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The Reality of Electronic Banking and Financial Technology in Light of Global Digital Transformation: An Analysis of Indicators (2020–2025)

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Abstract:
The rapid advancement of information and communication technologies has significantly transformed the financial sector. Financial technology (FinTech) has emerged as a key driver of innovation, reshaping traditional financial services and enabling more efficient, accessible, and cost-effective financial solutions. This study examines the reality of modern financial technologies and their role in improving financial service delivery through digital banking, electronic payment systems, mobile financial applications, blockchain technology, and artificial intelligence. These technologies contribute to enhancing operational efficiency, accelerating financial transactions, and promoting financial inclusion by expanding access to financial services. However, the widespread adoption of FinTech also raises several challenges, including cybersecurity risks, data protection issues, and the need for appropriate regulatory frameworks. Therefore, achieving a balance between technological innovation and effective financial regulation is essential to ensure financial stability and sustainable development within the evolving digital financial environment.

Keywords: Financial Technology (FinTech), Digital Transformation, Digital Banking, Electronic Payments, Cybersecurity.

JEL Classification: E42 ،E40, G21, G23, O33, L86

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1. Introduction:

In recent decades, the financial services sector has undergone profound transformations due to rapid technological advancements and the emergence of modern financial technologies (FinTech), which have redefined the way financial services are delivered and utilized. Individuals and businesses can now conduct payments, obtain loans, manage investments, and even trade digital currencies through advanced digital platforms, offering speed, efficiency, and reduced operational costs compared to traditional models. Moreover, FinTech has significantly contributed to financial inclusion, enabling marginalized populations to access services that were previously limited or inaccessible, while also providing innovative tools for financial data analysis and investment decision-making. Despite these opportunities, the rapid expansion of modern financial technologies presents a range of challenges and risks, including consumer protection concerns, cybersecurity threats, and financial system stability issues. Regulatory frameworks and legal protections have often lagged behind technological innovations, creating a clear gap between rapid financial innovation and the requirements for legal and regulatory safeguards, which constitutes the central problem addressed in this study.

The problem statement: How has the global digital transformation during the period (2020–2025) influenced the development of electronic banking services and financial technology (FinTech), and to what extent have these developments succeeded in meeting the needs of individuals and financial institutions while enhancing efficiency and financial inclusion?

Sub-Questions:

- To what extent does modern financial technology (FinTech) contribute to improving operational efficiency and promoting financial inclusion?
- What are the major legal, regulatory, and cybersecurity risks associated with the widespread adoption of FinTech solutions?
- How can an appropriate balance be achieved between fostering financial innovation, ensuring consumer protection, and maintaining financial system stability?
- What are the key economic and social challenges arising from the digital divide among countries and across different demographic groups?

Study Objectives: This study aims to:

- Analyze the current state of modern financial technologies (FinTech) and identify key

applications in both developed and emerging markets.

- Evaluate the economic and social opportunities provided by FinTech, including enhancing financial inclusion and improving operational efficiency.
- Identify legal, regulatory, and cybersecurity challenges associated with widespread adoption of FinTech.
- Provide practical recommendations to promote financial innovation while ensuring consumer protection and the stability of the global financial system.

Study Methodology: The study adopts a descriptive-analytical approach, which includes:

• A review of recent scientific literature on FinTech and emerging financial technologies.

• Analysis of official reports and data from international financial institutions and digital banks.

• Examination of practical FinTech applications in diverse market environments, with a comparative perspective on developed and emerging economies.

This methodology aims to provide a comprehensive and balanced understanding of the current state of FinTech, highlighting both its opportunities and challenges, and offering evidence-based recommendations to enhance financial innovation while minimizing associated risks.

2. General concepts

2.1. Definition of the term FinTech: is a term derived from the words “Financial” and “Technology.” It refers to any innovation that relies on technology to improve processes or to design and deliver financial and banking services, making them faster, easier, and more inclusive.

2.2. Definition of the term E-banking: Electronic Banking, or Online Banking, is the digitalization of traditional banking services. It is the use of the internet and digital technology by financial institutions to allow customers to perform various banking transactions online without visiting a physical branch.

2.3. Definition of the term E- payment: An electronic payment is the transfer of funds or digital currency from one account to another using telecommunication networks, specifically the internet, to purchase goods or services without the need for physical cash.

3. The Reality of Electronic Banking at the Global Level

The world's entry into what is known as globalization has made it necessary to develop the financial and banking sector within financial, banking, and commercial institutions

across the globe. These developments began to spread gradually until they penetrated most areas of this sector.

Electronic banking is considered one of the most important and prominent developments that have taken place in the global financial and banking sector. Its expansion required considerable efforts at both the international and regional levels. As a result, the rates of adoption and diffusion of these services have varied from one country to another, from one region to another, and from one sector to another.

In a world where digital transformation is accelerating, financial services are no longer a technological luxury; rather, they have become an essential part of individuals' daily lives. With the arrival of 2026, financial technology is witnessing major breakthroughs that are redefining the way we save, spend, and invest money, driven by the development of artificial intelligence, the spread of digital banks, and the increasing reliance on instant payments and comprehensive financial applications. It is worth noting that the global financial technology market reached about **$340.1 billion in 2024**, increased to **$394.9 billion in 2025**, and is expected to rise to approximately **$1.13 trillion by 2032**, according to forecasts.

The global digital banking and financial services market also witnessed significant growth in **2025**, with estimates indicating that the size of the global banking and financial services market reached approximately **$18.1 trillion** by the end of the year. Data also show a strong trend toward non-cash transactions driven by financial technology and artificial intelligence, with expectations that the digital banking market will reach nearly **$20 trillion by 2026**.

Key Statistics and Trends of Electronic Banking Transactions in 2025

- **Global market size:** The global banking and financial services market reached approximately **$18.1 trillion** by the end of **2025**.
- **Digital Banking Market:** Forecasts indicate rapid growth in digital banking services, expected to approach **$20 trillion by 2026**.
- **Loan growth:** Loans are expected to grow by **6% in 2025**, which will further stimulate activity in the electronic banking sector.
- **Digital financial inclusion:** Low- and middle-income countries recorded the highest rate of bank account ownership, supported by digital finance and mobile technology.

Main Growth Drivers in 2025

- **Artificial Intelligence and Blockchain:** Enhancing transaction security and improving fraud detection.
- **Banking as a Service (BaaS):** Increasing adoption of financial technology and accelerating the digital transformation of traditional banks.
- **Personalized experience:** Greater focus on delivering seamless and intelligent financial services tailored to customer needs.

3.1. The Reality of Internet Banking in the World

Under this heading, we will first examine some developments in the use of the Internet and its acceptance in order to better understand the interaction with the elements, requirements, and realities of Internet banking in particular.

A. The Development of Internet Use in the World

Until recently, and up to **1990**, the Internet was mainly used as a tool by the military and academic institutions. Today, however, it has spread across the globe and has acquired significant commercial value. The Internet has attracted more users in a shorter period of time than any other communication medium in history. It took only **four years** to reach **50 million users**. (Report 2025, UNCTAD, www.unctad.org/en/docs/ecdr2004_en.pdf, accessed on 2026)

