International Journal of Financial, Accounting, and Management (IJFAM)
ISSN: 2656-3355, Vol 7, No 3, 2025, 387-406 https://doi.org/10.35912/ijfam.v7i3.2825

Understanding fintech excellence: A scholarly review of the diploma fintech model for effective global implementation

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Article History
Received on 17 April 2025
1st Revision on 20 May 2025
2nd Revision on 21 July 2025
Accepted on 25 July 2025

Abstract
Purpose: This study examines the global Fintech phenomenon by reviewing research from several countries. It aims to identify best practices, involved journals, applied methods, and knowledge gaps that require further investigation.
Methodology/Approach: A systematic literature review was conducted using journals from multiple international databases that discuss fintech practices worldwide. The analysis follows the DIPLOMA Model by Boratynska to systematically evaluate and synthesize the selected studies.
Results/Findings: Based on the DIPLOMA Fintech Model, Indonesia emerges as the leading country in implementing fintech practices, fulfilling all five dimensions of the model. This achievement positions Indonesia as a potential benchmark for other countries aiming to strengthen their fintech ecosystems. Malaysia, China, and Brazil follow by meeting four dimensions, indicating strong development. The United Kingdom, Germany, Argentina, and South Africa fulfill three dimensions, reflecting moderate fintech maturity. Meanwhile, Sub-Saharan countries and Nigeria meet only one dimension, highlighting significant gaps in fintech readiness and infrastructure.
Conclusion: Indonesia fulfills all five DIPLOMA dimensions, confirming its position as a global leader in fintech implementation and innovation. This illustrates Indonesia's potential to serve as a reference for other countries.
Limitations: This study is limited by the selection of countries from only four continents, excluding Australia. The use of a relatively small number of articles also indicates the need for broader literature coverage.
Contribution: The study shows that fintech success is not solely determined by development level, but by a combination of supportive factors that enable even developing countries to excel.

Keywords: *Best Practice on Fintech, DIPLOMA Model, Fintech, SLR*

How to Cite: Haripin, H., Indraprakoso, D., Wibisono, G., Utomo, H. (2025). Understanding fintech excellence: A scholarly review of the diploma fintech model for effective global implementation. *International Journal of Financial, Accounting, and Management*, 7(3), 387-406.

1. Introduction

The present advancements in technology have propelled a worldwide shift towards the digital domain. This transformation, often termed digital transformation, entails embracing innovative technologies to boost efficiency, generate value, and enhance societal well-being (Ebert & Duarte, 2018). The

emergence of digital transformation has created a demand for innovation across industries worldwide, particularly in the financial sector. Financial Technology (Fintech) products are being developed as the financial sector actively engages in innovation to adopt digital transformation. FSB (2017) defines Fintech as "innovations enabled by technology in financial services that result in new business models, applications, processes, or products with significant impact on the provision of financial services."

The development of fintech differs greatly across the globe owing to the varying levels of technological advancement and economic circumstances in each country. The UK's extraordinary achievements in adopting fintech made it a leader in the digitalization of financial services in 2019 (Pakhnenko, Rubanov, Hacar, Yatsenko, & Vida, 2021). This achievement is fueled by the government's active endorsement of innovation policies and digital transformation in FinTech. Additionally, the UK is at the forefront of fintech innovation, with expectations of the sector yielding an annual revenue of £20 billion. The UK's regulatory sandbox model, led by the Financial Conduct Authority (FCA), serves as a blueprint for fintech-friendly environments. Furthermore, alternative financial avenues for SMEs in the UK have expanded notably, with an estimated 20,000 SMEs securing £2.2 billion in loans through online financial platforms in 2015 (L. Lu, 2018).

Nevertheless, certain developed countries fall behind in integrating fintech, even compared to certain developing nations. Germany exemplifies such a case, as it lags in embracing novel digital technologies and financial services provided by high-tech non-bank startups (e.g., FinTechs) (Jünger & Mietzner, 2020). Presently, Germany trails not only other advanced nations but also several developing countries in the fintech sector. Notably, in terms of mobile payment adoption, only 14% of Germans currently utilize mobile payments, with two-thirds of the population expressing no interest in adopting fintech services in this realm in the future (Schiereck, 2018).

China stands out among developed countries because of its rapid fintech adoption. Chinese banks focus on digital transformation, with strong investments in big data, blockchain technology, and AI. In 2015, it had the world's largest P2P lending network, with 3,477 platforms (Hidajat, 2020). Fintech in China also supports green innovation, eases financial barriers, and helps banks manage risks, leading to increased lending and financial asset growth (Cheng, Yao, Qian, Wang, & Zhang, 2023; Liang, Zhao, & Huang, 2023). Fintech growth is not limited to advanced countries; many developing nations have also seen rapid adoption, often surpassing their developed peers. In Latin America, Fintech has improved financial and social conditions. Notable examples include Mercado Pago and Nubank, the latter valued at $10 billion in 2019 (Cantú & Ulloa, 2020). Brazil led the region with $673 million in fintech activity in 2018, while Argentina saw growth from $30 million in 2017 to $129 million in 2018 (Ioannou & Wójcik, 2022).

Indonesia, like many other rapidly developing nations, has undergone a rapid digital transformation, resulting in changes in how smartphone users access financial services. Fintech firms in Indonesia are consistently innovating to create personalized products and services, aiming to enhance financial access and inclusivity, with a goal of achieving 90% national financial inclusion by 2024 (Nugraha, Setiawan, Nathan, & Fekete-Farkas, 2022). The fintech landscape in Indonesia is characterized by swift and dynamic evolution, with a 49% growth in the number of fintech companies from 2017 to 2021, resulting in 440 companies by 2022. This fintech ecosystem encompasses various types of companies, including payment platforms, alternative lending, investment technology, financial and accounting services, cryptocurrency, banking technology, insurance technology, regulatory technology, and blockchain services (Kurnia Rahayu, Budiarti, Waluya Firdaus, & Onegina, 2023).

Similarly, rapid fintech growth has been witnessed in Malaysia, with mobile banking transactions soaring from 13.6 million in 2011 to approximately 936 million by 2020 (Tan & Chung, 2023). It is worth mentioning that Malaysia became the inaugural country in Southeast Asia to regulate six of its initial P2P market operators in 2016 (Nguyen et al., 2021). Fintech adoption in Africa faces challenges such as infrastructure gaps, limited digital literacy, language barriers, and low-income pricing constraints (Hammerschlag, Bick, & Luiz, 2020). Adoption rates vary, with ATM at 64.02%, internet banking at 10.9%, and mobile banking at 77.85% (Okoli & Tewari, 2020). Despite these obstacles,

mobile banking has driven economic growth in several countries. For instance, South Africa is considering cryptocurrency regulations (Hamukuaya, 2021). Research shows fintech can reduce income inequality through improved financial inclusion, highlighting the need for supportive policies across the continent (Chinoda & Mashamba, 2021; Iddrisu, Abor, & Banyen, 2022).

Significant variation in fintech implementation across regions was observed, with rapid growth seen in advanced countries and some developing nations surpassing advanced ones. The effectiveness of fintech implementation is influenced by various factors beyond a country's level of advancement. This comprehensive literature review aims to deepen our understanding of the global implementation of fintech. The DIPLOMA Fintech Model developed by Katarzyna, which includes elements such as Digital, Innovation, Pricing, Learning, Openness, Modernity, and Agility, will be utilized to identify countries with the best fintech practices. The systematic literature review (SLR) methodology employed by Suryono, Budi, and Purwandari (2020), which involves planning, implementation, and reporting stages, serves as the guiding framework for the review process.

2. Literature Review

This study utilizes the DIPLOMA Fintech Model, which draws from the corporate diplomacy approach developed by Henisz (2017), known as the DIPLOM MODEL. Henisz underscores the role of corporate diplomacy in generating tangible business value, as managers aim to excel in strategic competition and effectively engage external stakeholders. By elevating corporate diplomacy to the executive level and implementing advanced management tools, companies can generate value for shareholders and society. However, challenges exist in realizing this vision, as many managers do not often view corporate diplomacy as the central mission of organizations. Consequently, corporate diplomacy is often perceived as less significant and influential than operational, financial, and marketing departments. Moreover, staff in diplomacy-related roles, such as government affairs, communications, and public relations, may face conflicts that diminish their overall influence. To address these issues, Henisz suggests a framework that combines different functions and offers tools for corporate diplomats to boost their effectiveness within the organization.

This strategy aims to readjust the power dynamics within the company, focusing on prioritizing the strategic concerns of external stakeholders. Henisz identifies six best practice elements for both success and failure: Due Diligence, Integration, Personal, Learning, Openness, and Mindset, abbreviated as DIPLOM (Figure 1). Among these elements, two (Due Diligence and Integration) rely on data-driven and analytics-based approaches, while the remaining four emphasize behavior. Of these, two are centered on internal company implementation (Learning and Mindset), while the other two focus on external stakeholder engagement (Personal and Openness).

