

Unveiling the Potential and Challenges of Transferring Integrated Financial Technology Knowledge from India to Indonesia

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Abstract

The rapid growth of technology during the Industrial Revolution 4.0 has significantly impacted various industries, with automation being widely adopted, particularly in the financial and economic sectors. Financial technology (FinTech) has recently emerged as a vital industry, driving major transformations. In India, the financial system has undergone significant changes due to the rise of FinTech, which has proven to be a disruptive force in the Banking, Financial Services, and Insurance (BFSI) sector. As of March 2024, the Government e-Marketplace (GeM) portal facilitated 5.8 million orders worth Rs. 3,87,006 crore (US\$ 46.67 billion), serving 148,245 primary buyers and 215,743 secondary buyers (IBEF, 2024). PhonePe, a prominent player in the Indian FinTech space, has faced stiff competition from established banking institutions since it began as an e-wallet. The company has since expanded into areas such as lending, insurtech, and wealthtech, encountering challenges in a competitive financial environment (Singh, 2020). This study employs a systematic literature review to explore the potential and challenges of transferring integrated FinTech knowledge from India to Indonesia, based on various sources such as academic books, journals, and other relevant publications. This study aims to identify the potential and challenges involved in transferring integrated financial technology knowledge from India to Indonesia. This study also aims to India as second biggest market in financial technology can transferring the financial technology of India to Indonesia to strengthen the economics between two countries, to strengthen environment and technology of financial technology itself as well as strengthen the diplomatics between Indonesia and India especially to support on science, technology, engineering and mathematics from India to Indonesia. It analyzes the issues using SWOT (Strength, Weakness, Opportunity and Threat) and PESTEL (Politics, Economic, Social, Technology, Environment, and Legal) Analysis that may arise during this transfer process and proposes solutions to

address them. This paper also use Gap Analysis to analyze the gap of transferring financial technology and potential of transferring integrated of financial knowledge in India to propose and transferring integrated financial knowledge from India to Indonesia as the solution . Additionally, the study evaluates the effectiveness of financial technology in enhancing financial inclusion, streamlining business processes, providing simple and integrated payment solutions, and improving user experience in financial transactions.

Keywords: Financial Technology, Finance, Knowledge Management, e-wallet.

1. Introduction

According to Mordor Intelligence, Financial Technology in India is rapid growth, In 2024 Market Size amounts to USD 111.14 Billion and it predicts growth to 2029 amount USD 421.48 Billion (Mordor Intelligence, 2024). In India itself, the financial system has a significant change that has proven to be a disruptive force in Banking, Financial Services, and Insurances. According to the financial Report by Medici, growth of financial technology was significant. It was proven by a wealth start up worth 486 Startups that consist of personal finance management, investments platform, robo advisor. Lending amount 365 Startups that consist of digital consumer lending, SME (Small, Medium Enterprise) Lending, Peer to Peer Lending. Insurance Technology worth 111 Startups consist of Policy Management, Software, Internet of things. Digital Payments amount 405 startups it consist of payment gateways, bill payments, mobile digital payments (Medici, 2020). The transaction of digital payment transactions undertaken during the last two years has driven the potential of growth of financial technology in India. According to the Reserve Bank of India (RBI) and National Payment Corporation of India (NPCI), total numbers of digital transactions (in crore) in 2021-2022 amount 8,840 crore Rupees and along 2022-2023 amount 9.192 crore Rupees. In 2029 the market of financial technology stood at \$110.57 and prediction of 2030 amounts to \$698,48 billion (Vikas Garg et al, 2024) and India is the second largest financial technology market behind China (Tanushree Basuroy, 2024).