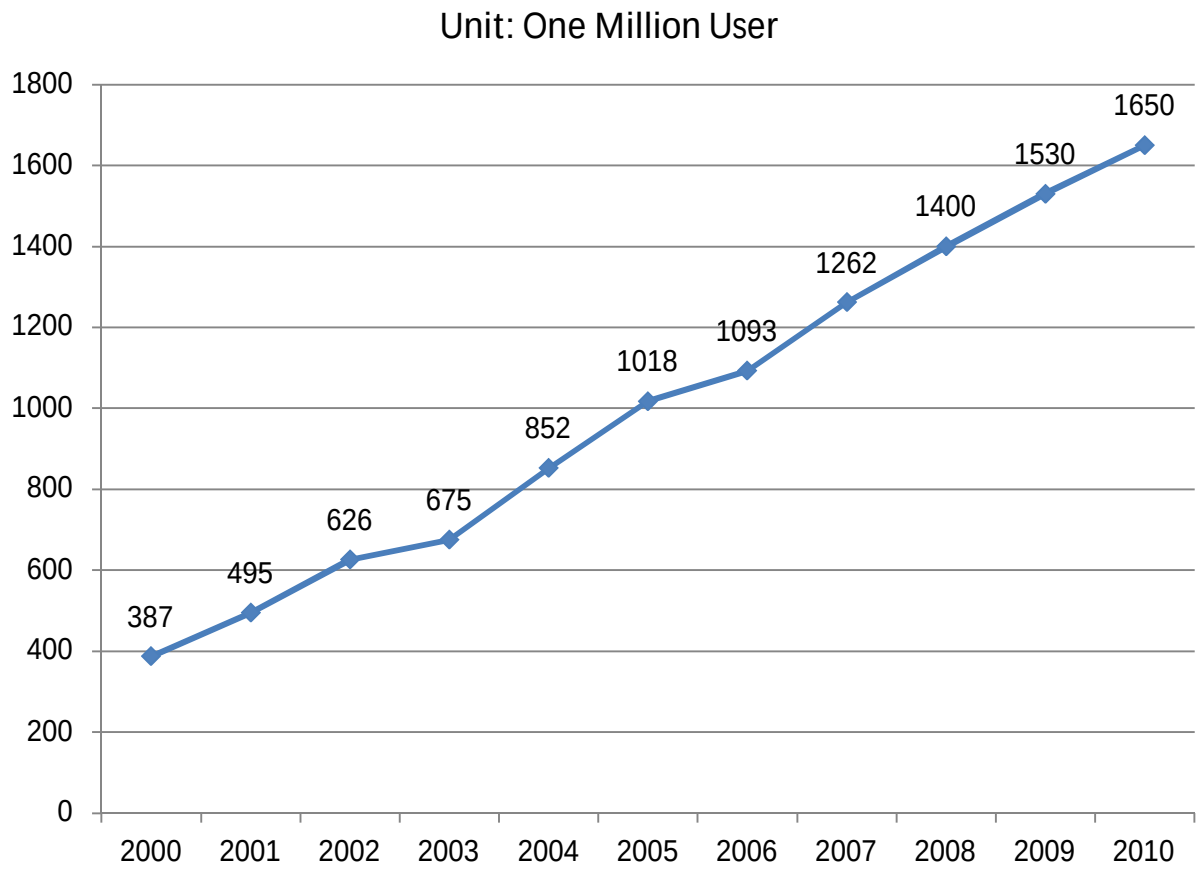
Statistics indicate that in **January 2020**, there were more than **4.1 billion Internet users** worldwide. The rapid growth in Internet use actually began at the end of **2002**, when the number of Internet users worldwide was estimated at about **200 million people**. By the end of **2003**, the number of people with Internet access had reached **676 million**, representing **11.8% of the world's population**. According to some statistics, the number of Internet users reached **852.14 million in 2004**, and in **2008** it exceeded **1.262 billion users**. By **2010**, the number had surpassed **1.65 billion users**.

The number of Internet subscribers through fixed networks reached **750 million in 2010**. In the **United States**, the proportion of Internet users increased from **14.9% in 1996** to **34.9% in 2000**. In the **Arab world**, the number of Internet users reached **70 million out of a total population of 350 million**.

A significant increase can also be observed in the number of computers connected to the Internet during the period **2000–2004**. In **2000**, the number was approximately **723 million**, rising to nearly **1.095 billion in 2001**. In **2002**, it reached **1.473 billion**, and in **2003** it increased to about **1.716 billion computers**, eventually reaching **2.331 billion computers**

in 2004. (Report 2025, UNCTAD, www.unctad.org/en/docs/ecdr2004_en.pdf, accessed on 2026)

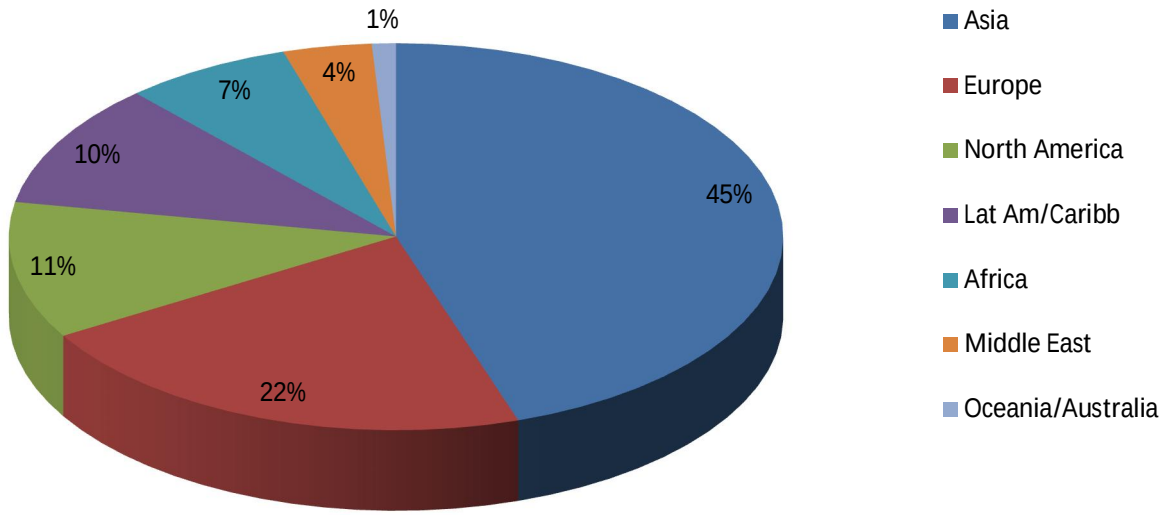
Figure (01): Growth in the Number of Internet Users Worldwide (2000–2010)



Source: a student achievement, based on information from: **internet world states**, avaible on the website : www.intrnetworldstates.com/states.htm , Date access: 02/02/2012.

As for the statistics for **2013** related to the distribution rates of Internet users by continent, they were as shown in the following figure:

Figure (02): Distribution of Internet Users by Continent in 2013



Source: http://www.downloadbramjy.com/numberofworldinternetusers.html, accessed on 12/05/2014.

The following table illustrates the **world population by continent**, the **number of Internet users in each continent**, and the **evolution of Internet usage from 2000 to 2013**.

Table (01): World Population by Continent and Number of Internet Users (2000–2013)

World Regions	Population	Internet Users Dec. 31, 2000	Internet Users Latest Data
Africa	1,073,380,925	4,514,400	167,335,676
Asia	3,922,066,987	114,304,000	1,076,681,059
Europe	820,918,446	105,096,800	518,512,109
Middle East	223,608,203	3,284,800	90,000,455
North America	348,280,154	108,096,800	273,785,413

World Regions	Population	Internet Users Dec. 31, 2000	Internet Users Latest Data
Latin America / Caribbean	593,688,638	18,068,919	254,915,745
Oceania / Australia	35,903,569	7,620,480	24,287,919

Source: http://www.downloadbramjy.com/numberofworldinternetusers.html, accessed on 12/05/2014.

Table (02): Number of Internet Users in the World (2020–2025)

Years	2020	2021	2022	2023	2024	2025
Number (million)	4100	4900	5300	5400	5800	6000
% of World Population	61	63	66	66.3	67	73.2
Growth %	8.2	5.8	6.1	3.7	5.8	5.1

Source: *E-commerce and Development Report 2025*, UNCTAD, www.unctad.org/en/docs/ecdr2004_en.pdf, accessed on 06/02/2026, p. 05.

Based on **Table (05)**, the number of Internet users worldwide between **2020 and 2025** has experienced a significant global development in terms of the **total number of users**, the **percentage of users relative to the world population**, and the **annual growth rate**.

First: Evolution of the total number of users

The data clearly shows that the number of Internet users followed a **continuous upward trend** during the studied period:

- **4.1 billion users in 2020**
- **4.9 billion users in 2021**
- **5.3 billion users in 2022**
- **5.4 billion users in 2023**
- **5.8 billion users in 2024**
- **6 billion users in 2025**

This reflects a significant expansion in Internet penetration worldwide, particularly in **developing countries and emerging economies**.

Second: Percentage of Internet users relative to the world population

The proportion of Internet users out of the total world population increased gradually:

- From **61% in 2020** to **73.2% in 2025**.

This represents an increase of more than **12 percentage points within five years**, indicating a relative reduction in the **digital divide**, although disparities between geographical regions still persist.

Third: Annual growth rates

Growth data shows some fluctuations:

- The **highest growth rate** was recorded in **2020 (8.2%)**, which is largely associated with the accelerated digital transformation during the **COVID-19 pandemic**.
- Growth declined in **2023 to 3.7%**, the lowest rate during the period.
- It increased again slightly in **2024 (5.8%)**, before stabilizing at **5.1% in 2025**.

This relative slowdown reflects the **approach of the global market toward digital saturation**, where growth becomes gradual rather than characterized by major leaps.

Fourth: General implications

– The continued expansion of the **global digital economy**.

– The strengthening of **e-commerce and digital financial services**.

– The transformation of the Internet from a **supplementary service to an essential infrastructure for development**.

– Future growth will be more related to **improving connection quality** rather than simply increasing the number of users.

Analytical conclusion

The period **2020–2025** represents a transition from **rapid growth to more stable growth** in global Internet adoption, with nearly **three-quarters of the world's population becoming digitally connected**. This development indicates the deepening of global digital transformation, while also highlighting new challenges related to **digital inclusion, cybersecurity, and the quality of digital infrastructure**.

