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RESEARCH ARTICLE

THE NEXUS OF FINTECH, TRUST AND CYBERSECURITY: STRATEGIC PATHWAYS FOR SUSTAINABLE DIGITAL BANKING COMPETENTIVENESS

Ashot Mardoyan¹ and Hayk Sargsyan²

1. Head of the Chair of Financial Markets and Institutions of ASUE, PhD in Economics, Associate Professor.
2. Associate Professor of the Chair of Financial Markets and Institutions of ASUE, PhD in Economics.

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Abstract

The paper examines the key factors influencing the adoption of digital banking in the context of rapid technological advancements and changing consumer expectations. The aim of the study is to identify behavioral and institutional determinants that shape digital banking development. The analysis is based on theoretical models and recent empirical data, including insights from the 2025 TAB Insights ranking. A qualitative and comparative approach is applied to assess how factors such as perceived ease of use, perceived usefulness, trust, and cybersecurity concerns impact user adoption. These behavioral drivers are examined in relation to demographic variables such as age, education, income level, and digital literacy. At the institutional level, the integration of artificial intelligence, personalized platforms, open banking initiatives, and ESG product offerings are analyzed as mechanisms for enhancing operational efficiency and customer engagement. Special attention is given to the importance of resilient cybersecurity infrastructures in mitigating risks such as data breaches and AI-generated cyber threats. The findings suggest that sustainable competitiveness in digital banking relies not only on technological innovation but also on the alignment of financial services with user values, digital inclusion, and regulatory compliance. The paper contributes to the ongoing discourse by providing practical and strategic insights for researchers, policymakers, and financial institutions aiming to foster secure and adaptive digital banking ecosystems.

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Introduction:-

The transformation of the financial services industry through digital banking represents a major shift from traditional, branch-based models to technology-driven, customer-centric solutions. This evolution has been propelled by increasing consumer demand for faster, more convenient, and cost-effective services. As noted by Saharawat (2024), digital banking now offers a wide range of functionalities—including account management, payments, lending, and digital wallets—all accessible via smartphones and other connected devices, significantly

Corresponding Author:- Ashot Mardoyan

Address:- Head of the Chair of Financial Markets and Institutions of ASUE, PhD in Economics, Associate Professor.

enhancing user experience and operational efficiency. These advancements have also contributed to greater financial inclusion, particularly in developing regions where traditional banking infrastructure is limited. The integration of emerging technologies such as artificial intelligence, blockchain, and machine learning has further improved decision-making, security, and service personalization. Digital-only banks and neobanks are at the forefront of this innovation, offering tailored services that challenge the conventional banking model. Despite these gains, digital banking faces persistent challenges. Among them are cybersecurity threats, evolving regulatory demands, and the pressure to deliver inclusive and sustainable services. The increasing adoption of Environmental, Social, and Governance principles also highlights the role of green banking in redefining digital financial practices. This paper explores the main trends, challenges, and opportunities associated with digital banking and digital currency development, with a particular focus on technological innovation, cybersecurity resilience, regulatory adaptation, and user-oriented service models.

Literature Review:-

In addressing the complexities of the contemporary global financial landscape, the Federal Reserve is confronted with the so-called financial trilemma, a concept which posits the impossibility of simultaneously achieving three key objectives: a fixed exchange rate, an independent monetary policy, and full capital mobility (Granata, 2020). This trilemma underscores the inherent trade-offs and strategic dilemmas that central banks must navigate in an increasingly interconnected and dynamic global economy. The Federal Reserve's policy framework, which emphasizes the primacy of maintaining an independent monetary policy and facilitating capital mobility while permitting a floating exchange rate, reflects its primary goal of preserving domestic economic stability while remaining responsive to external financial dynamics (Zehri et al., 2024). Furthermore, the accelerating pace of financial innovation and the unpredictability of economic shocks necessitate a reconsideration of conventional monetary policy tools and paradigms. In this context, the Federal Reserve's employment of interest rate adjustments and quantitative easing represents a sophisticated, flexible approach aimed at mitigating economic volatility and ensuring long-term macroeconomic stability.

According to Mendicino, Nikolov, Suarez, and Supera (2018), the macroeconomic effects of higher capital requirements depend critically on monetary policy. When interest rates approach the lower bound, policy loses its stabilizing power, increasing short-run costs. Fragile banking systems, however, benefit more from such regulation, justifying stricter capital rules. Chang Ma (2020) examines how macroprudential policy affects financial stability and economic growth in a small open economy with endogenous growth. The model shows financial crises have persistent output effects. While macroprudential policy stabilizes the economy by reducing crisis probability, it imposes a modest trade-off in average growth.

Bruno, Shim, and Shin (2017) conduct an empirical cross-country analysis assessing the impact of macroprudential policies on credit expansion and systemic vulnerabilities. Utilizing a broad panel dataset and robust econometric techniques, the authors find that more stringent macroprudential regulation significantly curbs credit growth and mitigates systemic financial risk. These results underscore the critical role of well-calibrated regulatory instruments in preserving macro-financial stability across diverse economic environments. Cerutti, Claessens, and Laeven (2017) conduct an extensive cross-country analysis on the use and effectiveness of macroprudential policies across 119 advanced and emerging economies from 2000 to 2013. Utilizing a novel IMF survey dataset, they classify policies into borrower- and lender-based tools and examine their impact on credit and housing markets. The study finds that macroprudential measures—particularly borrower-based tools such as loan-to-value (LTV) and debt-to-income (DTI) limits—are effective in moderating credit growth, especially in emerging markets. However, their effectiveness diminishes in financially open and developed economies due to policy circumvention.