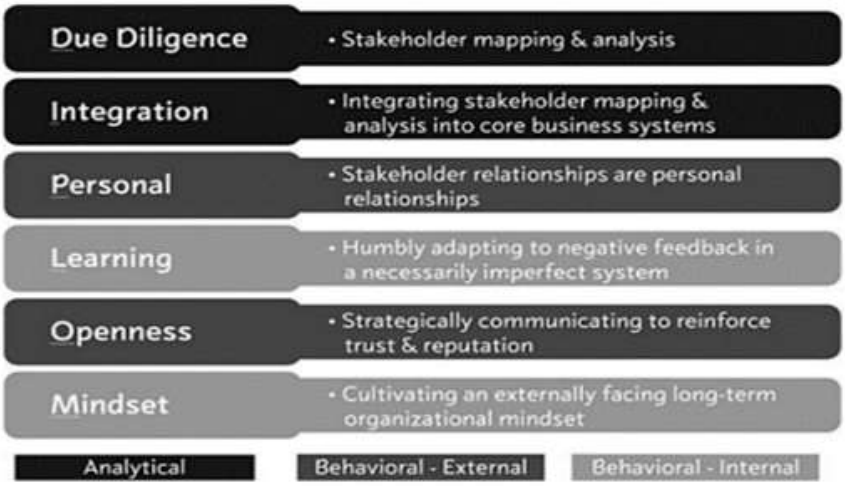

Figure 1. DIPLOM Concept
Source: Adapted from Henisz (2017)

Boratynska (2019) adapts the DIPLOM model for fintech application, extending it into a concept known as DIPLOMA: Digital, Innovation, Pricing, Learning, Openness, Modernity, and Agile (Figure 2). The reason for adapting DIPLOM to DIPLOMA is to tackle forthcoming challenges, progress all six elements concurrently, and assess the effective implementation of fintech companies. This study focuses on recognizing fintech implementation practices in financial services and evaluates the influence of digital transformation (fintech) on value generation in the global financial sector.

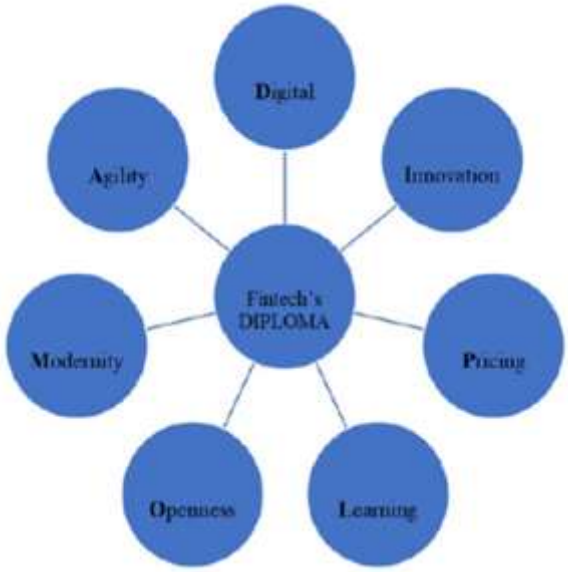

Figure 2. Fintech DIPLOMA Concept
Source: Adapted from Boratynska (2019)

The seven fintech characteristics that constitute the DIPLOMA approach are as follows.

a. Digitalization
   Digitalization involves converting businesses from analog to digital formats, offering additional value and a competitive edge to boost revenue (Boratyńska, 2019). Within the fintech sector, digitalization entails integrating technology and digitizing financial solutions (Wang, Guan, Hou, Li, & Zhou, 2019). Digitalization plays a crucial role in countries, particularly in the field of fintech. Nations can effectively compete with others when fintech digitalization is well executed. The level of digitalization is determined by the extent of business process transformation within a country.
b. Innovation
   Innovation involves translating ideas into enhanced and unique products, services, or business processes that confer a competitive edge for progress and competition against other companies (Boratyńska, 2019). Within the fintech sector, innovation pertains to the creation and adoption of novel technologies and methodologies that challenge conventional financial services and establish new value networks (Anagnostopoulos, 2018). Innovation is considered significant, especially for engaging stakeholders, and its assessment is based on the introduction of new fintech products and services by fintech companies within a country.
c. Pricing
   The integration of fintech-driven credit modeling has expanded financial inclusion, enabling certain borrowers to access higher-rated loans while securing credit at reduced costs compared with previous levels. Companies can reduce costs through the enablement of fintech (Boratyńska, 2019). Determining the cost of financial services offered by fintech firms is integral to pricing. Fintech companies integrate innovative technologies with financial services to introduce enhanced and novel financial products and services (Moro-Visconti, Cruz Rambaud, & López Pascual, 2020). Financing accessibility at lower costs is measured based on the financing that fintech companies offer to consumers.
d. Learning

The dynamic nature of fintech necessitates careful consideration of feedback from external sources to address weaknesses and refine strategies (Boratyńska, 2019). Within the fintech sector, learning involves acquiring knowledge and honing skills through practical experience, data analysis, and the utilization of artificial intelligence (AI) and machine learning (ML) algorithms (Cai, 2021). Learning is imperative for every nation in the fintech realm to track advancements and to enact improved strategies. The gauge lies in the process or experiential development of innovative fintech products that confer a competitive edge to companies.

e. Openness
Open communication of information is crucial for enhancing trust, reputation, ensuring accountability, and establishing realistic expectations (Boratyńska, 2019). For instance, strategically disclosing details about service provision, technology compatibility, and user engagement can expand the market potential of fintech platforms by promoting resource sharing, lowering infrastructure expenses, and fostering innovation and collaborative value creation opportunities (Ng, Tan, Sun, & Meng, 2023). Transparency in fintech fosters an environment conducive to ongoing innovation and upholds a nation's standing. The assessment is contingent on the official regulations established by a country for adopting fintech product development.

f. Modernity
Modernity refers to adopting new approaches to policies and product development within a corporation, aligning with the trajectory of progress (i.e., the future) (Boratyńska, 2019). In the fintech sector, modernity extends to the incorporation of contemporary technologies and innovative methods in financial services, leveraging information technology, such as cloud computing and mobile Internet, to enhance banking transactions and lending processes (Suryono et al., 2020). Consequently, business operations attain competitive capabilities and remain marketable. Modernity evaluation is based on how well fintech companies maintain and evolve their products to facilitate consumer use.

g. Agility
Agility refers to a set of principles guiding software development, where solutions evolve through implementation. It fosters dynamic, iterative work and empirical feedback to enable quick and flexible responses to changes (Boratyńska, 2019). In the fintech industry, agility denotes the capacity of fintech organizations to adapt and respond swiftly to shifting market conditions, customer demands, and emerging technologies. Fintechs are required to devise innovative technology-driven services while prioritizing the customer journey and delivering tailored customer service (Barbu, Florea, Dabija, & Barbu, 2021). The evaluation of agility is contingent upon how effectively fintech companies within a country respond to changes, with operations being optimized and enhanced based on feedback and insights gained throughout the iterative process.

3. Research Methodology

This study utilizes a systematic literature review method to examine key scholarly works concerning optimal strategies for implementing Fintech. SLR is a valuable approach for identifying emerging themes and laying down theoretical frameworks pertinent to the subject matter (Stieglitz, Mirbabaie, Ross, & Neuberger, 2018). This study aims to conduct a literature review to identify countries that adopt Fintech best practices according to the DIPLOMA model.

To systematically evaluate Fintech practices across nations, each selected article was coded and assessed against the seven DIPLOMA dimensions. Each dimension was evaluated on a binary scale (fulfilled/not fulfilled) based on the thematic content of peer-reviewed journal articles. This coding was independently validated by the authors to minimize bias. The decision to include countries from four continents aimed to balance geographical representation, with selections guided by the availability of peer-reviewed literature and diversity in fintech maturity levels. The countries selected for this review include Brazil and Argentina (Americas), the UK and Germany (Europe), Indonesia, Malaysia, and China (Asia), and South Africa, Nigeria, and other sub-Saharan nations (Africa), offering diverse regional perspectives on Fintech adoption.

The SLR methodology applied in this study is derived from the work of Suryono et al. (2020), who emphasized SLR as a crucial starting point for shaping and pinpointing research inquiries. The concept

of SLR is widely embraced in information system research to assess the theoretical landscape of the research subject. The steps involved in conducting the SLR are outlined as follows:

1. Research Question: The researcher identifies the research questions to pinpoint relevant studies and, upon delineating the Fintech topic, proceeds to locate articles that align with the research requirements.
2. Search Process: Initially, the researcher determines the database portals or scholarly publications to utilize, as the quality of the articles referenced is influenced by the selection of journal databases. SCOPUS and Google Scholar were used in this study. Subsequently, a review protocol was formulated by categorizing keywords according to population, intervention strategies, comparisons, outcomes, and contexts. For instance, the population is identified as "fintech in a country" within the context of "America, Africa, UK, Germany, Indonesia, China, etc." The intervention aspect involves gathering further information related to fintech focus, such as fintech payments, funding, innovation, and market strategies. This systematic approach aided in identifying articles relevant to the research questions.
3. Implementation: To reduce subjectivity in article selection, inclusion and exclusion criteria were defined, including the selection of articles in English and Indonesian while excluding other languages such as Spanish or Mandarin. Subsequently, the researcher identified articles pertinent to the research questions and eliminated duplicate articles. The implementation process was performed manually.