According to Statista, Digital Investment to India Financial Technology had invested from Financial Year (FY) 2023 amount 1072 US Dollar, Financial Year (FY) 2024 amount 1294 US Dollar, Financial Year (FY) 2025 amount 1410 US Dollar, Financial Year (FY) 2026 amount 1466 US Dollar, Financial Year (FY) 2027 amount 1492, Financial Year (FY) amount 1506 US Dollar. It can be refer to graphics on figure 1 Investment of Internet of Things in India:

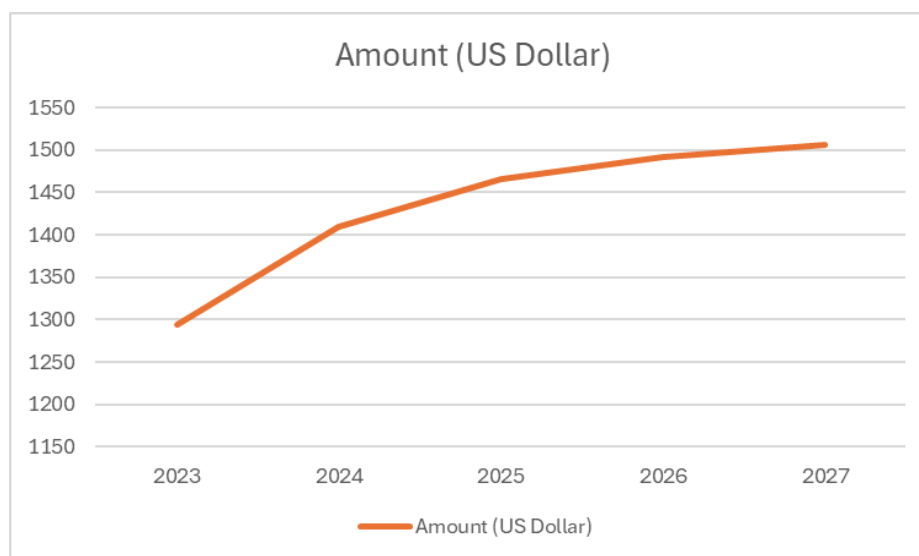


Figure 1 Digital Investment Trend by Financial Year
Source : statista

2. Literature Review

1. Strategy and Penetration of India Financial Technology

According to Statista, India have 900 million internet users, India was the second largest online market in the world, behind China. Despite the large number and a consistent increase in accessibility (Tanushree Basuroy, 2024). Financial technology disruptive force in Banking, Financial Technology and insurance sector. Hariom Duggal et al investigate banks have capitalized on leverage technological advancements by investing in the online banking platform (Duggal, Kumar, 2024). There are some strategies to support the penetration of India financial technology:

1. Technological advancements, the explosion of internet and technologies such as smartphone, tablet has been explosion financial technology in India.
2. Regulatory Reform, The Reserve Bank of India has played a proactive role in promoting financial technology such as e-banking and fostering innovation in the banking segment.
3. Changing Consumer Preferences: Indian consumers are increasingly embracing financial technology due to its convenience, accessibility, and time-saving benefits. The driving demand of financial technology is youth, digital banking services, preferring the convenience of online and mobile channels for transaction. So, Financial technology in India such as UPI (Unified Payment Interface) have impact to Indian economics that India have 9.41 billion in Transactions, worth 14.89 lakh crore in Rupees and worth 181 US Dollar in May 2023 (World Bank, 2023).

2. Leveraging Technological Advancement for Transaction in India

According to ACI Worldwide amount 129.3 billion real time transactions in 2023 and 84% India already has online payment transactions (ACI, 2023). It proven by volume of transaction in India is increase year by year and it significant increase (in million). It can refer to figure 2 Volume of transactions (in million).

