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### Digital Banking Services and Their Role in Strengthening the Pillars of Financial Inclusion in Iraqi Banks

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**Keywords:**

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**Abstract:** This study aims to analyze the role of digital banking services in strengthening the pillars of financial inclusion in Iraqi banks. To achieve this goal, the study's problem and hypotheses must be addressed by adopting a descriptive-analytical approach to measure the level of adoption of digital banking services and their impact on financial inclusion. A checklist was also used. The results showed that Iraqi banks achieved a good level of digital adoption, with an implementation rate of 73%. Speed of implementation and compatibility emerged as the highest-performing dimensions, while convenience and benefits ranked the weakest at 50%. The results for financial inclusion also showed an implementation rate of 76%, with the diversified financial services dimension outperforming (89%) and relatively weak regulation and financial education (67%). Regression analysis confirmed the significant impact of digital banking services in enhancing financial inclusion, strengthening the regulatory framework, and financial education programs to support sustainable financial development in Iraq.

## الخدمات المصرفية الرقمية ودورها في تعزيز ركانز الشمول المالي في البنوك العراقية

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### المستخلص

تهدف هذه الدراسة إلى تحليل دور الخدمات المصرفية الرقمية في تعزيز ركانز الشمول المالي في البنوك العراقية. ولتحقيق هذا الهدف، تم تناول مشكلة الدراسة وفرضياتها من خلال اعتماد منهج وصفي تحليلي لقياس مستوى تبني الخدمات المصرفية الرقمية وتأثيرها على الشمول المالي. كما تم استخدام قائمة مرجعية. وأظهرت النتائج أن البنوك العراقية حققت مستوى جيداً من التبني الرقمي، بنسبة تطبيق بلغت 73%. وبرزت سرعة التطبيق والتوافق كأفضل الأبعاد أداءً، بينما احتلت الراحة والفوائد المرتبة الأضعف بنسبة 50%. كما أظهرت نتائج الشمول المالي نسبة تطبيق بلغت 76%، مع تفوق بُعد الخدمات المالية المتنوعة (89%)، في حين كان أداء بُعد التنظيم والتثقيف المالي ضعيفاً نسبياً (67%). وأكد تحليل الانحدار التأثير الكبير للخدمات المصرفية الرقمية في تعزيز الشمول المالي، وتقوية الإطار التنظيمي، وبرامج التثقيف المالي لدعم التنمية المالية المستدامة في العراق.

**الكلمات المفتاحية:** الخدمات المصرفية الرقمية، والشمول المالي، والبنوك العراقية.

**Introduction:** The global banking sector has witnessed rapid growth in recent years, driven by the digital revolution. Digital banking services have become an essential component of modern economic life and an effective tool for adding distinct value to customers. These services refer to conducting financial transactions electronically without visiting traditional branches. These services utilize laptops, smartphones, and various digital technologies instead of paper transactions. This transformation has reshaped the nature of banking, raised service quality, and enhanced the customer experience.

On the other hand, financial inclusion is one of the main pillars of economic development, as it aims to ensure that low-income and marginalized groups have access to appropriate financial and credit services at reasonable costs. This includes opening bank accounts, payment and transfer services, insurance, financial consulting, and other tools that enable individuals to save, invest, and achieve financial stability. High rates of financial inclusion also help expand the deposit base and enhance banks' ability to support economic activity. With the rapid development of information and communications technologies, digital finance has emerged as a key tool for reshaping the banking sector.

This is achieved by providing financial services via the internet, mobile phones, or reliable digital cards. This provides affordable, accessible, fast, and secure services. The importance of this transformation is particularly evident in developing countries, including Iraq, where banks face challenges related to expanding their customer base and enhancing financial inclusion. Hence, studying the role of digital banking services in strengthening the pillars of financial inclusion in Iraqi banks is particularly important, as it helps clarify how modern digital tools can be used to support comprehensive financial and economic development in the country.

**Previous Studies:** (Melubo & Musau, 2020) examined the impact of digital banking services on enhancing financial inclusion for women-owned businesses in Narok County, Kenya. The study targeted all 184 women-owned businesses and collected data from business owners using semi-structured questionnaires and personal interviews. The results showed that mobile banking, internet banking, and ATMs had a positive and significant impact on women-owned businesses' access to and use of financial services. The study also revealed the low use of online banking services due to limited digital literacy.

(Iwedi, 2023) This study is an empirical study that examined the impact of digital banking on financial inclusion in Nigeria during the period (2009–2021), using quarterly data extracted from the Central Bank of Nigeria's statistical bulletin. Independent variables included ATM transactions, point-of-sale (POS) transactions, online banking, and mobile banking, while financial inclusion was measured as the ratio of total deposits to GDP. The study used Granger causality testing to analyze relationships, and the results showed that digital banking significantly enhances financial inclusion in Nigeria.

(Cnaan et al, 2023) "Financial Inclusion in the Age of Digital Banking: Lessons from Rural India" is a field study examining the relationship between financial inclusion and the shift to digital transactions in rural Indian villages that have declared themselves cashless. The survey included 3,159 households across 7 states, and the results showed that financial inclusion through digital banking was weak or almost nonexistent.

(Guerra et al. 2023) "Financial Inclusion and Digital Banking in an Emerging Economy" is an empirical analysis of financial inclusion through digital banking in an emerging economy (Mexico), using national survey data and a chi-square statistical analysis. It also found that residents of rural areas and small cities benefit less from digital banking services than those in developed regions. The study emphasizes the importance of developing targeted policies to enhance financial inclusion for vulnerable groups in emerging economies.

(Shah, 2024) "Financial Inclusion and Digital Banking: Current Trends and Future Directions" is a systematic review of the role of digital banking technologies in enhancing financial inclusion during the period (2010–2024). The study sample comprised a review of 40 peer-reviewed studies selected from 150 studies after searching global databases using precise criteria. The results showed that these technologies have contributed to expanding financial access, especially for the unbanked, by facilitating savings and transfers, improving access to credit, increasing transparency, and reducing costs.

