1535513>
30. Ammar, N., & Boughrara, A. (2023). Noninterest income mix and bank performance: Generalized propensity score fractional dose–response function evidence. *Global Finance Journal*, 56, 100771. <https://doi.org/10.1016/j.gfj.2022.100771>
 31. Anam, H., Rakim, A. A., Khozi, S., & Winarni, W. (2018). Analisis Data Pergerakan Harga Saham Bank BUMN melalui Debt to Equity Ratio (DER), Return On Equity (ROE) dan Earning Per Share (EPS). *JSHP (Jurnal Sosial Humaniora dan Pendidikan)*, 2(2), 124. <https://doi.org/10.32487/jsdp.v2i2.499>
 32. Antao, S., & Karnik, A. (2022). Bank Performance and Noninterest Income: Evidence from Countries in the Asian Region. *Asia-Pacific Financial Markets*, 29(3), 477. <https://doi.org/10.1007/s10690-021-09357-1>
 33. Ari Sukmawati Diningrat, , Anwar Bowo Leksono, , & Suseno Hendratmoko, (2023). Pengaruh Return On Assets Dan Return On Equity Terhadap Capital Adequacy Ratio Di PT. Bank Tabungan Pensiunan Nasional Tbk. Periode 2014-2022. *Jurnal Nuansa : Publikasi Ilmu Manajemen dan Ekonomi Syariah*, 1(4), 51-61. <https://doi.org/10.61132/nuansa.v1i4.340>
 34. Armalinda, A. (2021). MENINGKATKAN KINERJA KEUANGAN RETURN ON EQUITY (ROE) MELALUI RASIO STRUKTUR MODAL DEBT TO ASSET RATIO (DAR) DAN DEBT TO EQUITY RATIO (DER) PADA PT BANK MANDIRI TBK YANG TERDAFTAR DI BURSA EFEK INDONESIA. *Riset Manajemen dan Akuntansi*, 12(1), 52-65. <https://doi.org/10.36600/rma.v12i1.155>
 35. Arumosoye, O. M., & Obriki, O. D. (2020). A governance-oriented conceptual model for contractor safety performance in multi-contract industrial projects. *International Journal of Multidisciplinary Research and Growth Evaluation*, 1(5), 728-740. <https://doi.org/10.54660/IJMRGE.2020.1.5.728-740>
 36. Arumosoye, O. M., & Obriki, O. D. (2022). Conceptual risk pathway model for lifting and rigging operations in heavy industrial construction. *Gyanshauryam, International Scientific Refereed Research Journal*, 5(5), 346-369. <https://doi.org/10.32628/GISRRJ2256237>
 37. Ash-Shiddiqy, M. (2019). ANALISIS PROFITABILITAS BANK UMUM SYARIAH YANG MENGGUNAKAN RASIO RETURN ON ASSET (ROA) DAN RETURN ON EQUITY (ROE). *Imara: JURNAL RISET EKONOMI ISLAM*, 3(2), 117. <https://doi.org/10.31958/imara.v3i2.1659>
 38. Ashyari, M. Z., & Rokhim, R. (2020). Revenue diversification and bank profitability: study on Indonesian banks. *Jurnal Siasat Bisnis*, 24(1), 34. <https://doi.org/10.20885/jsb.vol24.iss1.art3>
 39. Asiedu, C. S. (2022). Drug interaction risk in antenatal care: A conceptual framework for systematic interaction screening. *Shodhshauryam, International Scientific Refereed Research Journal*, 5(3), 465-484.
 40. Asih, V. S., & Uriawan, W. (2022). Share Price of Bank BTPN Syariah: The Role of Return on Equity and Return on Assets. *Indonesian Journal of Economics and Management*, 3(1), 17-32. <https://doi.org/10.35313/ijem.v3i1.4643>
 41. Atakpa, M. I. (2021). A review of predictive analytics models for anti-money laundering detection in commercial banking systems. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 7(2), 778-804. <https://doi.org/10.32628/CSEIT2064813>
 42. Atakpa, M. I., & Abetoh, N. F. (2022). A systematic review of machine learning advances in financial fraud detection for banking systems. *International Journal of Scientific*

- Research in Computer Science, Engineering and Information Technology, 8(2), 771-801. <https://doi.org/10.32628/CSEIT23906220>
43. Atta, S., Tofah, P., Kankam, M. A., & Adenuga, O. M. (2020). A critical review of NDT-based integrity management and corrosion risk assessment strategies for refinery process equipment. *International Journal of Engineering and Modern Technology*, 6(2), 19-46. <https://doi.org/10.56201/ijemt.vol.6.no2.2020.pg19.46>
 44. Bace, E. (2016). Bank profitability: Liquidity, capital and asset quality. *Journal of Risk Management in Financial Institutions*, 9(4), 327. <https://doi.org/10.69554/crpu2203>
 45. Baek, S., Lee, K. Y., Lee, J., & Mohanty, S. K. (2016). Diversification in Korean Banking Business: Is Noninterest Income a Financial Savior?. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.2977590>
 46. Bafah, Y. R., & Muniarty, P. (2022). Pengaruh Return On Assets (Roa) Dan Return On Equity (Roe) Terhadap Capital Adequacy Ratio (Car) Pada PT. Bank Danamon Indonesia Tbk. *Ekopem: Jurnal Ekonomi Pembangunan*, 4(3), 45-56. <https://doi.org/10.32938/jep.v7i3.2868>
 47. Basnet, A., Oghenemaiga, E., & Anene, U. N. (2024). Attribution, revenue, and yield optimization models using Google Ad Manager reporting and forecasting tools. *International Journal of Advanced Multidisciplinary Research and Studies*, 4(6), 2907–2926. <https://doi.org/10.62225/2583049X.2024.4.6.5667>
 48. Basnet, A., Oghenemaiga, E., & Anene, U. N. (2024). Attribution, revenue, and yield optimization models using Google Ad Manager reporting and forecasting tools. *International Journal of Advanced Multidisciplinary Research and Studies*, 4(6). <https://doi.org/10.62225/2583049X.2024.4.6.5667>
 49. Bauer, D., & Zanjani, G. (2016). The Marginal Cost of Risk, Risk Measures, and Capital Allocation. *Management Science*, 62(5), 1431. <https://doi.org/10.1287/mnsc.2015.2190>
 50. Bawa, J. K., & Basu, S. (2020). Restructuring assets reform, 2013: Impact of operational ability, liquidity, bank capital, profitability and capital on bank credit risk. *IIMB Management Review*, 32(3), 267. <https://doi.org/10.1016/j.iimb.2019.10.009>
 51. Bello, A., Akomolafe, O., & Agu, M. U. (2023). A conceptual framework for data-driven procurement risk management in multinational enterprises. *International Journal of Advanced Multidisciplinary Research and Studies*, 3(6), 2307-2316. <https://doi.org/10.62225/2583049X.2023.3.6.5363>
 52. Bello, A. D., Elebe, O., Hammed, N. I., Omoegun, G. O., & Fadayomi, O. (2024). A cybersecurity risk management and regulatory compliance framework for financial institutions. *Iconic Research and Engineering Journals*. <https://www.irejournals.com/paper-details/1713553>
 53. Benink, H. (2020). Global Bank Capital and Liquidity after 30 Years of Basel Accords. *Journal of Risk and Financial Management*, 13(4), 73. <https://doi.org/10.3390/jrfm13040073>
 54. Bhuiyan, M. B. U., Salma, U., Roudaki, J., & Tavite, S. (2020b). Financial reporting quality, audit fees and risk committees. *Asian Review of Accounting*, 28(3), 423. <https://doi.org/10.1108/ara-01-2019-0017>
 55. Bhuiyan, M. B. U., Salma, U., Roudaki, J., & Tavite, S. (2020). Financial reporting quality, audit fees and risk committees. *Asian Review of Accounting*, 28(3), 423-444. <https://doi.org/10.1108/ara-01-2019-0017>
 56. Boamah, N. A., Opoku, E., & Boakye-Dankwa, A. (2022). Capital regulation, liquidity risk, efficiency and banks performance in emerging economies. *Journal of Financial Regulation and Compliance*, 31(1), 126-145. <https://doi.org/10.1108/jfrc-09-2021-0076>
 57. Bola-Sadipe, D., Eboh, E. E., & Odihi, F. (2022). Advances in data-driven tax compliance and financial reporting systems in banking institutions. *Shodhshauryam, International*

