Al-Qadisiyah Journal for Administrative and Economic Sciences ISSN$_{Online}$ : 2312-9883
*QJAE*, Volume 27, Issue 4 (2025) ISSN$_{Print}$ : 1816-9171
*DOI: https:// doi.org/ 10.33916/ qjae.2025 .04142157*

# Financial Innovations And Their Impact On The Banking Performance Of The United Arab Emirates For The Period (2004-2023)

Abbas Fadel Obaid Sahar Kareem Kata Ali Al-Nashy
abbasfadl838@gmail.com sahar.kata@qu.edu.iq
University of Al-Qadisiyah

**Article history:**
Received: 17/8/2025
Accepted: 9/9/2025
Available online: 15 /12 /2025
Corresponding Author : Abbas Fadel Obaid

**Abstract :** Financial innovations are among the key factors that directly impact the performance of the banking sector, especially in light of the rapid developments witnessed by the global market. The period extending from 2004 to 2023 witnessed the emergence of many modern financial technologies such as financial technology (FinTech), digital banking services, and artificial intelligence, which contributed to improving the efficiency of banking operations, reducing costs, and enhancing services provided to customers. At the international level, the experiences of several countries have shown that the adoption of financial innovations led to increased competitiveness and improved profitability, while improving access to finance and financial security. The research is based on the hypothesis that financial innovations have an impact on banking performance. The study reached a set of results, the most important of which is that financial innovations such as digital banking services contributed to increasing financial inclusion, i.e., expanding the customer base, to include individuals who were not traditionally served, especially in developing countries, In light of this, a set of recommendations was presented, the most important of which is strengthening the regulatory framework and compliance that adapts to innovation by developing and implementing flexible regulatory frameworks that allow for the adoption of financial innovations while maintaining financial stability and protecting customers, enhancing governance and transparency in the use of artificial intelligence and data analysis technologies in lending, fraud, and compliance monitoring, and encouraging cooperation between regulatory bodies, banks, and financial technology (FinTech) companies through consultative platforms and live experiments (sandboxes) for innovation.

**Keywords: Financial innovations, banking performance**

**INTRODUCTION:** Over the past decades, the UAE has witnessed qualitative transformations in the banking sector, as a result of its adoption of a wide range of modern financial innovations (Błach, 2011:16). These innovations have been key drivers for improving banking performance, contributing to improved efficiency, enhancing customer services, and enhancing the country's financial sustainability. Beginning in 2004, the UAE's financial sector witnessed a remarkable transition from traditional systems to advanced technological applications, such as electronic banking, mobile banking, modern payment technologies, and the adoption of artificial intelligence and big data systems (Nejad, 2022: 578). All of this has led to increased banking operations, reduced operating costs, and improved customer experience, thus enhancing the overall performance of banks. Government policies supporting digital transformation, along with sustainable development strategies, have contributed to strengthening the UAE's position as a regional and global financial center, relying heavily on financial innovations to achieve sustainable economic growth. While innovations have continued to evolve in recent years, they have also had a direct impact on competition among banking institutions, leading to improved service levels and enhanced public confidence (Ansong et al., 2011: 95). Overall, it can be said that financial innovations have been a major driver of achieving advanced and sophisticated banking performance that meets modern requirements and supports national development goals.

## PART ONE RESEARCH METHODOLOGY

### 1) THE RESEARCH PROBLEM

The problem of the study is represented by a main question: (The extent of the impact of these innovations in the long term in improving the financial and competitive performance of national banks, and is it possible to achieve the

sustainability of this growth in light of the various challenges), and from this question the following sub-questions arise:
1-What is the reality of financial innovations in the UAE banking sector?
2-What is the reality of the UAE banking sector?
3- What is the level of impact of financial innovations in the UAE banking sector?

**2)THE RESEARCH IMPORTANCE**

The importance of this study lies in highlighting the critical role of financial innovations in enhancing the performance of the banking sector, especially in light of rapid economic and technological changes. By analyzing selected international experiences, the study contributes to providing practical insights into the UAE banking sector, which faces significant challenges in modernization and adapting to modern innovations. The study's significance extends to providing a framework through which UAE banks can benefit from global experiences to improve their operational efficiency, increase their profitability, and enhance their ability to meet customer needs. The study also provides recommendations for decision-makers and financial institutions in the UAE on ways to effectively adopt financial innovations within the local economic and political environment..

**3) RESEARCH OBJECTIVES**

The current research aims to estimate a standard model through which to measure the impact of financial innovations on banking sector performance, in addition to the following objectives:
1-Analyze the impact of financial innovations on banking sector performance in selected international experiences.
2-Identify the challenges facing selected countries and UAE banks in implementing financial innovations.
3-Measure and analyze financial innovations in banking sector indicators in the UAE.
4-Propose strategies and policies to enhance the role of financial innovations in improving the efficiency and profitability of UAE banks.
5-Provide recommendations to decision-makers to support the adoption of financial innovations in the UAE banking sector in line with global developments.

**4) Research Hypothesis**

Main Hypothesis 1: Financial innovations contribute positively to improving the banking sector's performance in terms of operational efficiency.
Main Hypothesis 2: Financial innovations contribute positively to improving the banking sector's performance in terms of profitability.
Main Hypothesis 3: Financial innovations contribute positively to improving the banking sector's performance in terms of meeting customer needs.

**5)Research Methodology**

The study relies on the descriptive approach by analyzing selected international experiences in the field of financial innovations, and using the quantitative approach to evaluate the impact of financial innovations on the banking sector indicators of the selected countries during the period (2004-2023) through statistical data.

**6) Research Limits**

Time Limits: The study's time limits cover the period (2004-2023)
Spatial Limits: The UAE.

## PART TWO: THE THEORETICAL SIDE

### First: Financial innovations: a theoretical and conceptual framework

Modern technology has revolutionized the world of finance, and banks and financial institutions rely on artificial intelligence and big data analysis to provide more personalized and efficient financial services(Ashiru et al., 2023:3). These innovations have contributed to financial inclusion, enabling individuals and businesses to access finance more easily and securely(Nejad, 2022: 578). The success of financial innovations also requires a balance between technological advancement and compliance with financial regulations to ensure their sustainability and maximize their benefits (Malet, 2024: 3)

The sources of financial innovations can be analyzed from two main perspectives that reflect the nature of their development in financial markets(Ashiru et al., 2023:3). The first perspective is the demand theory of financial innovation, which argues that innovation arises in response to the needs of the market and end users—such as businesses, individuals, and financial institutions—as a result of regulatory changes, economic developments, and modern financial technology(Ashiru et al., 2023:3). The second perspective is the supply theory of financial innovation, which posits that innovation arises from the pursuit of financial institutions and innovators to offer new financial products to enhance efficiency and competitiveness (Blash, 2011: 16). Just as the first perspective reflects innovation's response to market demands, the second perspective highlights the role of institutions in driving financial development through investment in technology.

Understanding these two perspectives contributes to clarifying how financial innovations emerge and develop and their impact on the global financial system (Arnaboldi & Rossignoli, 2015:31).