Figure 3. SLR Process
Source: Adapted from Suryono et al. (2020)

Once all articles are collected, the researcher conducts data extraction and synthesis. Figure 4 illustrates the document selection process, beginning with the selection of titles and abstracts and progressing to the selection of full texts.

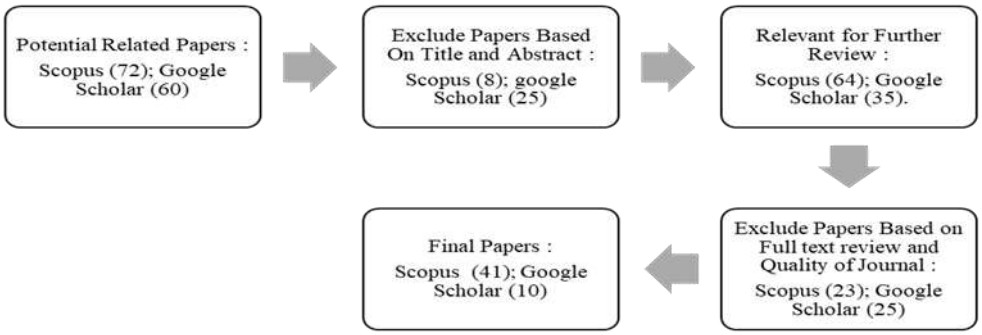

Figure 4. Document Selection Process
Source: by author (2024)

3.1 Classification of Articles Based on Fintech Practices

This categorization delineates various subjects concerning Fintech practices across diverse countries, aiding in the identification of Fintech practices aligned with the dimensions of the DIPLOMA Fintech Model. These subjects encompass Fintech Implementation (general), Payment, Innovation, Market Strategies, Peer-to-Peer Lending, and Cryptocurrency and Blockchain. The categorization of fintech practices on each continent is shown in Figure 5.

Figure 5. Classification based on practices in each continent
Source: by author (2024)

According to the provided figure, it is evident that the articles used in this study, categorized as "Relevant for further Review," total 99, with the largest quantity originating from Asia (46 articles), followed by Europe (23 articles), Africa (20 articles), and America (10 articles).

3.2 Classification of Articles Based on Journal Quality

In this study, the researcher employed articles sourced from high-caliber journals, ranging from Quartile 1 (Q1) to Quartile 3 (Q3), in both Scopus and Google Scholar. This categorization signifies that the selected articles exhibit credibility and are of high quality. The classification based on journal quality is presented below:

Table 1. Classification Based on Quality of Journal by Scopus and Google Scholar

Best Quartile	Total	Publisher
Q1	26 Articles	Taylor and Francis Ltd., Sage Publication Inc., Elsevier Inc., Elsevier BV, Alexander von Humboldt Institutes For Internet and Society, MDPI, SpringerOpen, Emerald Group Publish. Inc., Cambridge University Press, Wiley-Blackwell Publishing Ltd
Q2	14 Articles	Taylor and francis Ltd., Elsevier Inc., MDPI, KeAi, Emerald Group Publish. Inc., Growing Science, Centre of Socio;ogical Research, Frontiers Media S.A., Oxford University Press
Q3	11 Articles	North-West University, Taylor and Francis Ltd., Asian Economic and Social Society, IGI Publishing, Universiti Putra Malaysia, Institute of Eastern Europe and Central Asia, Gadjah Mada University, Emerald Group Publishing Limited, PC Technology Center, Universiti Malaysia Sarawak

Source: Processed by author (2024)

From the table provided (Table 1), it can be deduced that following the "full text review and Quality of Journal" phase, the overall count of articles utilized in this study amounts to 55, consisting of 26 Q1 articles, 14 Q2 articles, and 11 Q3 articles. Consequently, this study demonstrates commendable quality and reliability.

4. Results and Discussion

In this section, the application of the DIPLOMA fintech model is examined across each continent, commencing with Africa, followed by Asia, Europe, and the Americas. Additionally, a summary of the DIPLOMA implementation across each continent is provided in the conclusion.

4.1 Fintech Implementation in Africa

4.1.1 Digitalization:

Fintech adoption commenced and rapidly expanded in Africa, particularly in sub-Saharan regions. Its evolution began with a focus on the payment sector, notably exemplified by Safaricom's M-Pesa. The introduction of M-Pesa raised awareness among the populace regarding fintech's potential to enhance financial inclusion in areas underserved by traditional banking infrastructure (Yermack, 2018). Moreover, electronic payment systems are deemed more efficient than paper-based methods because they reduce transfer costs and minimize reliance on checks or cash transactions (Hamukuaya, 2021).

Additional research indicates that mobile money services, which allow for receiving, storing, and spending money via mobile phones, can facilitate funding and enhance financial inclusion for entrepreneurial endeavors, representing the initial strides in fintech development in Africa (Langley & Rodima-Taylor, 2022; Molla & Biru, 2023). Based on the provided description, it can be inferred that Africa's digitization journey initially commenced in Sub-Saharan regions with the inception of M-Pesa as a mobile payment system. The advent of M-Pesa not only transitioned manual payment methods to digital, fostering financial inclusion, but also streamlined transactions among Africa's populace.

4.1.2 Innovation and Learning:

In Africa, particularly in South Africa, there has been a notable uptake of innovation concerning cryptocurrencies, as evidenced by the awareness and trading activities surrounding cryptocurrencies in the region. Multiple studies suggest that a considerable segment of the South African population possesses knowledge of and expresses interest in investing in crypto-assets (Mazambani & Mutambara, 2020). Furthermore, South Africa has initiated the deployment of broadband and cloud infrastructure, supporting the advancement of Information and Communication Technology (ICT) within the nation (Pollio & Cirolia, 2022).

Another noteworthy innovation in Africa is the creation of the JUMO platform, which amalgamates neo-colonial communication, digital, and data infrastructure to connect and empower Africa's unconnected and marginalized populations (Langley & Leyshon, 2022). Additionally, fintech advancements in the healthcare sector in Africa have facilitated medical institutions and practitioners in delivering services while streamlining financing for patients or clients. Fintech facilitates easy access to funding for patients, addressing their medical requirements, and ultimately enhancing the health outcomes of Africa's populace (Lucero-Prisno III et al., 2022).

Therefore, learning and innovation have primarily taken place in South Africa, where the country has spearheaded various fintech advancements through learning. For instance, South Africa has ventured into cryptocurrencies, established broadband and cloud infrastructure to bolster ICT, introduced the JUMO platform, and pioneered fintech innovations within the healthcare sector. These innovations have all stemmed from the learning process, with the goal of cultivating a nation cognizant of digital transformation within the financial sector.

4.1.3 Openness:

South Africa has specific laws to curb the possible use of currency as a medium for illegal activities, such as the Prevention of Organized Crime Act of 1998, the Financial Intelligence Center Act of 2001, the Protection of Constitutional Democracy Against Terrorist and Related Activities Act of 2004, and

the South African Reserve Bank (SARB), which ensures that the national payment system complies with regulations. Intermediaries and trusted institutions are mandated to combat money laundering and terrorist financing (Hamukuaya, 2021). The swift progress of Fintech has spurred the South African government to address these potential risks. Consequently, the nation has implemented regulations regarding offenses or misuse associated with illicit currency exchanges or payments. This underscores South Africa's willingness to remain abreast of fintech advancements.

4.1.4 Modernity:

Nigeria has a significant demand for digital currency, positioning it as one of the leading users of cryptocurrency worldwide. Recently, Nigeria attained the fifth position globally, with 11% of its internet-connected population possessing or utilizing cryptocurrencies. Additionally, in 2019, Lagos, Nigeria topped the global rankings for online searches related to Bitcoin (Ukwueze, 2021).

Modernity has also emerged in Africa, and specifically in Nigeria. With the rapid development in the financial sector, Nigeria has recognized the potential future utility of digital currency, notably Bitcoin, amidst rapid advancements in the financial sector. This trend is propelled by the populace's strong inclination towards utilizing cryptocurrencies in the future, resulting in Nigeria securing the fifth position globally in cryptocurrency adoption.