- Scientific Refereed Research Journal, 5(1), 366-403.
<https://doi.org/10.32628/SHISRRJ247137>
58. Brighi, P., & Venturelli, V. (2014). How do income diversification, firm size and capital ratio affect performance? Evidence for bank holding companies. *Applied Financial Economics*, 24(21), 1375. <https://doi.org/10.1080/09603107.2014.925064>
 59. Brunnermeier, M. K., Dong, G. N., & Palia, D. (2020). Banks' Noninterest Income and Systemic Risk. *The Review of Corporate Finance Studies*. <https://doi.org/10.1093/rcfs/cfaa006>
 60. Brunner, M., Piacenza, F., Monti, F., & Bazzarello, D. (2009). Capital allocation for operational risk. *Journal of Risk Management in Financial Institutions*, 2(2), 165. <https://doi.org/10.69554/rlas1976>
 61. Cahyaningtyas, A. R., & Asiyah, B. N. (2022). PENGARUH RETURN ON ASSETS, RETURN ON EQUITY DAN FINANCING TO DEPOSIT RATIO TERHADAP NON PERFORMING FINANCING PADA BANK BCA SYARIAH. *KEADABAN: Jurnal Sosial dan Humaniora*, 4(1), 33-49. <https://doi.org/10.33650/adab.v4i1.4162>
 62. Chiorazzo, V., Milani, C., & Salvini, F. (2008). Income Diversification and Bank Performance: Evidence from Italian Banks. *Journal of Financial Services Research*, 33(3), 181. <https://doi.org/10.1007/s10693-008-0029-4>
 63. Dada, T., Isiekwu, C. P., & Oluwo, K. (2021a). Advances in multinational cash flow consolidation and FX risk control using tiered treasury architecture. *Iconic Research and Engineering Journals*, 4(11), 601-620. <https://doi.org/10.64388/IREV4I11-1714351>
 64. Dada, T., Isiekwu, C. P., & Oluwo, K. (2021). Advances in multinational cash flow consolidation and FX risk control using tiered treasury architecture. *Iconic Research and Engineering Journals*, 4(11), 601–620. <https://doi.org/10.64388/IREV4I11-1714351>
 65. De Alcântara, W. R. (2015). Liquidity effects in banks' capital allocation decisions. *Journal of Risk Management in Financial Institutions*, 8(2), 163. <https://doi.org/10.69554/hfmo8535>
 66. De Menna, B. (2020). The Joint Impact of Bank Capital and Funding Liquidity on the Monetary Policy's Risk-Taking Channel: A Bird's Eye View from the Euro Area Early Days. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3650902>
 67. Devkota, A. (2024). Impact of Revenue Diversification on Bank Profitability and Stability: A Case of Nepalese Commercial Banks. *Nepalese Journal of Economics*, 8(4), 41. <https://doi.org/10.3126/nje.v8i4.79748>
 68. DeYoung, R., & Rice, T. (2004). Noninterest Income and Financial Performance at U.S. Commercial Banks. *Financial Review*, 39(1), 101. <https://doi.org/10.1111/j.0732-8516.2004.00069.x>
 69. DeYoung, R., & Rice, T. (2006). Erratum: Noninterest Income and Financial Performance at U.S. Commercial Banks. *Financial Review*, 41(3), 449-450. <https://doi.org/10.1111/j.1540-6288.2006.00152.x>
 70. Dhahir Al-Noweran, (2019). Financial Analysis of Cash Flow Indicators, Capital Adequacy and Banking Liquidity Risk for Jordan Housing Bank for Trade and Finance 2011-2015. *TANMIYAT AL-RAFIDAIN*, 38(121), 99-112. <https://doi.org/10.33899/tanra.2019.161165>
 71. Doan, A., Lin, K., & Doong, S. (2018). What drives bank efficiency? The interaction of bank income diversification and ownership. *International Review of Economics & Finance*, 55, 203. <https://doi.org/10.1016/j.iref.2017.07.019>
 72. Dosunmu, A. A., & Ogundele, P. O. (2019). Security audit and enterprise risk assessment frameworks for resilient information systems. *Iconic Research and Engineering Journals*, 3(5), 434-447. <https://doi.org/10.64388/IREV3I5-1713225>

73. Dosunmu, A. A., & Ogundele, P. O. (2019). Security audit and enterprise risk assessment frameworks for resilient information systems. *IRE Journals*, 3(5).
74. Dosunmu, A. A., & Ogundele, P. O. (2024b). Cyber risk quantification models for prioritizing enterprise security investment decisions. *International Journal of Multidisciplinary Research and Growth Evaluation*, 5(6), 1777-1785. <https://doi.org/10.54660/IJMRGE.2024.5.6.1777-1785>
75. Dosunmu, A. A., & Ogundele, P. O. (2024). Cyber risk quantification models for prioritizing enterprise security investment decisions. *International Journal of Multidisciplinary Research and Growth Evaluation*, 5(6), 1777–1785.
76. D'Souza, C., & Lai, A. (2006). THE EFFECTS OF BANK CONSOLIDATION ON RISK CAPITAL ALLOCATION AND MARKET LIQUIDITY. *Journal of Financial Research*, 29(2), 271-291. <https://doi.org/10.1111/j.1475-6803.2006.00178.x>
77. D'Souza, C., & Lai, A. (2006). THE EFFECTS OF BANK CONSOLIDATION ON RISK CAPITAL ALLOCATION AND MARKET LIQUIDITY. *Journal of Financial Research*, 29(2), 271. <https://doi.org/10.1111/j.1475-6803.2006.00178.x>
78. Eboh, E. E., & Aliliele, C. (2023). Portfolio risk optimization models for venture capital investment strategy and fraud exposure analysis. *Iconic Research and Engineering Journals*, 7(4), 759-792. <https://doi.org/10.64388/IREV7I4-1715305>
79. Eboh, E. E., & Aliliele, C. (2024). AI-driven data analytics framework for risk assessment and detection of venture capital and private equity investment fraud in U.S. capital markets. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 10(6), 2624-2665. <https://doi.org/10.32628/CSEIT2410787>
80. Eboh, E. E., & Aliliele, C. (2024). AI-driven data analytics framework for risk assessment and detection of venture capital and private equity investment fraud in U.S. capital markets. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 10(6), 2624 to 2665. <https://doi.org/10.32628/CSEIT2410787>
81. Edirisuriya, P., Gunasekarage, A., & Dempsey, M. (2015). Australian Specific Bank Features and the Impact of Income Diversification on Bank Performance and Risk. *Australian Economic Papers*, 54(2), 63. <https://doi.org/10.1111/1467-8454.12043>
82. Fadayomi, O., Bello, A. D., Elebe, O., Hammed, N. I., & Omoegun, G. O. (2024). An adaptive fraud risk scoring model for real-time transaction monitoring at scale. *IIARD International Journal of Banking and Finance Research*, 10(10), 212–230. <https://iiardjournals.org/get/IJBFR/VOL.%2010%20NO.%2010%202024/An%20Adaptive%20Fraud%20Risk%20Scoring%2012-230.pdf>
83. Fajria, A. N., Nailiah, R., & Hikmah, N. (2024). PENGARUH RETURN ON ASSETS (ROA), RETURN ON EQUITY (ROE), DAN BIAYA OPERASIONAL PENDAPATAN OPERASIONAL (BOPO) TERHADAP KECUKUPAN MODAL BANK (CAR). *SINERGI : Jurnal Riset Ilmiah*, 1(7), 475-486. <https://doi.org/10.62335/dqy1rt02>
84. Falegan, O. C., & Aniebonam, S. O. (2022). Conceptual framework for lifecycle risk assessment in offshore produced water management. *Gyanshauryam, International Scientific Refereed Research Journal*, 5(5), 322-345.
85. Falinda, S., & Muniarty, P. (2023). Analisis Perbandingan Return On Asset Dan Return On Equity Pada PT. Bank Rakyat Indonesia, Tbk Dan PT. Bank Negara Indonesia, Tbk. *Jurnal Ilmiah Manajemen dan Kewirausahaan (JUMANAGE)*, 2(2), 210-216. <https://doi.org/10.33998/jumanage.2023.2.2.835>
86. Farhana Rob, S. (2015). Assessing Relationship between Working Capital Management and Return on Equity of Islamic Bank Bangladesh Limited. *DIU Journal of Business and Entrepreneurship*, 9(02), 155-162. <https://doi.org/10.36481/diujbe.v09i2.wc5eq694>