Ling Wang (2023) investigates how large banks in Japan and the U.S. adjust their holdings of risky securities in response to central bank asset purchase programs during periods of unconventional monetary policy. By employing both macro- and micro-level data, the study provides novel evidence on the risk-taking and portfolio-rebalancing channels of monetary transmission. The paper reveals contrasting behaviors: Japanese banks increase, while U.S. banks reduce, their risky asset holdings under such policies. It further shows that profitability incentives play a key role in these adjustments, offering new insights into the nexus between monetary policy and bank portfolio strategy (Wang, 2023). Akkaya, Bitter, Brand, and Fonseca (2024) develop a novel statistical methodology to identify key dimensions of European Central Bank monetary policy through asset price responses to policy news. By employing Varimax rotation to capture excess kurtosis in asset price distributions, the authors differentiate distinct policy

factors such as interest rate targets, forward guidance, and quantitative easing. Their findings indicate the evolving role of risk-taking in monetary policy transmission, particularly during periods of sovereign risk and uncertainty. Amiti et al. (2023) analyze U.S. inflation surges using a two-sector DSGE model, finding that supply chain disruptions and labor supply shocks jointly amplified inflation by about 2 percentage points in 2021–22. Their findings underscore the differing policy effectiveness depending on inflation's underlying drivers.

Ampudia, Ehrmann, and Strasser (2023) investigate how monetary policy affects inflation across income groups in the six largest euro area countries. Using two distinct datasets—one broad but slow-moving, the other high-frequency but limited to food and beverages—they find heterogeneous inflation responses to policy changes. High-income households exhibit lower inflation sensitivity due to different consumption shares but also show stronger responses due to more flexible shopping behaviors. These opposing effects suggest previous estimates may overstate the impact, highlighting the need for further research to fully understand inflation as a distributional channel of monetary policy.

Digital banking has emerged as a pivotal innovation in the financial sector, enabling customers to access a range of banking services through digital interfaces. According to Saharawat (2024), digital banking encompasses online and mobile banking platforms that offer essential features such as account management, fund transfers, loan applications, and digital wallets. This paradigm shift from traditional to digital infrastructures not only increases operational efficiency and reduces costs but also broadens financial inclusion by reaching underserved populations. Various types—such as neobanks and internet-only banks—illustrate the adaptability of digital banking to diverse user needs. Ultimately, digital banking aligns financial services with technological advancement, redefining consumer interaction with banks (Saharawat, 2024).

According to Das, Patnaik, and Satpathy (2024), digital banking adoption is shaped by a combination of technological, psychological, and socio-demographic factors. Their literature review identifies perceived ease of use, perceived usefulness, trust, and security concerns as primary determinants. Furthermore, social influence, along with individual characteristics such as age, education level, and income, significantly impacts user behavior. The authors emphasize that while digital infrastructure is foundational, users' perceptions and contextual factors are equally vital. Their study underscores the importance of a holistic, multidimensional approach to fostering digital banking adoption in the context of rapid technological advancement and changing consumer expectations (Das et. al, 2024, pp. 592–616).

Waliullah et al. (2025) conduct a systematic review of literature addressing how cybersecurity threats affect digital banking adoption and growth. The study identifies key risks—such as data breaches, identity theft, and malware—that hinder user trust and adoption. The authors argue that enhancing cybersecurity infrastructure, increasing public awareness, and implementing regulatory protections are essential for fostering secure digital financial services. Their findings emphasize the balance between technological advancement and safeguarding user confidence in digital banking (Waliullah et al., 2025).

Indriasari, Prabowo, Gaol, and Purwandari (2022) explore the challenges, emerging technological trends, and future research directions in digital banking. They discuss how digital banking is transforming traditional financial services, driven by innovations such as blockchain, artificial intelligence, and mobile technologies. The paper highlights challenges like cybersecurity risks, regulatory issues, and the digital divide. Furthermore, the authors emphasize the need for future research in areas such as customer experience, digital inclusion, and the integration of new technologies in banking systems. Their work provides a comprehensive framework for understanding the evolution of digital banking (Indriasari et al., 2022).

Mohanty, Singh, and Mohanty (2023) present a systematic literature review examining customer satisfaction in digital banking. The study identifies key factors influencing satisfaction, including service quality, perceived usefulness, perceived risk, performance expectancy, and effort expectancy. Utilizing Structural Equation Modeling with data from 222 banking customers in Northern India, the authors find that reliability, tangibility, and responsiveness significantly impact customer satisfaction. The research underscores the importance of aligning digital banking services with customer expectations to enhance satisfaction and retention. The study contributes to understanding the dynamics of customer satisfaction in the evolving digital banking landscape (Mohanty et al., 2023, pp. 48-71).

Chauhan, Akhtar, and Gupta (2022) conducted a structured literature review to examine the impact of digital banking on customer experience and its subsequent effect on financial performance. Analyzing 88 studies published between 2001 and 2021, the authors identified key determinants of customer experience: functional clues (e.g., trust, convenience), mechanical clues (e.g., website design, usability), and humanic clues (e.g., complaint handling). They propose an integrative framework linking digital banking factors, CE, customer satisfaction, loyalty, and financial performance. The study highlights the role of gamification in enhancing CE and offers strategic insights for banks aiming to improve online customer engagement (Chauhan et al., 2022m pp. 1-20).

Jalani and Easwaramoorthy (2024) explore the factors that influence the adoption and usage of mobile banking applications among Malaysian consumers. The study systematically identifies critical determinants, including security concerns, service quality, technological factors, and convenience, that affect consumer behavior in relation to mobile banking. Employing a quantitative approach, the researchers utilized an online survey with 152 participants to collect data, which were subsequently analyzed using correlation analysis and multinomial logistic regression. The findings emphasize the importance of security and convenience in fostering greater engagement with mobile banking services (Jalani et al., 2024).

Stefanelli, Manta, and Toma (2022) investigate the strategic response of European banks to the digital transformation within the financial sector, particularly focusing on the adoption of open banking and application programming interfaces. The study examines how these technological innovations alter the dynamics of customer relationships and the overall role of banks in the broader financial ecosystem. By analyzing the implications of open banking, the paper explores the shifting boundaries of traditional banking services and the evolving landscape of financial interactions (Stefanelli et al., 2022).