(Ahmad, 2025) The study, "Financial Inclusion: How Digital Banking Contributes to Bridging the Gap in Emerging Markets," examined the role of digital banking in promoting financial inclusion in Pakistan. The researcher used a qualitative approach through semi-structured interviews and surveys. The results showed that mobile banking, digital wallets, and electronic payment systems help bridge the financial gap by enabling low-income groups and rural residents to access basic financial services, achieve financial inclusion, and build a more equitable financial system.

(Agbeve et al, 2025) study, "A Comparative Analysis of Digital Banking and Financial Inclusion in the United States: Opportunities, Challenges, and Policy Implications," was based on secondary data, policy reports, and literature reviews. The results showed that mobile banking and digital wallets have contributed to expanding financial access and reducing reliance on physical branches, supported by federal regulatory frameworks that encouraged innovation and consumer protection. However, these efforts faced challenges, including cybersecurity, digital divides, poor internet coverage, and complex regulatory compliance requirements.

**Study Methodology:** Problem Statement: Despite notable progress in developing digital banking services in Iraqi banks, there are clear gaps in

adopting key dimensions, such as security, connectivity, convenience, and customer benefits. This may limit these services' ability to promote comprehensive and effective financial inclusion. This highlights the need to assess the availability of digital banking services and their contribution to strengthening the pillars of financial inclusion in Iraqi banks, and to identify areas requiring improvement to maximize their benefits. To address this problem, the following questions must be raised: To what extent are the dimensions of digital banking services available in Iraqi banks? Do Iraqi banks effectively implement financial inclusion? How do digital banking services affect financial inclusion?

**Objective of the Study:** This study aims to assess the level of digital banking services in Iraqi banks and analyze their role in strengthening the pillars of financial inclusion. This will be achieved by identifying the strengths and weaknesses across the various dimensions of digital services and providing recommendations to enhance financial access and improve the customer experience, thereby increasing the efficiency of financial inclusion at the national level.

**Study Hypotheses:** The study is based on two hypotheses:

Hypothesis 1: The requirements for implementing digital banking services are available in Iraqi banks.

Hypothesis 2: The prerequisites for financial inclusion are available in Iraqi banks.

Hypothesis 3: Digital banking services have a statistically significant impact on financial inclusion.

**Methodology of the study:** This study employed a descriptive-analytical method to achieve its objectives. This method is based on collecting data on the phenomenon as it is in reality, then analyzing it systematically to identify the relationships, patterns, and trends that explain it. This method was employed in two main stages. The first was a descriptive-theoretical stage that examined the concepts and intellectual approaches related to both digital banking services and the dimensions of financial inclusion, drawing on modern literature.

The second stage was an applied analytical stage that focused on studying the reality of these services in Iraqi banks, diagnosing their levels of adoption, and identifying gaps in their performance. Thus, the study combined quantitative and descriptive analysis within an integrated

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methodological framework, enabling it to present a comprehensive and accurate picture of the reality of digital banking transformation and the extent of its contribution to achieving financial inclusion in Iraq.

**Data Collection Methods:** To collect field data, a carefully prepared checklist was designed based on several sources, as detailed in Table 1. The checklist comprised two main sections representing the study variables. The first section covered digital banking services and their five dimensions: transaction speed, compatibility, connectivity, security, convenience, and benefits. The second section included the dimensions of financial inclusion: individual accessibility, financial organization, financial literacy, diversity of financial services, microfinance, and pension programs for the informal sector.

A three-tiered scale was adopted to evaluate each item in the questionnaire, with the following alternatives: fully available (3), partially available (2), and not available (1). This was done to determine the availability of digital services and financial inclusion across Iraqi banks. After data collection, averages and percentages were calculated to determine implementation levels according to clear criteria. A percentage from 0% to 33% indicated non-availability, from 34% to 67% indicated partial availability, and from 68% to 100% indicated full availability.

Table (1): Sources Used in Preparing the Checklist

Main Variable	Sub-Dimension	Researchers Adopted in Preparing the Items
Digital Banking Services	Transaction Speed	(Ozili, 2018) (Vives, 2017)
	Compatibility	(Shaikh & Karjaluto, 2015) (Alalwan et al., 2017)
	Connectivity	(Shaikh & Karjaluto, 2015) (Alalwan et al., 2017) (Gozman et al., 2018) (Mallat et al., 2009)
	Security	(Abou-Elala & El Aziz, 2017) (Alhassani & Alfarraj, 2020) (Mallat, 2007) (Fatonah et al., 2018)
	Convenience and Benefits	(Shaikh & Karjaluto, 2015) (Alalwan et al., 2017) (Choudhury & Kar, 2021)

Main Variable	Sub-Dimension	Researchers Adopted in Preparing the Items
Financial Inclusion	Individuals Capability	(Ozili, 2018) (Demirgüç-Kunt et al., 2018) (Shaikh & Karjaluoto, 2015)
	Financial Inclusion Regulation	(Arner et al., 2016) (Zetsche et al., 2017) (Philippon, 2016)
	Financial Literacy	(Lusardi & Mitchell, 2014) (Atkinson & Messy, 2012) (Klapper et al., 2013)
	Diverse Financial Services	(Ozili, 2018) (Gomber et al., 2018) (Mallat, 2007)
	Micro or Small Financing	(Zins & Weill, 2016) (Chen et al., 2010) (Gomber et al., 2018)
	Pension Programs for the Informal Sector	(World Bank, 2018) (Demirgüç-Kunt et al., 2018) (Macours & Vakis, 2010)

### Theoretical Framework

**First**, Digital Banking (Hidayat & Kassim, 2023, 43) is defined as a remote delivery channel for banking services delivered over the internet, where customers conduct transactions via bank websites on computers, whether personal or mobile devices, anytime and anywhere. (Shaikh & Amin, 2025, 11) point out that it is a transformative approach to delivering financial services via digital channels, such as mobile phones, the internet, and other digital platforms. This significantly increases the ability to enhance financial inclusion, particularly in developing regions, by providing affordable, convenient, and secure access to financial products for underserved groups. This opens up new opportunities for economic growth and development. (Pavithra & Geetha, 2021) proposed a set of factors for successfully implementing digital banking requirements, including:

1. Transaction Speed: The speed at which customers are assisted when receiving financial services. This dimension is of great importance, as resolving customer complaints quickly positively impacts their perception of the quality of the digital service, especially when the service is interrupted.