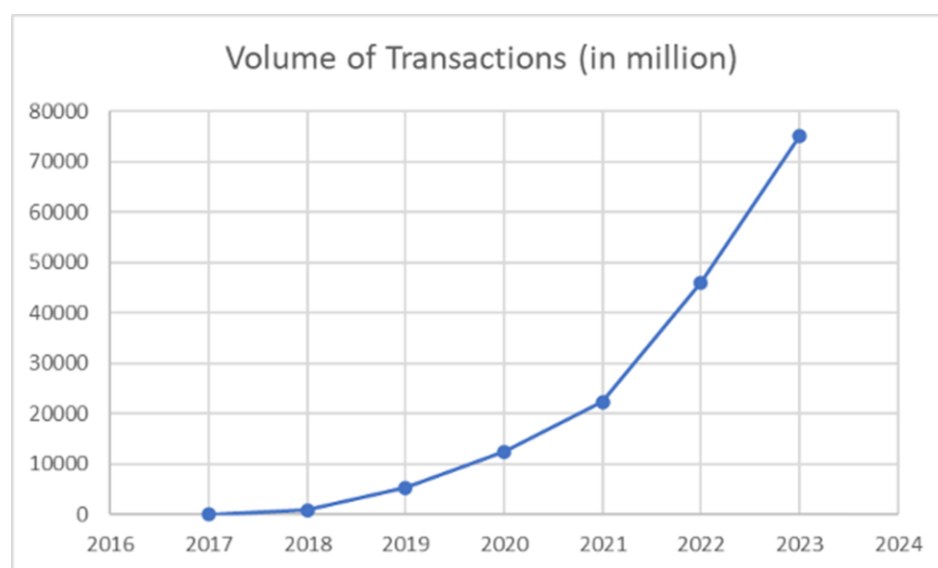


Figure 2 Volume of transactions (in million)

Source : statista

According to Statista, India leverage and investment to Internet of things (IOT) by Financial Year 2020 amount 220 US Dollar, then Financial Year 2021 amount 446.40 US Dollar, and Financial Year 2022 amount 218.70 US Dollar (Statista, 2020). It proven India investment Internet of thing to leverage technological advancement in India such as financial technology, mobile banking and many more. It can refer to graphics on figure 3 Investment of Internet of Things in India:

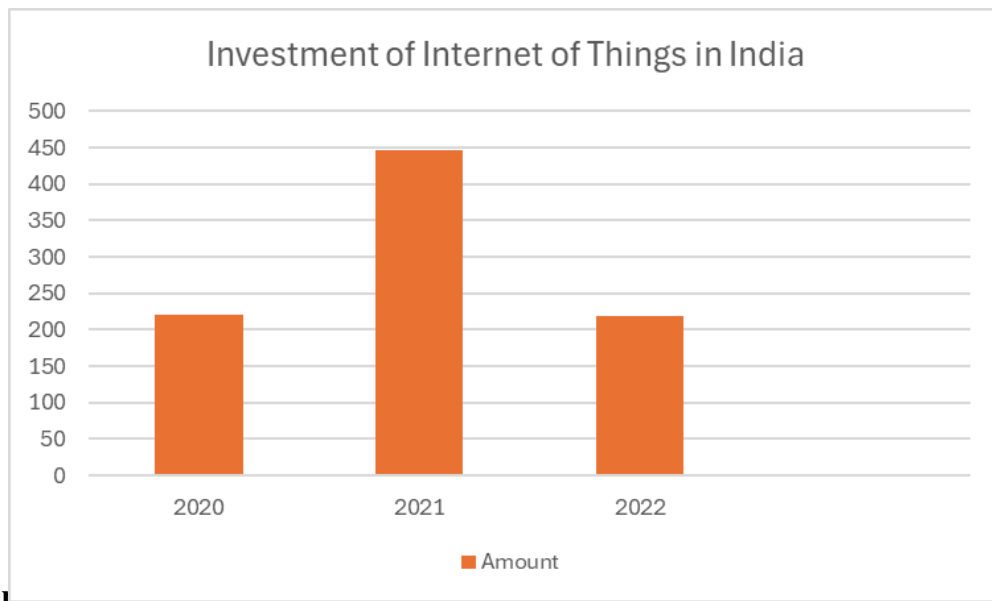


Figure 3

Source : statista

3. Penetration and Potential of Financial Technology in Indonesia

The development of technology in Indonesia impacts the penetration of financial technology in Indonesia. Boston Consulting Group (BCG) and Indonesian Financial Services Authority investigate users of customer payments, lending, and wealth has growth rapidly, which payments amount more than 63 Million users of electronic wallet (e-wallet) in 2020, lending amount more than 30 Million users of Peer to peer borrower accounts in 2020, and wealth amount 9 Million retail investors. Indonesian Financial Services Authority also investigated the transaction of e-wallet amount more than 63 Million in 2017-2021, transaction of lending amount more than 17 Billion loan disbursed for 2022, and more than 20 Billion wealth technology and digital trading in 2021 (BCG, International Financial Service Authority, 2023).

4. The Challenges of Financial Technology in Indonesia

The application of financial technology in Indonesia faces numerous challenges such as low digital skill levels among the workforce, low digital literacy index, and limited data digital infrastructure and connectivity.

1. Low digital skill levels and Low Digital Literacy Index.

Most digitally unskilled workers are employed in sectors with low exposure to digitalization, indicating the limited relevance of digital skills in these sectors (Kusumawardhani, 2023). This gap suggests a lack of integration of digital literacy into various sectors of the economy, impeding the growth of fintech. Approximately 60% of respondents in the Digital Literacy Survey were not accustomed to seeking out information online, including comparing various sources of information and verifying the credibility of the source (MCI, 2020). This suggests that Indonesians lack basic skills in navigating and evaluating digital content, which is crucial for fintech adoption and digital payment systems.

2. Scarcity of advanced skills in the workforce and Low performance in Basic Literacy Skills.

Advanced skills, especially in fintech, are scarce in Indonesia's workforce. This shortage presents a challenge for the effective transfer of fintech knowledge from more digitally advanced countries like India (Sari et al, 2024). The workforce's low capacity to manage and utilize new technologies hampers the growth and sustainability of fintech innovations. The PISA Survey of 2018 ranked Indonesia 71st out of 79 countries in terms of basic literacy (OECD, 2018), which directly correlates to the poor performance in digital literacy. This low level of basic literacy is a major barrier to the effective transfer of fintech knowledge, as individuals may struggle to understand complex financial concepts and digital tools.

3. Limited Digital Infrastructure and Connectivity.

Indonesia struggles with digital infrastructure challenges, particularly in rural and remote areas, which hampers access to digital financial services. According to the World Bank (2021), Indonesia's broadband penetration and internet speed are still below global standards, limiting access to fintech solutions for a large portion of the population. This gap in infrastructure needs to be addressed to effectively transfer fintech knowledge.

3. Methodology

1. Systematic Literature Review

Nowadays, systematic literature reviews (SLRs) and meta analyses are often placed at the top of the study hierarchy of evidence (Smela et al, 2023). The main objective of this paper is to reveal the potential and challenges of Financial Technology in India to transfer knowledge to Indonesia. The data collected in table 1:

| Potential of Financial Technology in India | Sources | Data collected |
|--|-----------|----------------|
| | El-Sevier | 12,457 |
| | AIS | 22 |

| Challenges of Financial Technology in India | Sources | Data collected |
|---|-----------|----------------|
| | El-Sevier | 10,478 |
| | AIS | 19 |

Table 1 data of potential and challenges of financial technology in India

2. PESTEL Analysis

PESTEL Analysis is a strategic tool used to evaluate and monitor the macro-environmental factors that may impact an organization, industry, or project. It stands for Political, Economic, Social, Technological, Environmental, and Legal factors. This analysis provides insight into external influences that can shape opportunities or pose risks in strategy implementation and market expansion (Aithal, 2022).