Table (03): Top 10 Arab Countries by Percentage of Internet Users Relative to Population in 2025 (%)

Rank	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
Country	United Arab Emirates	Bahrain	Saudi Arabia	Kuwait	Qatar	Oman	Jordan	Lebanon	Libya	Palestine

Source: https://www.samaaden.news/archives/224284, accessed 10/01/2026

The table shows the ranking of ten Arab countries based on the **percentage of Internet users relative to total population in 2025**, revealing a very advanced level of digital access in several countries, especially the Gulf states. Percentages range from **86.6% in Palestine** (lowest) to **99.5% in the UAE** (highest). All listed countries exceed **85%**, indicating widespread Internet penetration in the Arab region. The digital gap between the first and tenth ranks is relatively narrow (around **13 percentage points**), suggesting convergence in usage levels.

The countries with the **highest percentages** are Gulf states occupying the top ranks:

- UAE: **99.5%**
- Bahrain: **99.3%**
- Saudi Arabia: **99.1%**
- Kuwait: **99%**
- Qatar: **99%**
- Oman: **95.3%**

This indicates strong **digital infrastructure**, high income levels, supportive government policies for **digital transformation**, and widespread availability of electronic services (governmental, banking, educational).

Countries with **moderate percentages** include Jordan (**93.7%**), Lebanon (**91.6%**), Libya (**88.5%**), and Palestine (**86.6%**). Despite economic or political challenges in some of these countries, Internet usage remains high, reflecting the growing importance of the Internet in daily life, increasing reliance on digital services, and widespread use of smartphones.

Strategic Implications:

- **Approaching digital saturation:** Most countries exceed **95%**, so the next phase will focus less on quantitative expansion and more on **service quality, faster Internet speeds, and enhanced cybersecurity**.
- **Shift in priorities toward quality and innovation:** With near-universal penetration, the focus shifts to the **digital economy, artificial intelligence, digital financial services, and e-governance**.
- **Narrowing the Arab digital divide:** Differences between countries are minor, indicating convergence in digital integration, with remaining gaps related to **service quality** rather than access percentages.

Conclusion:

The Arab region, especially the Gulf states, has entered a **mature digital phase**, transitioning from expanding Internet access to **deepening digital transformation and promoting digital inclusion**. Future challenges will not focus on increasing the number of users, but on **improving digital efficiency, ensuring cybersecurity, and maximizing the economic benefits of digitization**.

B. Development of Internet Banking

Globally, the number of banks and credit unions offering **online services** increased from **1,200 institutions in 1998** (about **6% of the market**) to **12,000 in 2000** (tenfold), reaching **15,845 in 2003** (~75% of the market), and about **90% by 2010**.

The global **online banking market value** reached **$18.6 billion in 2025**. (https://www.moodys.com/web/en/us/insights/banking/banking-industry-2025-round-up.html#:~:text=In%202025%2C%20banks%20leaned%20on 2025) The effective rise of **digital banking** began in **2014**, supported by fintech developments, such as China's **WeBank** (Tencent), which became the **first fully digital bank in the world**.

Regarding the number of banks offering online services globally in 2025, there is no exact figure. Currently, the **vast majority of commercial and traditional banks**, as well as **fully digital banks (Neobanks)**, provide these services. By 2025, **around 6 billion people** worldwide use the Internet, making **online banking almost a standard requirement** for modern banking.

The number of **internet-only banks** (without physical branches) has grown significantly, especially in countries like **China, India, and the United States**. Reliance on digital banking has increased due to widespread Internet access, with **about three-quarters of the world population using the Internet in 2025**. Even in the Arab region, there is **rapid growth in digital banking services and mobile banking applications**.

Internet Banking in 2025

Globally, Internet banking experienced **significant growth in 2025**, generating **high revenues for banks**, estimated at approximately **$1.86 trillion**. This growth was driven by **intensive adoption of artificial intelligence (AI), real-time payments, and mobile services**, with **China leading globally**. In the Arab region, banks such as **Gulf Bank**

continue to expand online services to align with **global financial inclusion trends**. (Revue Banque Stratégie Janvier/Février 2020)

Key Trends in Internet Banking for 2025:

- **Record Digital Growth:** Global revenues for digital banks reached **$528.8 billion**, with China expected to dominate.
- **Artificial Intelligence & Services:** Increasing reliance on AI to enhance **efficiency and flexibility**.
- **Real-time Payments:** Shift toward **instant payments** and **Central Bank Digital Currencies (CBDCs)**.
- **Mobile Financial Inclusion: 86% of adults** own mobile phones, boosting adoption of digital financial accounts.

Highlights of Online Banking in the Arab World:

- **Kuwait:** Gulf Bank awarded **Best Digital Bank** and **Best Mobile Application**.
- **Algeria:** Significant growth in e-payments (**13.2 million transactions in the first 7 months**) and launch of **DZ Mob Pay** via QR codes.
- **Bahrain:** Digital bank **"Ila"** recognized as the **best banking app in the Middle East**.
- **Regulatory Reforms:** Banking laws in 2025 (e.g., India) focus on **deposit safety, strong governance, and accelerated crisis resolution**.

These developments are part of a **broader digital transformation**, improving **financial sector efficiency** and meeting the changing needs of individuals and businesses.

3.2. Key Features of the Mobile Banking Worldwide

Technological advancements have enabled mobile banking to become **a major service**, starting with **call centers for customer support**, saving time and reducing costs for both banks and clients. (Singer July 17, 2025)

Global Examples of Early Mobile Banking: (Ma'arafi 2007)

- **Midland Bank (UK):** The **First Direct Account** allowed customers to use phone communications and personal identification numbers to pay bills (electricity, gas, phone, etc.).

- **United States (1985):** Introduced home-based banking terminals connecting customers directly to banks; by 1986, financial transfer services were added for bill payments.
- **Barclays Bank (Nov 1994):** Launched money transfer and bill payment services, enabling customers to contract for loans or open letters of credit via phone banking.

Over the years, **mobile banking revolutionized the global financial sector**, allowing **75% of customers in developing economies** to access financial accounts through **apps, SMS, and USSD codes**. These services, now expanding to **fully digital banks**, provide **secure and convenient money management**, including transfers, bill payments, and card management, without visiting physical branches—enhancing financial inclusion.

Key Features of Mobile Banking Globally: **(Singer July 17, 2025)**

- **Financial Inclusion:** Contributed to **75% global account ownership in 2025**.
- **Types of Services:** Include **smartphone apps, SMS, and USSD-based services**.
- **Benefits:** Speed, security, convenience, and 24/7 access to pay bills and manage accounts.
- **Development:** Banks increasingly move toward **fully digital banks** without physical branches.
- **Interoperability:** Expanding **interbank transfers via mobile**, including QR code payments, to strengthen digital transactions.

Benefits and Advantages of Digital Financial Services

- **Ease of Access:** These services allow users in remote areas to access financial services.
- **Cost Efficiency:** They provide affordable solutions and reduce transaction costs.
- **Security:** They feature advanced security measures, including **two-factor authentication**.

These services are a vital part of **modern financial technology (Fintech)**, aiming to simplify daily life and promote smart financial management.

Mobile phones and the Internet have created a **radical transformation in financial inclusion**, enabling a larger number of people to access and use digital financial services to manage their daily finances. From **mobile-based financial accounts** on simple devices to **digital wallets linked to bank accounts on smartphones**, these digital solutions deliver on

their promise to provide **affordable and easier alternatives** to traditional options. (samaaden 2024)

Digital financial services offer numerous advantages, such as:

- Daily savings through **local agents**
- Loan disbursement and repayment via **mobile applications**
- Direct purchase of **prepaid electricity services** through mobile phones

These services are not only convenient but are also **essential in making financial services more accessible and user-friendly for everyone**. (the 2025 banking industry round-up 2025)

The latest **2025 Global Financial Inclusion Index** report, published by the **International Bank for Reconstruction and Development (IBRD)** and titled *"Internet Connectivity and Financial Inclusion in the Digital Economy"*, revealed a significant **increase in account ownership and the use of digital financial services**. The report also highlighted the importance of continuing to focus on **key areas**, such as closing gaps in access to digital technology and financial services, and enhancing individuals' ability to leverage these services to meet their needs.

Statistics for 2025 show that **79% of customers currently have an account at a bank, financial institution, or via mobile phone**, representing a substantial increase compared to **74% in 2021** and **only 51% in 2011**, when the first Global Financial Inclusion Index data were collected. (Singer July 17, 2025)

Mobile Money Accounts in Low- and Middle-Income Economies

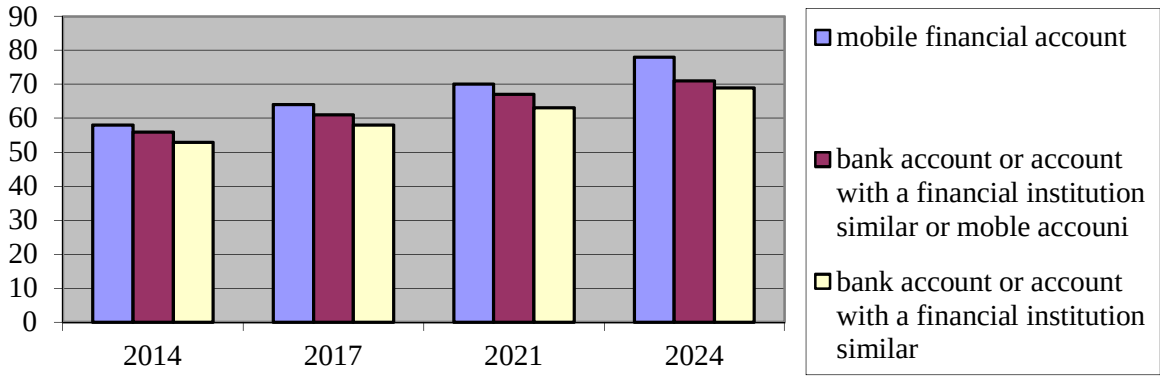
Focusing specifically on **low- and middle-income economies**, mobile money accounts have been a key driver of the **notable increase in overall account ownership**, particularly over the past ten years. The rise in account ownership is closely linked to the **expansion of mobile-based financial accounts**, either as standalone solutions or alongside traditional bank and financial institution accounts.