Whether a bank is experiencing a disruption or failure, the ability to recover quickly and professionally can create a very positive impression about the speed of transaction processing. This means that banks are obligated to ensure a quick and effective response from digital platforms and electronic customer service staff, and that they are fully ready to assist customers, which impacts customer satisfaction and retention. These points emphasize that transaction speed is an important factor in digital banking services (Bankuoru Egala et al., 2021, 1427).

2. **Compatibility:** Digital banking services can only be adopted if the technology is compatible with lifestyles. Compatibility is important for smartphones and digital banking, as people believe technology should fit their lifestyles. Therefore, these points emphasize that compatibility is an important factor in digital banking services (Shaikh & Amin, 2025, 14).
3. **Connectivity:** Connectivity refers to speed of access, ease of use, interface appearance, and ease of navigation. A lack of adequate connectivity can hinder customers from adopting digital banking services, suggesting that connectivity is an important factor in digital banking (Pavithra & Geetha, 2021, 1612).
4. **Security:** Security has been found to hinder the use of electronic payment systems, as it is closely linked to the decision to use them. Therefore, these points suggest that security is an important factor in digital banking.
5. **Convenience and Benefits:** Convenience and benefits are among the most prominent factors that attract customers to use digital banking services, as they provide access anytime, anywhere, while reducing costs, time, and effort. These services are characterized by their ease of use and simplicity, enabling the tracking of money flow and the control of spending and savings, making them an essential part of consumers' daily activities. Banks seek to design their websites and digital services to meet customer needs and enhance customer satisfaction, while perceived benefits, trust, and self-efficacy are among the most prominent indicators of adoption of these services (Hadid et al., 2020, 12).

**Second:** Financial inclusion (Shah, 2024, 4) is defined as the process of providing timely access to financial services and adequate credit, particularly for vulnerable groups such as low-income and marginalized individuals, at an affordable cost. Ultimately, financial inclusion goes beyond mere access to money and savings; it aims to eliminate social exclusion within the

economy. (Irum & Abbas, 2025, 76) explain that it is the availability and accessibility of financial services to all individuals and businesses, and is considered a catalyst for economic development and poverty alleviation. The World Bank confirms that approximately 2.5 billion people worldwide lack access to formal financial services, and that 75% of the poor do not use banks due to factors such as cost, distance, and accounting complexity. Financial inclusion is based on several pillars:

1. **Individual Capability:** This pillar refers to the extent to which customers can use digital financial services. This requires identifying the barriers that hinder customers' access to financial services, such as the cost of opening a bank account and the limited availability of ATMs. The presence of digital payment systems contributes to the growth of financial accounts and services, as traditional payment systems require significant infrastructure expenditures, leading to higher financial service fees (Zahran, 2025, 1000).
2. **Financial Inclusion Regulation:** There is a debate in political circles about the need to establish a global regulatory standard for financial inclusion practices, to promote uniformity and increase scrutiny and oversight of financial inclusion policies and practices adopted by policymakers across many countries (Ozili, 2021, 473).
3. **Financial Literacy:** This refers to the basic knowledge individuals have about financial services and their ability to plan their personal budgets. This is assessed through (Al-Mahdi, 2023, 298): 1- Measuring the percentage of adults who understand basic financial terms. 2- Determining the percentage of adults able to prepare their own monthly budget.
4. **Optimal use of diverse financial services:** Optimal use of financial services within the framework of financial inclusion includes providing affordable, accessible services that meet the diverse needs of the population, while accounting for the economic viability of service providers. Integrating digital financial services and accounting for demographic, cultural, ethnic, and religious diversity is essential for achieving effective financial inclusion (Ozili, 2020, 10).
5. **Microfinance:** Microfinance plays a fundamental role in promoting financial inclusion by providing financial services to disadvantaged groups, including small loans, savings, insurance, and money transfers. This enables individuals to start or expand their small businesses, manage risks, and improve their standard of living. This contributes to economic growth and

poverty reduction, and reflects the importance of integrating it into financial inclusion strategies to achieve economic development and social justice (Sonam et al., 2024, 6).

6. **Informal Sector Pension Program:** This program is a social initiative that aims to encourage informal-sector workers to participate in the social protection system by providing monthly pensions to groups not covered by formal insurance, particularly the elderly and daily-skilled workers. The program is based on the following axes (Matouk et al., 2021, 90): 1- Providing a fixed income after retirement for groups not covered by any formal insurance system, which contributes to protecting these groups from poverty and enhancing their social and livelihood stability. 2- Raising insurance and financial awareness among informal sector workers, while simplifying subscription procedures, to encourage them to join the system, especially in rural and remote areas. 3- Supporting financial inclusion efforts by linking these groups to banking services, which contributes to their integration into the formal economic system and improves their standard of living.

**The relationship between digital banking and financial inclusion:** Digital banking services enhance diversity and support financial inclusion by reducing transaction costs and providing quick access to social and economic services via mobile phones, expanding the beneficiary base, and contributing to general welfare. Its most prominent areas of impact can be summarized as follows (Boukkas & Khadrawi, 2025, 54): (Nnaomah et al., 2024):

1. **Financially empowering youth:** Financially empowering youth is fundamental to promoting financial inclusion by facilitating their access to digital banking services and providing them with the knowledge and tools to manage their financial resources, including opening digital accounts, financing, and savings, and financial awareness programs to support their economic independence.
  2. **Reducing financial fraud:** Enhancing trust in financial systems involves developing effective oversight mechanisms, improving identity verification, and increasing transaction transparency. Implementing strict legislation and early fraud-detection systems also helps protect the stability of the financial system.
  3. **Providing high-quality financial services:** Digital banking services efficiently meet the needs of individuals and customers, take into account the
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diversity of customer segments, and offer innovative solutions that expand financial inclusion and support sustainability in financial services.