Fintech implementation in Africa has generally proven successful, aligning with the five dimensions outlined in the DIPLOMA fintech Model. Sub-Saharan Africa has spearheaded the digitalization dimension, Nigeria exemplifies modernity, and South Africa has excelled in innovation, learning, and openness. However, individual countries still face challenges. The initial fintech development in Sub-Saharan Africa began with the introduction of M-Pesa as a mobile payment solution, which has since evolved. Conversely, South Africa has demonstrated greater innovation and modernization through the adoption of cryptocurrencies, establishment of broadband and cloud infrastructure, introduction of the JUMO platform, and fintech advancements in healthcare. Nigeria stands out for its strong inclination towards digital currency use, particularly Bitcoin. Thus, it can be inferred that South Africa leads as the African country that has most effectively implemented fintech according to the DIPLOMA model.

4.2 Fintech Implementation in Asia

4.2.1 Digitalization:

Fintech has rapidly emerged in Indonesia since the 2010s. This was initially attributed to extensive developments in the information and communication technology infrastructure in the country over the past decade. By 2017, fintech transactions in Indonesia reached a significant amount of approximately US$ 15 billion, primarily in the areas of payments, investments, and loans (Iman, 2018). In 2019, Indonesia's global fintech industry was ranked 47th, with a digital value of US$ 40 billion (approximately IDR 586 trillion). The escalating number of fintech enterprises reflects the rapid expansion of the industry (Kharisma, 2021). Indonesia boasts 283 registered fintech companies listed by the OJK and BI (Santoso, 2020). Earlier, the World Bank Global Findex (2017) reported that Indonesia had a population of 95 million "unbankable" individuals. The adoption of fintech is anticipated to benefit the unbanked populace, especially in peer-to-peer financing services, ultimately fostering financial inclusion in society (Setiawan, Nugraha, Irawan, Nathan, & Zoltan, 2021).

Similarly, Malaysia has witnessed a surge in economic development and financial technology advancement. The introduction of digital-only banks in Malaysia is still in its nascent stage, with Bank Negara Malaysia (BNM) having licensed five digital-only banks as of April 2022 (Saif, Hussin, Husin, Alwadain, & Chakraborty, 2022). Malaysia holds a prominent position in Islamic finance. As a predominantly Muslim country, Malaysia has considerable potential to develop platforms that align with Islamic values and meet the preferences of its population. Consequently, Malaysia has embarked on digitalization in the Shariah financial sector. Fintech startups in Malaysia are experiencing gradual growth while adhering to Shariah regulations, aimed at bolstering the global Islamic financial industry (Ab Razak, Dali, Dhillon, & Manaf, 2020).

In China, the development of digital finance has significantly increased in tandem with digital technology. In 2022, The Two Sessions of China combined the Digital Economy Innovation Leading

Development Plan, emphasizing multiple measures for digital economic development and integrating digital technology and financial systems, which is an integral part of implementing high-quality development strategies. Hence, digital finance plays a crucial role in helping China achieve its high-quality development objectives (Jin, Dai, Jiang, & Cao, 2023).

Furthermore, fintech advancement in China is evident in the FinTech platform, which has transformed how people invest in mutual funds. Prior to the emergence of the FinTech platform, mutual fund distribution channels were limited to fund companies, large banks, and brokers. This leads to limited fund choices and higher barriers for individual investors. However, in March 2013, the China Securities Regulatory Commission (CSRC) issued three regulations allowing independent technology companies, distinct from fund companies, brokers and banks, to collectively distribute funds. Consequently, more mutual funds are distributed through this platform, offering retail investors a vast array of choices on a single platform (You, Yu, Zhang, & Lu, 2023).

Based on the findings above, it can be concluded that digitalization in Asia varies across countries. Indonesia adopted fintech as early as 2010 and has experienced substantial growth in its industry. Malaysia is in the early stages of digital-only banking and prioritizes the advancement of Islamic finance. Meanwhile, China has integrated digital finance into its strategy for high-quality development and witnessed the emergence of fintech platforms.

4.2.2 Innovation:

Digital transformation has driven innovation in the fintech sectors of various countries, including Indonesia. In Indonesia, the advancement of payment systems through digitalization has been encouraged to accelerate economic and financial development. Bank Indonesia (BI) led the introduction of the Indonesian Standard QR Code (QRIS) to standardize QR-based payments and enhance connectivity and interoperability (Natakusumah, Maulina, Muftiadi, & Purnomo, 2023).

China has witnessed significant fintech advancements, notably in QR payments, where it stands as a frontrunner. Moreover, China has developed advanced QR code payment systems based on biometrics, exemplified by DCEP (Digital Currency Electronic Payment) (Liébana-Cabanillas, Muñoz-Leiva, Molinillo, & Higueras-Castillo, 2022). A noteworthy innovation in China is the People's Bank of China's introduction of the DCEP concept. The DCEP is a fiat currency administered by designated institutions and made available to the general public. It encompasses cash transactions conducted outside the traditional banking system and funds held by individuals (Xia, Gao, & Zhang, 2023).
Thus, significant progress has been achieved in the fintech sector in Asia, specifically in Indonesia and China. Indonesia led the way with the QRIS solution, while China introduced the DCEP digital currency, marking significant innovations within their respective markets.

4.2.3 Pricing:

In Indonesia, the expansion of fintech has led to the emergence of peer-to-peer lending platforms. Shariah-compliant P2P lending platforms are currently being developed in Indonesia, with progress still in its intermediate stages. P2P lending offers an alternative financing avenue, notably advantageous for SMEs and borrowers who may face rejection from traditional banks (Suryono, Budi, & Purwandari, 2021). The profit-sharing mechanism utilized in Islamic P2P platforms provides benefits to both borrowers and lenders compared to interest-based financing in conventional banks (Edward, Fuad, Ismanto, Atahau, & Robiyanto, 2023). As of 2022, Indonesia had 103 registered and licensed fintech lending providers, grouped into four categories: Edulon, Consumer P2P Lending, Cashloan/Paylater, and P2P Lending Business (Kurnia Rahayu et al., 2023). The Indonesian government regulates P2P lending services through OJK regulations, which cover transaction limits, P2P licensing, customer data protection, and P2P platform security (Ali, Simboh, & Rahmawati, 2023).

Similarly, Malaysia focuses on making fintech affordable and convenient for unbanked and underbanked consumers, such as small businesses, low-income families, and minorities, particularly gig workers, and young students. Additionally, it aims to reduce transaction costs, provide personalized and professional services, and enhance consumer digital literacy and skills in financial services. The

objective is for these digital banks to make financial services easily accessible to all, improve banking service quality, increase employment levels, and reduce poverty (Abdul-Rahim, Bohari, Aman, & Awang, 2022). Furthermore, P2P lending platforms in Malaysia have been subject to a reduction in interest rates by Bank Negara Malaysia, from 3% to 1.75%, specifically for business borrowers and not individuals (Nguyen et al., 2021).

China has implemented "green credit" into its sustainable finance or environmental finance efforts, focusing on loans provided by financial institutions to businesses for investments in environmentally friendly projects, such as green environmental protection, clean energy, green infrastructure, and eco-friendly services within conventional sectors (Liu & You, 2023). Therefore, considering the pricing dimension of the DIPLOMA model, Asia demonstrates commendable performance. Each country has distinct financing advancements. In Indonesia, P2P lending is evolving within both conventional and Shariah-compliant frameworks. Malaysia prioritizes the provision of affordable and convenient financial services, whereas China underscores green financing for environmental conservation and sustainable investments.

4.2.4 Learning:

The global spread of COVID-19 has brought economic challenges to many nations, especially China, where the risk of corporate debt defaults has increased, thereby affecting the quality of economic growth. In response, China has introduced fintech solutions to alleviate this risk, particularly targeting non-state-owned enterprises (SOEs) and small and medium-sized enterprises (SMEs) at various stages of growth. Consequently, fintech innovation in China is progressing as intended, aiming to enhance service delivery to the real economy and promote high-quality development.

In contrast, Malaysia prioritizes the security of the fintech industry, notably in light of rising cyber threats. Fintech firms are urged to increase their vigilance in identifying potential risks and security vulnerabilities. In Malaysia, mobile banking employs more robust user-authentication measures than Internet banking. Approximately 80% of the country's fintech systems are assessed at Level 3 in the uAuth Security Analytics Framework. Therefore, the Malaysian fintech industry must improve authentication protocols, methods for verifying logins and transactions, password guidelines, and readiness for quantum-safe security technology (Tan & Chung, 2023).

Likewise, Indonesia has noted the increasing adoption of e-wallets. The extensive use of e-wallets in Indonesia has led to a competitive market landscape, with new providers entering the market annually. This dynamic environment fuels the ongoing growth of e-wallet transaction volumes and heightens competition among e-wallet service providers (Chalik & Faturohman, 2022). Additionally, the Indonesian government sees digital payments, specifically e-wallets, as instrumental in achieving the goal of transitioning to a cashless society (Urus et al., 2022). In summary, Asian countries consistently glean insights from their fintech advancement journeys within the learning dimension. China adapts to the repercussions of COVID-19 on corporate debt defaults, prompting the introduction of fintech solutions to address such risks. Malaysia prioritizes fintech security, whereas Indonesia draws lessons from the extensive adoption of e-wallets to innovate fintech offerings aligned with user preferences.