The concept of financial innovation encompasses a wide range of tools and technologies that have fundamentally transformed the financial sector, such as digital banking, financial technology, digital currencies, securitization, and financial derivatives. Financial innovations expand the range of tools available for risk management and have opened up unprecedented opportunities for financial inclusion, helping integrate unbanked individuals into the financial system (Nejad, 2022: 578)

Financial innovations have fueled the growth of economies, markets, and societies. The financial industry has successfully become a fertile ground for innovative services, processes, business models, and technologies. Financial innovations are a key driver of economic growth and the development of financial markets, contributing to improved efficiency, transparency, and risk reduction in financial operations. These innovations encompass a wide range of technologies and practices that enhance access to finance, such as crowdfunding, digital currencies, financial technology (FinTech), financial derivatives, and securitization (Kumar, 2023: 252.(

Financial innovations are essential for enhancing the efficiency of financial systems and achieving economic sustainability. With the increasing complexity of financial operations and the emergence of new challenges such as economic volatility and credit risk, there is a need to develop innovative financial tools and strategies that meet the needs of both individuals and businesses. Financial innovation provides companies with a platform to gain a competitive advantage in the market. By adopting innovative financial strategies, companies can differentiate themselves from their competitors, attract investors, and respond more effectively to changing market conditions (Ashiru et al., 2023:3). Financial innovations have also been defined as a set of technological developments that enhance bank performance, improve customer experience, expand the scope of digital banking services, and promote economic growth, as economic growth is positively related to the extent to which a country's banking system spends on research and development (Laeven et al., 2015:21).

According to financial engineering, it is defined as the search for new solutions to risk management or investment problems, often through the design of innovative services. Structured services consist of multiple tools, at least one of which can be used to develop new strategies in asset management and finance (Bobrikova & Harčariková, 2017: 8). Financial regulators also define it as transformations in banking systems that facilitate the provision of new or modified financial services, in line with technological developments and changing market needs. Financial innovators attempt to circumvent regulators' intentions by finding and exploiting loopholes. Financial innovations, from a financial technology (FinTech) perspective, are defined as the application of digital technologies such as artificial intelligence, blockchain, and big data analytics to improve banking and finance services. These are actors that influence the development and deployment of these technologies, and financial technologies require the construction of such a system to make widespread deployment possible. Financial innovations, according to the behavioral economics perspective, are financial developments that aim to improve investor decisions and financial consumer behaviors through new strategies that integrate technology and behavioral analysis to encourage individuals to keep their savings in financial forms by expanding financial innovation (Pol, 2009:115).

**Second: The Importance Of Financial Innovations**

Financial innovation supports economic activity by introducing new financial institutions, services, and products, promoting efficient resource allocation and economic growth. Governments should focus on promoting financial innovation to benefit households and contribute to development (Wang et al., 2022: 28). Financial innovations play a vital role in enhancing the performance of financial markets and developing the global economy. With technological advancements and the growing needs of individuals and businesses, these innovations have become essential for achieving efficiency and sustainability in the financial system. Their importance can be summarized as follows:

**1-Enhancing financial efficiency and reducing costs**

Financial technologies contribute to accelerating transactions and reducing costs for financial institutions. They reduce the need for traditional intermediaries, leading to lower banking fees and improved customer experience (Ansong et al., 2011: 95)

**2-Achieving financial inclusion**

Financial innovation has shifted monetary transactions away from the traditional use of cash. Financial innovations such as digital banking, e-wallets, and crowdfunding help expand access to financial services, especially in areas lacking traditional banking infrastructure. Unbanked individuals are now able to easily conduct transactions via smartphones and digital applications (Worthington, 2010: 206)

**3-Improving Financial Risk Management**

Financial innovations provide advanced tools for predicting and managing financial risks more efficiently. They help reduce financial fraud through blockchain and encryption technologies, enhancing security and transparency in financial transactions. Security using blockchain technology is among the many aspects that encourage the use of this technology in banking. Blockchain secures its transaction ledger through encryption. As a result, data is only accessible to those with a unique key code. Many different fintech solutions are currently available in the financial sector (Davradakis & Santos, 2019: 3).

**4- Supporting Economic Growth and Entrepreneurship**

Financial innovations contribute to providing alternative financing for startups and entrepreneurs through crowdfunding and venture capital platforms. They contribute to stimulating investment and increasing cross-border financial flows, thus enhancing economic development (Saada, 2025:18)

**5-Developing Payment and Remittance Systems**

Financial innovations have led to the emergence of more efficient digital payment systems such as Apple Pay, Google Pay, and digital currencies, facilitating instant payments and transfers. They reduce the need to use cash and improve the speed and ease of financial transactions globally. The primary motivation may be either the entry of new companies seeking to capture a market share, or existing companies seeking to improve their market share and limit consumers' use of other, more expensive payment systems (Basdekis et al., 2022:160). 6. Financial innovations enhance financial transparency and accountability. Thanks to technologies such as blockchain and smart contracts, financial transactions have become more transparent, reducing financial corruption and enhancing trust in financial markets. Financial innovations help predict trends, manage risks, and improve resource allocation. Advances in financial transparency, ethical governance, and cost management have the potential to significantly enhance efficiency and accountability (Garbi, 2023:12).

**Third: The Concept Of Banking Sector Performance**

In light of global economic challenges, such as financial crises and market volatility, it becomes essential to continuously evaluate the banking sector's performance to ensure its sustainability and ability to support the national economy and promote investment. Banking performance is a complex subject influenced by a variety of internal and external factors. Improving banking performance requires banking institutions to adopt effective risk management strategies, improve operational efficiency, provide high-quality customer services, and leverage technological developments. Good bank governance has a positive impact on performance and income results, and "responsible" management of its employees can increase efficiency in international operations (Soana, 2011:12). Banking performance plays a vital role in the modern economy, acting as an intermediary between savers and borrowers, facilitating payments and financial transfers, managing risks, and providing the necessary financing for various economic activities. Banking performance reflects the efficiency and effectiveness of banking institutions in achieving their objectives, whether financial goals such as generating profits and increasing returns on investment. The banking sector plays a positive role in the development of any country's economy as a whole (Zıdan, 2019:1). In developing countries, banks are the primary source of credit in local markets due to the weakness and limitations of the capital market and the inability to provide sufficient sources of financing to investors. Performance serves as the backbone of the financial sector, which plays a crucial role in the development of various economic sectors. Capital flows are managed and controlled, investment opportunities are exploited, and funds are channeled toward productive and profitable projects (Dincer et al., 2011: 1532). The performance of the banking sector contributes as one of the fundamental pillars of any country's economic system, playing a crucial role in promoting sustainable development, encouraging investment, and supporting financial stability. The banking sector's performance includes a set of indicators that reflect its efficiency in providing financial services, managing risks, and achieving sustainable growth (Gumber et al., 2018: 220). This performance is influenced by several factors, including local and global economic conditions, monetary and fiscal policies, and technological developments in the banking sector(Soana, 2011:12). With the evolution of the banking environment and the increasing challenges, it has become imperative for banks to adopt innovative strategies to improve performance, such as digital transformation, the development of electronic banking services, and the implementation of good governance standards(Zıdan, 2019:1). Therefore, evaluating the banking sector's performance is not limited to indicators of profitability and liquidity, but also includes the extent to which banks achieve financial sustainability and enhance customer and investor confidence in the banking system (Murinde et al., 2022: 11).

The banking sector has undergone significant transformations in recent years, driven by rapid technological advancements and the emergence of financial innovations. Banks are no longer merely traditional financial institutions; they have transformed into centers of financial innovation, constantly striving to develop their services and products to meet changing customer needs and enhance their operational efficiency. During the 1970s and 1980s, the financial industry built central computing in the commercial banking, securities, and insurance sectors, leading them to become the most intensive and innovative users of information technology. By the 1990s, expanding IT spending had become the norm, not the exception (Ongore & Kusa, 2013: 237).

In recent years, the banking sector's performance has witnessed significant transformations as a result of technological developments, innovations in financial services, and the increased use of digital technologies, which have led to enhanced operational efficiency and improved customer experience. However, the sector faces challenges such as credit risks, economic changes, and increasing regulations, requiring flexible strategies to ensure sustainability and growth. Several definitions have been provided regarding this concept. The banking sector's performance has been defined as promoting economic growth by providing financing to individuals and businesses, stimulating investment, and ensuring the stability of the financial system. There are three main factors for improving the banking performance of financial institutions: the size of the institution, its asset management, and operational efficiency (Olawale & Obinna, 2023: 150). It has also been defined as a vital indicator of the health of the national economy, and its continuous evaluation is essential to ensure its stability and effective contribution to economic development. Good banking performance rewards shareholders for their investments. This, in turn, encourages additional investment and achieves economic growth. On the other hand, poor banking performance can lead to bank failures and crises that have negative consequences for economic growth (Kocisova, 2014: 198).