Kovacevic, Radenkovic, and Nikolic (2024) investigate the dual aspects of artificial intelligence integration within the banking sector, focusing on both its transformative potential and associated cybersecurity risks. The study highlights how machine learning enhances decision-making, fraud detection, and customer service automation. However, it also addresses emerging threats such as adversarial attacks, including data poisoning and evasion tactics, which exploit vulnerabilities in AI models. The authors advocate for the development of secure, resilient, and trustworthy AI systems to mitigate these risks and ensure the safe deployment of AI technologies in financial institutions (Kovacevic et al., 2024).

Kshetri et al. (2023) conduct a comprehensive review of emerging cyber threats, specifically cryptojacking and ransomware attacks, within the banking industry. The study delves into the evolving tactics employed by cybercriminals, highlighting the financial motivations and sophisticated techniques underpinning these threats. The authors examine the challenges faced by financial institutions in mitigating such risks and emphasize the necessity for proactive cybersecurity measures. Additionally, the paper introduces a Digital Forensics and Incident Response approach, advocating for its integration into current cyber threat hunting processes to effectively counteract these malicious activities (Kshetri et al., 2023).

The article "Shaping the Future: 7 Digital Technology Trends Reshaping Banking and Financial Services in 2023" outlines seven pivotal digital technology trends influencing the banking and financial services industry. These include the evolution of mobile applications, the impact of wearable devices, and the rise of embedded finance. The piece discusses how these innovations are transforming customer experiences, enhancing service accessibility, and driving the digital transformation of financial institutions. By integrating these technologies, banks aim to improve operational efficiency and meet the evolving expectations of consumers in a digital-first landscape (4 Sight Holdings, 2023).

The article "Top 10 Banking Technology Trends in 2023" by Axiom Groupe outlines ten pivotal technological advancements shaping the banking sector. These include the integration of artificial intelligence for enhanced customer service and fraud detection, the adoption of open banking through application programming interfaces to foster collaboration with non-banking financial companies, and the implementation of blockchain technology to ensure secure and transparent transactions. Additionally, the article discusses the rise of hyper-personalized banking experiences, the utilization of the Internet of Things (IoT) for real-time data collection, and the emphasis on cybersecurity measures to protect sensitive financial information. The piece also highlights the growing trend of neobanking, the automation of banking processes through robotic process automation, and the exploration of

quantum computing for complex financial modeling. These trends collectively signify a transformative shift towards more efficient, secure, and customer-centric banking services (Axiom Groupe, 2023).

According to Setiawan and Prakoso (2024), digital banking adoption demonstrates a nuanced relationship with bank performance in Indonesia. While it exhibits a negative effect on return on assets, it enhances operational efficiency. The authors argue that bank size significantly moderates these outcomes, with larger banks being better equipped to optimize digital banking implementation. These findings underscore the importance of institutional scale and strategic alignment in maximizing the benefits of digital transformation in the financial sector (Setiawan et al., 2024m pp. 196-207).

According to Poon, Wibowo, and Tang (2024), this study develops a comprehensive framework for clustering FinTech based on technology, business models, and stakeholder perspectives. It synthesizes over 100 studies to classify FinTech into various clusters, providing a holistic view of the FinTech ecosystem. The authors emphasize the importance of understanding these classifications for both academic research and practical application in the rapidly evolving digital finance sector (Poon et al., 2024).

Asamoah and Osei (2024) explore the factors influencing users' intention to continue using digital banking services. Their study reveals that perceived self-efficacy, usefulness, and ease of use significantly affect users' continued usage intentions. The authors argue that user experience plays a critical role in sustaining digital banking adoption, underscoring the importance of improving service quality to retain customers (Asamoah et al., 2024, pp. 3332-3342).

According to Coelho, Figueiredo, and Valério (2025), their report provides a comprehensive overview of key regulatory and non-regulatory developments in the fintech sector during the fourth quarter of 2024. The report covers various aspects, including decentralized finance, digital assets, stablecoins, and central bank digital currencies (CBDCs). It also examines the metaverse, artificial intelligence, and related technologies such as robotics and quantum computing. The authors emphasize the importance of understanding these developments to navigate the evolving landscape of digital finance and technology (Coelho et al., 2025).