4. **Affordability:** The appropriateness of the costs of maintaining a bank account, especially for low-income individuals.
5. **Transparency:** Financial inclusion requires ensuring that customers receive clear, accurate, and easily understandable information about financial services, enabling them to make informed decisions about their use.
6. **Convenience and Ease:** This indicator reflects the ease of access to financial services and the convenience of using them from the customer's perspective

**Field Framework:** This framework describes and interprets the checklist data to determine the application rates of digital banking services and financial inclusion in Iraqi banks. A checklist consisting of three scales was used (fully available: 3, partially available: 2, unavailable: 1), with an arithmetic mean of 2. This means will help us determine the application rate, as follows: 1. If the average percentage divided by the measurement score is 0-33%, this indicates that digital banking services and financial inclusion are not available in Iraqi banks. 2. If the application rate is 34%-67%, this indicates that the application of the study topic is partially available. 3. If the application rate is 68%-100%, this indicates full implementation.

**First: The Independent Variable: Analysis of the Results of Digital Banking Services:**

1. **Transaction Speed:** Table (2) shows the results of the transaction speed dimension, which scored 2.66. This result falls within the fully achieved range, as indicated by the 89% implementation rate. However, there is a 11% gap, indicating that Iraqi banks have sufficient speed to complete customer transactions but need to improve further.

Table (2) Results of the Checklist for the Transaction Speed Dimension

Factor	Source	Digital Tool	Fully Available (3)	Partially Available (2)	Not Available (1)
Transaction Speed	(Ozili, 2018) (Vives, 2017)	Digital banking platforms (websites, applications)	√		

		Electronic customer service systems (live chat, automated response)		√	
		Digital complaint management systems	√		
		Real-time malfunction monitoring tools	√		
		Remote technical support systems	√		
Frequencies			4	2	0
Score = (Frequencies × Response Scale)			12	4	0
Average = Total Score / Total Frequency			16 / 6 = 2.66		
Application Rate = Average / Highest Scale			2.66 / 3 = 0.89		
Gap Rate = 1 – Application Rate			1 – 0.89 = 0.11		

2. **Compatibility:** Table 3 shows that Iraqi banks have a 94% compatibility rate across their digital services, which is at the fully implemented level. This means that the various digital channels and platforms adopted by banks operate in harmony and at a high level of integration with each other, ensuring a unified and seamless user experience. This high level also reflects the banks' ability to standardize service and data exchange across different systems, which is an indicator of the maturity of their digital infrastructure and the efficiency of their technical operations management. The gap reached 6%. Although this gap is relatively small, it remains an important indicator of opportunities to improve digital integration and enhance consistency across all components of the digital banking system, thereby achieving a smoother, more reliable user experience.

Table (3): Results of the Digital Services Compatibility Checklist for Iraqi Banks

Factor	Source	Digital Tool	Fully Available (3)	Partially Available (2)	Not Available (1)
Compatibility	(Shaikh & Karjaluoto, 2015) (Alalwan et al., 2017)	Multi-platform mobile applications	√		
		Responsive website design	√		
		Integrated e-payment systems	√		
		Support for local languages and cultures		√	
		Integration with daily applications	√		
		Automatic periodic updates	√		
Frequencies			5	1	0
Score = (Frequencies × Response Scale)			15	2	0
Average = Total Score / Total Frequency			17 / 6 = 2.83		
Application Rate = Average / Highest Scale			2.83 / 3 = 0.94		
Gap Rate = 1 – Application Rate			1 – 0.94 = 0.06		

3. Communication: The results of Table 4 show that the availability of communication applications in Iraqi banks reached 68%, indicating a moderate level of adoption within the digital banking services system. Although this percentage reflects clear efforts to enhance digital communication channels with customers, the 32% gap indicates that these channels remain incomplete or underutilized. This gap may be due to several factors, including limited investment in modern communication technologies, weak integration across communication channels, or some banks' reliance on traditional channels without exploiting advanced capabilities such as artificial intelligence in chatbots or interactive applications.

Table (4): Results of the checklist for digital communication services in Iraqi banks

Factor	Source	Digital Tool	Fully Available (3)	Partially Available (2)	Not Available (1)	
Communication	(Shaikh & Karjaluoto, 2015; Alalwan et al., 2017; Gozman et al., 2018; Mallat et al., 2009)	High-speed Internet networks (4G/5G)		√		
		Interactive user interface design		√		
		Seamless navigation systems		√		
		Lightweight applications		√		
		Cloud services				√
		Content Delivery Networks (CDN)			√	
		Multi-channel connectivity			√	
Frequencies			0	6	1	
Score = (Frequencies × Response Scale)			0	12	1	
Average = Total Score / Total Frequency			13 / 7 = 1.85			
Application Rate = Average / Highest Scale			1.85 / 3 = 0.62			
Gap Rate = 1 - Application Rate			1 - 0.62 = 0.38			

4. Security: Table 5 shows that the security level of digital banking services in Iraqi banks reached 71%, which is considered good but not high enough to ensure comprehensive protection. This percentage indicates that banks have provided an acceptable digital security system that includes basic protection measures such as encryption, secure passwords, two-factor authentication, and monitoring systems. However, they still suffer a significant 29% gap. This gap may be due to several reasons, most notably: the lack of continuous security system updates in some banks, weak integration between old and new security systems, or limited investment in advanced cybersecurity technologies, such as artificial intelligence for early threat detection. The gap may also be related to human factors, such as poor security awareness among employees and customers or a shortage of specialized information security personnel.