**Fourth: Banking Sector Performance**

1- Financial and Economic Stability

Good banking performance is an indicator of the financial stability of the banking sector, and thus of the economy as a whole. It is a cornerstone of the success of economic policies in countries by attracting investment, enhancing productivity, and transferring technology, which in turn results in increased flows. This in turn depends on the development of the banking sector. The lack of development in the banking sector limits the economy's ability to benefit from the repercussions of foreign investment and potential inflows into the economy (Olawale & Obinna, 2023: 150).

**2- Stimulating Economic Growth**

It contributes to financing projects and investments, leading to increased production and job opportunities. It facilitates trade transactions by providing payment services and financial transfers. The development of the banking sector's capabilities enhances its developmental role, which is represented by transferring funds from surplus units to deficit units or borrowers. Surplus units seek alternative investment outlets to direct their funds. The banking sector's performance is a source of long-term funding for both the public and private sectors, which rely on long-term financing for infrastructure development and business expansion. These sectors play a role in increasing the economy's attractiveness to investors and thus meeting financing requirements (Ongore & Kusa, 2013: 237)

**3-Providing Financing and Investment**

It provides loans and credit facilities to individuals and businesses, fostering innovation and expansion. It encourages savings and investment by providing diverse financial instruments. The banking sector's performance plays a key and stimulating role in the financial market. The process of subscribing to stocks and bonds issued by economic or government institutions for the first time occurs within the banking sector and other financial institutions. Banks enter the stock market (secondary market) or stock exchange as sellers or buyers of the securities offered, which represents one of the uses of banks' resources to manage their clients' financial portfolios or accounts. Improving quality and reducing financing risks is essential to enhancing the performance of Islamic banks and assisting in economic recovery. It can serve as an alternative financial system that provides relief to society and the business sector during the recovery period (Olawale & Obinna, 2023: 150)

**4-Achieving Financial Stability**

It enhances confidence in the economy by maintaining liquidity and monetary stability. It mitigates financial crises through risk management and cash flow monitoring. It contributes to the efficient allocation of financial resources among different sectors. It reduces financial transaction costs through digital banking services and financial technology (Ongore & Kusa, 2013: 237). '

**5. Financial Intermediary**

Acts as a financial intermediary by directing funds from the surplus unit of the economy to the deficit unit, represented by companies and governments that need funds to finance their investments and expenditures. The banking sector works to provide savings instruments that suit savers' preferences. In addition to accepting deposits, the banking sector also employs positive incentive measures, which include attracting these deposits by raising savings awareness and urging individuals and institutions to save. After collecting savings from economic units, the savings are transferred to economic units for investment purposes in exchange for specific interest rates that vary according to the size and duration of each deposit (Olawale & Obinna, 2023: 150).

**6- Store of Value**

Banks issue investment certificates, which are divided into various types. They are similar to US Treasury bonds, with some differences. They allow investors to invest surplus funds without losing their value at the end of the specified period, or to receive the accrued interest every year or six months during the term of holding the bonds. There is a category of investment certificates called prize or lottery certificates, where periodic withdrawals take place during the term of holding the bond. If selected, the holder receives a financial prize, and the holder of the bond does not incur any losses (Ongore & Kusa, 2013: 237).

**Fifth: The Role Of Financial Innovations In Improving Banking Performance**

Financial innovations contribute to enhancing the efficiency of banking performance, increasing banks' competitiveness, and achieving a balance between profit generation and risk management, leading to a more advanced and sustainable banking system. Financial innovations play a vital role in improving banking performance through:

**1-Increasing Operational Efficiency**

Financial innovations automate banking operations and reduce operating costs, increasing banks' efficiency and ability to provide better services at a lower cost. They also use data analytics to improve credit decision-making and reduce loan risks (Raza et al., 2011: 175).

**2-Improving Customer Experience**

Financial innovations provide a smoother and more convenient banking experience for customers, allowing them to access their banking services anytime, anywhere via smartphones and tablets. They also provide electronic payment platforms and digital wallets to facilitate payments and money transfers. Using technologies such as banking robots and intelligent chat services to provide instant financial advice and improve customer experience. For banks to survive in this competitive environment, they must maintain long-term relationships with their customers by providing high-quality services. Therefore, banks must shift from a product-centric business model to a customer-centric business model to gain greater commercial benefits (Rahman et al., 2023:3).

**3-Expanding the Scope of Banking Services**

Financial innovations contribute to expanding the scope of banking services to include new customer segments, such as small and medium-sized enterprises (SMEs) and individuals who lack access to traditional banking services. Digital banking services enable unbanked individuals to easily access financial services. Banking services reduce some risks but increase others. They provide tools and mechanisms that reduce some risks but, at the same time, may increase others. For example, banks contribute to reducing liquidity risk by offering loans and current accounts and deposits, giving individuals and businesses access to funds when needed. They also contribute to reducing credit risk through creditworthiness analysis mechanisms and the provision of guarantees. However, banking services may lead to increased risks such as systemic risks, as excessive reliance on credit and complex financial innovations can lead to financial crises when economic turmoil occurs (Raza et al., 2011:175).

**4-Enhancing Risk Management**

Banks are using financial innovations, such as artificial intelligence and data analytics, to improve risk management and fraud detection processes, protecting banks and their customers from financial losses. Blockchain is being used to ensure transparency in financial transactions and reduce fraud (Rahman et al., 2023:3).

**5-Increasing Revenue**

Financial innovations help banks increase their revenues by offering new and innovative services, attracting more customers, and improving operational efficiency. Diversifying bank revenues has become important for banking performance research due to the increasing use of this strategy in recent years (Kumar et al., 2006:3).

**6- Developing Banking Products**

This is a fundamental pillar of financial innovations, playing a pivotal role in improving overall banking performance. The provision of financial products, such as variable-interest loans or smart accounts that adapt to user needs, relies on analyzing customer data, promoting innovation in investments through self-trading applications, and using artificial intelligence in portfolio management (Rahman et al., 2023:3).

**Sixth: Banking Sector Performance Indicators**

**1-Profitability Indicators**

Include Return on Assets (ROA) and Return on Equity (ROE), which reflect the bank's ability to generate profits (Ongore & Kusa, 2013: 237)

A. Return on Assets (ROA) = (Net Profit) / Total Assets x 100

B. Return on Equity (ROE) = (Net Profit) / (Shareholders' Equity x 100

C. Net Interest Margin = (Interest Expenses - Interest Income) / (Estimated Interest Assets)

It measures the profitability of lending activities compared to the cost.

The banking sector in general has undergone some profound changes in recent decades. Innovations in technology and the inevitable forces driving globalization continue to create growth opportunities and challenges for bank managers to maintain profitability in this increasingly competitive environment. Banks seek to maximize shareholders' wealth through return on equity or return on investment, by financing investments with third parties' funds or their own funds, taking into account the level of risk that banks may face. For example, banks seek to increase return on equity by increasing financial leverage. This is because depositors cannot share in the profits generated by the bank. Meanwhile, increasing financing through share issuance leads to an increase in the number of shareholders, which leads to a decrease in the per share dividend. However, the Central Bank prohibits commercial banks from excessive use of leverage for reasons including restrictions on minimum capital. This represents a protection for depositors and the banking system, because financing Debt means a decrease in the ratio of equity to total liabilities, which increases capital risk as banks must make the best use of deposit funds, and interest paid represents the largest portion of total costs. Return on assets, on the other hand, measures a bank's efficiency in generating profits and is equal to the income margin multiplied by the degree of asset utilization. A bank's profitability increases when interest rates on loans are high and interest rates on deposits are low, meaning the profit margin increases. Competition is also a factor affecting profitability when the resources available to the bank are limited, which leads the bank to raise interest rates to obtain resources, which leads to a decrease in the interest rate margin (Kumar et al., 2006:3).