Aims:-

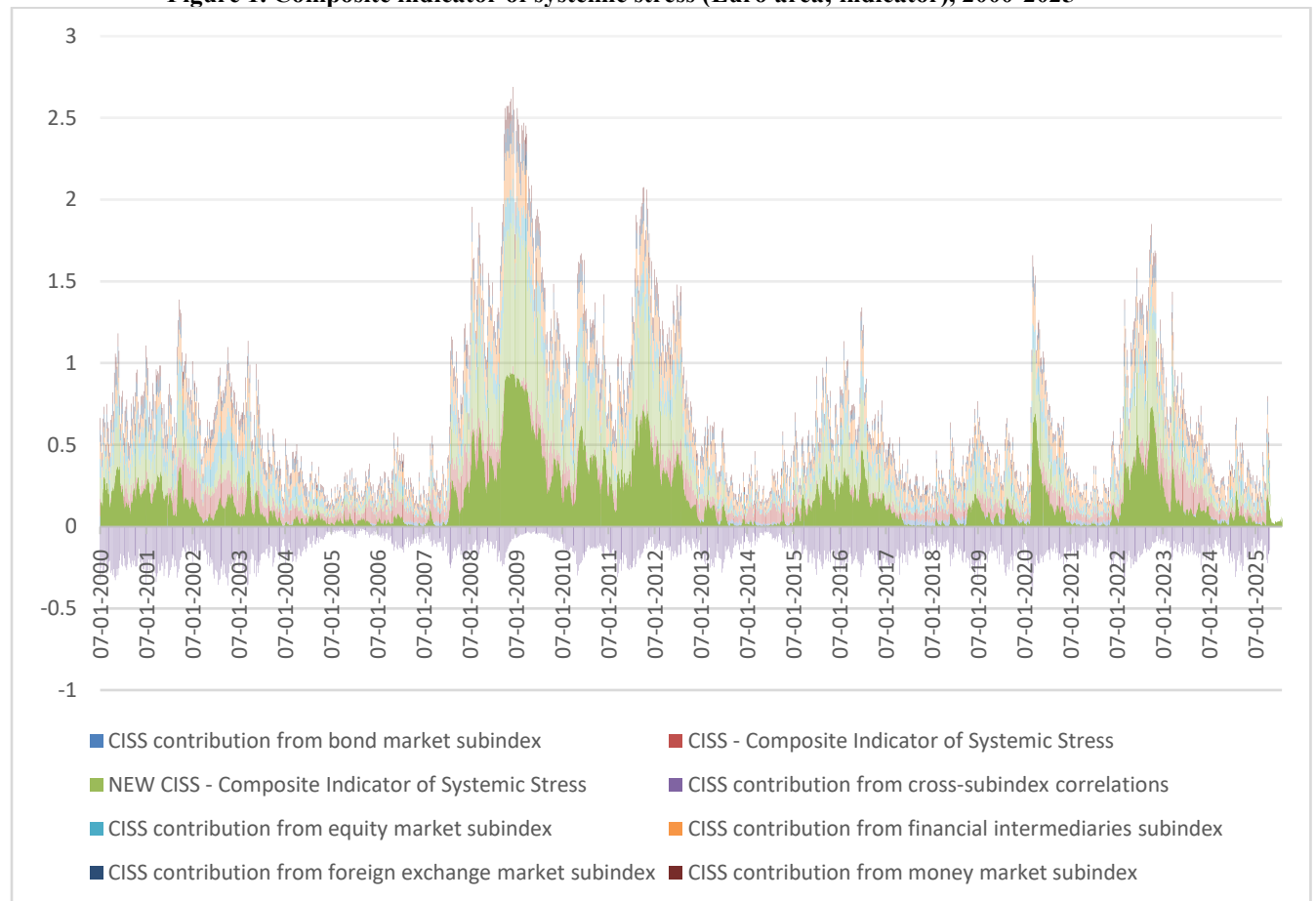
The study aims to evaluate the impact of technological innovations and regulatory changes on digital banking performance, focusing on overcoming cybersecurity challenges, enhancing customer experience, and adapting to shifting financial market conditions.

Methods:-

This study employs a mixed-methods approach, combining qualitative content analysis of academic and industry sources with quantitative econometric modeling. Key trends in digital banking adoption, market performance, and regulatory impacts are analyzed using reports from TABInsights, McKinsey, PwC, and institutional data. Quantitative analysis utilizes the Structural Quantile Vector Autoregressive model to examine interactions among macroeconomic variables such as GDP growth, inflation, interest rates, and financial stress indicators. Empirical data from European Central Bank and U.S. financial stress indices support the assessment of monetary policy effects and financial system resilience. This methodology provides a comprehensive understanding of the relationship between digital banking transformation and macro-financial dynamics.

Results:-

The study examines how advanced and emerging market economies have responded to post-2008 financial challenges using a blend of monetary, macroprudential, and foreign exchange policies. It highlights that EMEs have found success in combining various policy tools, including capital flow management measures, to shield their economies from external shocks such as capital flow volatility. The authors conclude that integrated policy approaches have improved trade-offs and resilience in EMEs. However, the creation of a comprehensive macro-financial stability framework remains a work in progress, with ongoing challenges in understanding international spillovers and spillovers (Basu et al. 2024).

Figure 1. Composite indicator of systemic stress (Euro area; indicator), 2000-2025

As shown in Figure 1, the Composite Indicator of Systemic Stress (CISS) highlights fluctuations in systemic risk across the euro area, reflecting heightened stress during major financial crises. The Composite Indicator of Systemic Stress, developed by Holló, Kremer, and Lo Duca (2012), is a unit-free index ranging between 0 and 1, designed to capture the level of systemic stress in the euro area's financial system. It synthesizes information from five key financial market segments—money markets, bond markets, equity markets, financial intermediaries, and foreign exchange markets—and accounts for time-varying correlations among these segments to reflect market interconnectedness, which is critical during times of distress. This multidimensional approach allows for a more accurate monitoring of systemic vulnerabilities. As part of the ESRB risk dashboard, the CISS serves as a tool for assessing financial instability trends rather than providing early-warning signals. The dashboard's disclaimer explicitly notes that indicators such as the CISS should not be used for mechanical inference but rather as analytical instruments requiring contextual interpretation. Building upon this framework, Garcia-de-Andoain and Kremer (2017) introduced the Sovereign CISS, which applies the same methodology to euro area sovereign bond markets. Their approach goes beyond simple bond spreads by incorporating liquidity and volatility indicators, offering a more comprehensive view of sovereign market stress. Together, these tools form an integral part of macroprudential surveillance in the euro area.

In their 2024 Research Bulletin, Chavleishvili, Kremer, and Lund-Thomsen introduce a novel framework to assess the trade-offs between monetary policy and financial stability. They employ a Structural Quantile Vector Autoregressive model, which allows for the estimation of dynamic interactions between key variables—real GDP growth, inflation, short-term interest rates, and financial stability conditions—across different quantiles of their joint probability distributions. QVAR was first proposed in unpublished work by Cecchetti and Li (2008). Independent work by White et al. (2015) and Montes-Rojas (2019) has formalized the econometric model. This approach enables policymakers to evaluate not only the most likely outcomes but also the tail risks associated with extreme events, such as systemic crises. To operationalize financial stability, the authors incorporate two widely used indicators: the

Systemic Risk Indicator (SRI), representing ex ante financial imbalances, and the Composite Indicator of Systemic Stress (CISS), reflecting ex post systemic stress. These indicators help quantify the potential costs and benefits of alternative monetary policy actions, considering both macroeconomic and financial stability dimensions. The study's findings suggest that aggressive monetary tightening, while potentially curbing inflation, may exacerbate financial instability, particularly when financial systems are vulnerable. Conversely, a more gradual approach could mitigate financial stress but risks allowing inflation to become entrenched. The authors advocate for a risk management perspective in monetary policy, where financial stability considerations are integrated into the policy decision-making process, balancing the trade-offs between inflation control and economic stability.