3. SWOT Analysis

A SWOT analysis is a strategic tool used to evaluate both the internal and external factors that affect a business's ability to achieve its objectives. The internal factors refer to aspects that the business can control, such as its strengths and weaknesses, while external factors involve elements beyond the business's control, such as opportunities and threats (Jackson et al., 2003; Kim, 2005; Bull et al., 2016; David et al., 2017; Mostafa et al., 2021). By analyzing these factors, a company can develop strategic alternatives, including combinations such as SO (Strengths-Opportunities), ST (Strengths-Threats), WO (Weaknesses-Opportunities), and WT (Weaknesses-Threats) (Lee & Ko, 2000; Valentin, 2001; Wang, 2007; Mostafa et al., 2021). These strategic insights can also be enhanced with tools like the External Factors Evaluation (EFE) matrix, Internal Factors Evaluation (IFE) matrix, and Competitive Profile Matrix (CPM), which help in constructing a detailed SWOT matrix for decision-making and strategy development (Davis, 2007; Bayram & Üçüncü, 2016; Mostafa et al., 2021).

4. Gap Analysis

Gap analysis is essential in research to identify, find and understand the areas to overcome and where further studies closes to close knowledge gaps and encourage evidence-based practice (Calorine Alordiah, 2023). Suggested by Jurevicius (2023), this can be done by gap analysis, where the desired level is not met, changes must be made. In this study, Gap Analysis to find the gap of financial technology in Indonesia and overcome the challenges in transferring the financial technology knowledge by investigating the potential financial technology in India by technological advancement and potential human resources in India.

4. Result

This study use Gap analysis, PESTEL analysis and SWOT analysis. Gap Analysis, Gap analysis is essential in research to identify, find and understand the areas to overcome and where further studies closes to close knowledge gaps and encourage evidence-based practice (Calorine Alordiah, 2023) and Suggested by Jurevicius (2023), this can be done by gap analysis, where the desired level is not met, changes must be made.

1. PESTEL Analysis

PESTEL analysis serves two primary functions for organizations. The first is to help identify the external factors affecting the business environment. The second is to provide valuable insights that enable businesses to predict and prepare for potential future changes and challenges. As such, it is an essential tool for strategic management, assisting in preemptively analyzing the external conditions that can influence business decisions and operations (Yüksel, 2012; Rashid, C. A. 2023) as table 2 below.

| PESTEL | Indonesia | India |
|--------------------------|--|--|
| Political Factors | In Indonesia, the government has also taken proactive steps to foster a digital economy through its <i>100 Smart Cities</i> program and efforts to improve financial inclusion, though regulatory barriers related to local fintech laws and cross-border transactions remain significant challenges (Asian Development Bank, 2023). | The Indian government has been actively encouraging digital payment systems through initiatives like <i>Digital India</i> and <i>Startup India</i> , which aim to boost fintech adoption. These policies have improved regulatory frameworks to support fintech innovation. However, ongoing political instability in certain regions can occasionally affect the consistency of these reforms (World Bank, 2023). |
| Economic Factors | Indonesia's growing middle class presents a robust market for fintech, particularly in mobile payment systems and peer-to-peer lending. However, economic inequality and varying access to financial services continue to limit the full potential of fintech across the country (OECD, 2023). | India is seeing rapid economic growth, with a strong focus on expanding digital payment systems. The country has a large, young, and tech-savvy population that is a major driver of fintech adoption. However, the country's economic disparity means that digital access is still limited in rural areas (IBEF, 2023). |
| Social Factors | Similar to India, Indonesia has a significant rural population, and though the digital penetration rate is growing, social factors such as trust in digital transactions and financial literacy remain barriers to widespread fintech adoption (World Bank, 2023). | Social factors such as a large proportion of the population in rural areas and significant digital literacy gaps affect fintech adoption. However, the increasing mobile penetration and young demographic help overcome some of these challenges (World Bank, 2023). |