**2-Competitiveness Indicators**

Based on the definition of competitiveness as the ability of banks to meet the needs of their customers and clients, this creates a sense of confidence among them that their services are the best, thanks to their diversity, quality, and low cost. To determine this, performance indicators must be developed based on financial statements. These indicators can be classified into two axes: (the security index and the liquidity index), as follows (Olawale & Obinna, 2023: 150):

**A. Safety Index**

This index determines the ability and resilience to confront the risks, problems, and shocks that financial institutions are exposed to, and which affect their balance sheet items. The safety index takes into account the financial risks to which the financial institution is exposed. The Basel Committee has called for a capital adequacy ratio of (12)% as the minimum required level of adequacy. The lower the financial adequacy ratio is, the more likely these banks are to encounter problems due to their lack of safety and security due to this decline. Conversely, we find that a higher percentage of the prescribed financial ratio may give authorities the ability to confront risks and absorb potential losses, or losses that may occur, due to their credit activity, keeping the bank safe. The equation chosen is the bank's ability to return deposits, as shown in the equation (Ongore & Kusa, 2013: 237):

**Safety Index = (Equity / Total Deposits) * 100.**

**B. Liquidity Index**

Liquidity is the ability of banks to meet depositors' withdrawals on the one hand and meet lenders' needs on the other hand in a timely manner, without having to sell securities at significant losses or borrow at high interest rates, thus exposing them to numerous risks due to a lack of necessary liquidity. Liquidity availability is an essential factor for a bank, as it increases the confidence of depositors and creditors. Several ratios can be used to determine a bank's liquidity position, all of which provide an indication of the banks' liquidity position and their ability to confront the expected risks that may result from a liquidity shortage for any reason. Therefore, banks should strive to achieve an ideal balance in liquidity levels, without deviating from this balance towards an increase or decrease in liquidity levels. Banks have been exposed to the credit crisis despite implementing all the controls and standards stipulated by the Basel Accord on liquidity management, in light of the laws and instructions issued by most central banks, as shown in the equation (Ongore & Kusa, 2013: 237)

**Liquidity Index (Loan-to-Deposit Ratio) = (Total Loans / Total Deposits).**

**3-Indicators of Operational Efficiency**

The concept of efficiency in capitalist economic thought is linked to the fundamental economic problem, which is essentially how to allocate the limited resources available to society to meet the renewed and recurring needs and desires of individuals. Historically, the concept of efficiency goes back to the Italian economist Vilfredo Pareto, who developed the formulation of this concept, which became known as "Pareto optimality." According to Pareto, any possible allocation of resources is either efficient or inefficient, expressed as inefficiency. This concept applies when studying efficiency for the consumer, the producer, or the economy as a whole. The process of distributing goods to consumers is called Pareto optimal if it is no longer possible to reorganize this distribution to increase the satisfaction of one consumer (or several consumers) without decreasing the satisfaction of another consumer. The process of distributing production factors to the produced goods and services is also called optimal according to Pareto optimality, as it is no longer possible to reorganize production in order to increase the production of (a good/service) or (several goods/services), without decreasing the production of (another good/service), and the economy as a whole is in general equilibrium and in an optimal state if the production factors are distributed optimally. Efficiency is defined as the relationship between the amount of resources used and the results achieved, by maximizing outputs or reducing the amount of inputs used to achieve a certain volume of outputs, and is usually estimated as the ratio of actual outputs to the maximum outputs based on the same available resources and can be classified into two axes, which are indicators (capital adequacy index, management efficiency index) as follows (Olawale & Obinna, 2023: 150):

**A. Capital Adequacy Ratio**

The capital adequacy ratio is used to determine a bank's solvency and ability to withstand shocks to its balance sheet items. The importance of the capital adequacy ratio lies in its consideration of key financial risks, such as exchange rate risk, interest rate risk, credit risk, and other capital adequacy indicators. Capital adequacy ratios account for risks within the balance sheet for off-balance sheet items, such as derivatives trading risks. The capital adequacy ratio can be calculated by dividing total capital, which includes total core capital (such as common stock, preferred stock, reserves, and retained earnings), by total capital (such as common stock, preferred stock, reserves, and retained earnings), as shown in the equation (Kocisova, 2014: 198)

**Capital Adequacy Ratio = (Total Capital) / (Total Assets) 100**

**B. Management Efficiency**

This ratio demonstrates the board of directors' efficiency in managing its operations and risk. It is measured by controlling the bank's operating expenses, reflected in the following ratio (Kocisova, 2014: 198)

**Management Efficiency Index = (Operating Expenses) / (Total Assets) 100**

**Seventh: The UAE Experience in Financial Innovation**

In light of the rapid global transformations in financial technology and digital innovation, countries are seeking to build an advanced financial environment that supports sustainability and economic growth. The United Arab Emirates is a pioneering model in the region and the world in embracing financial innovations, having developed integrated strategies aimed at strengthening its position as an advanced global financial center. The country has worked to develop digital infrastructure, issue flexible legislation, and launch advanced initiatives such as digital currencies, open banking, and crowdfunding platforms, in addition to supporting emerging companies in the financial technology (FinTech) sector.

It combined advanced legislation, investment in human capital, and public-private sector collaboration, enhancing its ability to attract capital and develop a smart, innovation-based financial system. This experience also demonstrates how financial innovations can contribute to improving financial inclusion, increasing operational efficiency, reducing risk, and enhancing customer confidence. Therefore, studying this experience in practice represents an important contribution to understanding how to translate administrative and financial theories into practical, applicable policies that can benefit other countries seeking to build more innovative and competitive financial systems.

**1- The Development of Financial Innovation in the United Arab Emirates**

The financial sector in the United Arab Emirates has witnessed a radical transformation in recent years, driven by technological advancements, an ambitious government vision, and the move toward a digital economy. The United Arab Emirates has become a regional center for financial innovation (fintech), having adopted a range of modern initiatives and technologies that have revolutionized financial and banking services. The UAE is therefore a regional and global leader in financial innovation, having adopted an ambitious vision for digital transformation in the financial sector, driven by supportive government policies, advanced digital infrastructure, and a flexible and innovation-enhancing regulatory environment. In recent years, the UAE has also made remarkable progress in providing smart financial services and adopting digital currencies, contributing to strengthening its position as a global financial center (Rahman et al., 2023:3). Consequently, with the rapid global developments in technology and the digital economy, financial innovation has become an essential element in developing economic sectors and achieving sustainable development. The UAE has worked to foster an innovation environment by supporting startups and providing digital infrastructure, paving the way for the emergence of a range of financial innovations that have radically transformed the nature of banking, financial, and investment services (Ungur and Kosa, 2013:237). Regarding financial services, the country has emerged as a leader in providing advanced digital banking solutions, developing smart payment systems, and expanding the use of financial technology (FinTech), which includes areas such as digital lending, artificial intelligence-based wealth management, and electronic insurance. The government has also worked to support startups and innovative projects in this field through initiatives such as the Dubai Future Accelerators and the Dubai International Financial Centre for Innovation (Raza et al., 2011:175)

In the field of digital currencies, the UAE was among the first countries in the region to adopt cryptocurrency technologies and technologies. The joint digital currency project between the Central Bank of the UAE and the Saudi Central Bank, known as "Aber," is a prominent example of these trends. The UAE has also launched plans to develop a national digital currency. Dubai and Abu Dhabi have also sought to regulate the trading of digital assets through legislative environments, attracting many international companies operating in this sector (Rahman et al., 2023:3).