87. Ferreira, J. H. L., Zanini, F. A. M., & Alves, T. W. (2019). Bank revenue diversification: its impact on risk and return in Brazilian banks. *Revista Contabilidade & Finanças*, 30(79), 91. <https://doi.org/10.1590/1808-057x201805810>
88. Fitriani, A. (2021). PENGARUH CURRENT RATIO DAN DEBT TO EQUITY RATIO TERHADAP RETURN ON EQUITY PADA PT BANK MANDIRI TBK.. *Aktiva : Jurnal Akuntansi dan Investasi*, 6(1), 29. <https://doi.org/10.53712/aktiva.v6i1.1094>
89. Giese, G., Lee, L., Melas, D., Nagy, Z., & Nishikawa, L. (2019). Foundations of ESG Investing: How ESG Affects Equity Valuation, Risk, and Performance. *The Journal of Portfolio Management*, 45(5), 69. <https://doi.org/10.3905/jpm.2019.45.5.069>
90. Githaiga, P. N. (2020). Human capital, income diversification and bank performance—an empirical study of East African banks. *Asian Journal of Accounting Research*, 6(1), 95. <https://doi.org/10.1108/ajar-06-2020-0041>
91. Githaiga, P. N. (2022). Intellectual capital and bank performance: the moderating role of income diversification. *Asia-Pacific Journal of Business Administration*, 15(4), 509. <https://doi.org/10.1108/apjba-06-2021-0259>
92. Golubeva, O., Duljic, M., & Keminen, R. (2019). The impact of liquidity risk on bank profitability: some empirical evidence from the European banks following the introduction of Basel III regulations. *Journal of Accounting and Management Information Systems*, 18(4). <https://doi.org/10.24818/jamis.2019.04001>
93. Gottschalk, S. (2011). Asset correlation, portfolio diversification and regulatory capital in the Basel Capital Accord. *Risk Governance and Control: Financial Markets and Institutions*, 1(3), 31. <https://doi.org/10.22495/rgcv1i3art3>
94. Gusvarizon, M., Ningsih, P. T. S., & Imaniah, I. (2024). Pengaruh Return on Asset (ROA) Dan Return on Equity (ROE) Terhadap Capital Adequacy Ratio (CAR) pada Bank Umum Syariah di Indonesia. *Ilmu Ekonomi Manajemen dan Akuntansi*, 5(1), 42-57. <https://doi.org/10.37012/ileka.v5i1.2145>
95. Hafidiyah, M. N., & Trinugroho, I. (2016). REVENUE DIVERSIFICATION, PERFORMANCE, AND BANK RISK: EVIDENCE FROM INDONESIA. *Jurnal Dinamika Manajemen*, 7(2). <https://doi.org/10.15294/jdm.v7i2.8198>
96. Hasanah, N. J., Busaini, , & Chaidir, T. (2023). ANALISIS PROFITABILITAS RESIKO USAHA RETURN ON EQUITY BANK NTB PASCA MELAKUKANKONVERSI MENJADI BANK UMUM SYARIAH. *Jurnal Tabarru': Islamic Banking and Finance*, 6(1), 92-100. [https://doi.org/10.25299/jtb.2023.vol6\(1\).12815](https://doi.org/10.25299/jtb.2023.vol6(1).12815)
97. Hasanah, U., & Purnama, I. (2022). PENGARUH RETURN ON ASSETS, RETURN ON EQUITY, DAN DEBT TO EQUITY RATIO TERHADAP HARGA SAHAM PERBANKAN YANG GO PUBLIK DI BURSA EFEK INDONESIA. *Jurnal Ekonomi & Bisnis*, 10(2), 187-196. <https://doi.org/10.58406/jeb.v10i2.923>
98. Hastasari, R., & Suharini, (2022). Pengaruh Inflasi dan Non-Performing Loans (NPL) Terhadap Return on Equity (ROE) Bank Perkreditan Rakyat (BPR) Indonesia. *Formosa Journal of Multidisciplinary Research*, 1(3), 331-342. <https://doi.org/10.55927/fjmr.v1i3.570>
99. Haubrich, J. G., & Young, T. (2019). Trends in the Noninterest Income of Banks. *Economic Commentary (Federal Reserve Bank of Cleveland)*, 1-6. <https://doi.org/10.26509/frbc-ec-201914>
100. Hedy, M. (2021). Pengaruh Return on Equity terhadap Harga Saham pada PT. Bank Mandiri (Persero), Tbk Periode 2010-2019. *Jurnal Tadbir Peradaban*, 1(1), 22-27. <https://doi.org/10.55182/jtp.v1i1.5>
101. Hunjra, A. I., Zureigat, Q., Tayachi, T., & Mehmood, R. (2020). Impact of non-interest income and revenue concentration on bank risk in South Asia. *Banks and Bank Systems*, 15(4), 15. [https://doi.org/10.21511/bbs.15\(4\).2020.02](https://doi.org/10.21511/bbs.15(4).2020.02)

102. Ike, P. N., Aifuwa, S. E., Nnabueze, S. B., Olatunde-Thorpe, J., Ogbuefi, E., Oshoba, T. O., & Akokodaripon, D. (2024a). Quantitative risk architecture for public-private partnerships: A multi-layered model for allocating public and private risk. *International Journal of Advanced Multidisciplinary Research and Studies*, 4(6), 2669-2682. <https://doi.org/10.62225/2583049X.2024.4.6.5021>
103. Ike, P. N., Aifuwa, S. E., Nnabueze, S. B., Olatunde-Thorpe, J., Ogbuefi, E., Oshoba, T. O., & Akokodaripon, D. (2024b). Quantitative risk architecture for public-private partnerships: A multi-layered model for allocating public and private risk. *International Journal of Advanced Multidisciplinary Research and Studies*, 4(6), 2669–2682. <https://doi.org/10.62225/2583049X.2024.4.6.5021>
104. Iskandar, Y. (2021). Pengaruh Net Interest Margin, Return On Equity, Return On Asset, Capital Adequacy Ratio terhadap Price Book Value Pada Bank Umum di Indonesia. *DIALEKTIKA : Jurnal Ekonomi dan Ilmu Sosial*, 6(1). <https://doi.org/10.36636/dialektika.v6i1.592>
105. Jati, W. (2021). Influence of Operational Costs on Operating Revenue and Loan to Deposit Ratio against Return on Asset at PT. Bank Negara Indonesia, Tbk Year 2009-2019. *Kontigensi : Jurnal Ilmiah Manajemen*, 9(1), 1-9. <https://doi.org/10.56457/jimk.v9i1.88>
106. Jawad, M., Naz, M., & Shamsi, M. A. (2021). Impact of Noninterest Income on Bank Risk-Taking and Bank Lending Spread. *Review of Pacific Basin Financial Markets and Policies*, 24(04). <https://doi.org/10.1142/s0219091521500296>
107. Jones, D., & Mingo, J. (1999). Credit risk modeling and internal capital allocation processes: implications for a models-based regulatory bank capital standard. *Journal of Economics and Business*, 51(2), 79-108. [https://doi.org/10.1016/s0148-6195\(98\)00030-7](https://doi.org/10.1016/s0148-6195(98)00030-7)
108. Kamau, S., & Simo-Kengne, B. D. (2024). Legal origin and bank lending behavior in developing countries: The mediating role of revenue diversification. *Journal of Corporate Accounting & Finance*, 35(3), 213-229. <https://doi.org/10.1002/jcaf.22705>
109. Karmila, K. (2022). Pengaruh Financing to Deposit Ratio (FDR), Capital Adequacy Ratio (CAR) Terhadap Return on Equity (ROE) Pada PT. Bank Syariah Mandiri. *Journal Of Institution And Sharia Finance*, 5(1), 13-25. <https://doi.org/10.24256/joins.v4i1.3377>
110. Kayombo, K. M. (2021). Revenue diversification, risk and profitability of banks: Evidence from Zambia. *SAARJ Journal on Banking & Insurance Research*, 10(2), 1-15. <https://doi.org/10.5958/2319-1422.2021.00012.6>
111. Khairi, M. R., Atika, , & Rahmani, N. A. B. (2024). The Effect of Return on Equity, Capital Adequacy Ratio and Financing to Deposit Ratio on Return on Assets of PT. Bank Muamalat Tbk. *Ilomata International Journal of Management*, 5(4), 1154-1172. <https://doi.org/10.61194/ijjm.v5i4.1274>
112. Kim, J., & Kim, Y. (2020). Heterogeneous patterns of income diversification effects in U.S. bank holding companies. *International Review of Economics & Finance*, 69, 731. <https://doi.org/10.1016/j.iref.2020.07.003>
113. Klaassen, P., & Van Eeghen, I. (2018). Bank capital allocation and performance management under multiple capital constraints. *Journal of Risk Management in Financial Institutions*, 11(3), 194. <https://doi.org/10.69554/oswe3595>
114. Kone, M. I. (2024). Income Diversification, Capital Requirement and Bank Profitability in the West African Economic and Monetary Union. *Pakistan Journal of Life and Social Sciences (PJLSS)*, 22(2). <https://doi.org/10.57239/pjlss-2024-22.2.00386>
115. Kurniyanto, O., Suprihanto, S., & Nesor, A. (2023). Analisis Rasio Return on Equity, Return on Asset dan Debt to Equity Rasio Dalam Menilai Pertumbuhan Harga Saham PT Bank Tabungan Negara.Tbk Periode 2016-2020. *PARAMETER*, 7(2), 418-427. <https://doi.org/10.37751/parameter.v7i2.217>