Additionally, account holders increasingly rely on **their mobile phones or debit/credit cards linked to their accounts** to conduct financial transactions. Today, **more than half of all accounts in low- and middle-income economies are digitally enabled** through these channels.

Regional Trends:

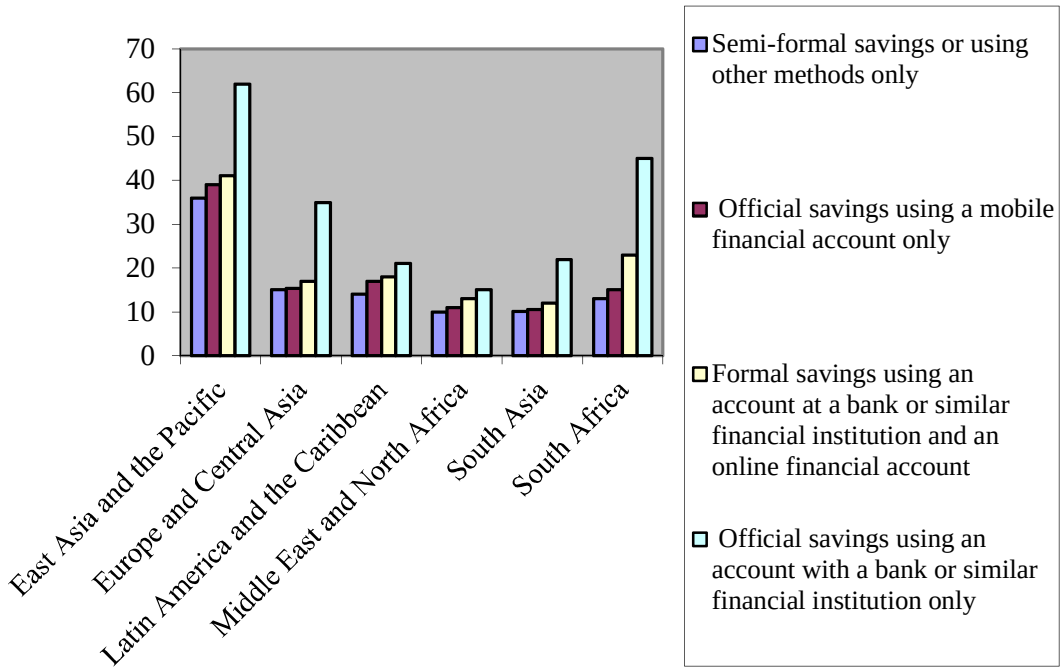
- **Sub-Saharan Africa** continues to lead globally in mobile money adoption, with **40% of customers using mobile money accounts in 2024**, up from 27% in 2021.
- **Latin America and the Caribbean** are catching up, with **37% of customers using mobile money accounts in 2024**, up from 22% in 2021.
- Similarly, **some economies in Europe and Central Asia** are closing financial inclusion gaps by adopting mobile money or other digital account solutions.

Figure (03): Percentage of Customers with Accounts (2014–2024)



Source: World Bank, Global Financial Inclusion Index Database 2025, p.12

Figure (04) shows the evolution of the percentage of customers with accounts during the period 2014–2024, distinguishing between three types of accounts:



Source: World Bank, Global Financial Inclusion Index Database 2025, p.12

1. Accounts at traditional financial institutions only
2. Bank or financial institution accounts with a mobile money account
3. Bank or financial institution accounts only

The figure shows a continuous upward trend across all categories for the years 2014, 2017, 2021, and 2024, reflecting improvements in financial inclusion.

- **2014:** Lowest values across all categories; account ownership was relatively limited, with the **greatest reliance on traditional bank accounts**, indicating weak digital financial services at that stage.
- **2017:** Clear increase in account ownership and improved access to banking services, signaling **expansion of financial infrastructure** and increased trust in the banking system.
- **2021:** Further growth across all categories, with **stronger adoption of mobile-linked accounts**, reflecting the acceleration of digital financial transformation.
- **2024:** Highest percentages across all indicators, with **notable growth in mobile-linked accounts**, highlighting the expansion of electronic payments, digital financial services, and financial inclusion. (World Bank 2025)

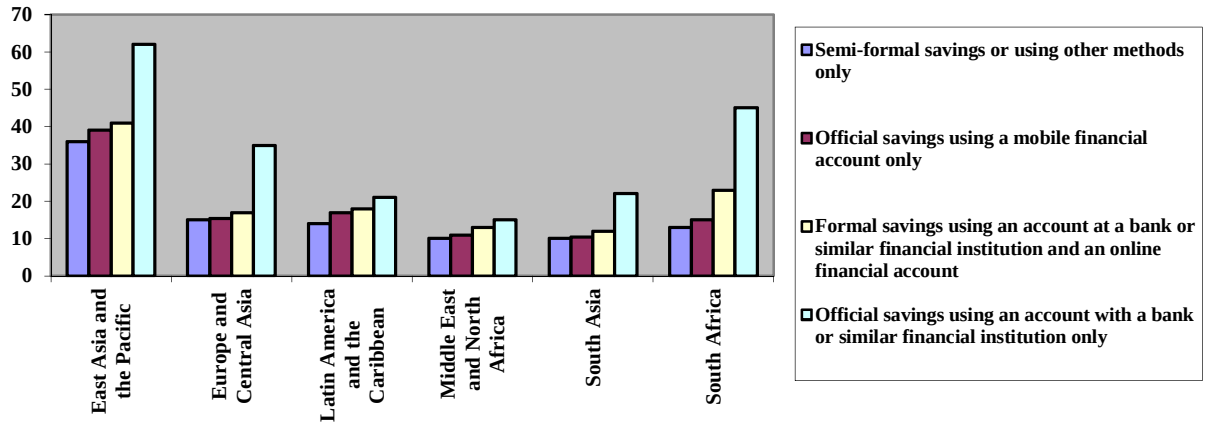
Comparing the account types:

- **Mobile-linked accounts** are the fastest-growing segment during the period, indicating a shift toward digitization.
- **Traditional bank-only accounts** remain the lowest in proportion, showing that users are increasingly moving to more advanced financial solutions.
- **Hybrid accounts** (bank + mobile) represent the most common model today.

Economic implications: This evolution reflects improved financial inclusion policies, the expansion of digital banking services, increased integration of individuals into the formal financial system, and support for the transition toward a digital economy.

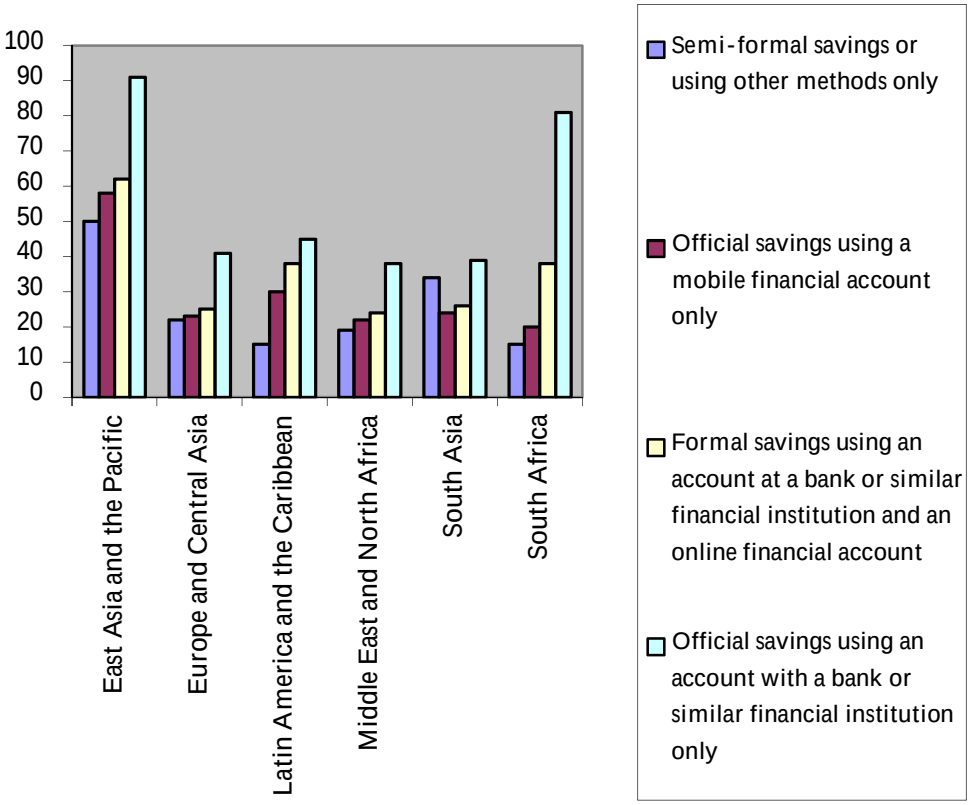
Analytical summary: The figure highlights a **gradual shift from traditional bank accounts to mobile-linked digital financial models**, with a continuous rise in the proportion of the population owning accounts, confirming improvements in financial inclusion and the growing role of fintech during the period studied.