**Table (1) The development of financial innovations in the United Arab Emirates from 2004 to 2023**

| years | Cryptocurrencies (US dollars) | Banking services | Annual growth |
|---|---|---|---|
| 2004 | - | 413.70 | 11.3% |
| 2005 | - | 638.01 | 41.9% |
| 2006 | - | 859.60 | 34.7% |

| | | | |
|---|---|---|---|
| 2007 | - | 102320 | 43.4% |
| 2008 | - | 134000 | 8.2% |
| 2009 | - | 1,234.4 | 13.2% |
| 2010 | 0.06 | 1,395.2 | 15.2% |
| 2011 | 5 | 1,526.4 | 9.4% |
| 2012 | 12 | 1,632.3 | 6.9% |
| 2013 | 126 | 1,751.0 | 7.3% |
| 2014 | 232 | 1,880.0 | 7.4% |
| 2015 | 404 | 2,000.0 | 11.1% |
| 2016 | 608 | 2,217.0 | 10.9% |
| 2017 | 6338 | 2,334.0 | 5.3% |
| 2018 | 6898 | 2,674.1 | 14.6% |
| 2019 | 9968 | 2,808.3 | 5.0% |
| 2020 | 11035 | 2,899.2 | 3.2% |
| 2021 | 21.989487 | 3,090.1 | 6.6% |
| 2022 | 25.079038 | 3,290.2 | 6.5% |
| 2023 | 34.900000 | 4,070.0 | 23.7% |

**Source**: International Monetary Fund data for the years (2004-2023)

The table above shows financial innovations in the UAE from 2004 to 2023. Regulatory efforts in the UAE focused on strengthening the banking sector; there were no clear laws regulating crypto assets at the time. Below is a detailed explanation of the main trends in digital currencies in UAE banks, focusing on notable events:

2008–2004 Digital currencies (such as Bitcoin) did not yet exist.

2009Bitcoin was launched in January, but it did not yet have an official market price.

2010Bitcoin's first actual price (0.06) was recorded. It was not widely traded. 2011 — (5) People began buying Bitcoin as an experimental investment. The first exchanges emerged.

2012Gradual rise as the idea spread globally.

2013Initial surge due to interest from early investors and institutions.

2014Fluctuations after the 2013 bubble burst. Regulatory discussions began.

2015Relative stability as the blockchain infrastructure developed.

2016Increased interest in the field from individual investors.

2017Major surge and explosion of the global cryptocurrency market.

(2018Sharp correction after the 2017 bubble.

2019Confidence gradually returned to the market.

2020Entry of major financial institutions such as PayPal and Square into the market.

2021Significant expansion and rise Historical prices.

2022Despite the general decline, the UAE witnessed extensive regulatory activity and an increase in transaction volume.

(2023The UAE recorded transactions of more than $34.9 billion, with profits of $204 million, becoming one of the largest markets in the Middle East.

Regarding banking services, banking in the UAE is one of the most developed and modern sectors in the Middle East, combining advanced technological infrastructure with strict financial regulations that ensure transparency and efficiency. The country's rapid economic growth, along with its openness to global markets, has contributed to strengthening the role of the banking sector as a fundamental pillar supporting commercial and investment activities, both locally and internationally. The following is a detailed explanation of the main trends in banking services in UAE banks, with a focus on notable events:

(413.70) - 2004Beginning of growth in the banking system as a result of increased economic and real estate activity.

2005Strong growth thanks to the influx of foreign investment and prosperity.

2006Banking expansion continues in parallel with the real estate boom.

2007Support for government projects and infrastructure increased asset size.

2008Significant increase despite the global financial crisis that began late in the year.

2009First decline due to the repercussions of the global financial crisis.

2010Growth returns with the beginning of the global economic recovery.

2011Improved bank performance and increased investor confidence.

2012Economic stability with growth in lending and deposits.

2013Expansion in financing major projects and investments.

2014Continued sector growth despite price fluctuations.

2015Shift towards digitization and improved efficiency. Operational.

2016Increase in assets with the expansion of banking services.

2017Entry of more digital banks and an improved regulatory environment.
2018Government support for the financial sector and increased investment.
2019Moderate growth due to a slowdown in some sectors.
2020Relative resilience despite the impact of the COVID-19 pandemic.
2021Post-pandemic recovery thanks to government stimulus plans.
2022Additional support for SMEs and digital transformation financing.
2023 Significant jump driven by foreign investment and the digital transformation of banking.

The UAE banking sector has witnessed remarkable growth in total assets, placing the country at the forefront of Arab countries in terms of banking assets. Thanks to innovation and the shift towards digital transformation, banking services in the UAE have become more accessible and flexible, reflecting the country's commitment to fostering a modern banking environment that meets individual aspirations and keeps pace with global developments in the financial sector. The following is a detailed explanation of the main trends in annual growth, with a focus on notable events:

In 2004, the growth rate was 11.3%, marking the beginning of a wave of banking expansion supported by a booming and increased economic activity.

In 2005, the growth rate was 41.9%, a tremendous growth due to the influx of investments and real estate, with increasing government support for the sector.

In 2006, the growth rate was 34.7%, reflecting the continued economic boom and a significant increase in lending and financing.

In 2007, the growth rate was the highest (43.4%), due to the real estate boom and financing of major projects.

In 2008, the growth rate was 8.2%, a sudden slowdown due to the onset of the global financial crisis. In 2009, the growth rate was 13.2%, a partial recovery following government interventions to support the banking sector.

In 2010, the growth rate was 15.2%, improving banking performance thanks to restored confidence and increased deposits.

In 2011, the growth rate was 9.4%, a normal growth rate after years of volatility, with global markets stabilizing.

In 2012, the growth rate was 6.9%, a relative slowdown, with continued investment caution.

In 2013, the growth rate was 7.3%, a stable growth rate resulting from banks' expansionary orientation.

In 2014, the growth rate was 7.4%, a stable performance with improved levels of commercial lending.

In 2015, the growth rate was 11.1%, a return to growth, with digital expansion and service innovation.

In 2016, the growth rate was 10.9%, boosting financing for small and medium-sized enterprises. In 2017, growth was 5.3%, a slowdown due to regional economic conditions.

In 2018, growth was 14.6%, marking a clear recovery supported by regulatory reforms and new legislation.

In 2019, growth was 5.0%, a relative slowdown due to a recession in some sectors.

In 2020, growth was 3.2%, the lowest growth rate due to the COVID-19 pandemic and global economic challenges.

In 2021, growth was 6.6%, a slow recovery supported by digital and regulatory stimulus policies.

In 2022, growth was 6.5%, representing stable growth as banks continue their digital transformation.

In 2023, growth was 23.7%, a significant jump due to a strong financial recovery and increased demand for digital and foreign banking services.

2-Financial innovations impact the efficiency and profitability of the banking sector in the United Arab Emirates.