116. Lahouel, B. B., Taleb, L., & Kossai, M. (2022). Nonlinearities between bank stability and income diversification: A dynamic network data envelopment analysis approach. *Expert Systems with Applications*, 207, 117776. <https://doi.org/10.1016/j.eswa.2022.117776>
117. Lawal, O. A., & Oduleye, T. E. (2021a). A conceptual decision model for capital allocation using financial analytics. *Gyanshauryam, International Scientific Refereed Research Journal*, 4(2), 269–295.
118. Lawal, O. A., & Oduleye, T. E. (2021). A conceptual decision model for capital allocation using financial analytics. *Gyanshauryam, International Scientific Refereed Research Journal*, 4(2), 269–295.
119. Lawal, O. A., & Oduleye, T. E. (2023a). A review of decision analytics models for sustainable profitability in technology firms. *Gyanshauryam, International Scientific Refereed Research Journal*, 6(6), 455-475.
120. Lawal, O. A., & Oduleye, T. E. (2023). A review of decision analytics models for sustainable profitability in technology firms. *Gyanshauryam, International Scientific Refereed Research Journal*, 6(6), 455–475.
121. Le, B., & Moore, P. H. (2021). The impact of audit quality on earnings management and cost of equity capital: evidence from a developing market. *Journal of Financial Reporting and Accounting*, 21(3), 695-728. <https://doi.org/10.1108/jfra-09-2021-0284>
122. Lee, C., Chen, P., & Zeng, J. (2019). Bank Income Diversification, Asset Correlation and Systemic Risk. *South African Journal of Economics*, 88(1), 71. <https://doi.org/10.1111/saje.12235>
123. Lee, C., Hsieh, M., & Yang, S. (2014). The relationship between revenue diversification and bank performance: Do financial structures and financial reforms matter?. *Japan and the World Economy*, 29, 18. <https://doi.org/10.1016/j.japwor.2013.11.002>
124. Lee, C., Ning, S., & Lee, C. (2015). How does Bank Capital Affect Bank Profitability and Risk? Evidence from China's WTO Accession. *China & World Economy*, 23(4), 19-39. <https://doi.org/10.1111/cwe.12119>
125. Lestari, N., & Mardiana, R. (2022). Pengaruh Capital Adequacy Ratio (CAR) Dan Non Performing Loan (NPL) Terhadap Return On Equity (ROE) Pada Bank Umum Swasta Nasional Devisa Yang Terdaftar Di BEI (Bursa Efek Indonesia). *Jurnal Ekonomi dan Bisnis*, 2(1). <https://doi.org/10.56145/jurnalekonomidanbisnis.v2i1.57>
126. Lestari, P. S., Barokah, B. Y., & Setiawan, I. (2024). Peran Current Ratio dalam Memoderasi Pengaruh Debt to Equity Ratio Terhadap Return on Equity pada Bank Syariah Indonesia. *JES (Jurnal Ekonomi Syariah)*, 9(1), 27-38. <https://doi.org/10.30736/jes.v9i1.755>
127. Le, T. D. (2021). Geographic expansion, income diversification, and bank stability: Evidence from Vietnam. *Cogent Business & Management*, 8(1). <https://doi.org/10.1080/23311975.2021.1885149>
128. Li, L., & Zhang, Y. (2013). Are there diversification benefits of increasing noninterest income in the Chinese banking industry?. *Journal of Empirical Finance*, 24, 151. <https://doi.org/10.1016/j.jempfin.2013.10.004>
129. Li, X., Feng, H., Zhao, S., & Carter, D. A. (2021). The effect of revenue diversification on bank profitability and risk during the COVID-19 pandemic. *Finance Research Letters*, 43, 101957. <https://doi.org/10.1016/j.frl.2021.101957>
130. Maghyereh, A. I., & Yamani, E. (2022). Does bank income diversification affect systemic risk: New evidence from dual banking systems. *Finance Research Letters*, 47, 102814. <https://doi.org/10.1016/j.frl.2022.102814>
131. Maguni, W., Mulu, B., Turmudi, H., Insawan, H., & Ni'mah, F. (2020). Analysis of Financial Ratio on Profitability Level (Return on Equity) in PT. Bank Muamalat Indonesia TBK. *Al-Ulum*, 20(1), 191-211. <https://doi.org/10.30603/au.v20i1.696>

132. Majumdar, S., & Karnik, A. (2024). Income Diversification and Bank Profitability in India: Exploring the Importance of Macroeconomic Factors. *International Journal of Business and Emerging Markets*, 1(1). <https://doi.org/10.1504/ijbem.2024.10058524>
133. Mamatzakis, E., & Bermpei, T. (2014). What drives investment bank performance? The role of risk, liquidity and fees prior to and during the crisis. *International Review of Financial Analysis*, 35, 102-117. <https://doi.org/10.1016/j.irfa.2014.07.012>
134. Mamun, A., Meier, G., & Wilson, C. (2023). How do noninterest income activities affect bank holding company performance?. *Finance Research Letters*, 53, 103630. <https://doi.org/10.1016/j.frl.2023.103630>
135. Markoulis, S., Ioannou, P., & Martzoukos, S. (2021). Bank distress in the European Union 2008–2015: A closer look at capital, size and revenue diversification. *International Journal of Finance & Economics*, 28(1), 792-820. <https://doi.org/10.1002/ijfe.2450>
136. Mauliza, R., & Sufi, S. (2021). PENGARUH RASIO LIKUIDITAS TERHADAP RETURN ON EQUITY PADA BANK UMUM SYARIAH DI INDONESIA. *Negotium: Jurnal Ilmu Administrasi Bisnis*, 4(2), 155. <https://doi.org/10.29103/njiab.v4i2.3554>
137. Mbonu, I. S., Aliliele, C., Iwuanyanwu, U., & Oluoha, O. M. (2018). A conceptual framework for legal and ethical risk modeling in enterprise data protection governance systems. *Iconic Research and Engineering Journals*, 2(2), 207-226. <https://doi.org/10.64388/IREV2I2-1714911>
138. Mbonu, I. S., Aliliele, C., Iwuanyanwu, U., & Uzoka, E. (2021a). A conceptual framework for risk based business intelligence architecture in financial technology platforms. *International Journal of Multidisciplinary Research and Growth Evaluation*, 2(6), 731-746. <https://doi.org/10.54660/IJMRGE.2021.2.6.731-746>
139. Mbonu, I. S., Iwuanyanwu, U., Aliliele, C., & Uzoka, E. (2020a). A conceptual framework for agile supply chain digital transformation with embedded IT risk and ISO compliance controls. *Iconic Research and Engineering Journals*, 3(11), 566-593. <https://doi.org/10.64388/IREV3I11-1714916>
140. McCleary, W. (1991). THE EARMARKING OF GOVERNMENT REVENUE: A Review of Some World Bank Experience. *The World Bank Research Observer*, 6(1), 81-104. <https://doi.org/10.1093/wbro/6.1.81>
141. Medon, J. J., & Oduleye, T. E. (2023). Developing a financial planning model for sustainable profitability in dynamic business environments. *Shodhshauryam, International Scientific Refereed Research Journal*, 6(3), 418-447. <https://doi.org/10.32628/SHISRRJ236926>
142. Medon, J., & Oduleye, T. (2023). Developing a Financial Planning Model for Sustainable Profitability in Dynamic Business Environments. *Shodhshauryam Int. Sci. Ref. Res*, 448-464.
143. Mendoza, R., & Rivera, J. P. R. (2017). The Effect of Credit Risk and Capital Adequacy on the Profitability of Rural Banks in the Philippines. *Scientific Annals of Economics and Business*, 64(1), 83-96. <https://doi.org/10.1515/saeb-2017-0006>
144. Misra, P., & Awasthi, P. (2017). Income Diversification and Its Impact on Competitiveness, Profitability and Risk of a Commercial Bank – A Case Study of Union Bank of India. *Dynamics of Public Administration*, 34(2). <https://doi.org/10.5958/0976-0733.2017.00019.0>
145. Molyneux, P., Reghezza, A., Torriero, C., & Williams, J. (2020). Banks' noninterest income and securities holdings in a low interest rate environment: The case of Italy. *European Financial Management*, 27(1), 98-119. <https://doi.org/10.1111/eufm.12268>
146. Muhammad Baihaqki, , & Pipit Buana Sari, (2024). Analisis Pengaruh Return on Asset, Return on Equity dan Net Interest Margin Terhadap Harga Saham Bank Umum Yang