Figure (05): Percentage of Customers Saving Money Using Various Methods, 2001 (%)



Source: World Bank, *Global Financial Inclusion Index Database 2025*, p.10

Figure (06): Percentage of Customers Saving Money Using Various Methods, 2024 (%)



Source: World Bank, *Global Financial Inclusion Index Database 2025*, p.10

From Figures (07) and (08), there is a temporal and regional comparison of formal and informal savings patterns, highlighting the role of financial accounts and mobile phones in the savings process.

First: General Trend:

There is a clear increase in the percentage of savings between 2021 and 2024 across most regions of the world. This rise is mainly associated with the expansion of financial inclusion, the spread of digital financial services, and the use of mobile phones in financial transactions.

Second: Regional Analysis: (World Bank 2025)

- **East Asia and Pacific:** Highest global savings rate, a significant jump in 2024. Reliance mainly on formal financial accounts, limited role for informal savings, indicating a well-developed financial system and high trust in institutions.
- **Europe and Central Asia:** Notable growth in savings, primarily through traditional banking channels, with minor contribution from mobile savings, reflecting mature banking infrastructure.
- **Latin America and Caribbean:** Moderate improvement, increased use of digital wallets and mobile phones, diversity in saving tools, indicating financial digital transformation.
- **Middle East and North Africa:** Savings rates remain relatively low despite improvement, mainly relying on formal traditional channels, weak adoption of mobile savings, reflecting limited financial inclusion and slow digital financial transformation.
- **South Asia:** Gradual growth, emerging role of mobile phones in savings linked to the spread of mobile payment services.
- **Sub-Saharan Africa:** Among the largest improvements between 2021 and 2024, clear increase in mobile and informal savings, with mobile phones playing a key role in financial inclusion.

Third: Analysis by Type of Savings:

- **Formal savings through banks only:** Still the largest component globally.
- **Mobile savings:** Fastest growing, especially in developing countries.
- **Informal savings:** Gradually declining with the expansion of digital financial services.
- **Combination of bank and mobile:** Present in economies undergoing digital financial transformation.

Fourth: Economic Implications:

- Direct relationship between financial system development and higher savings rates.
- Fintech = a key tool for increasing savings.
- Regions with lower savings also have lower financial inclusion.

Fifth: Conclusion:

In 2024, formal savings were clearly strengthened globally, and digital financial services became a key driver of financial inclusion. The Middle East and North Africa still need to expand access to financial accounts and develop mobile payments.

With the COVID-19 pandemic, banks operating with e-banking accelerated growth, with the number of licensed digital banks exceeding 160 leading digital banks in 42 markets, according to the global classification by **TABInsights** for 2025.

By geographic distribution: Asia-Pacific hosts about 47 digital banks, followed by Europe with 30, North America with 10, Latin America with 7, and 6 in the Middle East and Africa. Digital banks rely on technology to provide banking services such as deposits, loans, and transfers exclusively through electronic channels. They have significantly contributed to financial inclusion, especially in emerging markets, providing simple and effective solutions for users with limited access.

According to *Global Market Insights*, the digital banking market size was about **$10.9 trillion** at the end of 2023, with expectations of continued growth at a compound annual rate of over 3% between 2024 and 2032. However, *Statista* projects the market to reach approximately **$19.89 trillion** by next year.

Top Global Digital Banks: (2025)

- **Bank of Georgia:** Awarded “Best Global Digital Bank” by *Global Finance* magazine for using AI and machine learning to provide tailored solutions, simplify user experience, and expand digital inclusion.
- **DBS Bank:** Best digital bank for corporate and institutional clients.
- **Kuwait’s Boubyan Bank:** Recognized as the best Islamic digital bank globally, developing an open banking platform compatible with Shariah in partnership with Temenos.
- **TD Bank (North America):** Uses generative AI to speed up mortgage processes, awarded best digital bank for consumers in North America.
- **Citi Bank:** Best digital bank for businesses.

- **First National Bank (Africa):** Best digital bank for consumers.
- **National Bank of Kuwait:** Best digital bank for consumers in the Middle East.
- **Arab Bank:** Best digital bank for institutions and consumers in Africa and the Middle East.

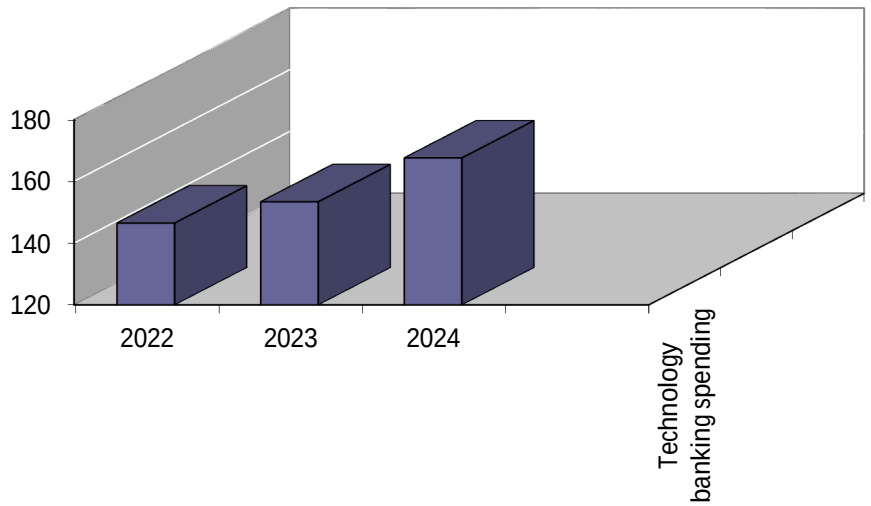
Regarding consumers, World Bank data shows **81% of users prefer digital ease** in banking transactions, while identity theft remains the top concern. The banking sector has transformed drastically, from traditional branches to advanced digital solutions. *Standard & Poor's* revealed a gradual closure of traditional branches in the U.S. during Q1 2025. Data from the American Bankers Association indicates that banks investing in digital transformation can reduce operating costs by 20–40%, with 60% of Millennials and 57% of Gen Z relying on mobile banking apps.

Europe: Online banking penetration reached **70%** in Western Europe.

China: Digital banking usage exceeds **80%** among internet users.

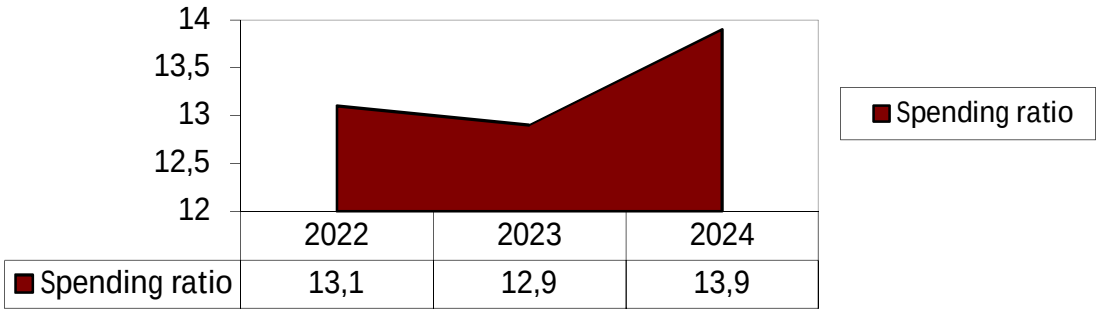
Globally: Mobile banking rose to **48%** in 2023, according to *SCOPE* Market Research. Contactless payments saw substantial growth, adopted by **80% of stores in 2021**. Digital wallets became the most common payment method in 2024, with **15% of consumers regularly leaving their physical wallets at home**.

Figure (07): Global Spending on Banking Technology, 2022–2024 (Billion USD)



Source: global banking outlook,global banking technology spend, dan davies, the unaccountablity, profile books,2024, https://www.ey.com/content/dam/ey-unified-site/ey-com/en-cn/insights/financial-services/documents/ey-global-banking-outlook-2025- consulté le: 02/01/2026.