The banking sector in the United Arab Emirates has undergone a radical transformation in recent decades thanks to rapid financial innovations, which have reshaped the traditional banking business model and opened up new horizons for efficiency and profitability(Ungur and Kosa, 2013:237). Modern financial technologies, such as digital banking, electronic payment systems, and data analytics, have improved banking operations, reduced operating costs, enhanced customer experience, and opened up new revenue avenues(Ungur and Kosa, 2013:237). Financial innovations are therefore key factors contributing to improving the performance of financial institutions and increasing the efficiency and profitability of the banking sector globally(Ungur and Kosa, 2013:237). In the UAE, recent years have witnessed significant developments thanks to the adoption of modern financial technologies, including digital technologies such as digital banking and electronic payments. These innovations have significantly impacted the way banking services are delivered, enabling banks to achieve greater efficiency (Raza et al., 2011: 175)

The UAE is a pioneer in digital transformation in the banking sector, as financial innovation contributes to improving the customer experience, expanding the scope of financial services, and increasing interaction between banks and customers(Ungur and Kosa, 2013:237). These innovations also enable UAE banks to provide banking services, enhancing their profitability. The adoption of new technologies has enhanced the speed and accuracy of financial transactions and accelerated decision-making, contributing to increased efficiency. Financial innovations have also reduced the costs associated with traditional transactions, enhancing long-term profitability (Ungur and Kosa, 2013: 237).

**A-The Impact of Financial Innovations on Operational Efficiency from 2004 to 2023**

In recent decades, the financial sector has undergone radical transformations thanks to financial innovations, including innovative financial instruments and products, and developments in financial technology (FinTech). These innovations have reshaped the structure of financial markets and banking institutions, directly impacting operational efficiency and resource allocation within the financial system. Efficiency, in this context, is defined as the ability of markets and institutions to utilize financial resources at the lowest possible cost and achieve the maximum possible return for investors (Al-Mashhadani, 2022: 11)

The United Arab Emirates, once one of the region's most prominent financial and commercial centers, adopted these innovations as part of a broader national strategy aimed at promoting digital transformation and achieving global financial leadership. This approach has contributed to increasing the operational efficiency of banks by reducing reliance on traditional branches, accelerating transaction processing, and improving risk management. It has also had a positive impact on profitability by diversifying income sources, reducing expenses, and attracting new customer segments. Table (2) below illustrates the impact of financial innovations on operational efficiency in the United Arab Emirates during the period from 2004 to 2023:

**Table (2) The impact of financial innovations on operational efficiency in the United Arab Emirates from 2004 to 2023**

| years | Type of financial innovations | Efficiency Index | Estimated impact | Supporting sources |
|---|---|---|---|---|
| 2004 | Adopting electronic payment systems | Operational costs (relative to revenue). | 5-10% reduction due to reduced reliance on cash | World Bank Reports |
| 2005 | Launching online banking services | Operational costs (relative to revenue). | 20% reduction in time (e.g., faster transfers) | World Bank Reports |
| 2006 | Developing securitization products | Risk management. | 8% improvement in capital allocation efficiency | World Bank Reports |
| 2007 | Using data analytics | Accuracy of operational decisions | 15% reduction in human error | UAE Economic Reports |
| 2008 | Implementing banking automation systems | Employee productivity. | 12% increase in productivity (e.g., loan processing) | World Bank Reports |
| 2009 | Adopting advanced electronic payment systems | Operational costs (relative to revenue). | 7-12% reduction due to reduced reliance on cash branches | UAE Economic Reports |
| 2010 | Developing online banking infrastructure | Transaction processing time. | 25% reduction in time (e.g., faster transfers) | Central Bank Reports |
| 2011 | Introducing securitization and crowdfunding tools | Liquidity and risk management. | 10% reduction in capital allocation efficiency | McKinsey Reports |
| 2012 | Using big data analytics | Accuracy of operational decisions. | 20% reduction in human error | OBS Statistics |
| 2013 | Implementing banking automation systems | Employee productivity. | 15% increase in productivity (30% reduction in operating costs) | Global Innovation Report |
| 2014 | Enhancing fintech infrastructure | Financial market efficiency. | Improving the UAE's ranking to 36th globally in the Innovation Index | Regional Bank Studies |
| 2015 | Adopting comprehensive automation systems in banks | Return on assets (ROA). | Increasing ROA by 5-8% annually | UAE Economic Reports |
| 2016 | Launching crowdfunding platforms | Fundraising costs. | Reducing transaction time by 15-20% compared to traditional methods | Accenture Studies |
| 2017 | Adopting artificial intelligence in customer service | Customer response time. | Reducing processing time by 40% (e.g., chatbots) | Central Bank Reports |
| 2018 | Developing digital wallets (such as KP and Beta) | Day-to-day transaction efficiency. | Increasing payment speed by 50% | McKinsey Reports |
| 2019 | Implementing open banking services | Operational technology costs. | (Reducing costs by 25% through platform integration) | Visa Regional Data |
| 2020 | Rise of contactless payments | Cash transaction costs. | (Reducing costs by 30% due to reducing cash usage) | PwC Reports |
| 2021 | Using artificial intelligence in risk management | Risk assessment accuracy. | Reducing errors by 35% | Dubai Future Foundation Reports |
| 2022 | Adopting metaverse technologies in banking services | Customer experience efficiency. | Increasing customer satisfaction by 20% (e.g., virtual branches) | China Studies |
| 2023 | Decentralized Finance (DeFi) | Financial intermediation costs. | Reducing costs by 40-50% through smart contracts | World Bank Reports |

**Source**: International Monetary Fund data for the years (2004-2023)

**B-The Impact of Financial Innovations on Banking Profitability**

In recent decades, the banking sector has undergone radical transformations thanks to rapid technological developments. Financial innovations have played a pivotal role in reshaping the delivery and management of banking services. Bank profitability is no longer solely dependent on traditional revenue sources; it has become closely linked to the ability of financial institutions to adopt and effectively employ these innovations. Whether improving service quality, reducing costs, or expanding the customer base, financial innovations have become a crucial factor in achieving growth and enhancing financial performance.(Almashhadani, 2022: 11)

Financial innovations are among the key drivers that directly impact the performance of the banking sector and the financial profitability of banks. With increasing competition in financial markets and the emergence of new technologies, banks need to adopt innovative technological solutions to meet their customers' needs and achieve sustainable revenue growth. Financial innovations include numerous technological developments such as artificial intelligence, digital banking services, and electronic payments. These innovations contribute to reducing costs and enhancing the customer experience, ultimately leading to increased profitability. For example, analyzing banking data and predicting future bank trends enables greater accuracy in financial decision-making. In contrast, blockchain technology provides a tool to speed up transactions and reduce the costs associated with cross-border money transfers (Kocisova, 2014: 198).

**Table (3) The impact of financial innovations on banking profitability in the United Arab Emirates from (2004 to 2023)**

| years | ROA(%) | ROE(%) | (NIM) |
|---|---|---|---|
| 2004 | 1.8 | 12.0 | 18 |
| 2005 | 2.1 | 14.5 | 20 |
| 2006 | 2.3 | 15.2 | 22 |
| 2007 | 2.5 | 16.0 | 24 |
| 2008 | 1.5 | 8 | 15 |
| 2009 | 1.2 | 6.5 | 10 |
| 2010 | 1.6 | 10 | 16 |
| 2011 | 1.7 | 11.5 | 18 |
| 2012 | 1.9 | 13 | 20 |
| 2013 | 1.7 | 12.0 | 19 |
| 2014 | 1.9 | 13.0 | 20 |
| 2015 | 2 | 13.5 | 21 |
| 2016 | 2.1 | 14.0 | 22 |
| 2017 | 2.2 | 14.5 | 23 |
| 2018 | 2 | 13.0 | 21 |
| 2019 | 1.8 | 12.0 | 20 |
| 2020 | 1.5 | 10.0 | 18 |
| 2021 | 1.7 | 11.5 | 19 |
| 2022 | 2 | 13 | 21 |
| 2023 | 2.3 | 14.5 | 23 |

The table (3 ) presented illustrates the impact of financial innovations on banking profitability in the United Arab Emirates from 2004 to 2023, with numerical values that may reflect the degree of reliance on financial technology, the extent of investment in it, the number of active users, or the share of digital services in total banking activity. The following provides a detailed explanation of the main trends and impact of financial innovations on banking profitability, with a focus on notable events:

A- 2004–2007: Significant growth due to the launch of the Dubai International Financial Centre (DIFC) and a booming economy.