4.2.5 Modernity

In Indonesia, advancements in modern technology have boosted the efficiency of financial systems and services in the country. Consequently, Bank Indonesia (BI) has advocated for the modernization of QR Code transactions in conventional markets. In response, Bank Rakyat Indonesia (BRI) and Bank Mandiri have actively embraced fintech because of the significant potential of financial transactions in traditional markets (Natakusumah et al., 2023). In 2019, Bank Indonesia officially introduced the Quick Response Code Indonesian Standard (QRIS), which has profoundly impacted digital payment operations. QRIS has simplified payment methods, allowing individuals to make payments simply by scanning barcodes, thereby offering a new and convenient experience when using e-wallets (Chalik & Faturohman, 2022). In Indonesia's traditional markets, where the adoption of QRIS is encouraged, these modernization endeavors are evident, aiming to promote financial inclusion and enhance technological literacy in the community.

4.2.6 Agility:
Approximately 74% of Malaysians are aware of and interested in virtual banking, which delivers banking services through electronic channels, eliminating the need for physical branches. In response to this interest, numerous banks in Malaysia have commenced digitizing their financial offerings. Furthermore, most burgeoning fintech firms in Malaysia focus on providing digital payment services (M.-P. Lu, 2022). Malaysia has displayed adaptability in meeting the demand for virtual banking, prompting both the government and financial institutions to develop banking and fintech solutions to streamline transactions for its populace.

According to the DIPLOMA fintech model, it can be concluded that Asia satisfies six dimensions: Digitalization, Innovation, Pricing, Learning, Modernity, and Agility. Specifically, Indonesia meets five dimensions (Digitalization, Innovation, Pricing, Learning, and Modernity), while Malaysia and China meet four dimensions each (Digitalization, Pricing, Learning, and Agility for Malaysia; Digitalization, Innovation, Pricing, and Learning for China). This indicates the successful implementation of fintech in Asia, particularly in China, Indonesia, and Malaysia. However, the Openness dimension is not explicitly addressed, suggesting that these countries must prioritize regulations concerning fintech product development. Consequently, Indonesia emerges as the Asian country with the most robust fintech implementation, based on the DIPLOMA model.

4.3 Fintech Implementation in Europe
4.3.1 Digitalization:
The emergence of fintech in Germany originated in the late 2000s during a financial crisis that undermined trust in conventional banks. In response to customer demand for alternatives to address banking issues, many banks have shifted towards digital systems, including crowdlending and crowdfunding platforms (Brandl & Hornuf, 2020). Additionally, in 2015, Germany experienced a surge in mobile usage for accessing various platforms, such as social networks, email, and online banking (Stewart & Jürjens, 2018). Therefore, digitalization in Europe occurred in Germany during the late 2000s due to the financial crisis, prompting a quest for alternatives to traditional banking.

4.3.2 Innovation:
In Germany, fintech innovation focuses on the banking sector, including the rollout of P2P lending products, crowdfunding services, and digital financial advisory services, all aimed at meeting customers' demand for transparency. Offerings such as robo-advisors and price comparison websites have enhanced the transparency of banking operations and transactions for customers (Stewart & Jürjens, 2018). Additionally, Germany has made strides in fintech security, with firms such as Fraugsters developing AI platforms to detect and mitigate fraud (Baba et al., 2020).

In the UK, fintech advancement includes the introduction of "Buy now, Pay Later" (BNPL) products, which are credit fintech products allowing consumers to defer payments without interest in one or more installments, typically four or fewer (Guttman-Kenney, Firth, & Gathergood, 2023). Additionally, the success of fintech in the UK is evidenced by the proliferation of fintech startups that have made significant strides in the financial services sector. These startups have thrived because of their low costs and effective financial technology, offering more attractive products than less adaptable platforms (Giaretta & Chesini, 2021). The success of these innovations aims to reshape the financial landscape, bridge credit gaps, and foster a more diverse and stable financial environment (Buchak, Matvos, Piskorski, & Seru, 2018). Moreover, the UK has shown innovation in platforms, with companies such as Rapyd providing e-commerce firms and financial institutions with tools to integrate local payment methods into applications, thereby facilitating access to foreign markets (Baba et al., 2020).

In the Innovation dimension, it can be concluded that both the UK and Germany showcase distinct advancements. The UK is recognized for its "Buy now, Pay Later" (BNPL) products and thriving fintech startups, whereas Germany, while trailing behind more advanced nations, has implemented P2P lending and digital financial advisory services, increasing transparency in banking operations for customers.

4.3.3 Learning:
Currently, Germany lacks dedicated regulations and oversight for fintech, with only one law directly addressing fintech issues. Therefore, this study examined different sandbox regulation models globally and proposed a range of sandbox concepts tailored to the German regulatory landscape. This initiative aims to offer a clear regulatory direction for fintech, creating modern and adaptable solutions (Gerlach & Rugilo, 2019). In the Learning dimension, neither country has established specific learning frameworks for fintech development. However, a study has suggested recommendations for Germany, which has only one fintech law, regarding the adoption of sandbox concepts derived from analyses of sandbox regulations in various countries. These recommendations seek to offer clear fintech regulations and optimal solutions.

4.3.4 Openness:
Germany's fintech market can serve as a basis for extending services to other European Union nations, thanks to the European Union passport policy. Consequently, numerous UK fintech firms have shifted their operations to Germany to retain access to EU markets (Kostin, Fendel, & Wild, 2022).

In the UK, the success of the FCA's sandbox has led to recommendations for an improved sandbox program in the government's Kalifa 2021 report on UK Fintech (McCarthy, 2023). The FCA's sandbox provides a platform for fintech companies to test new products under strict supervision before offering them to customers. Moreover, the FCA sandbox delves into tech-fin companies' motivations and concerns regarding their involvement in regulatory decisions related to emerging technologies (Lauren, 2022). Keeping pace with technological advancements, the FCA has also finalized cryptocurrency regulation guidelines in July 2019, outlined in the document titled "Guidance on Crypto-assets Feedback and Final Guidance to CP 19/3."

These guidelines aim to clarify whether crypto-assets fall within the FCA's regulatory jurisdiction and establish obligations for market participants (Huang, 2021). Furthermore, another article highlights that the FCA advocates for outcome-based regulatory innovation, allowing greater flexibility and adaptability in responding to new technologies and market practices (Schilling de Carvalho, 2022). Therefore, it can be inferred that both the UK and Germany are willing to embrace new technologies in the fintech sector, aligning closely with innovative regulatory standards (Hodson, 2021).

Based on the descriptions above, both the UK and Germany meet the openness dimension. In the UK, the FCA has implemented regulations for its sandbox program, enabling FinTech companies to operate under rigorous supervision. Additionally, the FCA finalized cryptocurrency regulations after gathering feedback from 92 entities across ten sectors. In Germany, a passport policy allows fintech firms to extend their services to other EU countries.

4.3.5 Agility:
In January 2019, the FCA in the UK initiated consultations to collect input for its initial regulatory framework. After six months, the FCA received feedback from 92 parties representing ten sectors, including prominent banks, fintech companies, crypto asset issuers, exchanges, and custodian service providers. Utilizing this feedback, the FCA finalized cryptocurrency regulation guidelines in July 2019, as outlined in the document titled "Guidance on Crypto-assets Feedback and Final Guidance to CP 19/3" (Huang, 2021).

Agility was only observed in the UK, where cryptocurrency regulation guidelines were finalized by the FCA based on extensive feedback from various sectors, refining regulations pertaining to crypto-assets. Based on the explanations provided, European countries such as the UK and Germany meet four dimensions of the DIPLOMA fintech model: Digitalization, Innovation, Openness, and Agility. The UK meets three dimensions (Innovation, Openness, and Agility), while Germany meets three dimensions (Digitalization, Innovation, and Openness). Thus, based on the DIPLOMA model, fintech implementation in European countries appears similar, with the UK regarded as having the most robust implementation. This is corroborated by Pakhnenko et al. (2021), who noted the UK's leading position

in the digitalization of financial services in 2019. Meanwhile, Schiereck (2018) highlighted that Germany lags behind other countries in the fintech movement.

4.4 Fintech Implementation in the Americas

4.4.1 Digitalization

In the initial stages of Latin America's development, roughly 70% of the population faced barriers in accessing and affording financial services, with a notable portion being unbanked or underbanked. Nevertheless, the rise of financial technology (Fintech) startups has brought about inventive solutions to broaden access to financial services for those less fortunate. A prime instance is Neobanks, a fintech firm in the region that offers Internet-based banking services and operates exclusively online without physical branches (Rojas-Torres, Kshetri, Hanafi, & Kouki, 2021).