- Terdaftar Di BEI. EKOMA : Jurnal Ekonomi, Manajemen, Akuntansi, 3(6), 1394-1406. <https://doi.org/10.56799/ekoma.v3i6.5180>
147. Mustafidah, W., & Dimas Arisandi, (2024). Pengaruh Kinerja Keuangan Berdasarkan Return On Asset (Roa), Return On Equity (Roe), Beban Operasional Pendapatan Operasional (Bopo), Financing To Deposit Ratio (Fdr) Terhadap Pengeluaran Zakat Bank Umum Syariah Indonesia. JPSDa: Jurnal Perbankan Syariah Darussalam, 4(2), 121-134. <https://doi.org/10.30739/jpsda.v4i2.3131>
148. Nalta, S., Wijaya, I., & Haris, H. (2019). PENGARUH PEMBIAYAAN MUDHARABAH DAN MUSYARAKAH TERHADAP RETURN ON EQUITY PADA PT. BANK PEMBIAYAAN RAKYAT SYARIAH DI INDONESIA. el-Amwal, 1(2), 23. <https://doi.org/10.29103/el-amwal.v1i2.1349>
149. Naufallita, Q., & Hendratmi, A. (2019). THE INFLUENCE OF INTELLECTUAL CAPITAL ON RETURN ON ASSETS AND RETURN ON EQUITY SHARIA RURAL BANK 2015 – 2017 PERIOD. Jurnal Ekonomi dan Bisnis Islam (Journal of Islamic Economics and Business), 5(2), 124. <https://doi.org/10.20473/jebis.v5i2.11787>
150. Nepali, S. R. (2018). Income Diversification and Bank Risk-Return Trade-Off on the Nepalese Commercial Banks. Asian Economic and Financial Review, 8(2), 279. <https://doi.org/10.18488/journal.aefr.2018.82.279.293>
151. Ngozi, P. O. J., Chukwudi, D. O. K., & George, A. A. (2023). Portfolio Diversification and Return on Equity of Deposit Money Banks in Nigeria. Journal of Accounting and Financial Management, 9(9), 158-179. <https://doi.org/10.56201/jafm.v9.no9.2023.pg158.179>
152. Nguyen, K. N. (2019). Revenue Diversification, Risk and Bank Performance of Vietnamese Commercial Banks. Journal of Risk and Financial Management, 12(3), 138. <https://doi.org/10.3390/jrfm12030138>
153. Nguyen, K. N. (2020). The Impact of Noninterest Income on the Profitability of Commercial Banks in VietNam: Evidence of Non-Linear Relationship. International Journal of Economics and Finance, 13(1), 100. <https://doi.org/10.5539/ijef.v13n1p100>
154. Nguyen, M., Perera, S., & Skully, M. (2016). Bank market power, ownership, regional presence and revenue diversification: Evidence from Africa. Emerging Markets Review, 27, 36. <https://doi.org/10.1016/j.ememar.2016.03.001>
155. Nguyen, M., Skully, M., & Perera, S. (2012a). Market power, revenue diversification and bank stability: Evidence from selected South Asian countries. Journal of International Financial Markets, Institutions and Money, 22(4), 897. <https://doi.org/10.1016/j.intfin.2012.05.008>
156. Nguyen, M., Skully, M., & Perera, S. (2012b). Bank market power and revenue diversification: Evidence from selected ASEAN countries. Journal of Asian Economics, 23(6), 688. <https://doi.org/10.1016/j.asieco.2012.08.004>
157. Niessen-Ruenzi, A., Parwada, J. T., & Ruenzi, S. (2015). Information Effects of the Basel Bank Capital and Risk Pillar 3 Disclosures on Equity Analyst Research An Exploratory Examination. SSRN Electronic Journal. <https://doi.org/10.2139/ssrn.2670418>
158. Nisar, S., Peng, K., Wang, S., & Ashraf, B. (2018). The Impact of Revenue Diversification on Bank Profitability and Stability: Empirical Evidence from South Asian Countries. International Journal of Financial Studies, 6(2), 40. <https://doi.org/10.3390/ijfs6020040>
159. Nkwaira, C. (2018). Using Risk-Weighted Assets to Generate Risk-Weighted Fees to Counter the Effects of Basel III on Revenue Generation. JOURNAL OF FINANCE AND BANK MANAGEMENT, 6(2). <https://doi.org/10.15640/jfbm.v6n2a4>
160. Nnabueze, S. B., Sakyi, J. K., Filani, O. M., Okojie, J. S., Abioye, R. F., Okereke, M., & Enow, O. F. (2024). Revenue optimization in energy distribution through integrated

- financial planning and advanced data-driven frameworks. *International Journal of Advanced Multidisciplinary Research and Studies*, 4(4), 1427–1445.
161. Nofriyanti, N., Ritonga, K., Lestari, S., & Batubara, D. (2021). The Effect of Non Performing Financing (NPF) and Operating Expenses of Operating Income (BOPO) on Return on Equity (ROE) on PT. Bank Bri Syariah, Tbk.. *Journal Of Sharia Banking*, 2(2). <https://doi.org/10.24952/jsb.v2i2.4951>
 162. Novita, D., Jalaludin, J., & Sucipto, M. C. (2022). Profitability Ratio Analysis in Measuring Financial Performance at Bank Syariah Mandiri (Research on Return On Assets, Return on Equity, Gross profit margin and Net Profit Margin in 2015–2019). *EKSISBANK: Ekonomi Syariah dan Bisnis Perbankan*, 6(2), 125-145. <https://doi.org/10.37726/ee.v6i2.440>
 163. Nufus, S. H., Sahroni, N., & Sari, D. P. (2020). PENGARUH RETURN ON ASSET, RETURN ON EQUITY DAN EARNING PER SHARE TERHADAP HARGA SAHAM (Survey pada PT. Bank Mandiri (Persero) Tbk). *BanKu: Jurnal Perbankan dan Keuangan*, 1(2), 85-93. <https://doi.org/10.37058/banku.v1i2.2063>
 164. Nurdiwaty, D., & Faisol, F. (2017). Analisis Financing To Deposit Ratio, Debt To Equity Ratio, Return On Equity Dan Quick Ratio Terhadap Pembiayaan Murabahah Pada Bank Umum Syariah Di Indonesia. *JAE (JURNAL AKUNTANSI DAN EKONOMI)*, 2(2), 34. <https://doi.org/10.29407/jae.v2i2.865>
 165. Nwangwu, C. V., Duvbiama-Owasanoye, O. A., & Akano, O. A. (2021). Aligning capital budgeting with field development execution in the upstream petroleum sector. *Gyanshauryam, International Scientific Refereed Research Journal*, 4(4), 259–282.
 166. Nwangwu, C. V., Duvbiama-Owasanoye, O. A., & Akano, O. A. (2022). Resource discovery in mature asset portfolios: A review of longitudinal data trends for subsurface value extraction. *Gyanshauryam, International Scientific Refereed Research Journal*, 5(3), 503–524.
 167. Obogo, S. F., Arumosoye, O. M., & Obriki, O. D. (2020b). Conceptual risk management model for heavy lifting and crane installation engineering operations. *Shodhshauryam, International Scientific Refereed Research Journal*, 3(4), 122-144. <https://doi.org/10.32628/SHISRRJ214441>
 168. Obogo, S. F., Ozobu, C. O., & Uduokhai, D. O. (2019b). Development of a construction safety risk governance model for multi contractor high rise projects. *Iconic Research and Engineering Journals*, 2(9), 502-522. <https://doi.org/10.64388/IREV2I9-1715495>
 169. Obriki, O. D., & Arumosoye, O. M. (2020). Conceptual framework for human error causation in high-risk construction and industrial activities. *International Journal of Multidisciplinary Research and Growth Evaluation*, 1(5), 715-727. <https://doi.org/10.54660/IJMRGE.2020.1.5.715-727>
 170. Obriki, O. D., & Arumosoye, O. M. (2024a). Conceptual governance framework for subcontractor safety performance management. *International Journal of Advanced Multidisciplinary Research and Studies*, 4(6), 3020-3033. <https://doi.org/10.62225/2583049X.2024.4.6.5894>
 171. Obriki, O. D., Obogo, S. F., & Arumosoye, O. M. (2022a). Advances in workforce safety training models for operational risk reduction. *Gyanshauryam, International Scientific Refereed Research Journal*, 5(6), 349-382. <https://doi.org/10.32628/GISRRJ225638>
 172. Obriki, O. D., Obogo, S. F., & Arumosoye, O. M. (2023). Review of behavioral safety programs for risk reduction in large workforces. *International Journal of Advanced Multidisciplinary Research and Studies*, 3(6), 2760-2775. <https://doi.org/10.62225/2583049X.2023.3.6.6076>
 173. Octovian, R. (2019). â€œPENGARUH RETUURN ON ASSEETS (ROA), RETURN ON EQUITY (ROE), DAN EARNING PER SHARE (EPS) TERHADAP HARGA SAHAM