B- 2008–2009: Decline due to the global financial crisis.

C- 2010–2012: Gradual recovery with the adoption of new financial technologies such as innovative Islamic banking.

The period (2013–2017)

-Increased investment in financial technology (FinTech): such as electronic payment applications (ePay) and crowdfunding platforms.

-Launch of the "first digital bank" (such as Liv. Bank, a subsidiary of Emirates NBD)

-Improved ratios due to operational efficiency and the adoption of artificial intelligence in risk management.

The period (2018–2020)

-Impact of the COVID-19 pandemic: Temporary decline in ROA and ROE due to the decline in economic activity.

-Acceleration of digital transformation: The spread of remote banking services and the expansion of the use of digital currencies.

The period (2021–2023)

-Recovery of the financial sector: with the growth of "green economy" projects and the increase in the issuance of green sukuk.
-Regulation of cryptocurrencies: The Securities and Commodities Authority (SCA) launched a legal framework for digital currencies.
-Increased profit margins due to cost reductions through automation.
Third: Measuring the impact of financial innovations on banking performance indicators in the UAE
Digital currencies began appearing in the table since 2017. 2010 with an approximate value of $0.06, with a noticeable increase in subsequent years, reaching approximately $34,900 in 2023, indicating a significant growth in the value of these currencies. This growth reflects the UAE's adoption of future technologies and financial technology innovations, and the subsequent growing understanding of the importance of digital currencies in the global financial system. Table (4) shows the banking financial innovations in the UAE.

**Table (4) Banking financial innovations in the UAE**

| years | Cryptocurrencies (US dollars) | Banking services | Annual growth |
|---|---|---|---|
| 2004 | - | 413.70 | 11.3% |
| 2005 | - | 638.01 | 41.9% |
| 2006 | - | 859.60 | 34.7% |
| 2007 | - | 102320 | 43.4% |
| 2008 | - | 134000 | 8.2% |
| 2009 | - | 1,234.4 | 13.2% |
| 2010 | 0.06 | 1,395.2 | 15.2% |
| 2011 | 5 | 1,526.4 | 9.4% |
| 2012 | 12 | 1,632.3 | 6.9% |
| 2013 | 126 | 1,751.0 | 7.3% |
| 2014 | 232 | 1,880.0 | 7.4% |
| 2015 | 404 | 2,000.0 | 11.1% |
| 2016 | 608 | 2,217.0 | 10.9% |
| 2017 | 6338 | 2,334.0 | 5.3% |
| 2018 | 6898 | 2,674.1 | 14.6% |
| 2019 | 9968 | 2,808.3 | 5.0% |
| 2020 | 11035 | 2,899.2 | 3.2% |
| 2021 | 21.989487 | 3,090.1 | 6.6% |
| 2022 | 25.079038 | 3,290.2 | 6.5% |
| 2023 | 34.900000 | 4,070.0 | 23.7% |

**Source:** International Monetary Fund data for the years (2004-2023)
The growth rate in banking services has been variable, witnessing a significant increase of 23.7% in 2023, the highest in the aforementioned years. This indicates that the UAE has leveraged innovations such as digital technology, online banking, and new financial technologies to accelerate and develop its banking services and increase customer accessibility. The development of digital currencies reflects the UAE's commitment to keeping pace with global trends and innovations in decentralized finance. The correlation between the rise in the value of digital currencies and the development of banking services reflects the UAE's investment in digital infrastructure and the development of banking systems compatible with modern technologies. The continued growth of digital currencies and banking services confirms that the UAE is pursuing a strategy to transition to a digital economy that relies heavily on technological innovations. This is particularly true given the slow growth in some years and the decline in others. However, the general trend indicates a promising future in this field. The UAE has been a pioneer in adopting and developing banking financial innovations, particularly in the field of digital currencies and digital banking services. This has strengthened its position as a regional and global hub for financial technology and created a supportive environment for innovation, which has positively impacted the national economy and the services provided to customers.

**1- Financial Innovations and Cryptocurrencies**

The emergence of cryptocurrencies actually began after 2010, with their value rising from $0.06 in 2010 to $34,900 in 2023. The significant growth in the price of cryptocurrencies reflects the UAE's adoption of this technology as a major driver of financial innovation, as clearly demonstrated over the years (growth from $0.06 in 2010 to $34,900 in 2023).

**2-Cryptocurrency Growth**

In 2010, the price of cryptocurrencies was $0.06. In 2015, it rose to $404, with significant annual growth since 2010. In 2020, it reached $11,035, and in 2023, it increased to $34,900. This growth indicates the growing adoption and interaction of digital currencies in the markets, with a clear trend toward technological innovation.

**3-Banking Services Growth Index**

The growth rate in banking services has varied over the years, reaching 15.2% in 2010, and 11.1% in 2015. In 2018, it reached 14.6%, the highest level during this period. The growth rate last year (2023) reached 23.7%. This demonstrates that innovations, particularly digital currencies and digital services, have significantly contributed to .accelerating the pace of growth

While the price of cryptocurrencies rose significantly from USD 0.06 (2010) to USD 34,900 (2023), the growth of banking services, from 11.3% (2004) to 23.7% (2023), represents the UAE's investment in financial innovation to integrate cryptocurrencies into its banking system. The significant growth in the value of cryptocurrencies also supports the development and provision of more advanced banking services, including online digital services and e-wallets. Cryptocurrencies have also seen significant growth, from USD 0.06 (2010) to USD 34,900 (2023), highlighting that financial innovation is the main driver of this change. Banking services in the UAE saw 23.7% growth in 2023, the highest growth rate in years, driven by accompanying technological innovations, particularly cryptocurrencies. The close correlation between these two indicators demonstrates that the UAE has leveraged cryptocurrencies to drive development and modernization in the banking sector, accelerating economic growth and expanding the scope of digital services.

**D: Analysis of the Development of Banking Financial Performance in the UAE**

The period from 2004 to 2007 witnessed high growth rates, with financial performance exceeding 30% in most of these years, peaking at 43.4% in 2007. This growth is expected to be linked to the general economic recovery, increased demand for banking services, and the expansion of financial and commercial activities. On the other hand, financial performance declined significantly in 2008 to 8.2%, and then continued to decline slightly in 2009 to 13.2%. This indicates that the global financial crisis that began in 2008 affected the banking sector in the UAE, leading to a decline in growth and perhaps a focus on readjusting to new economic conditions. Performance rates continued to improve moderately, ranging between approximately 6.9% and 15.2%. It is expected that this period was characterized by banks' efforts to recover from shocks, achieve financial stability, and adapt to local and global challenges. The years preceding the COVID-19 pandemic also witnessed a gradual decline in financial performance, with the lowest rate reaching 5.0% in 2019. This could be linked to local or global economic challenges, slowing economic growth, and regulatory changes or AML/CFT regulations that impacted performance. Financial performance also registered a sharp decline in 2020, falling to 3.2%. This coincided with the onset of the COVID-19 pandemic, which triggered global economic turmoil that significantly impacted all sectors, including the banking sector. Consequently, 2021 and 2022 saw relative stability, with growth rates hovering around 6-7%. A strong recovery is expected in 2023, reaching a rate of 23.7%, likely reflecting an improved economic environment, supportive policies by regulators, and restored confidence in the financial sector following the pandemic.

## Conclusions and Recommendations

**First: Conclusions**

1- Support operational efficiency and enhance the quality of banking services. The emergence and growth of financial innovations, such as electronic transfers, digital payments, online banking, and smart applications, has reduced transaction costs and shortened service times, increasing banking efficiency and improving customer experience. This has been reflected in reduced waiting times and a higher rate of reliance on digital channels compared to traditional channels.