The above description shows that digitalization occurred across Latin America. Initially, a large proportion of the Latin American population was either unbanked or underbanked. The emergence of fintech companies has transformed traditional manual practices into digital ones, exemplified by neobanks offering online or digital banking services to facilitate financial transactions in the region.

4.4.2 Innovation:

Brazil and Argentina lead Latin American nations in generating employment opportunities through digitalization. Brazil's focus on digitalization centers on advancements in digital finance, particularly peer-to-peer consumer lending and financial management. Additionally, Argentina has concentrated its fintech sector on factoring, capturing approximately 54.6% of the total fintech market share (Ioannou & Wójcik, 2022). In the Innovation dimension, it can be concluded that Brazil and Argentina have different fintech innovations. Brazil's innovations focus on financing, including P2P and balance sheets, whereas Argentina innovates in the factoring FinTech market.

4.4.3 Learning:

Brazil has forged a funding partnership with China and collaborated with the Chinese fintech powerhouse Tencent. This collaboration presents avenues for Brazilian companies to access knowledge, expertise, and networks (Ioannou & Wójcik, 2022). In terms of learning within the DIPLOMA fintech model, Brazil stands out, having effectively learned from China through its partnership with Tencent. This partnership supports Brazilian fintech firms in developing fintech solutions within their country.

4.4.4 Agility:

In Brazil, numerous popular payment and lending platforms report that 60% of their customer base resides in São Paulo and the surrounding states. This concentration is attributed to factors such as the availability of a highly skilled workforce and proximity to the University of São Paulo (USP). Additionally, in Argentina, customer distribution is primarily centered around Buenos Aires, which reflects the population density. Beyond the presence of a skilled workforce, this mapping distribution aims to encourage FinTechs to be closer to their clientele, enhancing visibility and deepening their understanding of customer needs and preferences (Ioannou & Wójcik, 2022).

Based on the above description, agility is evident in both Brazil and Argentina, leveraging their respective demographic conditions. Brazil focuses on developing payment and lending platforms in the São Paulo region because of the availability of a skilled workforce and proximity to USP. Meanwhile, Argentina concentrates on developing fintech products in Buenos Aires, aiming to be closer to its customer base while benefiting from a skilled workforce.

Based on the explanation above, countries in the Americas, particularly Latin America, have successfully incorporated fintech strategies. Following the DIPLOMA model, fintech adoption in Latin America encompasses four key dimensions: Digitalization, Innovation, Learning, and Agility. Brazil meets all four dimensions, whereas Argentina satisfies three (Digitalization, Innovation, and Agility). Therefore, it can be inferred that Brazil exemplifies the most effective fintech practices among the countries in the Americas, particularly in Latin America, according to the DIPLOMA model.

4.5 Best Fintech Practices Using the DIPLOMA FINTECH MODEL

Figure 6. Best Fintech Practices Using the DIPLOMA FINTECH MODEL
Source: by author (2024)

Based on the illustration in Figure 6, it can be inferred that Indonesia showcases the best fintech practices according to the DIPLOMA Fintech Model. Indonesia meets all five dimensions outlined in the model: Digitalization, Innovation, Pricing, Learning, and Modernity. This suggests that Indonesia could serve as a model for other countries aiming to implement fintech solutions within their own borders. Following Indonesia, Malaysia meets four dimensions (Digitalization, Pricing, Learning, and Agility); China also meets four dimensions (Digitalization, Innovation, Pricing, and Learning); and Brazil meets four dimensions (Digitalization, Innovation, Learning, and Agility). Subsequently, the United Kingdom (UK) meets three dimensions (Innovation, Openness, and Agility); Germany meets three dimensions (Digitalization, Innovation, and Openness); South Africa meets three dimensions (Innovation, Learning, and Openness); and Argentina meets three dimensions (Digitalization, Innovation, and Agility). Additionally, countries in Sub-Saharan Africa only meet one dimension (digitalization), and Nigeria meets only one dimension (modernity).

The research reveals that Indonesia has embraced fintech across all facets of the DIPLOMA model, serving as a notable example for other nations. Malaysia, China, and Brazil have made notable strides in different dimensions of this model. In contrast, the UK, Germany, South Africa, and Argentina have shown notable advancements in specific areas. Nevertheless, Sub-Saharan Africa, including Nigeria, has yet to fully tap into the advantages of fintech across various dimensions. These findings underscore Indonesia's success, alongside that of other nations, in harnessing fintech to improve financial services in the digital age. Such insights are crucial for policymakers and stakeholders to guide their decisions and promote fintech innovations globally. Collaborative efforts and knowledge sharing between countries with established fintech practices and those with growth potential can drive global financial inclusivity.

5. Conclusion

5.1 Conclusion

Financial Technology (FinTech) refers to innovations facilitated by technology within financial services, leading to new business models, applications, processes, or products that substantially impact the provision of financial services (FSB, 2017). The advancement of fintech varies significantly among nations, irrespective of their development status. This diversity is influenced by the pace of technological progress and economic circumstances in each country. Fintech adoption shows considerable disparity globally, ranging from countries witnessing rapid growth in fintech to those encountering substantial hurdles in its implementation.

Interestingly, certain developing nations have outpaced some developed countries in terms of fintech development. This indicates that the efficacy of fintech implementation and innovation is not solely

determined by a country's level of development but also by other factors facilitating effective fintech adoption. Therefore, this study aims to examine the optimal practices in fintech implementation across various countries, encompassing regions such as Africa (including sub-Saharan Africa, Nigeria, and South Africa), Asia (including China, Indonesia, and Malaysia), Europe (including the UK and Germany), and the Americas (including Brazil and Argentina).

The research model utilized for identifying countries with exemplary fintech practices is the DIPLOMA Fintech Model introduced by Katarzyna, which includes six components (Digital, Innovation, Pricing, Learning, Openness, Modernity, and Agile). The approach for document selection is the Systematic Literature Review (SLR) as outlined by Suryono et al. (2020), which encompasses Planning, Implementation, and Reporting as key stages for conducting the literature review.

Based on the assessment conducted using the DIPLOMA Fintech Model, Indonesia emerged as the leader in implementing exemplary fintech practices among the countries examined. Indonesia excels in five dimensions of the DIPLOMA model (Digitalization, Innovation, Pricing, Learning, and Modernity), positioning it as a potential benchmark for other nations seeking to adopt fintech solutions. Following Indonesia, Malaysia demonstrates proficiency in four dimensions (Digitalization, Pricing, Learning, and Agility), while China and Brazil also exhibit strength in four dimensions each (Digitalization, Innovation, Pricing, and Learning). The United Kingdom (UK) satisfies three dimensions (Innovation, Openness, and Agility), while Germany, South Africa, and Argentina each meet three dimensions (varying combinations of Digitalization, Innovation, Learning, Openness, and Agility). In contrast, countries in Sub-Saharan Africa only meet one dimension (digitalization), with Nigeria fulfilling only one dimension (modernity).

These findings not only reinforce the relevance of the DIPLOMA model in evaluating fintech maturity but also offer a strategic framework for policymakers seeking to replicate successful practices. In particular, developing nations can draw lessons from Indonesia's integrative approach, which combines regulatory clarity, innovation-friendly policies, and user-centered design, to accelerate their own Fintech adoption pathways. Future comparative studies may refine this model further by introducing weighted dimensions or exploring the roles of institutional trust, digital literacy, and socio-cultural factors.

5.2 Limitation

This study has limitations stemming from the random selection of countries from only four continents, with Australia notably excluded, potentially impacting the representativeness of the global population. Moreover, reliance on a limited number of articles necessitates further exploration of a broader spectrum of literature. Conversely, the application of the DIPLOMA Fintech Model to analyze best practices in fintech implementation is relatively uncommon.

5.3 Suggestion

Future research should expand the analysis to encompass all five continents and categorize countries based on their performance. Furthermore, studies should adopt a systematic literature review approach that focuses exclusively on fintech implementation across various nations. This methodological refinement offers a more comprehensive and accurate understanding of the subject matter, enhancing both the theoretical underpinning and research methodology.