- PT BANK SINARMAS TBK PERIODE TAHUN 2011 â€“ 2017. JURNAL SeMaRaK, 2(3), 46-60. <https://doi.org/10.32493/smk.v2i3.3482>
174. Oduleye, T. E., & Medon, J. J. (2023a). A predictive model for optimizing cash flow and working capital management in corporations. *Gyanshauryam, International Scientific Refereed Research Journal*, 6(5), 739-754. <https://doi.org/10.32628/GISRRJ236537>
 175. Oduleye, T. E., & Medon, J. J. (2023). A predictive model for optimizing cash flow and working capital management in corporations. *Gyanshauryam, International Scientific Refereed Research Journal*, 6(5), 739-754. <https://doi.org/10.32628/GISRRJ236537>
 176. Okafor, C. M., Farounbi, B. O., Adesanya, O. S., & Akinola, A. S. (2024b). Controls for cross-border payments operations: Correspondent banking risk reduction via end-to-end monitoring. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 10(4), 1050-1071.
 177. Okafor, C. M., Farounbi, B. O., Adesanya, O. S., & Akinola, A. S. (2024). Controls for cross-border payments operations: Correspondent banking risk reduction via end-to-end monitoring. *International Journal of Scientific Research in Computer Science, Engineering and Information Technology*, 10(4), 1050-1071.
 178. Okafor, C. M., Osuji, V. C., & Dako, O. F. (2021). Fintech-enabled transformation of transaction banking and digital lending as a catalyst for SME growth and financial inclusion. *Int J Multidiscip Res Growth Eval*, 2(6), 485-504.
 179. Okafor, C. M., Osuji, V. C., & Dako, O. F. (2024a). Harmonizing risk governance, technology infrastructure, and compliance frameworks for future-ready banking systems. *International Journal of Scientific Research in Humanities and Social Sciences*, 1(1), 316-337.
 180. Okafor, C. M., Osuji, V. C., & Dako, O. F. (2024). Harmonizing risk governance, technology infrastructure, and compliance frameworks for future-ready banking systems. *International Journal of Scientific Research in Humanities and Social Sciences*, 1(1), 316-337.
 181. Okojie, J., Ike, P., Idu, J., Nnabueze, S. B., Filani, O., & Ihwughwavwe, S. (2023b). Predictive analytics models for monitoring smart city emissions and infrastructure risk in urban ESG planning. *International Journal of Multidisciplinary Futuristic Development*, 4(1), 45-57. <https://doi.org/10.54660/IJMFD.2023.4.1.45-57>
 182. Okojie, J., Ike, P., Idu, J., Nnabueze, S. B., Filani, O., & Ihwughwavwe, S. (2023). Predictive analytics models for monitoring smart city emissions and infrastructure risk in urban ESG planning. *International Journal of Multidisciplinary Futuristic Development*, 4(1), 45-57. <https://doi.org/10.54660/IJMFD.2023.4.1.45-57>
 183. Okojie, J. S., & Abioye, R. F. (2020). Reconciling chemical safety with circular-economy targets: A decision framework for post-consumer recycled polymers in consumer-goods packaging balancing REACH compliance, lifecycle GHG footprint, and regulatory risk. *International Journal of Multidisciplinary Research and Growth Evaluation*, 1(5), 992-1006.
 184. Okonkwo, C. S., Ogunwole, O., Mayo, W., & Okeke, O. T. (2021). Framework for regulatorycompliant procurement in high-risk energy environments. *International Journal of Multidisciplinary Research and Growth Evaluation*, 2(6), 595-605. <https://doi.org/10.54660/IJMRGE.2021.2.6.595-605>
 185. Okwah, M. N. (2022). Integrating triglyceride-glucose index and echocardiographic parameters for improved cardiovascular risk stratification in Sub-Saharan Africa. *International Journal of Cardiology*, 1(2), 1-16. https://doi.org/10.34218/IJC_01_02_001
 186. Olalere, O., Aminul Islam, M., Marniati, , & Rahmi, N. (2021). The effect of revenue diversification on the firm value and stability of banks: A comparative study of Nigerian

- and Malaysian banks. Banks and Bank Systems, 16(3), 141-151. [https://doi.org/10.21511/bbs.16\(3\).2021.13](https://doi.org/10.21511/bbs.16(3).2021.13)
187. Oluwo, K., Dada, T., & Isiekwu, C. P. (2022). A review of integrated product innovation cycles in human capital and financial services. *Iconic Research and Engineering Journals*, 5(12), 560–586. <https://doi.org/10.64388/IREV5I12-1714353>
 188. Ominyi, M. (2020). Developing a conceptual framework for post-merger compliance integration in multi-jurisdictional banking transaction. *IIARD International Journal of Banking and Finance Research*, 6(3), 78–95. <https://doi.org/10.56201/ijbfr.vol.6.no3.2020.pg78.95>
 189. Ominyi, M., & Anichukwueze, C. C. (2023). A review of algorithmic accountability and model risk management approaches in financial services. *Journal of Accounting and Financial Management*, 9(12), 218–238. <https://doi.org/10.56201/jafm.v9.no12.2023.pg218.238>
 190. Ovi, N. Z., Perera, S., & Colombage, S. (2014). Market Power, Credit Risk, Revenue Diversification and Bank Stability in Selected ASEAN Countries. *South East Asia Research*, 22(3), 399. <https://doi.org/10.5367/sear.2014.0221>
 191. Oz-Yalaman, G. (2019). Financial inclusion and tax revenue. *Central Bank Review*, 19(3), 107-113. <https://doi.org/10.1016/j.cbrev.2019.08.004>
 192. Pangaribuan, H., Ariyanti, E., & Rahman, A. S. (2023). Pengaruh Net Profit Margin, Return on Equity, Return on Asset, dan Earning Per Share terhadap Harga Saham pada PT Bank Central Asia Tbk Periode 2012-2021. *J-MAS (Jurnal Manajemen dan Sains)*, 8(2), 1459. <https://doi.org/10.33087/jmas.v8i2.1356>
 193. PUTRA, F. P., MUNIARTY, P., & WULANDARI, W. (2024). ANALISIS RETURN ON EQUITY (ROE) PADA PT. BANK TABUNGAN NEGARA, TBK. *GANEC SWARA*, 18(3), 1214. <https://doi.org/10.35327/gara.v18i3.921>
 194. Rachmawati, T. (2009). PENGARUH RETURN ON ASSETS (ROA), RETURN ON EQUITY(ROE), NET INTEREST MARGIN (NIM) DAN RASIO BIAYA OPERASIONAL PENDAPATAN OPERASIONAL (BOPO), TERHADAP HARGA SAHAM BANK DI BURSA EFEK INDONESIA.. *DiE: Jurnal Ilmu Ekonomi dan Manajemen*, 6(1). <https://doi.org/10.30996/die.v6i1.91>
 195. Radiatun, R., & Rimawan, M. (2022). NALISIS KINERJA KEUANGAN BERDASARKAN CASH RATIO, LOAN TO DEPOSIT RATIO, GROSS PROFIT MARGIN,DAN RETURN ON EQUITY RATIO PADA PT BANK DANAMON INDONESIA TBK. *Jurnal Ekonomi dan Bisnis (EK&BI)*, 5(1), 17-28. <https://doi.org/10.37600/ekbi.v5i1.481>
 196. Rahmawati, N. (2020). PENGARUH LOAN TO DEPOSIT RATIO DAN DEBT TO EQUITY RATIO TERHADAP RETURN ON EQUITY (Studi Kasus Pada PT. Bank Mandiri (Persero) Tbk, Periode 2009-2018). *Jurnal Ekonomi : Journal of Economic*, 11(1). <https://doi.org/10.47007/jeko.v11i1.3147>
 197. Rahmawaty Arifiani, , & Purnama, R. (2022). Pengaruh return on equity (roe) terhadap harga saham pada PT. Bank Negara Indonesia, Tbk. periode 2014-2021. *Jurnal Bisnis*, 10(2), 276-284. <https://doi.org/10.62739/jb.v10i2.38>
 198. Renpoi, F., & Sitanggang, A. (2014). PENGARUH RETURN ON ASSETS, RETURN ON EQUITY DAN DEBT TO EQUITY RATIO TERHADAP RETURN SAHAM PERUSAHAAN PERBANKAN YANG TELAH TERCATAT DI BURSA EFEK INDONESIA. *Jurnal Manajemen dan Bisnis*, 1-15. <https://doi.org/10.54367/jmb.v14i1.82>
 199. Robisco, A. A., & Martínez, J. M. C. (2022). Measuring the model risk-adjusted performance of machine learning algorithms in credit default prediction. *Financial Innovation*, 8(1). <https://doi.org/10.1186/s40854-022-00366-1>