Figure 2. Comparison of recent forecasts for euro area real GDP growth, HICP inflation

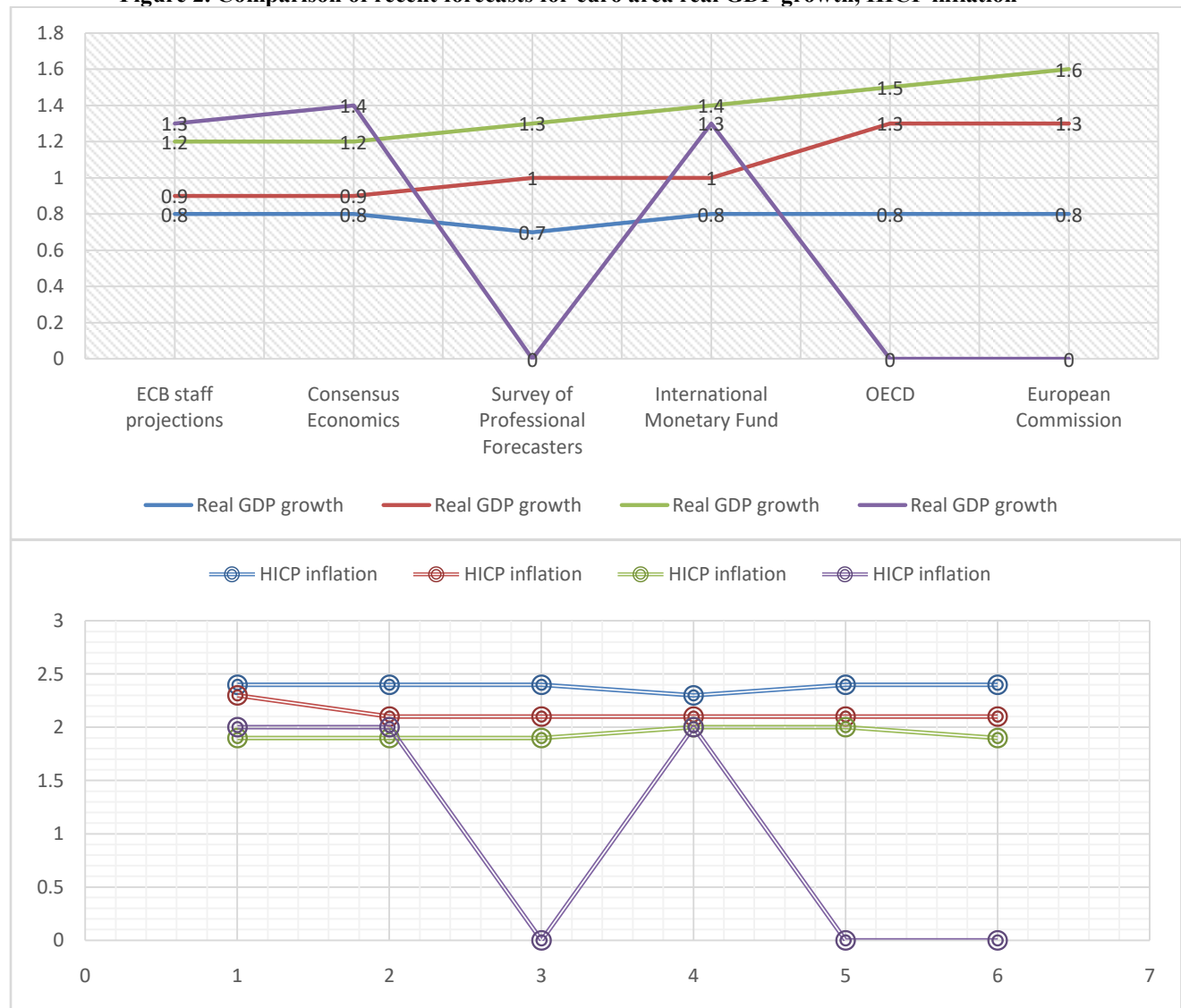


Figure 2. presents a two-part comparison of recent forecasts for euro area real GDP growth and HICP inflation, showing that the March 2025 ECB staff projections generally fall within the range of other forecasts, with GDP growth at the lower end and 2025 HICP inflation slightly above due to differing energy price assumptions.(Chavleishvili et al. 2024).

Table 1. Impact on real GDP growth and HICP inflation of alternative paths for the exchange rate

	Path 1: 25th percentile			Path 2: 75th percentile		
	2025	2026	2027	2025	2026	2027
USD/EUR exchange rate	-2.1	-3.1	-3.7	3.3	7.8	11.4
USD/EUR exchange rate (% deviation from baseline)	-1.1	-1.6	-1.9	1.7	3.9	5.7
(Deviations from baseline growth rates, percentage points)						
Real GDP growth	0	0.1	0.1	-0.1	-0.2	-0.3
HICP inflation	0.1	0.1	0.1	-0.1	-0.2	-0.3

Table 1. shows the impact of alternative exchange rate paths on real GDP growth and HICP inflation. It presents two scenarios based on the 25th and 75th percentiles of the USD/EUR exchange rate distribution, illustrating how deviations from the baseline exchange rate affect economic growth and inflation over the years 2025 to 2027. A weaker euro (25th percentile path) slightly boosts GDP growth and inflation, while a stronger euro (75th percentile path) dampens both.