References

Ab Razak, M. I., Dali, N. A. M., Dhillon, G., & Manaf, A. W. (2020). Fintech In Malaysia: An Appraisal To The Need Of Shariah-Compliant Regulation. *Pertanika Journal of Social Science and Humanities, 28*(4), 3223-3233. doi:https://doi.org/10.47836/pjssh.28.4.40

Abdul-Rahim, R., Bohari, S. A., Aman, A., & Awang, Z. (2022). Benefit–Risk Perceptions Of Fintech Adoption For Sustainability From Bank Consumers' Perspective: The Moderating Role Of Fear Of Covid-19. *Sustainability, 14*(14), 8357. doi:https://doi.org/10.3390/su14148357

Ali, S., Simboh, B., & Rahmawati, U. (2023). Determining Factors Of Peer-To-Peer (P2P) Lending Avoidance: Empirical Evidence From Indonesia. *Gadjah Mada International Journal of Business, 25*(1), 1-27. doi:https://doi.org/10.22146/gamaijb.68805
Anagnostopoulos, I. (2018). Fintech And Regtech: Impact On Regulators And Banks. *Journal of economics and business, 100*, 7-25. doi:https://doi.org/10.1016/j.jeconbus.2018.07.003
Baba, C., Batog, C., Flores, E., Gracia, B., Karpowicz, I., Kopyrski, P., . . . Xu, X. C. (2020). Fintech In Europe: Promises And Threats. doi:https://doi.org/10.5089/9781513561165.001
Barbu, C. M., Florea, D. L., Dabija, D.-C., & Barbu, M. C. R. (2021). Customer Experience In Fintech. *Journal of Theoretical and Applied Electronic Commerce Research, 16*(5), 1415-1433. doi:https://doi.org/10.3390/jtaer16050080
Boratyńska, K. (2019). Impact Of Digital Transformation On Value Creation In Fintech Services: An Innovative Approach. *Journal of Promotion Management, 25*(5), 631-639. doi:https://doi.org/10.1080/10496491.2019.1585543
Brandl, B., & Hornuf, L. (2020). Where Did Fintechs Come From, And Where Do They Go? The Transformation Of The Financial Industry In Germany After Digitalization. *Frontiers in artificial intelligence, 3*, 511504. doi:https://doi.org/10.2139/ssrn.3036555
Buchak, G., Matvos, G., Piskorski, T., & Seru, A. (2018). Fintech, Regulatory Arbitrage, And The Rise Of Shadow Banks. *Journal of financial economics, 130*(3), 453-483. doi:https://doi.org/10.3386/w23288
Cai, C. W. (2021). Triple-Entry Accounting With Blockchain: How Far Have We Come? *Accounting & Finance, 61*(1), 71-93. doi:https://doi.org/10.1111/acfi.12556
Cantú, C., & Ulloa, B. (2020). The Dawn Of Fintech In Latin America: Landscape, Prospects And Challenges. 1-44.
Chalik, F. R., & Faturohman, T. (2022). Customer Satisfaction Of E-Wallet User: An Adoption Of Information System Success Model. *Quantitative Analysis of Social and Financial Market Development*, 61-83. doi:https://doi.org/10.1108/s1571-038620220000030005
Cheng, X., Yao, D., Qian, Y., Wang, B., & Zhang, D. (2023). How does fintech influence carbon emissions: evidence from China's prefecture-level cities. *International Review of Financial Analysis, 87*, 102655. doi:https://doi.org/10.1016/j.irfa.2023.102655
Chinoda, T., & Mashamba, T. (2021). Fintech, Financial Inclusion And Income Inequality Nexus In Africa. *Cogent Economics & Finance, 9*(1), 1986926. doi:https://doi.org/10.1080/23322039.2021.1986926
Ebert, C., & Duarte, C. H. C. (2018). Digital Transformation. *IEEE Softw., 35*(4), 16-21. doi:https://doi.org/10.1109/ms.2018.2801537
Edward, M. Y., Fuad, E. N., Ismanto, H., Atahau, A. D. R., & Robiyanto, R. (2023). Success Factors For Peer-To-Peer Lending For Smes: Evidence From Indonesia. *Innovations, 20*(2), 16-25. doi:https://doi.org/10.21511/imfi.20(2).2023.02
Gerlach, J. M., & Rugilo, D. (2019). The Predicament of FinTechs in the Environment of Traditional Banking Sector Regulation–An Analysis of Regulatory Sandboxes as a Possible Solution. *Credit and Capital Markets–Kredit und Kapital, 52*(3), 323-373. doi:https://doi.org/10.3790/ccm.52.3.323
Giaretta, E., & Chesini, G. (2021). The Determinants Of Debt Financing: The Case Of Fintech Start-Ups. *Journal of Innovation & Knowledge, 6*(4), 268-279. doi:https://doi.org/10.1016/j.jik.2021.10.001
Guttman-Kenney, B., Firth, C., & Gathergood, J. (2023). Buy Now, Pay Later (BNPL)... On Your Credit Card. *Journal of Behavioral and Experimental Finance, 37*, 100788. doi:https://doi.org/10.1016/j.jbef.2023.100788
Hammerschlag, Z., Bick, G., & Luiz, J. M. (2020). The Internationalization Of African Fintech Firms: Marketing Strategies For Successful Intra-Africa Expansion. *International Marketing Review, 37*(2), 299-317. doi:https://doi.org/10.1108/imr-05-2019-0130
Hamukuaya, N. H. (2021). The Development Of Cryptocurrencies As A Payment Method In South Africa. *Potchefstroom Electronic Law Journal/Potchefstroomse Elektroniese Regsblad, 24*(1), 1-23. doi:https://doi.org/10.17159/1727-3781/2021/v24i0a9364
Henisz, W. J. (2017). *Corporate Diplomacy: Building Reputations And Relationships With External Stakeholders*: Routledge.

Hidajat, T. (2020). Unethical Practices Peer-To-Peer Lending In Indonesia. *Journal of Financial Crime, 27*(1), 274-282. doi:https://doi.org/10.1108/jfc-02-2019-0028
Hodson, D. (2021). The politics of FinTech: Technology, regulation, and disruption in UK and German retail banking. *Public Administration, 99*(4), 859-872. doi:https://doi.org/10.1111/padm.12731
Huang, S. S. (2021). Crypto Assets Regulation In The UK: An Assessment Of The Regulatory Effectiveness And Consistency. *Journal of Financial Regulation and Compliance, 29*(3), 336-351. doi:https://doi.org/10.1108/jfrc-06-2020-0062
Iddrisu, K., Abor, J. Y., & Banyen, K. T. (2022). Fintech, Foreign Bank Presence And Inclusive Finance In Africa: Using A Quantile Regression Approach. *Cogent Economics & Finance, 10*(1), 2157120. doi:https://doi.org/10.1080/23322039.2022.2157120
Iman, N. (2018). Assessing The Dynamics Of Fintech In Indonesia. *Investment Management and Financial Innovations, 15*(4), 296-303. doi:https://doi.org/10.21511/imfi.15(4).2018.24
Ioannou, S., & Wójcik, D. (2022). The Limits To Fintech Unveiled By The Financial Geography Of Latin America. *Geoforum, 128*, 57-67. doi:https://doi.org/10.1016/j.geoforum.2021.11.020
Jin, L., Dai, J., Jiang, W., & Cao, K. (2023). Digital Finance And Misallocation Of Resources Among Firms: Evidence From China. *The North American Journal of Economics and Finance, 66*, 101911. doi:https://doi.org/10.1016/j.najef.2023.101911
Jünger, M., & Mietzner, M. (2020). Banking Goes Digital: The Adoption Of Fintech Services By German Households. *Finance Research Letters, 34*, 101260. doi:https://doi.org/10.1016/j.frl.2019.08.008
Kharisma, D. B. (2021). Urgency Of Financial Technology (Fintech) Laws In Indonesia. *International Journal of Law and Management, 63*(3), 320-331. doi:https://doi.org/10.1108/ijlma-08-2020-0233
Kostin, K. B., Fendel, R., & Wild, F. (2022). Comparing The Situation Of Fintech Start-Ups In Russia And Germany Through Equity Investments. *Economies, 10*(2), 33. doi:https://doi.org/10.3390/economies10020033
Kurnia Rahayu, S., Budiarti, I., Waluya Firdaus, D., & Onegina, V. (2023). Digitalization And Informal MSME: Digital Financial Inclusion For MSME Development In The Formal Economy. *Journal of Eastern European and Central Asian Research, 10*(1). doi:https://doi.org/10.15549/jeecar.v10i1.1056
Langley, P., & Leyshon, A. (2022). Neo-Colonial Credit: Fintech Platforms In Africa. *Journal of Cultural Economy, 15*(4), 401-415. doi:https://doi.org/10.1080/17530350.2022.2028652
Langley, P., & Rodima-Taylor, D. (2022). FinTech in Africa: An Editorial Introduction. *Journal of Cultural Economy, 15*(4), 387-400. doi:https://doi.org/10.1080/17530350.2022.2092193
Lauren, F. (2022). Regulator Reputation And Stakeholder Participation: A Case Study Of The Uk's Regulatory Sandbox For Fintech. *European Journal of Risk Regulation, 13*(1), 138-157. doi:https://doi.org/10.1017/err.2021.44
Liang, F., Zhao, P., & Huang, Z. (2023). Financial Technology, Macroeconomic Uncertainty, And Commercial Banks' Proactive Risk-Taking In China. *China Economic Quarterly International, 3*(2), 77-87. doi:https://doi.org/10.1016/j.ceqi.2023.04.001
Liébana-Cabanillas, F., Muñoz-Leiva, F., Molinillo, S., & Higueras-Castillo, E. (2022). Do Biometric Payment Systems Work During The Covid-19 Pandemic? Insights From The Spanish Users' Viewpoint. *Financial Innovation, 8*(1), 22. doi:https://doi.org/10.1186/s40854-021-00328-z
Liu, Q., & You, Y. (2023). Fintech And Green Credit Development—Evidence From China. *Sustainability, 15*(7), 5903. doi:https://doi.org/10.3390/su15075903
Lu, L. (2018). Promoting SME Finance In The Context Of The Fintech Revolution: A Case Study Of The Uk's Practice And Regulation. *Banking and Finance Law Review*, 317-343.
Lu, M.-P. (2022). Cashless Payments And Banking Performances: A Study Of Local Commercial Banks In Malaysia. *International Journal of Business & Society, 23*(2), 855–876. doi:https://doi.org/10.33736/ijbs.4842.2022
Lucero-Prisno III, D. E., Olayemi, A. H., Ekpenyong, I., Okereke, P., Aldirdiri, O., Buban, J. M., . . . Turay, F. U. (2022). Prospects For Financial Technology For Health In Africa. *Digital Health, 8*, 20552076221119548. doi:https://doi.org/10.1177/20552076221119548