200. Rumaly, N. (2023). Unlocking Profitability: Exploring the Impact of Bank-Specific and Macroeconomic Determinants on Return on Equity in Commercial Banking Sector of Bangladesh. *International Journal of Economics and Financial Issues*, 13(6), 107-115. <https://doi.org/10.32479/ijefi.15274>
201. Safii, M. A. (2020). Return On Equity: Alokasi Dana Zakat, Profit Sharing Financing Dan Good Corporate Governance Pada Bank Umum Syariah Di Indonesia. *Relevance: Journal of Management and Business*, 2(2). <https://doi.org/10.22515/relevance.v2i2.2095>
202. Saita, F. (1999). Allocation of Risk Capital in Financial Institutions. *Financial Management*, 28(3), 95. <https://doi.org/10.2307/3666187>
203. Sakyi, J. K., Nnabueze, S. B., Filani, O. M., & Okojie, J. S. (2023). Revenue assurance strategies leveraging artificial intelligence and big data in service-intensive organizations. *International Journal of Multidisciplinary Evolutionary Research*, 4(2), 58–75. <https://doi.org/10.54660/IJMER.2023.4.2.58-75>
204. Sakyi, J. K., Nnabueze, S. B., Filani, O. M., Okojie, J. S., & Babatope, O. M. (2024). Digital transformation in service delivery leveraging automation and risk reduction for long-term commercial efficiency. *International Journal of Advanced Multidisciplinary Research and Studies*, 4(4), 1446–1464.
205. Sakyi, J. K., Nnabueze, S. B., Filani, O. M., Okojie, J. S., & Okereke, M. (2022). Customer service analytics as a strategic driver of revenue growth and sustainable business competitiveness. *Journal of Frontiers in Multidisciplinary Research*, 3(2), 109–123. <https://doi.org/10.54660/IJFMR.2022.3.2.109-123>
206. Salam, A. A. (2020). PENGARUH RETURN ON ASSETS, RETURN ON EQUITY DAN NET INTEREST MARGIN TERHADAP RETURN SAHAM BANK BUMN YANG TERDAFTAR DI BURSA EFEK INDONESIA PADA TAHUN 2015-2019.. *Ekonomi: Jurnal Ekonomi, Akuntansi & Manajemen*, 2(2), 48-56. <https://doi.org/10.37577/ekonomi.v2i2.263>
207. Saleh, I., & Afifa, M. A. (2020). The effect of credit risk, liquidity risk and bank capital on bank profitability: Evidence from an emerging market. *Cogent Economics & Finance*, 8(1), 1814509. <https://doi.org/10.1080/23322039.2020.1814509>
208. Salsabilla, T. N., & Herlinawati, E. (2024). Pengaruh Return On Assets (ROA), Return On Equity (ROE), Earning Per Share (EPS), dan Debt to Equity Ratio (DER) Terhadap Harga Saham pada PT Bank KB Bukopin Tbk Periode 2014 - 2023. *eCo-Buss*, 7(2), 1265-1278. <https://doi.org/10.32877/eb.v7i2.1859>
209. Sanni, J. O., & Adumaza, A. (2023). A comprehensive framework for digital transformation in capital markets: Solving operational challenges and enhancing stakeholder engagement. *Gyanshauryam, International Scientific Refereed Research Journal*, 6(6), 275–302.
210. Sanni, J. O., & Attah, A. (2023a). A comprehensive framework for digital transformation in capital markets: Solving operational challenges and enhancing stakeholder engagement. *Gyanshauryam, International Scientific Refereed Research Journal*, 6(6), 275-302. <https://doi.org/10.32628/GISRJR236640>
211. Sanni, J. O., & Wedraogo, L. (2024). Data centric funnel optimization frameworks resolving revenue leakage in high value services. *International Journal of Advanced Multidisciplinary Research and Studies*, 4(6), 2859–2874.
212. Santika, A. (2019). Pengaruh Islamic Social Reporting terhadap Profitabilitas (Return on Asset dan Return on Equity) Pada Bank Umum Syariah Di Indonesia. *Falah: Jurnal Ekonomi Syariah*, 4(2), 1. <https://doi.org/10.22219/jes.v4i2.9870>
213. Sari, N., & MSI, A. A. A. (2021). INFLUENCE INCOME DIVERSIFICATION, BANK LIQUIDITY, AND FINANCIAL LAVERAGE ON PROFITABILITY WITH BANK

- EFFICIENCY, AS INTERVENING VARIABLES IN SHARIA COMMERCIAL BANKS 2015-2019. *jmm*17, 8(02), 110. <https://doi.org/10.30996/jmm17.v8i02.5475>
214. Sarinni, J. B. (2024). PENGARUH EARNING PER SHARE (EPS) DAN RETURN ON EQUITY (ROE) TERHADAP HARGA SAHAM PT. BANK RAKYAT INDONESIA AGRONIAGA Tbk.. *Jurnal Ekonomi, Bisnis dan Terapan (JESIT)*, 4(1), 103-122. <https://doi.org/10.47178/n6z23r39>
 215. Schreiber, B. Z. (2020). The Impact of Revenue Diversification on Profitability, Capital, and Risk in US Banks by Size. *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3758431>
 216. Sebayang, P. (2020). The Impact of the Capital Adequacy Ratio, Non-Performing Loan Against to Return on Equity (Case Study Private Bank in Indonesia). *SHS Web of Conferences*, 76, 01035. <https://doi.org/10.1051/shsconf/20207601035>
 217. Setiadi, R., & Danarsari, D. N. (2024). The Benefits of Revenue Diversification on Bank Profitability and Stability: An Empirical Study on Indonesian Commercial Banks. *Journal of Accounting, Business and Management (JABM)*, 31(1), 22. <https://doi.org/10.31966/jabminternational.v31i1.979>
 218. Sharma, S., & Anand, A. (2018). Income diversification and bank performance: evidence from BRICS nations. *International Journal of Productivity and Performance Management*, 67(9), 1625. <https://doi.org/10.1108/ijppm-01-2018-0013>
 219. Shim, J. (2013). Bank capital buffer and portfolio risk: The influence of business cycle and revenue diversification. *Journal of Banking & Finance*, 37(3), 761. <https://doi.org/10.1016/j.jbankfin.2012.10.002>
 220. Silva, A. D., Duong, H. N., Nguyen, M., & Nguyen, Y. N. (2022). Bank risk in uncertain times: Do credit rationing and revenue diversification matter?. *Journal of Business Finance & Accounting*, 50(7-8), 1240. <https://doi.org/10.1111/jbfa.12653>
 221. Sissy, A. M., Amidu, M., & Abor, J. Y. (2017). The effects of revenue diversification and cross border banking on risk and return of banks in Africa. *Research in International Business and Finance*, 40, 1. <https://doi.org/10.1016/j.ribaf.2016.09.017>
 222. Stiroh, K. J. (2004). Diversification in Banking: Is Noninterest Income the Answer?. *Journal of Money, Credit, and Banking*, 36(5), 853. <https://doi.org/10.1353/mcb.2004.0076>
 223. Sufian, F. (2008). The effects of revenue management via diversification strategy on Non-Commercial Bank Financial Institutions' productivity: empirical evidence from Malaysia. *International Journal of Revenue Management*, 2(4), 376. <https://doi.org/10.1504/ijrm.2008.020728>
 224. Sulaiman, S. (2024). Analysis of the effect of return on assets and return on equity on stock prices pt. (Persero) Mandiri bank TBK. *International Journal of Accounting and Economics Studies*, 11(1), 14-17. <https://doi.org/10.14419/ywcsy670>
 225. Sulastri, D. (2022). Effect of Return On Investment and Return On Equity of Share Return PT Bank Rakyat Indonesia Tbk Between 2011-2020. *Indonesian Financial Review*, 1(2), 78-94. <https://doi.org/10.55538/ifr.v1i2.7>
 226. Sundari, A., & Benfidastafo, B. (2023). PERANAN FINANCING TO DEPOSITE RATIO DAN RETURN ON EQUITY DALAM MENINGKATKAN RETURN ON ASSET PADA BANK SYARIAH MANDIRI. *Jurnal Pelita Nusa*, 1(1), 1-31. <https://doi.org/10.61612/jpn.v1i1.9>
 227. Sun, L., Wu, S., Zhu, Z., & Stephenson, A. (2017). Noninterest Income and Performance of Commercial Banking in China. *Scientific Programming*, 2017, 1. <https://doi.org/10.1155/2017/4803840>