Table (5) Results of the Security Checklist for Digital Services in Iraqi Banks

Factor	Source	Digital Tool	Fully Available (3)	Partially Available (2)	Not Available (1)
Security	(Abou-Elala & El Aziz, 2017; Alhassani & Alfarraj, 2020; Mallat, 2007; Fatonah et al., 2018)	Advanced encryption systems (SSL/TLS)		√	
		Two-factor authentication (2FA)		√	
		Digital signature			√
		Fraud detection systems	√		
		End-to-end encryption		√	
		Identity and Access Management (IAM)		√	
		Electronic payment security protocols (SET, 3D Secure)	√		
Frequencies			2	4	1
Score = (Frequencies × Response Scale)			6	8	1
Average = Total Score / Total Frequency			15 / 7 = 2.14		
Application Rate = Average / Highest Scale			2.14 / 3 = 0.71		
Gap Rate = 1 – Application Rate			1 – 0.71 = 0.29		

5. **Comfort and Benefits:** Table 6 shows that the level of comfort and benefits associated with using digital banking services in Iraqi banks reached only 50%. This percentage reflects a relatively average and weak level compared to the level required to provide an effective digital banking experience. This percentage indicates that approximately half of customers feel easy and flexible when using digital channels. In contrast, the other half encounters obstacles or does not realize the tangible benefits of these services. The 50% gap indicates a clear shortcoming in improving the user experience and highlighting the added value of digital banking services. This can be attributed to several factors, including the inconvenient design of some applications and websites, the lack of clarity in user interfaces, the complexity of transaction procedures, slow performance at times due to weak technical infrastructure, or the lack of awareness campaigns that highlight the benefits of using digital services compared to traditional methods.

Table (6): Results of the comfort and benefits checklist for digital services in Iraqi banks

Factor	Source	Digital Tool	Fully Available (3)	Partially Available (2)	Not Available (1)
Convenience & Benefits	(Shaikh & Karjaluo, 2015; Alalwan et al., 2017; Choudhury & Kar, 2021)	Mobile and web banking services	√		
		Instant payment and transfer systems	√		
		Expense tracking and savings tools		√	
		Simple user interfaces	√		
		Personalized dashboards		√	
		Fast response via digital channels		√	
		Personalized offers and services		√	
		Electronic customer satisfaction evaluation systems	√		
Frequencies			4	4	0
Score = (Frequencies × Response Scale)			12	8	0
Average = Total Score / Total Frequency			20 / 8 = 2.50		
Application Rate = Average / Highest Scale			2.50 / 3 = 0.83		
Gap Rate = 1 - Application Rate			1 - 0.83 = 0.17		

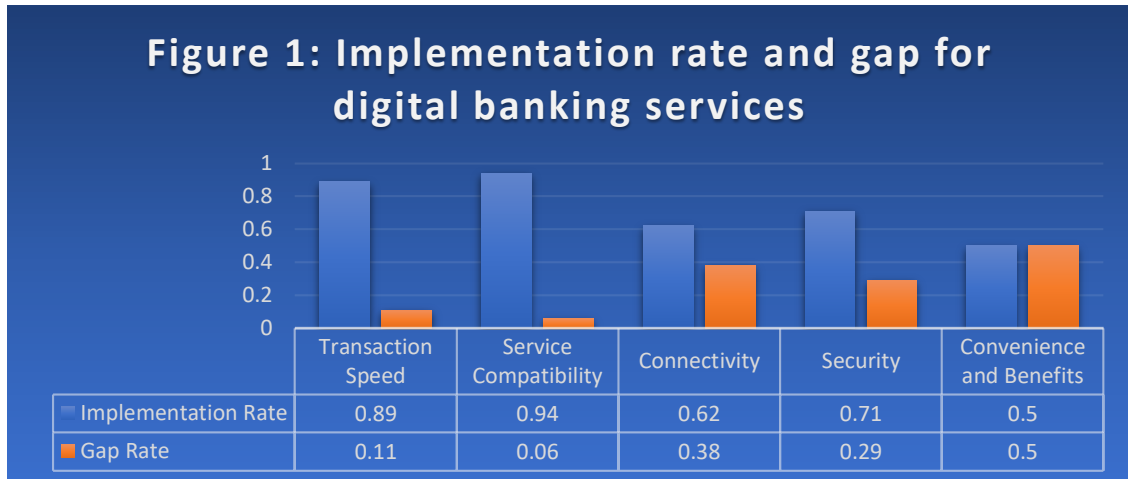
6. **General Index of Digital Banking Dimensions:** An analysis of Table 7 indicates that Iraqi banks are performing relatively well in providing digital banking services. The overall adoption rate reached 73%, with a 27% gap, reflecting strong digital adoption, though some challenges remain. Service consistency is the highest-performing dimension, with an adoption rate of 94% and a gap of only 6%. This indicates that the various digital channels and services operate in harmony, providing a unified user experience across all platforms. Conversely, the convenience and benefits dimension appears to be the least effective, with an adoption rate of 50% and a 50% gap. This indicates that only half of customers feel the ease and tangible benefits of using digital services. This gap reflects the need to improve the user experience, simplify procedures, and enhance the added value of digital services to ensure customer satisfaction and increase the efficiency of the digital banking system. Therefore, we accept the first hypothesis, which states that "Iraqi banks meet the requirements for digital banking services."

Table (7) Results of the General Index of Digital Banking Dimensions in Iraqi Banks

Dimensions of Digital Banking Services	Application Rate	Gap Rate
Transaction Speed	0.89	0.11
Service Compatibility	0.94	0.06
Connectivity	0.62	0.38
Security	0.71	0.29
Convenience & Benefits	0.50	0.50
Average	0.73	0.27

We embodied the results of Table 7 in Figure 1. The figure shows a comparison of the implementation rate versus the gap ratio for the dimensions of digital banking services in Iraqi banks:

1. The dimensions of transaction speed and service compatibility achieved the highest implementation rates (0.89 and 0.94), respectively, with small gaps (0.11 and 0.06), indicating strong performance in these two dimensions.
2. The dimensions of connectivity and security recorded medium implementation rates (0.62 and 0.71), with larger gaps (0.38 and 0.29), reflecting challenges in improving continuous connectivity and securing digital services.
3. The dimensions of convenience and benefits showed the lowest implementation rate (0.50) and the largest gap (0.50), indicating that customers have not yet achieved the best user experience or distinct benefits from digital services. Based on these results, the following improvement opportunities must be presented:
  - A. Enhancing digital connectivity by improving network infrastructure and implementing multi-channel communication technologies to reduce interruptions and increase service access speeds.
  - B. Strengthen security by adopting advanced encryption technologies, multi-factor authentication, and digital fraud detection systems.
  - C. Improve convenience and benefits by simplifying user interfaces, providing customization features, and offering additional services that enhance the customer's digital experience.
  - D. Develop integration between services to maintain high levels of compatibility and a seamless user experience across all digital touchpoints.