Figure (08): Global Spending on Banking Technology as a Percentage of Total Operating Expenses, 2022–2024 (%)



Source: Dan davies, **global banking outlook, global banking technology spend, the unaccountablity**, profile books,2024, https://www.ey.com/content/dam/ey-unified-site/ey-com/en-cn/insights/financial-services/documents/ey-global-banking-outlook-2025- consulté le: 02/01/2026.

The figures (09) and (10) show global spending on technology in the banking sector during 2022–2024, highlighting both the absolute amounts and the share of total operating expenses, allowing simultaneous quantitative and relative analysis.

First: General trend in spending: (davies 2024)

There is a continuous upward trajectory in technology spending: $146.5 billion in 2022, $153.4 billion in 2023, and $167.1 billion in 2024. This represents a notable cumulative growth, reflecting banks' recognition of technology as a strategic element rather than merely an operational expense. The increase between 2023 and 2024 is particularly significant, indicating an acceleration in investment, especially in areas such as artificial intelligence, cloud computing, cybersecurity, and big data analytics.

Second: Share of total operating expenses: (World Bank 2025)

As a percentage of total operating expenses, spending declined slightly from 13.1% in 2022 to 12.9% in 2023, before rising to 13.9% in 2024. The minor drop in 2023 may be due to overall operating expenses growing faster than technology spending, amid global inflationary pressures. The strong increase in 2024 reflects a strategic shift prioritizing technology investment within the overall cost structure.

Third: Strategic implications: (davies 2024)

- **Deepening digital transformation:** Banks no longer treat technology as optional; it is now a core competitive pillar.

- **Shift from efficiency to innovation:** The goal is not just cost reduction but creating new digital business models and enhancing the customer experience.
- **Growing importance of AI:** Increased investment aligns with the global trend of integrating AI applications into banking operations.
- **Cyber risk management:** Higher spending also reflects rising digital threats and the need for enhanced security systems.

Analytical summary:

The data shows the banking sector moving from gradual digital transformation to intensive technology investment as a tool to reshape the banking business model. The increase in the technology share of total expenses in 2024 indicates that technology has become a strategic focal point in banks' cost structures, highlighting a growing recognition that future competitiveness will depend on successfully leveraging sustainable digital innovation.

3.3. The State of Bank Cards Worldwide

Electronic cards have evolved globally from simple paper cards in the 1940s to fully digital, contactless smart systems (digital wallets). Credit cards began in 1947, followed by magnetic stripe cards in the 1970s, and smart chip cards (EMV) that significantly enhanced security. (Abdelkade s.d.)

Stages of electronic card development:

- **Early phase (1950s–1960s):** Started with bank credit cards such as the "Franklin National" card in 1951, followed by Bank of America's "Bank Americard" in 1958, later becoming Visa.
- **Magnetic stripe era (1970s):** In 1979, point-of-sale (POS) devices appeared, and magnetic stripes were added to accelerate transactions.
- **Smart chip revolution (EMV):** Developed to prevent fraud; chips encrypt data via a microprocessor instead of using copyable magnetic stripes.
- **Contactless cards:** Later evolution allowing payments by simply tapping the card over an NFC-enabled device.
- **Digital wallets:** Cards integrated into smartphones and smartwatches (e.g., Apple Pay, Google Pay), becoming fully virtual.

The following table illustrates the evolution of these cards in 2001–2002:

Table (04): Electronic Card Development, 2001–2002

	Nombre de cartes (en millions)	**Croissance** (2001/2002)	**Part de marché** (2002)
Visa	1 071,80	10,20%	60,50%
MasterCard	590,1	13,60%	33,3%
American Express	57,3	3,80%	3,20%
JCB	45,3	13,80%	2,60%
Diner Club	8	- 5,90%	0,50%
TOTAL	**1 772,50**	**11,10%**	**100%**

Source: Raheem Hussein and Houari Merad, *E-banking as an Entry Point for Modernizing Algerian Banks*, Proceedings of the National Symposium on the Algerian Banking System and Economic Transformations – Reality and Challenges, University of Chlef, December 14–15, 2004, p.179.

In 2003, the use of bank cards reached 6 million cards[1]. The following table shows the geographical distribution of bank cards worldwide during 1997–2002. (Merad 14-15 december2004)

Table (05): Geographical Distribution of the Bank Card Market (1997–2002)

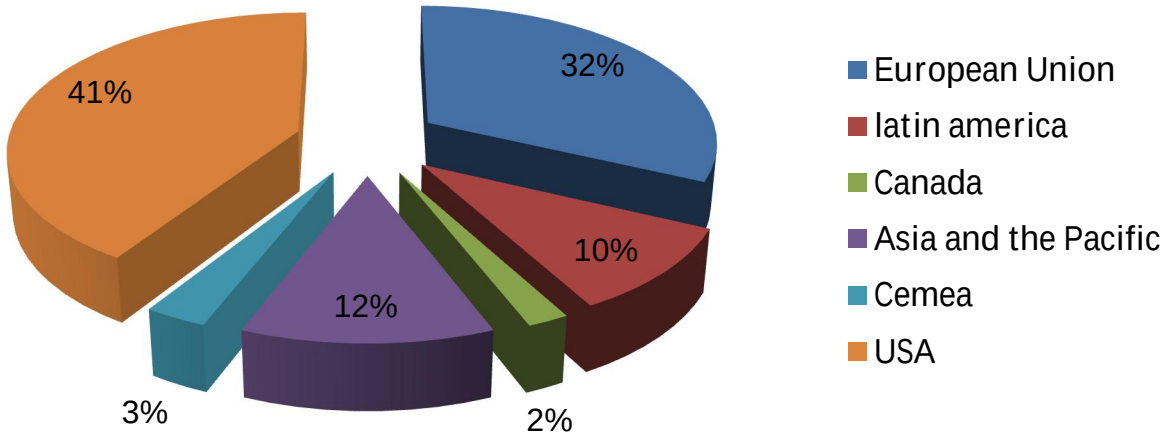
Region	**1997**	**2002**
Europe	70%	46%
America	11%	22%
Asia	14%	28%
Rest of the World	5%	4%

Source: Jérome Baumgarten, Nicolas Descamp, **La carte a puce**, 2002-, p.7, site : http://tpe.camarades.free.fr/tpe.pdf , consulté le : 04/02/2012.

The most widely used type of card is the **Visa Card**, which is particularly prominent in the **United States of America**. Statistics collected by the global Visa company and published on its official website on **30/12/2005** show that **41% of all international Visa card transactions worldwide occur in the United States**, followed by the **European Union** with **32%**. (Jérome Baumgarten 2002) This is illustrated in the following figure:

[1] Rahim Hussein, Houari Merad, previous reference, p. 317.

Figure (09): Volume of Visa card transactions worldwide at the end of 2005

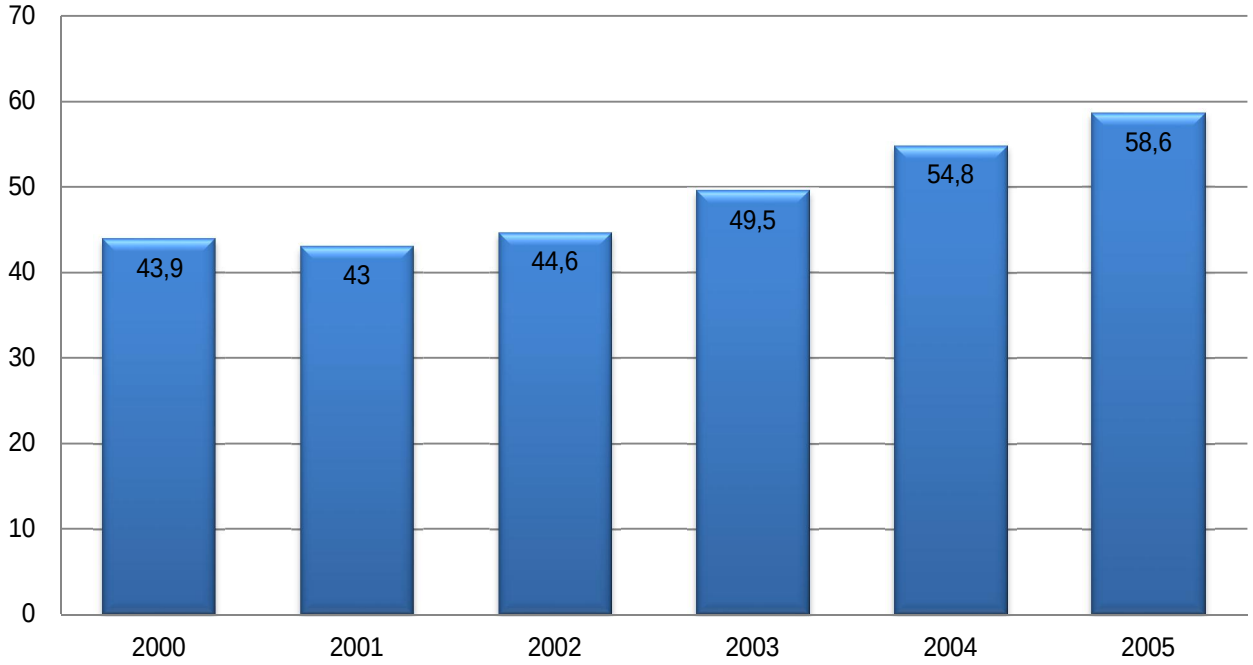


Source: visa international, **Statistique about Visa Card**, http://www.corporate.vasa.com 22/10/2012.