The analysis reveals that front-loading interest rate hikes—raising rates more rapidly than expected—amplifies both downside risks to real GDP growth and upside risks to systemic stress. This suggests that aggressive tightening can increase the likelihood of adverse economic outcomes and financial instability. Conversely, a more gradual tightening approach mitigates these risks, indicating that slower rate increases may better balance the objectives of controlling inflation and maintaining financial stability. These findings underscore the importance of considering financial stability when formulating monetary policy. The St. Louis Fed Financial Stress Index, which aggregates various indicators of financial stress, can serve as a valuable tool for central banks in this context. By monitoring the STLFSI4, policymakers can assess the current state of financial markets and adjust their policy stance accordingly to avoid exacerbating financial instability. For instance, if the STLFSI4 indicates rising financial stress, central banks might opt for a more cautious approach to tightening monetary policy to prevent triggering a financial crisis.

In summary, integrating financial stability considerations, as reflected in tools like the STLFSI4, into the monetary policy decision-making process is crucial. This approach enables central banks to navigate the trade-offs between achieving price stability and maintaining financial stability, thereby enhancing the effectiveness of their monetary policy.

Notes: The STLFSI4 measures the degree of financial stress in the markets and is constructed from 18 weekly data series: seven interest rate series, six yield spreads and five other indicators. Each of these variables captures some aspect of financial stress. Accordingly, as the level of financial stress in the economy changes, the data series are likely to move together.

The average value of the index, which begins in late 1993, is designed to be zero. Thus, zero is viewed as representing normal financial market conditions. Values below zero suggest below-average financial market stress, while values above zero suggest above-average financial market stress.

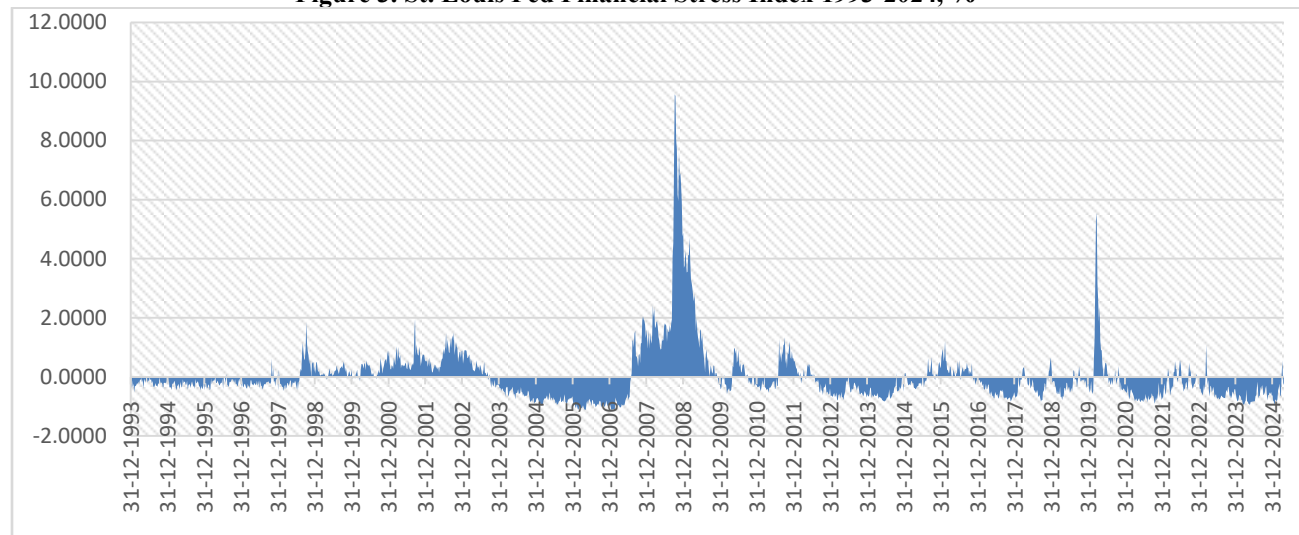
Figure 3. St. Louis Fed Financial Stress Index 1993–2024, %

Figure 3. St. Louis Fed Financial Stress Index, 1993–2024 (%). The figure was created by the author and illustrates the dynamics of financial stress levels in the U.S. economy, as measured by the St. Louis Fed Financial Stress Index (STLFSI) over the period 1993–2024. The DSGE model is one of several tools used for forecasting and policy analysis at the St. Louis Fed. The current version extends a medium-scale New Keynesian DSGE framework by incorporating a limited form of household heterogeneity and an explicit fiscal sector, thereby accounting for varying marginal propensities to consume and the impact of fiscal policies such as social transfers (Faria e Castro, 2024). The model's extensions align with conventional methodological approaches in DSGE modeling, facilitating its application to a variety of economic phenomena. These extensions allow analysis of specific features such as a frictional labor market, which accounts for unemployment and vacancy rates, as described in Arias et al. (2019) and Gelain and Lopez (2023).

According to the International Monetary Fund's (IMF) Global Financial Stability Report (April 2025), global financial stability risks have escalated significantly, primarily due to a sharp repricing of risk assets following the United States' tariff announcements. This repricing led to marked increases in financial market volatility across stock, currency, and bond markets, with responses from other countries further amplifying uncertainties. The heightened volatility has contributed to a tightening of global financial conditions.

The IMF's Growth-at-Risk model indicates that macro financial downside risks to growth have increased meaningfully. Despite recent turmoil in markets, valuations remain high in some key segments of equity and corporate bond markets, suggesting that readjustments in valuations could go further if the outlook were to deteriorate. Economic policy uncertainty remains elevated, and some macroeconomic indicators have surprised to the downside, making corrections of asset prices more likely. Downside asset price moves could significantly impact emerging markets, whose currencies and stock prices have already depreciated due to weakening growth prospects. With investors increasingly expecting emerging market central banks to ease, the expected carry trade returns have fallen, raising the likelihood of capital outflows. The report emphasizes the need for policymakers to address these vulnerabilities to enhance resilience amid the prevailing uncertainty. In summary, the April 2025 GFSR underscores the interconnectedness of global financial markets and the importance of coordinated policy responses to mitigate the risks posed by trade tensions and market volatility.