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|------------------------------|---|---|
| Technological Factors | Indonesia is also seeing strong growth in mobile internet usage, and fintech apps have expanded significantly in recent years. However, the country's reliance on traditional banking methods means fintech adoption in some areas is still slow (OECD, 2023). | India is experiencing rapid technological development with advancements in mobile networks and internet infrastructure. The government's initiatives like <i>BharatNet</i> aim to improve connectivity across rural areas. These technological improvements are critical to fintech growth, though challenges such as cyber threats persist (IBEF, 2023). |
| Environmental Factors | Indonesia faces challenges related to natural disasters, such as earthquakes and floods, which can disrupt financial services. However, the increasing focus on building resilient infrastructure in urban areas is improving the fintech environment (World Bank, 2023). | Environmental challenges, such as extreme weather events, can impact infrastructure and hinder the rollout of fintech services in certain areas. However, India's commitment to sustainability through initiatives like the <i>National Action Plan on Climate Change</i> helps mitigate some of these risks (IBEF, 2023). |
| Legal Factors | Indonesia's legal framework for fintech is still evolving, with some regulations, such as those for digital payments and fintech lending, under review. This evolving regulatory landscape poses both opportunities and risks for fintech players (Asian Development Bank, 2023). | Legal factors, such as the <i>Data Protection Bill</i> and <i>RBI's regulations</i> on fintech, play a crucial role in shaping the market. While the legal landscape is becoming more supportive of fintech, there are concerns about the lack of comprehensive consumer protection laws (World Bank, 2023). |

2. SWOT Analysis

SWOT analysis is a strategic approach used to assess the present situation of a subject or entity, aiming to generate data that can inform future decisions. The method divides its assessment into four categories: strengths, weaknesses, opportunities, and threats. The acronym "SWOT" comes from the initial letters of these four elements, which help in evaluating both internal factors (like strengths and weaknesses) and external factors (such as opportunities and threats) that affect an organization or topic (Kement, 2021; Gümüş, Ö et.al., 2023) as mentioned table 3 below.

| SWOT | Indonesia | India |
|------|-----------|-------|
|------|-----------|-------|

| | | |
|--|---|--|
| <p style="text-align: center;">Strengths</p> | <p>Strong Growth in Mobile Penetration: The increasing smartphone adoption in Indonesia provides a strong base for fintech growth, especially in digital payments and peer-to-peer lending platforms (OECD, 2023).</p> <p>Government Focus on Financial Inclusion: Initiatives such as <i>100 Smart Cities</i> are pushing for greater adoption of digital financial services (Asian Development Bank, 2023).</p> | <p>Large Market Potential: India has a vast population, with a growing number of mobile users, which is crucial for fintech adoption. The government's push for digital financial inclusion through initiatives like <i>Digital India</i> enhances fintech market opportunities (World Bank, 2023).</p> <p>Skilled Workforce: The country has a strong IT and tech talent pool, supporting fintech startups and innovations (IBEF, 2023).</p> <p>Government Support: Several fintech-friendly policies, such as the <i>Startup India</i> initiative, provide a conducive environment for growth (IBEF, 2023).</p> |
| <p style="text-align: center;">Weaknesses</p> | <p>Limited Financial Literacy: A significant portion of the population still has low financial literacy, which hampers fintech adoption, especially in rural areas (OECD, 2023).</p> <p>Regulatory Hurdles: Despite improvements, Indonesia's fintech regulatory landscape is still developing, creating uncertainty for new players entering the market (Asian Development Bank, 2023)</p> | <p>Rural Digital Divide: Although urban areas are seeing rapid fintech growth, rural India still faces challenges such as limited internet connectivity and lower digital literacy, slowing adoption (World Bank, 2023).</p> <p>Cybersecurity Issues: The growing fintech sector is facing increasing cybercrime risks, with many consumers still not fully trusting digital platforms (IBEF, 2023).</p> |