The company also announced that global business and government spending using its electronic payment system reached high levels in 2004, approximately $54.8 trillion, rising to $58.6 trillion in 2006, representing an increase of about 6.1%,[2] as shown in the following figure:

[2] international services association, **Visa lunches-commercial index**, http://www.visa.com , Op.cit.

Figure (10): Visa's electronic payment system rates 2000-2005



Source : international services association, **Visa lunches-commercial index**, http://www.visa.com consulted : 31/02/2012

As for **MasterCard**, by the end of 2005 it had issued over **749.3 million cards**, an increase of **10.5%** compared to 2004. These cards are managed by **25,000 affiliated financial institutions worldwide**, allowing cardholders to use them at more than **24 million merchant locations** globally. The company recorded approximately **19.1 billion transactions** with MasterCard-branded cards, excluding **Maestro** and **Cirrus**, generating a total transaction value of **$1.7 trillion**, an **11.9% increase** compared to 2004. Additionally, the company reported on its website that purchase activity with its cards grew by **13.7%**, reaching nearly **$1.2 trillion**.[3]

According to card indicators, bank cards have become more widely used than checks in industrialized countries. The total number of magnetic stripe cards worldwide reached **1.1 billion in 2002**, reflecting a **5.8% growth** compared to 2001. The number of **smart cards (cards with microprocessors)** reached **701 million** in the same year, with a **17% increase** compared to 2001. Notably, **Europe leads other regions** in this sector.

About **70% of the global market** for **smart cards (cartes à puce)** is concentrated in Europe, while the **Americas account for only 11%** of this market and just **8% of**

[3] Philippe David, **Un nouveaux monde pour les cartes bancaires**, Revue banque stratégie, 24 novembre 2005, Revue Banque Stratégie, November 24, Paris, 2005, p.26.

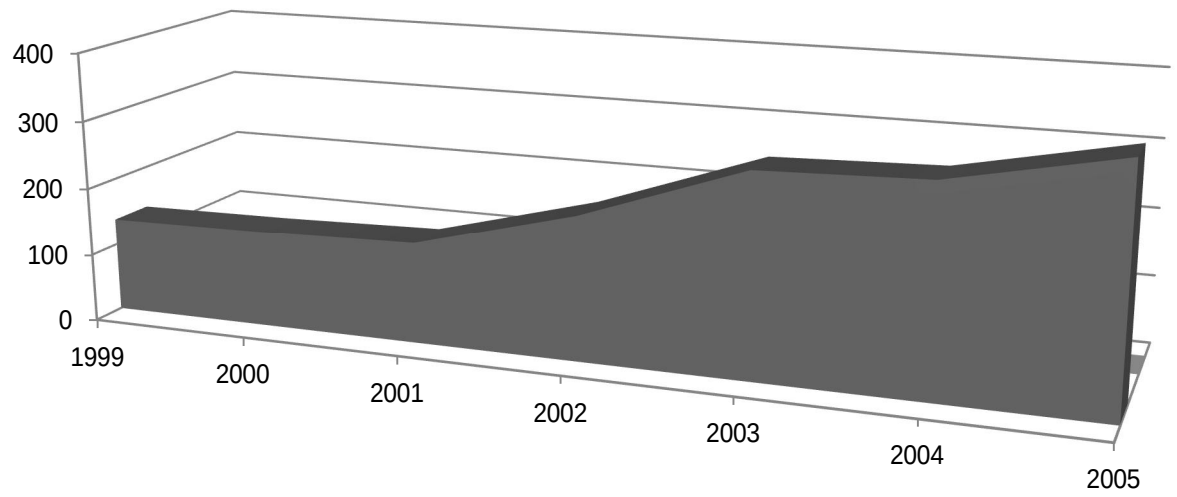
microprocessor cards. The following table shows the **geographical distribution of smart and microprocessor card usage worldwide in 2002**.

Table (06): Distribution of Smart and Microprocessor Card Usage Worldwide, 2002

Region	Smart Cards	%	Microprocessor Cards	%	Total
Europe, Africa	391	26%	414	59%	805
Asia, South Pacific, China	369	34%	231	33%	600
Americas	325	30%	56	8%	381
Total	1085	100%	701	100%	1786

Source: Philippe David, Op.cit., P.26.

Figure (11): Global Smart Card Volume, 1999–2005



Source : Jérome Baumgarten, Nicolas Descamp, Ibid.

Table (07): Size and Market Share of Smart Cards, 2025
Study Period: 2019–2030

Indicator	Value
Market Size in 2025	USD 21.82 billion
Projected Market Size in 2030	USD 30.03 billion

Indicator	Value
Growth Rate (2025–2030)	8.60%
Fastest-Growing Market	Asia-Pacific
Largest Market	North America
Market Concentration	Moderate
Key Players (unordered)	Watchdata, Caralogix, Securakey, Bdr., intelCav

Source: Mordor Intelligence – Smart Card Market, 12/01/2025

The smart card market is valued at **USD 20.3 billion in 2025** and is expected to reach **USD 30.6 billion by 2030**, growing at a **compound annual growth rate (CAGR) of 8.6%** over the forecast period.

Regionally, Asia holds the largest established base, while the greatest growth potential lies in Africa, where **mobile-first payment systems** are being introduced and cards are issued to previously untapped customer segments.

Competitive intensity is moderate; leading manufacturers are consolidating their market share through **sustainability-focused products** and **biometric innovations**, creating differentiation beyond price.

These are some key takeaways from the core statistics: (2602)

- **By interface type:** Contactless cards led with **54% of the smart card market share in 2024**; dual-interface cards are expected to grow at a **CAGR of 8.7% until 2030**.
- **By chip type:** Microcontroller cards accounted for **62% of the smart card market in 2024**; secure element-based cards are projected to grow at a **CAGR of 10.2% until 2030**.
- **By material:** PVC dominated with a **42.95% market share in 2024**; polycarbonate cards are expected to grow at a **CAGR of 8.3% until 2030**.
- **By application:** Payment and banking cards held **45.07% of the smart card market in 2024**; ID and electronic identity cards are forecasted to grow at a **CAGR of 10.37%**.
- **By end-user industry:** Telecom retained **44.43% of the smart card market in 2024**; banking, financial services, and insurance are expected to record the **highest CAGR of 9.83%**.

- **By geography:** Asia led with **44% of the smart card market in 2024**, while Africa is projected to achieve the **fastest CAGR of 9.3% between 2025 and 2030**.

Smart card industry leaders:

1. CardLogix Corporation
2. Watchdata Technologies
3. Bundesdruckerei GmbH
4. IntelCav
5. Secura Key

With payment companies increasingly adopting AI, a new index by **Evident**, tracking AI in the financial sector, ranked **Visa first** among 12 global payment companies. Visa reported **USD 41.391 billion in revenue for the twelve months ending December 31, 2025**, up **12.47% YoY**, and **USD 40 billion for the full year 2025**, up **11.34% from 2024**. **Mastercard** and **PayPal** ranked second and third, respectively. Fintech giants like **Stripe** and **Block** ranked fifth and sixth, highlighting how rapidly startups are acquiring substantial AI capabilities. (1201)

4. Advantages of Electronic Banking Services

To understand this topic better, it is essential to compare **traditional banks** and **electronic banks**, both in terms of service delivery and legal frameworks.

4.1. General Comparison Between Traditional and Electronic Banking

Technological advancements in electronic banking now allow customers to **access banking information anytime, anywhere**, conduct all transactions at **lower costs**, and enjoy greater convenience. In this context, a comparison between **traditional banking channels** and **internet-based banking** can be made in terms of **product distribution costs**.

4.2. Advantages of Electronic Banking Services

To better understand this topic, it is essential to compare **traditional banks** and **electronic banks**, both in terms of service delivery and the legal framework.

A. General Comparison Between Traditional and Electronic Banking

Technological advancements in electronic banking now allow customers to **access banking information anytime and anywhere**, in addition to conducting all transactions at **lower costs**. In this context, we compare traditional banking operations with electronic banking operations.