228. Susanto, F. O., Adib, N., & Prastiwi, A. (2024). The Impact Of Revenue Diversification On Bank Profitability And Stability: Evidence From Indonesia Banking Industry. *Jurnal Reviu Akuntansi dan Keuangan*, 14(4). <https://doi.org/10.22219/jrak.v14i4.36770>
229. Syahyunan,, Muda, I., Siregar, H. S., Sadalia, I., & Chandra, G. (2017). The effect of Lerner Index and income diversification on the general bank stability in Indonesia. *Banks and Bank Systems*, 12(4), 56. [https://doi.org/10.21511/bbs.12\(4\).2017.05](https://doi.org/10.21511/bbs.12(4).2017.05)
230. Tariq, W., Usman, M., Tariq, A., Rashid, R., Yin, J., Memon, M. A., & Ashfaq, M. (2021). Bank maturity, income diversification, and bank stability. *Journal of Business Economics and Management*, 22(6), 1492. <https://doi.org/10.3846/jbem.2021.15583>
231. Theoret, R. (2014). Noninterest Income Generating Activities and the Future of Banking. *Journal of Stock & Forex Trading*, 03(03). <https://doi.org/10.4172/2168-9458.1000125>
232. Thonse Hawaldar, I., Kumar Meher, B., Kumari, P., & Kumar, S. (2022). Modelling the effects of capital adequacy, credit losses, and efficiency ratio on return on assets and return on equity of banks during COVID-19 pandemic. *Banks and Bank Systems*, 17(1), 115-124. [https://doi.org/10.21511/bbs.17\(1\).2022.10](https://doi.org/10.21511/bbs.17(1).2022.10)
233. Thota, N. (2019). Market reaction to banks revenue diversification strategy: evidence from India. *Applied Economics Letters*, 27(1), 25-29. <https://doi.org/10.1080/13504851.2019.1606400>
234. Tj, N., Aryansyah, F., & Ruhyanto, A. (2022). PENGARUH RETURN ON ASSET (ROA) DAN RETURN ON EQUITY (ROE) TERHADAP HARGA SAHAM (Pada perusahaan PT. Bank Mandiri Tbk Yang Terdaftar Di Bursa Efek Indonesia). *J-KIP (Jurnal Keguruan dan Ilmu Pendidikan)*, 3(3), 698. <https://doi.org/10.25157/j-kip.v3i3.8744>
235. Tonoyan, A., Dada, O., & Ayivi-Donkor, S. S. (2021). Advances in demand forecasting: Machine learning algorithms for revenue projection and financial planning accuracy. *Gyanshauryam, International Scientific Refereed Research Journal*, 4(1), 282-317.
236. Tonoyan, A., Dada, O., & Ayivi-Donkor, S. S. (2021b). Predictive cash flow modeling in retail: A review of advanced forecasting and working capital optimization. *Shodhshauryam, International Scientific Refereed Research Journal*, 4(3), 366-397.
237. Tonoyan, A., Dada, O., & Ayivi-Donkor, S. S. (2023). A conceptual framework for retail asset valuation: Integrating quantitative pricing and multi-unit financial performance prediction. *Journal of Accounting and Financial Management*, 9(12), 218-250. <https://doi.org/10.56201/jafm.v9.no12.2023.pg218.250>
238. Tonoyan, A., Dada, O., & Ayivi-Donkor, S. S. (2024a). Advances in supply chain resilience: Predictive models for vendor risk assessment and procurement cost optimization. *International Journal of Social Sciences and Management Research*, 10(11), 525-551. <https://doi.org/10.56201/ijssmr.v10.no11.2024.pg.525.551>
239. Tran, V. T., & Nguyen, H. (2023). Liquidity Creation, Bank Competition and Revenue Diversification. *The Quarterly Journal of Finance*, 13(03). <https://doi.org/10.1142/s2010139223500076>
240. Turnbull, S. M. (2000). Capital Allocation and Risk Performance Measurement In a Financial Institution. *Financial Markets, Institutions & Instruments*, 9(5), 325. <https://doi.org/10.1111/1468-0416.00039>
241. Turnbull, S. M. (2018). Capital Allocation in Decentralized Businesses. *Journal of Risk and Financial Management*, 11(4), 82. <https://doi.org/10.3390/jrfm11040082>
242. Uddin, M. J., Majumder, M. T. H., Akter, A., & Zaman, R. (2021). Do the diversification of income and assets spur bank profitability in Bangladesh? A dynamic panel data analysis. *Vilakshan - XIMB Journal of Management*, 19(2), 177-194. <https://doi.org/10.1108/xjm-01-2021-0023>

243. Varotto, S. (2011). Liquidity risk, credit risk, market risk and bank capital. *International Journal of Managerial Finance*, 7(2), 134-152. <https://doi.org/10.1108/17439131111122139>
244. Varotto, S. (2011). Liquidity risk, credit risk, market risk and bank capital. *International Journal of Managerial Finance*, 7(2), 134. <https://doi.org/10.1108/17439131111122139>
245. Vidyarthi, H. (2019). Dynamics of income diversification and bank performance in India. *Journal of Financial Economic Policy*, 12(3), 383. <https://doi.org/10.1108/jfep-05-2019-0084>
246. Virga Zedio, D., Yuli Ayu Putri, S., & Salfadri, S. (2023). Analisa Pengaruh Debt To Equity Ratio, Return On Equity, dan Price Earning Ratio Terhadap Return Saham Pada Perusahaan Non Bank LQ 45 Tahun 2016-2018. *EKASAKTI PARESO JURNAL AKUNTANSI*, 1(1), 64-71. <https://doi.org/10.31933/epja.v1i1.805>
247. Wahyuni, E. S. (2024). Pengaruh Return On Equity (ROE) dan Gross Profit Margin (GPM) Terhadap Pertumbuhan Laba Pada Bank Umum Syariah. *Jurnal Ilmiah Metansi (Manajemen dan Akuntansi)*, 6(2), 305-310. <https://doi.org/10.57093/metansi.v6i2.326>
248. Wahyuti, N., & Pratiwi, A. (2020). Pengaruh Loan To Deposit Ratio (LDR) dan Debt To Equity Ratio (DER) Terhadap Return On Equity (ROE) Pada Bank BNI Tbk. *Jurnal Ekonomi dan Bisnis Dharma Andalas*, 22(2), 315-324. <https://doi.org/10.47233/jebd.v22i2.100>
249. Wang, C., & Lin, Y. (2021). Income diversification and bank risk in Asia Pacific. *The North American Journal of Economics and Finance*, 57, 101448. <https://doi.org/10.1016/j.najef.2021.101448>
250. Zheng, C., (Wai Kong) Cheung, A., & Cronje, T. (2019). The moderating role of capital on the relationship between bank liquidity creation and failure risk. *Journal of Banking & Finance*, 108, 105651. <https://doi.org/10.1016/j.jbankfin.2019.105651>