As disinflation continues and macroeconomic indicators signal a gradual slowdown in economic activity and labour market tightness, major central banks, including the European Central Bank and the Federal Reserve, have begun a cautious transition from a restrictive to a neutral monetary policy stance. Rate cuts already implemented, along with those anticipated for 2025, mark a strategic easing aimed at supporting a soft-landing scenario.

The ECB is projected to achieve a neutral rate as early as 2025 due to subdued regional growth and expectations of inflation aligning with the 2% target, aided by slowing wage growth and narrowing business margins. Similarly, the Fed is expected to follow suit, avoiding excessive labour market weakening amid the ongoing disinflationary trend (CaixaBank Research, 2024). Monetary easing in 2025 is poised to alleviate pressures on GDP growth. Although the full impact of monetary policy typically manifests with a delay—as suggested by Romer and Romer (2023), who estimate a nine-quarter lag—recent granular data (Buda et al., 2023) indicate that some effects materialize rapidly. For instance, interest rate changes influence consumption within days, business sales within a month, and employment within two months. These early responses suggest that monetary easing may provide a timely, albeit moderate, boost to economic activity in 2025, supporting the soft landing without reigniting inflationary pressures. Deloitte's (2024) report assesses the digital maturity of banks across 44 countries, analyzing 1,005 functionalities in areas such as account opening, customer onboarding, everyday banking, and non-banking services. The study identifies two primary strategies among leading banks: enhancing customer experience through intuitive design and expanding functionalities to create comprehensive "super applications." The findings highlight the importance of both user-centric design and functional breadth in achieving digital banking excellence (Deloitte's, 2024).

Murrar, Asfour, and Paz (2024) examine the relationship between banking sector development and economic growth using advanced statistical modeling techniques. The study finds that investments and loans have a significant negative correlation with bank capital, while deposits positively impact bank capital. Additionally, bank capital is significantly related to various components of GDP, including private consumption, gross investment, and net exports, highlighting the critical role of the banking sector in economic development during the digital transformation era (Murrar et al., 2024, pp. 335–353).

KPMG (2024) suggests that Germany's fintech market showed resilience in 2024, particularly with an 81% increase in corporate venture capital investments. This stability is attributed to favorable regulatory frameworks like the EU AI Act, which offer clarity to fintech operations. The report indicates that while global investments declined, the German market's focus on AI-driven solutions and embedded finance continues to attract significant interest (KPMG, 2024). BDO (2024) reports a 19% growth in German fintech investments in H1 2024, highlighting a shift towards niche markets and partnerships between fintechs and traditional financial institutions. The study also notes significant interest in AI, blockchain, and embedded finance, despite a more cautious investment climate in Europe (BDO, 2024).

As McKinsey & Company (2024) suggests, the lower-value cross-border payments market, which represents a substantial portion of the global payments sector, is increasingly being dominated by nontraditional players such as fintechs and money transfer operators. According to their analysis, these players have captured up to 65% of the market share in regions like Asia, a significant portion of the \$2 trillion global market. The report asserts that to counter this shift, traditional banks must modernize their infrastructure, integrate real-time processing capabilities, and enhance customer experience through transparent pricing and user-friendly interfaces. These measures are essential to regain competitive advantage and secure a share of this growing market, projected to account for nearly 40% of total global cross-border payment revenue in 2025 (McKinsey & Company, 2024).

The 2023 PwC Digital Banking Survey focused on Southeast Asia reveals that while over 70% of banks in the region have established clear digital strategies, a significant implementation gap remains, with more than 80% of banks falling short of achieving their digitalization objectives. The primary drivers of digital transformation are enhancing customer experience (68%) and improving operational efficiency (56%). Challenges such as ineffective implementation (62%) and cybersecurity threats (59%) are hindering progress. To overcome these issues, banks are focusing on modernizing technology architectures, adopting cloud solutions, and upskilling their workforce, although concerns regarding cloud security and regulatory compliance still impede adoption in countries like Thailand (PwC, 2023).

The 2025 Global Digital Bank Rankings by TAB Insights highlight the rapid growth and increasing profitability of digital-only banks worldwide. Brazil's Nubank leads the list, followed by ING Group's retail arm and China's WeBank. These top 100 digital banks collectively held \$2.4 trillion in assets, \$2 trillion in deposits, and \$78 billion in revenue by the end of FY2023. Notably, 61% of these banks reported full-year profitability, a significant increase from 48% in 2024. The average time to reach profitability has decreased to two years, indicating improved operational efficiency. Despite this progress, the global break-even ratio remains below 25%, with interest income being the primary revenue source. The rankings assess over 160 banks across five key dimensions: customer base,

market/product coverage, profitability, asset and deposit growth, and funding. The Asia Pacific region accounts for 47% of the top 100, Europe 30%, and North America 10%.

According to TABInsights (2025), digital banks have shown strong growth in assets, users, and profitability, with Nubank (Brazil), ING's retail division, and China's WeBank leading global performance (Table 2. World's top 10 digital banks 2025). These top 100 digital banks, selected from over 400, operate independently from traditional banks, emphasizing fully virtual customer experiences. By FY2023, they managed \$2.4 trillion in assets, \$2 trillion in deposits, and \$78 billion in revenue. The compound annual growth rate (CAGR) for assets, loans, deposits, and revenue from FY2021 to FY2023 stood at 7%, 8%, 7%, and 18%, respectively, signaling sustained momentum (Kapfer and Weng, 2025).