Table (08): Cost Differences Between Traditional Channels and Online Channels

Unit: USD per transaction

Transaction Type	Traditional Channels	Online Channels	Savings (%)
Bill Payments	2.22 – 3.32	0.65 – 1.10	67% – 71%
Software Distribution	15.00	0.10 – 0.20	97% – 99%
Banking Transactions	1.08	0.13	89%
Airline Ticket	9.10	1.18	87%

Source: Teboul Tayeb, *E-commerce Policies and Legal Issues*, online article, www.ityarabic.org/e-business 22/11/2016

Analysis:

- Bill payments online save **67%–71%** compared to traditional channels.
- Software distribution online saves **97%–99%**.
- Banking transactions show a savings of **89%**.
- Airline ticket purchases save **87%** in transaction costs.

Clearly, **internet banking significantly reduces costs** compared to traditional modern channels.

For example, in countries like **Hong Kong** and **Singapore**, any bill can be paid via ATMs, offering several advantages including cost reduction. Paper bills cost between **$0.75 and $2.75**, while electronic bills cost only **$0.25–$0.30**.[4]

Table (09): Estimated Cost of Services Across Different Channels

Service Delivery Channel	Estimated Cost
Bank branch service	+295 units
Call center service	+56 units
Internet service	+4 units
ATM service	+1 unit

Source: Ezzedine Kamel Amin Mostafa, Electronic Banking, online article, www.bank.org/arabic/period, 22/11/2013

[4] Nadhim Muhammad Nouri Al-Shammari & Zuheir Abdel-Fattah Al-Abdallat, Op. Cit., p.52.

From the table, it is evident that cost savings are substantial: around 70% for bill payments, approximately 98% for software distribution, 89% for banking transactions, and 87% for airline tickets. This demonstrates that online transactions significantly reduce costs. Banking sector professionals estimate that the cost of providing a service through traditional channels is at least six times higher than through modern electronic channels. Thus, one of the main objectives of banking is to reduce costs while delivering services to customers more efficiently.

The following table presents estimated costs of banking services across different channels:

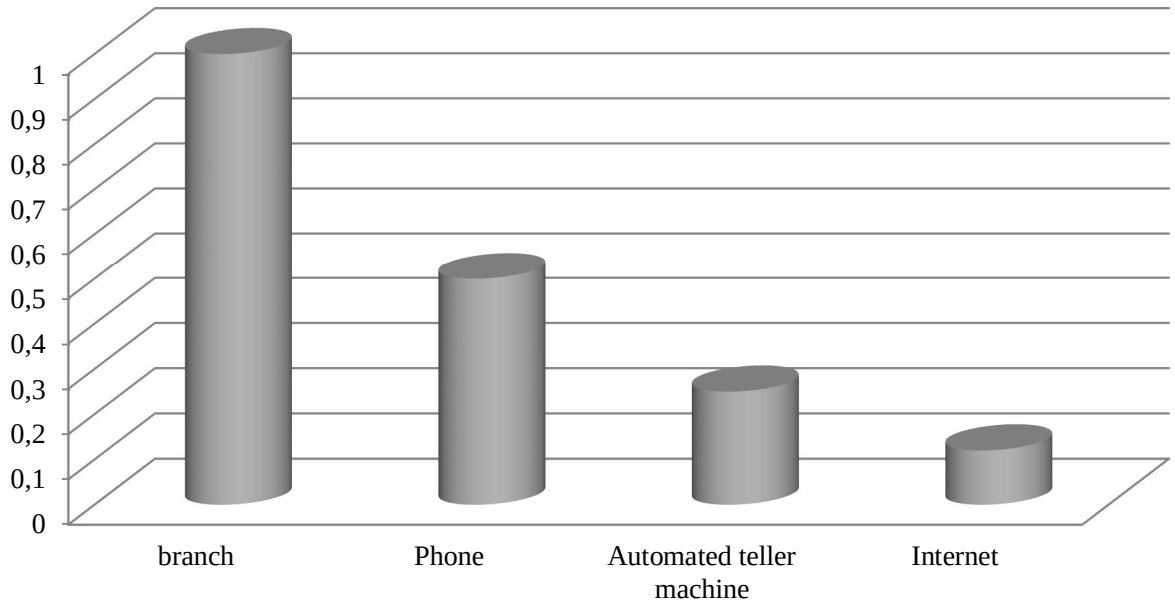
Table (10): Cost of Accessing Banking Services via Different Electronic Channels and Branches (£ and $)

Channel	Internet	ATM	Phone	Branches
Service Cost (£)	0.09	0.17	0.40	1.06
Service Cost ($)	0.01	0.27	0.54	1.07

Source: Nadhim Muhammad Nouri Al-Shammari & Zuheir Abdel-Fattah Al-Abdallat, Op. Cit., p.40.

It is clear from the table that providing banking services via the internet saves up to 98% of the cost, excluding human resource expenses, and exceeds 99% when using ATMs

Figure (12): Cost of obtaining banking services through electronic channels (in euros)"



Source: Dominique Plihon, Jézabel Couppey-Soubeyran & Saidane***, Les banques – acteur de globalisation financière,*** Les études de la Documentation Française, Édition : La Documentation Française, Paris, France, 2006, p.61.

According to statistics, opening an account directly costs €65, whereas opening an account online costs only €15. In addition, the bank simultaneously promotes its other services avaible through the internet. (Hussein 2010)

B. Applicability of Legal Rules of Traditional Banks to Electronic Banks

In this section, two opinions are presented:

Branch One: First Opinion

1. **Legal Entity:** Traditional banks are characterized by having a legal entity, with multiple and widespread branches. In contrast, electronic banks operate as a single entity that any customer can access regardless of their location or time. They also do not require a large number of employees as in traditional banks.
2. **Services Provided:** Regarding the services offered to customers, traditional banks provide all banking operations in a conventional, direct manner, which requires significant effort and time for both the bank and the customer. Electronic banks provide the same services but through modern electronic methods, saving time and effort.

Accordingly, electronic banks should be subject to the same legal rules that govern traditional banks to ensure that customers have a suitable level of reassurance when dealing with this type of bank.

Branch Two: Second Opinion

However, there is an opposing view that rejects applying traditional banking laws directly to electronic banking. For example, Dr. Ahmed Safar supports this opinion. This view is based on the comparison between traditional and electronic services; due to the significant differences, the substantive legal provisions regulating and protecting traditional banking operations cannot be applied to electronic banking methods and procedures. (Safar 2008)

For instance, a check has legal validity under the law. Violations of the rules that protect checks—such as issuing a check without sufficient funds, closing the account without the check issuer’s knowledge, or issuing it without the issuer’s awareness—are punishable under clear criminal law provisions. This is because the check is a tangible instrument that can be presented to judicial authorities if the beneficiary cannot obtain its value, ensuring the right is recovered by legal force. (2012)

The electronic check is the digital equivalent of a traditional check. It is essentially a secured and authenticated electronic financial data message that contains all the required

information, including the requested monetary value. The issuer of the check sends it to the beneficiary, who presents it to the bank where they hold an account online. The bank then transfers the monetary value of the check to the beneficiary's account and electronically cancels the check, returning it to the beneficiary as proof that the check has been cashed. This allows the beneficiary to verify electronically that the amount has indeed been transferred to their account.

Thus, the difference between the two cases is significant. The electronic check is a financial data message and lacks the physical element inherent in a traditional check. Therefore, the same legal rules that apply to a traditional check cannot be directly applied to an electronic check, and specific regulations must govern electronic check services. The same principle applies to electronic money versus physical cash.

Given the substantial differences and the fact that electronic transactions have become a real and practical reality, it is necessary and essential for Arab countries to enact laws regulating these electronic transactions. Most countries have made significant progress in this area, establishing electronic transaction laws in Bahrain, Jordan, the UAE, Egypt, Tunisia, Qatar, and Lebanon, among others.

As long as electronic transactions are an established reality, appropriate legal and regulatory frameworks are required to support their expansion and development. Otherwise, in the absence of such frameworks, numerous legal issues may arise, such as cases of non-payment, disputes, and other matters that have well-established rules within the scope of traditional banking operations. (Al-Haddad 2009)

5. Results analysis

The study identified a set of challenges and risks associated with the widespread adoption of FinTech, including:

• Cybersecurity and data protection, as the risk of digital breaches and financial fraud remains significant.

• Regulatory and legal gaps, where many existing legal frameworks have not kept pace with rapid financial innovation, potentially threatening financial stability and consumer protection.

• Digital and social disparities across countries and demographic groups, limiting some users' ability to fully benefit from digital services. Based on these findings, the study emphasizes that the success of FinTech depends on achieving a careful balance between financial innovation, consumer protection, and financial system stability.

6. Conclusion

This study concluded that modern financial technologies (FinTech) represent a key driver in the development of the global financial sector, demonstrating effectiveness in improving operational efficiency, reducing costs, and expanding access to financial services, thereby contributing to enhanced financial inclusion, particularly for marginalized populations and individuals in remote areas. The study also revealed that FinTech applications, such as digital payments, online lending, and automated investment platforms, have contributed to increased financial innovation and more precise, effective management of financial resources.

The study further recommends the development of flexible and effective regulatory frameworks, enhancement of users' digital and financial literacy, and promotion of responsible innovation to ensure sustainable benefits from financial technologies while minimizing associated risks.

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