### Second: Analysis of Financial Inclusion Results

1. Individual Capability: The results of Table 8 indicate that the level of financial inclusion capacity among individuals working in Iraqi banks reached 75%, reflecting that the majority of employees possess the necessary skills and knowledge to support the provision of digital financial services and promote financial inclusion among customers. This percentage indicates the employees' ability to guide customers, use digital tools, and provide financial advice, contributing to the expansion of digital banking services. However, the 25% gap indicates a relative lack of certain skills or expertise among some employees. This may be related to a lack of full familiarity with modern digital technologies, limited experience in dealing with customers unfamiliar with electronic banking services, or a lack of ongoing training in financial inclusion.

Table (8): Individual Capability Results for Accessing Financial Inclusion in Iraqi Banks

Factor	Source	Digital Tool	Fully Available (3)	Partially Available (2)	Not Available (1)
Individual Capability	(Ozili, 2018; Demirgüç-Kunt et al., 2018; Shaikh & Karjaluoto, 2015)	Digital payment systems		√	
		Mobile banking applications	√		
		Smart ATMs	√		
		E-wallets			√
Frequencies			2	1	1
Score = (Frequencies × Response Scale)			6	2	1
Average = Total Score / Total Frequency			9 / 4 = 2.25		
Application Rate = Average / Highest Scale			2.25 / 3 = 0.75		
Gap Rate = 1 – Application Rate			1 – 0.75 = 0.25		

2. Financial Inclusion Regulation: The results of Table 9 indicate that the level of implementation of financial inclusion regulations in Iraqi banks reached 67%, reflecting moderate adoption of policies and procedures to expand access to financial services across various segments of society. This percentage indicates that banks have established a partial regulatory framework that guides digital operations and enhances individuals' access to financial services, such as adopting policies to facilitate account opening, adopting digital payment tools, and providing services to traditionally underserved individuals. However, the 33% gap indicates a relative shortcoming in the full implementation of financial inclusion standards. This gap may be related to incomplete internal policies, poor coordination between branches, or limited customer financial awareness and education programs. This gap may also reflect regulatory or technical challenges, such as the lack of integration of digital systems with policy requirements or the limited capacity of employees to implement new procedures effectively.

Table (9): Results of Financial Inclusion Regulation in Iraqi Banks

Factor	Source	Digital Tool	Fully Available (3)	Partially Available (2)	Not Available (1)
Financial Inclusion Regulation	(Arner, Barberis, & Buckley, 2016; Zetsche et al., 2017; Philippon, 2016)	RegTech platforms		√	
		National digital databases		√	
		Financial monitoring and analysis systems		√	
Frequencies			0	3	0
Score = (Frequencies × Response Scale)			0	6	0
Average = Total Score / Total Frequency			6 / 3 = 2.00		
Application Rate = Average / Highest Scale			2.00 / 3 = 0.67		
Gap Rate = 1 – Application Rate			1 – 0.67 = 0.33		

3. Financial Literacy: The results of Table 10 show that the level of financial literacy in Iraqi banks reached 67%, reflecting clear efforts to provide

customers with the knowledge and skills necessary to manage their financial resources effectively. This percentage indicates the presence of partial financial awareness programs, such as digital guides, educational articles, and seminars or workshops aimed at increasing customers' understanding of financial inclusion tools and services. However, the 33% gap indicates that some customers still lack adequate financial guidance or are not fully benefiting from available education programs. This may be due to limited program reach, limited digital access to educational content, or a lack of interactive campaigns that encourage customers to learn and participate. Thus, this percentage indicates a strong foundation of financial literacy. However, it also underscores the need to strengthen educational programs, expand their scope, and improve digital communication channels to ensure financial information reaches all customer segments and enhances their ability to make sound financial decisions.

Table (10): Financial Literacy Results in Iraqi Banks

Factor	Source	Digital Tool	Fully Available (3)	Partially Available (2)	Not Available (1)
Financial Literacy	(Lusardi & Mitchell, 2014; Atkinson & Messy, 2012; Klapper, Lusardi, & Panos, 2013)	E-learning platforms		√	
		Budget simulation applications		√	
		Digital financial assessment tests		√	
Frequencies			0	3	0
Score = (Frequencies × Response Scale)			0	6	0
Average = Total Score / Total Frequency			6 / 3 = 2.00		
Application Rate = Average / Highest Scale			2.00 / 3 = 0.67		
Gap Rate = 1 – Application Rate			1 – 0.67 = 0.33		

4. **Diversified Financial Services:** The results of Table 11 indicate that the availability of diverse financial services in Iraqi banks reached 89%, reflecting a high level of adoption and availability within the framework of financial inclusion. This percentage indicates that banks offer a wide range of digital financial products and services, including current and savings accounts, loans, transfers, digital payments, and e-wallets, enabling customers to access comprehensive financial services easily and effectively.

The 11% gap reflects areas that still need development, such as specialized services for certain groups or the integration of certain digital channels. Although the gap is relatively small, it indicates an opportunity to enhance integration and comprehensiveness in the provision of financial services, ensuring that all customer segments can fully benefit from the available digital products and services. This result demonstrates that Iraqi banks have been largely successful in providing diverse financial services that support financial inclusion, with limited room for improvement to ensure that services are comprehensively and effectively accessible to all segments of society.

Table (11): Results of Diversified Financial Services in Iraqi Banks

Factor	Source	Digital Tool	Fully Available (3)	Partially Available (2)	Not Available (1)
Diverse Financial Services	(Ozili, 2018; Gomber et al., 2018; Mallat, 2007)	Multi-service banking platforms	√		
		Predictive analytics		√	
		Smartphone payment systems (NFC, QR Code)	√		
Frequencies			2	1	0
Score = (Frequencies × Response Scale)			6	2	0
Average = Total Score / Total Frequency			8 / 3 = 2.66		
Application Rate = Average / Highest Scale			2.66 / 3 = 0.89		
Gap Rate = 1 – Application Rate			1 – 0.89 = 0.11		

5. Microfinance: Table 12 shows that the level of microfinance availability in Iraqi banks reached 78%, with a gap of only 22%. This reflects a good availability of financial products targeting low-income groups and small and medium-sized enterprises. This percentage indicates that banks have succeeded in providing affordable loans and financial services that enable individuals and small businesses to access the financing they need, thereby enhancing financial inclusion and providing equal opportunities for financing and economic support. However, the 22% gap indicates the presence of challenges or constraints to full access to microfinance, such as limited product awareness, complex loan procedures, or restrictions on the

geographic coverage of some branches. This result demonstrates that Iraqi banks have achieved a high level of financial inclusion through microfinance, with limited scope to improve access and effectiveness to ensure that as many individuals and small businesses as possible benefit from these financial services.