Mazambani, L., & Mutambara, E. (2020). Predicting Fintech Innovation Adoption In South Africa: The Case Of Cryptocurrency. *African Journal of Economic and Management Studies, 11*(1), 30-50. doi:https://doi.org/10.1108/ajems-04-2019-0152
McCarthy, J. (2023). From Childish Things: The Evolving Sandbox Approach In The Eu's Regulation Of Financial Technology. *Law, Innovation and Technology, 15*(1), 1-24. doi:https://doi.org/10.1080/17579961.2023.2184131
Molla, A., & Biru, A. (2023). The Evolution Of The Fintech Entrepreneurial Ecosystem In Africa: An Exploratory Study And Model For Future Development. *Technological forecasting and social change, 186*, 122123. doi:https://doi.org/10.1016/j.techfore.2022.122123
Moro-Visconti, R., Cruz Rambaud, S., & López Pascual, J. (2020). Sustainability in FinTechs: An explanation Through Business Model Scalability And Market Valuation. *Sustainability, 12*(24), 10316. doi:https://doi.org/10.3390/su122410316
Natakusumah, K., Maulina, E., Muftiadi, A., & Purnomo, M. (2023). Integrating Religiosity Into A Technology Acceptance Model For The Adoption Of Mobile Payment Technology. *International Journal of Data & Network Science, 7*(1), 305-312. doi:https://doi.org/10.5267/j.ijdns.2022.10.003
Ng, E., Tan, B., Sun, Y., & Meng, T. (2023). The Strategic Options Of Fintech Platforms: An Overview And Research Agenda. *Information Systems Journal, 33*(2), 192-231. doi:https://doi.org/10.1111/isj.12388
Nguyen, L. T. P., Kalabeki, W., Muthaiyah, S., Yu, C., Hui, K. J., & Mohamed, H. (2021). P2P Lending Platforms In Malaysia: What Do We Know. *F1000Research, 10*, 1-13. doi:https://doi.org/10.12688/f1000research.73410.1
Nugraha, D. P., Setiawan, B., Nathan, R. J., & Fekete-Farkas, M. (2022). FinTech Adoption Drivers for Innovation for SMEs in Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity, 8*(4), 208. doi:https://doi.org/10.3390/joitmc8040208
Okoli, T. T., & Tewari, D. D. (2020). An Empirical Assessment Of Probability Rates For Financial Technology Adoption Among African Economies: A Multiple Logistic Regression Approach. *Asian Economic and Financial Review, 10*(11), 1342. doi:https://doi.org/10.18488/journal.aefr.2020.1011.1342.1355
Pakhnenko, O., Rubanov, P., Hacar, D., Yatsenko, V., & Vida, I. (2021). Digitalization Of Financial Services In European Countries: Evaluation And Comparative Analysis. *Journal of International Studies, 14*(2), 267-282. doi:https://doi.org/10.14254/2071-8330.2021/14-2/17
Pollio, A., & Cirolia, L. R. (2022). Fintech Urbanism In The Startup Capital Of Africa. *Journal of Cultural Economy, 15*(4), 508-523. doi:https://doi.org/10.1080/17530350.2022.2058058
Rojas-Torres, D., Kshetri, N., Hanafi, M. M., & Kouki, S. (2021). Financial Technology In Latin America. *IT Professional, 23*(1), 95-98. doi:https://doi.org/10.1109/MITP.2020.3028486
Saif, M. A., Hussin, N., Husin, M. M., Alwadain, A., & Chakraborty, A. (2022). Determinants Of The Intention To Adopt Digital-Only Banks In Malaysia: The Extension Of Environmental Concern. *Sustainability, 14*(17), 11043. doi:https://doi.org/10.3390/su141711043
Santoso, W. (2020). *Fintech And The Future Of Finance.* Paper presented at the International Seminar on Fintech and The Future of Finance.
Schiereck, D. (2018). *Von der Bargeldzahlung Zur Digitalen Transaktion–Zur Zukunft des Bezahlens und der Zahlungsverkehrspartner*. Retrieved from
Schilling de Carvalho, P. (2022). Retaining Influence In Post-Brexit International Financial Regulation: Lessons From The Uk's Fintech Framework. *Journal of Financial Regulation, 8*(1), 104-131. doi:https://doi.org/10.1093/jfr/fjac004
Setiawan, B., Nugraha, D. P., Irawan, A., Nathan, R. J., & Zoltan, Z. (2021). User Innovativeness And Fintech Adoption In Indonesia. *Journal of Open Innovation: Technology, Market, and Complexity, 7*(3), 188. doi:https://doi.org/10.3390/joitmc7030188
Stewart, H., & Jürjens, J. (2018). Data Security And Consumer Trust in FinTech Innovation In Germany. *Information & Computer Security, 26*(1), 109-128. doi:https://doi.org/10.1108/ics-06-2017-0039
Stieglitz, S., Mirbabaie, M., Ross, B., & Neuberger, C. (2018). Social Media Analytics–Challenges In Topic Discovery, Data Collection, And Data Preparation. *International Journal of Information Management, 39*, 156-168. doi:https://doi.org/10.1016/j.ijinfomgt.2017.12.002

Suryono, R. R., Budi, I., & Purwandari, B. (2020). Challenges And Trends Of Financial Technology (Fintech): A Systematic Literature Review. *Information, 11*(12), 590. doi:https://doi.org/10.3390/info11120590

Suryono, R. R., Budi, I., & Purwandari, B. (2021). Detection Of Fintech P2P Lending Issues In Indonesia. *Heliyon, 7*(4), e06782. doi:https://doi.org/10.1016/j.heliyon.2021.e06782

Tan, S. F., & Chung, G. C. (2023). An Evaluation Study Of User Authentication In The Malaysian Fintech Industry With Uauth Security Analytics Framework. *Journal of Cases on Information Technology (JCIT), 25*(1), 1-27. doi:https://doi.org/10.4018/jcit.318703

Ukwueze, F. O. (2021). Cryptocurrency: Towards regulating the unruly enigma of fintech in Nigeria and South Africa. *Potchefstroom Electronic Law Journal/Potchefstroomse Elektroniese Regsblad, 24*(1), 1-38. doi:http://dx.doi.org/10.17159/1727-3781/2021/v24i0a10743

Urus, S. T., Kurniasari, F., Faiza Syed Mustapha Nazri, S. N., Utomo, P., Othman, I. W., Jimmy, S. Y., & Hamid, N. A. (2022). A Comparative Study Of Fintech Payment Services Adoption Among Malaysian And Indonesian Fresh Graduates: Through The Lens Of Utaut Theory. *Eastern-European Journal of Enterprise Technologies, 5*(13), 73–88. doi:https://doi.org/10.15587/1729-4061.2022.265662

Wang, Z., Guan, Z., Hou, F., Li, B., & Zhou, W. (2019). What Determines Customers' Continuance Intention Of Fintech? Evidence From Yuebao. *Industrial Management & Data Systems, 119*(8), 1625-1637. doi:https://doi.org/10.1108/imds-01-2019-0011

Xia, H., Gao, Y., & Zhang, J. Z. (2023). Understanding The Adoption Context Of China's Digital Currency Electronic Payment. *Financial Innovation, 9*(1), 63. doi:https://doi.org/10.1186/s40854-023-00467-5

Yermack, D. (2018). *FinTech in sub-saharan Africa: What has worked well, and what hasn't*. Retrieved from

You, Y., Yu, Z., Zhang, W., & Lu, L. (2023). Fintech Platforms And Mutual Fund Markets. *Journal of International Financial Markets, Institutions and Money, 84*, 101652. doi:https://doi.org/10.1016/j.intfin.2022.101652