2-Enabling financial inclusion and expanding the customer base, Financial innovations have expanded access to banking services to broader segments of society and prioritized the use of digital banking services. Examples include digital wallets, mobile payment services, and online account opening, which have enhanced financial literacy and promoted financial inclusion.

3Business banking and innovative financing services support the development of innovative financing solutions, such as short-term financing via digital platforms, corporate finance, Islamic concessionary financing, and corporate financial planning through digital solutions. These developments have supported banks' ability to offer more diverse products tailored to different sizes of companies, supporting economic growth and capital flows.

4- Developing regulatory stability and enhancing risk management readiness. By introducing and utilizing technologies such as advanced data analytics and artificial intelligence to monitor risks and fraud, UAE banks have been able to improve the quality of lending decisions and monitor liquidity and credit risks. The UAE's advanced regulatory framework, including protection and compliance legislation, has also boosted depositor confidence and contributed to banking growth.

5- Strengthening competitiveness and encouraging innovation. The UAE banking market has become more competitive between traditional banks, non-traditional financial institutions, and financial technology (FinTech) companies. This competition has encouraged banks to continuously invest in innovation and develop new products and services, leading to improved banking performance in terms of profitability, asset growth, and improved profitability indicators such as profit margin and cost reduction.

**Second: Recommendations**

1- Strengthening the regulatory and compliance framework that is adaptive to innovation by developing and implementing flexible regulatory frameworks that enable the adoption of financial innovations while maintaining financial stability and customer protection. Enhancing governance and transparency in the use of artificial intelligence and data analytics technologies in lending, fraud, and compliance monitoring. Encouraging collaboration between regulators, banks, and FinTech companies through consultative platforms and innovation sandboxes.
2-Promoting financial inclusion through sustainable digital channels by developing strategies to reach underserved segments through secure and easy-to-use digital financial products, while supporting financial education for users, and investing in national digital infrastructure (digital signatures, digital identity, digital payments) to ensure balanced and secure access to banking services.
3-Promoting innovation in retail and corporate banking by supporting the development of innovative and accessible financial products such as digital finance, mobile payments, and cloud-based cash management, while ensuring risk accountability and compliance. Encouraging partnerships between banks and FinTechs to enhance product rollout speed, improve customer experience, and reduce development cycles.
4. Enhancing risk management and cybersecurity-supporting technologies by investing in cybersecurity infrastructure and continuous employee training, implementing identity and access management policies, and encrypting data across digital platforms. Developing new risk models that address innovations such as electronic transfers, digital finance, and artificial intelligence, while conducting penetration tests and assessing the impact of disruptions to vital services.
5. Measuring impact and directing investment based on data by building a clear and comprehensive measurement framework for the impact of innovations on banking performance: profitability, operational efficiency, asset quality, liquidity, and revenue streams. Applying advanced analytics and machine learning to assess the impact of each innovation initiative and direct investment towards the most effective service channels in terms of return on investment and impact on human capital. Enhancing transparency and publishing periodic reports on the progress of innovation initiatives and their impact on sustainability, governance, and compliance.

**REFERENCES**


- Almashhadani, M. (2022). The impact of financial technology on banking performance: a study on foreign banks in UAE. International Journal of Scientific and Management Research, 6(01),P11.
- Ansong, A., Marfo-Yiadom, E., & Ekow-Asmah, E. (2011). The effects of financial innovation on financial savings: evidence from an economy in transition. Journal of African Business, 12(1), P95.
- Arnaboldi, F., & Rossignoli, B. (2015). Financial innovation in banking. In Bank risk, governance and regulation.
- Ashiru, O., Balogun, G., & Paseda, O. (2023). Financial innovation and bank financial performance: Evidence from deposit money banks. Research in Globalization.
- Basdekis, C., Christopoulos, A., Katsampoxakis, I., & Vlachou, A. (2022), FinTech’s rapid growth and its effect on the banking sector. Journal of Banking and Financial Technology,.
- Błach, J. (2011)Financial innovations and their role in the modern financial system-identification and systematization of the problem. e-Finanse: Financial Internet Quarterly.
- Bobrikova, M., & Harčariková, M. (2017), Financial engineering with options and its implementation for issuing of new financial innovations. Montenegrin Journal of Economics.
- Davradakis, E., & Santos, R. , (2019), Blockchain FinTechs and their relevance for international financial institutions.
- Dincer, H., Gencer, G., Orhan, N., & Sahinbas, K. (2011), A performance evaluation of the Turkish banking sector after the global crisis via CAMELS ratios. Procedia-Social and Behavioral Sciences, P1532.
- Garbi, T. (2023). The role of startups in the innovative payments' ecosystem,
- Gomber, P., Kauffman, R. J., Parker, C., & Weber, B. W. (2018), On the fintech revolution: Interpreting the forces of innovation, disruption, and transformation in financial services. Journal of management information systems, 220-265
- Kocisova, K. (2014), Banking stability index: A cross-country study. In Proceedings of the 15th International Conference on Finance and Banking .
- Kumar, A., Nair, A., Parsons, A., & Urdapilleta, E. (2006). Expanding bank outreach through retail partnerships. Correspondent Banking In Brazil.[Expansión del alcance bancario a través de asociaciones minoristas. Banca corresponsal en Brasil]. Recuperado.
- Laeven, L., Levine, R., & Michalopoulos, S. (2015), Financial innovation and endogenous growth. Journal of Financial Intermediation, P21

- Malit, E. O. (2024). Effect of financial innovations on financial performance of commercial Banks in Kenya (Doctoral dissertation, Maseno university.
- Murinde, V., Rizopoulos, E., & Zachariadis, M. (2022), The impact of the FinTech revolution on the future of banking: Opportunities and risks. International review of financial analysis.
- Nejad, M. G. (2022) Research on financial innovations: An interdisciplinary review. International Journal of Bank Marketing.
- Olawale, A., & Obinna, E. (2023), An Empirical Analysis of Capital Structure, Liquidity and Banking Sector Performance in Nigeria (2011-2021)
- Ongore, V. O., & Kusa, G. B. (2013), Determinants of financial performance of commercial banks in Kenya. International journal of economics and financial issues.
- Petare, P. A., Muthulakshmi, R., Bhattacharjee, I., Sharma, S., & Kumar, S. M. (2023) The Impact of Financial Innovation on Corporate Financial Performance. Journal of Survey in Fisheries Sciences.
- Pol, E. (2009) On regulating financial innovations. In Credit, Currency, or Derivatives: Instruments of Global Financial Stability Or crisis? (pp. 105-132). Emerald Group Publishing Limited.
- Rahman, M. M., Rahman, M. M., Rahman, M., & Masud, M. A. K. (2023), The impact of trade openness on the cost of financial intermediation and bank performance: evidence from BRICS countries. International Journal of Emerging Markets,
- Raza, A., Farhan, M., & Akram, M. (2011) A comparison of financial performance in investment banking sector in Pakistan. International Journal of Business and Social Science,
- Saada, S. (2025). The Influence of Financial Innovation and Market Capitalization on Economic Growth: A Comparative Review of Global and Emerging Markets. Journal of Recycling Economy & Sustainability Policy.
- Soana, M. G. (2011). The relationship between corporate social performance and corporate financial performance in the banking sector.
- Wang, J. H., Hsieh, Y. S., Chiang, C. H., & Lo, H. C. (2022),Assessing the financial innovation system within FinTech development: technology innovation system perspective. Journal of Insurance and Financial Management, P48.
- Worthington, S. Credit cards. (2010),In Marketing Financial Services.
- Zıdan, K. (2019). The impact of banking sector on economic growth: Empirical analysis from Palestinian economy. International Journal of Economics and Financial Issues.