Table (12): Microfinance Results in Iraqi Banks

Factor	Source	Digital Tool	Fully Available (3)	Partially Available (2)	Not Available (1)
Micro or Small Financing	(Zins & Weill, 2016; Chen, Rasmussen, & Reille, 2010; Gomber et al., 2018)	Digital lending platforms	√		
		Alternative credit scoring systems		√	
		Digital microinsurance solutions		√	
Frequencies			1	2	0
Score = (Frequencies × Response Scale)			3	4	0
Average = Total Score / Total Frequency			7 / 3 = 2.33		
Application Rate = Average / Highest Scale			2.33 / 3 = 0.78		
Gap Rate = 1 – Application Rate			1 – 0.78 = 0.22		

6. Informal Sector Pension Program: The results of Table 13 indicate that the implementation rate of informal sector pension programs in Iraqi banks reached 78%, with a gap of only 22%, reflecting their good availability within the framework of financial inclusion. This percentage indicates that banks have begun to provide accessible financial solutions to groups working in the informal economy, such as self-employed individuals and unregistered workers, by offering digital pension programs or those linked to bank accounts, ensuring sustainable financial protection for them after retirement or in emergencies. However, the 22% gap indicates challenges or limitations in the accessibility of these programs to all potential beneficiaries, such as limited geographical coverage, limited awareness among unregistered workers, or difficulty accessing digital services in some areas. This result demonstrates that Iraqi banks have achieved a good level of provision of pension programs for the informal sector. However, they need to raise awareness, simplify procedures, and expand access to ensure that as many of

these important groups as possible benefit from comprehensive financial inclusion.

Table (13) Results of pension programs for the informal sector in Iraqi banks

Factor	Source	Digital Tool	Fully Available (3)	Partially Available (2)	Not Available (1)
Pension Programs for the Informal Sector	(World Bank, 2018; Demirgüç-Kunt et al., 2018; Macours & Vakis, 2010)	E-registration platforms		√	
		Direct payment systems for beneficiaries		√	
		Digital awareness campaigns		√	
		Integration with digital banking services			√
Frequencies			0	3	1
Score = (Frequencies × Response Scale)			0	6	1
Average = Total Score / Total Frequency			7 / 3 = 2.33		
Application Rate = Average / Highest Scale			2.33 / 3 = 0.78		
Gap Rate = 1 – Application Rate			1 – 0.78 = 0.22		

7. Analysis of the results of the general index of financial inclusion dimensions: The financial inclusion dimensions in Iraqi banks indicate that the general index reached an implementation rate of 76%, with a 24% gap. This reflects a good level of overall adoption of financial inclusion practices, though some areas need strengthening. Examining the individual dimensions, the highest-performing dimension is "Diversified Financial Services," with an implementation rate of 89% and a gap of only 11%. This reflects banks' ability to offer a wide range of financial products and services that effectively meet customer needs and enhance financial inclusion. Microfinance and informal-sector pension programs ranked second, with an implementation rate of 78% and a 22% gap, indicating tangible efforts to provide financing solutions for individuals, small businesses, and informal groups. The ability

dimension appears to be within individuals, with an implementation rate of 75% and a gap of 25%, indicating that the majority possess the basic knowledge and skills to access financial services, with a need to improve digital proficiency and financial awareness.

8. In contrast, the lowest performing dimensions are "Financial Inclusion Regulation" and "Financial Education," with an implementation rate of 67% for each, and a gap of 33%. This indicates a relative shortcoming in the implementation of comprehensive regulatory policies and financial awareness programs. It highlights the need to strengthen the regulatory framework, expand financial education programs, and improve access to services for all segments of society to ensure comprehensive and effective financial inclusion. These results provide a comprehensive picture of the success of Iraqi banks in achieving a good level of financial inclusion, with the potential to improve some dimensions to ensure comprehensive coverage and reduce the remaining gaps.

Table (14): Results of the implementation rate and gap for the overall inclusion dimensions in Iraqi banks