Table 2. World's top 10 digital banks (2025)

Rank 2025	Rank 2024	Digital Bank	Country/ Headquarter	Year of launch	Customer	Coverage	Financials	Balance Sheet	Funding	Final Score
Total Scores Achievable					30.0	10.0	30.0	20.0	10.0	100.0
1	5	Nubank	Brazil	2014	21.9	6.5	16.3	10.0	5.3	60.1
2	3	ING (Global)	Netherlands	1991	6.9	10.0	17.6	19.1	5.3	59.0
3	1	Webank	China	2015	20.8	5.0	14.3	13.6	2.0	55.8
4	4	KakaoBank	South Korea	2017	18.5	5.0	9.8	16.4	6.0	55.6
5	7	T-Bank	Russia	2007	19.6	4.5	15.7	12.7	1.3	53.8
6	2	Ally Bank	US	2009	5.8	5.5	16.3	20.0	6.0	53.6
7	8	ING	Germany	<2000	4.6	5.5	19.6	18.2	3.3	51.2
8	9	MYBank	China	2015	16.2	3.0	13.0	16.4	2.0	50.6
9	13	Toss Bank	South Korea	2021	18.5	3.0	13.0	11.8	3.3	49.7
10	6	Su Merchants Bank	China	2017	16.2	4.0	13.0	13.6	2.0	48.8

According to Fintech News Singapore (2025), the top digital banks in Asia for 2025 include Maya (Philippines), Kakaobank (South Korea), and ANEXT Bank (Singapore). Maya, a digital bank in the Philippines, has achieved significant growth, reaching a deposit base of ₱25 billion from 2.3 million clients by August 2023. Kakaobank, established in South Korea in 2016, had 21.8 million customers as of March 2023 and offers a range of banking and financial services. ANEXT Bank, a digital wholesale bank in Singapore, has been recognized for its excellence in digital banking innovation, customer growth, and financial performance. These banks exemplify the rapid expansion and innovation within the digital banking sector across Asia (Fintech News Singapore, 2025).

The concept of neobanks emerged as a response to the limitations of traditional banking systems and the evolving needs of customers. After the financial crisis of 2008, many users grew dissatisfied with banks due to high fees, paper-based processes, and poor customer experience. During this period, the first fintech companies began to appear, offering online payment services, digital wallets, and simple financial tools.

The "Project mBridge" initiative, a collaboration between the central banks of Hong Kong, UAE, and Thailand, has significantly improved cross-border CBDC transaction settlement times, reducing them from 2-5 days to mere seconds. As of mid-2024, the project reached its minimum viable product stage. Additionally, the future of digital banking emphasizes customization, moving away from generic interfaces and rigid product bundles to allow customers to personalize their banking experiences. Furthermore, green banking integrates Environmental, Social, and Governance principles, offering sustainable products and carbon tracking tools to align financial choices with customers' values.

In Q4 2024, the combined market capitalization of the top 25 global banks surged by 27.1% year-on-year, reaching \$4.6 trillion, according to GlobalData (2025). This growth was largely attributed to the U.S. Federal Reserve's interest rate cuts, which positively influenced investor sentiment and stock prices. JPMorgan Chase led the rankings, with a 37.2% increase in market capitalization, reaching \$674.9 billion, while Bank of America saw a 26.6% rise. In

Asia, the Industrial and Commercial Bank of China (ICBC) experienced a 37.8% growth, reaching \$328.2 billion. Other notable performers included Goldman Sachs, which posted a 42.9% increase, and ICICI Bank, which rose by 25.8%. Despite the overall positive performance, TD Bank experienced a significant decline of 20.1% due to regulatory challenges and missed financial targets. This robust growth underscores the resilience of major banks amidst global economic uncertainties, highlighting the profound impact of monetary policy decisions (Blakey, 2025).

This performance contrasts with the increasing pressure on digital banks to maintain profitability and operational efficiency in the face of competitive market dynamics and rising cybersecurity threats. Digital banks, while benefitting from technological advancements and operational agility, must also confront challenges in scalability, regulatory compliance, and consumer expectations for personalized services. In particular, the move towards highly customizable banking experiences, alongside growing demands for secure, green banking solutions, suggests that future innovation must balance both profitability and sustainability (Poon et al., 2024). Thus, as traditional financial institutions continue to flourish, digital banks must focus on adapting to market trends, ensuring robust cybersecurity, and aligning with global regulatory frameworks to secure long-term success in the evolving financial landscape.

Conclusions:-

This study highlights the rapid evolution and multifaceted nature of digital banking, emphasizing the critical role of technological advancements, regulatory frameworks, and customer-centric innovations in shaping its future. The findings suggest that while traditional banks continue to thrive, digital banking presents a formidable challenge and opportunity for growth, especially as customer expectations for personalized, efficient, and secure services continue to rise. The integration of technologies such as artificial intelligence, blockchain, and mobile applications has led to enhanced customer experiences and operational efficiencies, providing banks with new tools to maintain a competitive edge in an increasingly digital-first financial landscape.

However, the research also underscores the significant challenges that digital banks face, particularly regarding cybersecurity threats and regulatory compliance. Cybersecurity risks, including data breaches, identity theft, and cyberattacks, are major concerns that can undermine user trust and slow down adoption rates. To address these challenges, the development of robust cybersecurity infrastructures, clear regulations, and consumer education is essential for building trust and encouraging widespread adoption.

Moreover, the study highlights the importance of adapting digital banking platforms to meet the evolving demands of diverse consumer segments. Factors such as ease of use, perceived usefulness, and service reliability play a crucial role in driving adoption. Additionally, the increasing focus on green banking, sustainability, and ESG (Environmental, Social, and Governance) factors reflects the growing consumer demand for socially responsible financial products and services.

Ultimately, for digital banks to succeed in a competitive and fast-evolving market, they must strike a balance between technological innovation, customer satisfaction, and regulatory adherence. The future of digital banking depends not only on embracing new technologies but also on understanding the shifting dynamics of customer behavior and global financial regulations. As digital banking continues to grow, financial institutions must prioritize security, customer engagement, and regulatory compliance to remain competitive and resilient in the long term.

Declarations:-

Ethical Approval and Consent to Participate - Not applicable. This study did not involve human participants or animals.

Consent for Publication - Not applicable. The manuscript does not contain any individual person's data in any form (including individual details, images, or videos).

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