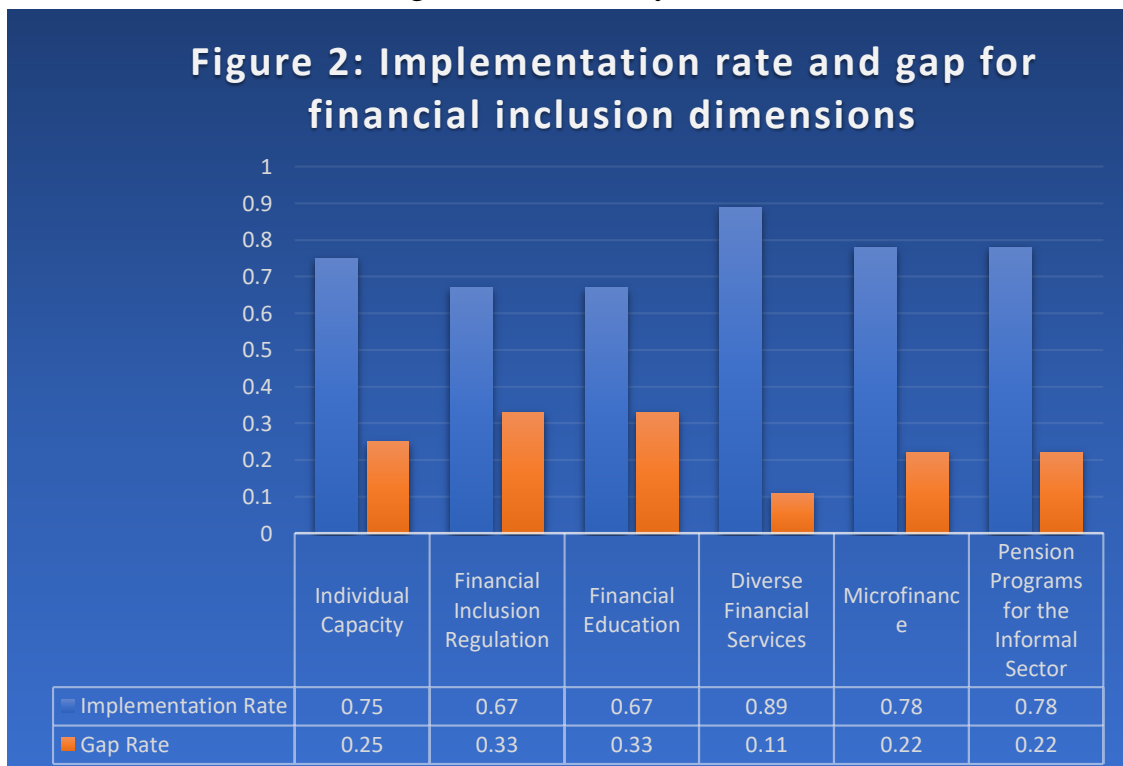
Dimensions of Financial Inclusion	Application Rate	Gap Rate
Individual Capability	0.75	0.25
Financial Inclusion Regulation	0.67	0.33
Financial Education	0.67	0.33
Diverse Financial Services	0.89	0.11
Micro or Small Financing	0.78	0.22
Pension Programs for the Informal Sector	0.78	0.22
Average	0.76	0.24

Figure 2 illustrates the implementation rate and implementation gap for the financial inclusion dimensions, as shown below:

1. Individual Capacity: The implementation rate was relatively high (0.75), with a medium gap (0.25), indicating that most programs are performing well, but there is still room to enhance individual capacity.
2. Financial Regulation for Financial Inclusion: The implementation rate was slightly lower (0.67), and the gap was larger (0.33), indicating the need to improve the regulatory framework to support financial inclusion. Meanwhile, Financial Education achieved the same level as financial

regulation, with a gap of 0.33, indicating the need to strengthen financial education programs to reach all segments.

3. Diversified Financial Services: The highest among the dimensions, with an implementation rate of 0.89 and a low gap of 0.11, indicating significant success in providing diverse financial services with minimal gaps.
4. Microfinance: The implementation rate was 0.78, and the gap was 0.22, demonstrating good progress, but it needs to be strengthened to achieve universal access. The implementation rate of retirement programs for the informal sector was 0.78, with a gap of 0.22, indicating that these programs exist but do not fully cover everyone. In light of these results, the following improvement opportunities must be identified:
  - a- Strengthening the regulatory framework and financial education to reduce gaps.
  - b- Expanding access to microfinance and retirement programs for the informal sector.
  - c- Maintaining the success of diversified financial services and expanding their reach to include broader segments of society.



### **The Relationship Between Digital Banking and Financial Inclusion:**

Table 15 shows that digital banking has a positive impact on financial inclusion ( $\beta = 0.44$ ). This means that a one-unit increase in digital banking

services will increase financial inclusion by 44%. This is a significant value, given the R<sup>2</sup> of 0.57, which explains the variance in financial inclusion and is a good indicator of the overall impact of digital services on it. The F value of 18.34 indicates that the regression model as a whole is statistically significant, and the P value of 0.001 indicates that the relationship between digital banking services and financial inclusion is strongly significant at the 99.9% confidence level. This supports the hypothesis that digital banking services effectively enhance the pillars of financial inclusion in Iraqi banks. Therefore, the third hypothesis is accepted.

Table (15): The Relationship Between the Two Variables

Variables	Digital banking services			
	R <sup>2</sup>	$\beta$	F	P
Financial Inclusion	0.52	0.44	18.34	0.001

**Discussion of the Results:** The study results indicate that Iraqi banks are performing relatively well in adopting digital banking services. The overall index reached 73%, with a 27% gap. This reflects a good level of digital adoption, though some challenges remain to improve the customer experience and enhance utilization of these services. The analysis of individual dimensions shows that service consistency reaches 94% and a 6% gap, indicating that digital services operate harmoniously across all channels and provide a consistent user experience. Transaction speed at 89% and a 11% gap reflect the strength of performance in facilitating digital banking procedures and achieving operational efficiency. Connectivity at 62% and a 38% gap, and security at 71% and a 29% gap, demonstrate challenges in maintaining communication continuity and securing digital transactions. Comfort and benefits represent the lowest performance level at 50% and a 50% gap, indicating that customers have not yet received the best possible user experience and distinct benefits from digital services. Accordingly, the first hypothesis can be accepted, which states that Iraqi banks meet the requirements for digital banking services, while indicating areas for improvement. As for the dimensions of financial inclusion in Iraqi banks, the general index reached 76%, with a 24% gap, indicating a good level of adoption of financial inclusion practices, though some areas need strengthening. An analysis of the individual dimensions shows that diversified financial services achieve the highest performance at 89%, with a 11% gap, reflecting banks' ability to offer multiple financial products that

meet customers' diverse needs and enhance financial inclusion. This is followed by microfinance efforts and informal-sector pension programs at 78%, with a 22% gap, which provide financing solutions for small and informal groups. The individual capacity dimension, at 75% with a 25% gap, indicates that individuals possess the basic skills to access financial services, but need to improve digital efficiency and financial awareness. Meanwhile, the financial inclusion and financial education dimension shows the lowest performance at 67% and a 33% gap, reflecting a relative shortcoming in regulatory policies and financial awareness programs and highlighting the need to strengthen the regulatory framework and expand financial education programs to ensure comprehensive and effective financial inclusion. Accordingly, the second hypothesis related to the availability of practices can be accepted. Financial inclusion. These results present a positive picture of the level of digital banking services and financial inclusion in Iraqi banks, with specific gaps that warrant focusing on the least-performing dimensions to enhance the effectiveness and efficiency of digital financial services and ensure broader, more sustainable financial inclusion.

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