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|-----------------------------|---|---|
| <p>Opportunities</p> | <p>Untapped Rural Market: With increasing smartphone penetration and government support, there is a large untapped market in rural regions for mobile banking and digital lending (Asian Development Bank, 2023).</p> <p>Cross-Border Payments: Indonesia's geographical location presents an opportunity to tap into cross-border payment systems, particularly with Southeast Asia's increasing digital trade (OECD, 2023).</p> | <p>Digital Payment Systems Growth: There is a significant opportunity for fintech companies in the digital payments sector, driven by government initiatives like <i>Jan Dhan Yojana</i> and <i>PMGDISHA</i>, which encourage financial inclusion (World Bank, 2023).</p> <p>Fintech Innovation: With a growing tech ecosystem, India presents opportunities for innovative fintech solutions in lending, insurance, and wealth management (IBEF, 2023)</p> |
| <p>Threats</p> | <p>Competition from Traditional Banks: Established financial institutions are also expanding into digital banking, creating significant competition for fintech startups (IBEF, 2023)</p> | <p>Regulatory Risks: While the Indian government has taken steps to regulate fintech, changes in policies and regulations (such as data privacy concerns) could create uncertainties (World Bank, 2023).</p> |

3. Gap Analysis

Suggested by Jurevicius (2023), this can be done by gap analysis, where the desired level is not met, changes must be made. Gap Analysis to find the gap of financial technology in Indonesia and overcome the challenges in transferring the financial technology knowledge by investigating the potential financial technology in India by technological advancement and potential human resources in India. The result of fit gap analysis as table 4 below.

| <p>Gap of transferring integrated of financial technology knowledge in Indonesia</p> | <p>Potential of transferring integrated of financial knowledge in India</p> |
|---|---|
| <p>1. Low Digital Skills Level among the Workforce, Most digitally unskilled workers are employed in sectors with low exposure to</p> | <p>1. Experienced workforce in Financial Technology. A significant portion of the workforce in India has experience</p> |

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|---|---|
| <p>digitalization, indicating the limited relevance of digital skills in these sectors (Kusuma & Zainuddin, 2022). This gap suggests a lack of integration of digital literacy into various sectors of the economy, impeding the growth of fintech.</p> | <p>in fintech, with 60% having less than five years of experience, and 35% having less than two years of experience. This indicates a rapidly growing fintech workforce (Kumar et al., 2023). The sector's expansion provides a robust base for knowledge transfer to other regions, such as Indonesia, that are still developing their fintech ecosystems</p> |
| <p>2. Low Digital Literacy Index, Overall, Indonesia ranks relatively low in digital literacy. The Indonesia Digital Literacy Survey conducted in November 2020 by MCI (Ministry of Communication and Informatics) found that digital literacy in Indonesia is particularly poor, especially when it comes to the skills required to handle digital information and data (MCI, 2020). This limits the workforce's ability to adapt to fintech knowledge transfers, hindering the adoption of digital financial solutions.</p> | <p>2. Technological Expertise, A high percentage of the Indian workforce is skilled in technology, especially financial technology. This is crucial for transferring fintech knowledge to countries like Indonesia, where the technological skills base is weaker (Singh & Sharma, 2022). India's workforce can serve as a model for Indonesia's fintech development.</p> |
| <p>3. Lack of online information search habit</p> <p>Approximately 60% of respondents in the Digital Literacy Survey were not accustomed to seeking out information online, including comparing various sources of information and verifying the credibility of the source (MCI, 2020). This suggests that Indonesians lack basic skills in navigating and evaluating digital content, which is crucial for fintech adoption and digital payment systems.</p> | <p>3. Currently, 91% of the FinTech employees have a science, technology, engineering and mathematics (STEM) background. It can transfer knowledge and skill from the Indian workforce with ICT (Information Communication and Technology) to the Indonesian workforce.</p> |

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|--|---|
| <p>4. Scarcity of advanced skills in the workforce.</p> <p>Advanced skills, especially in fintech, are scarce in Indonesia's workforce. This shortage presents a challenge for the effective transfer of fintech knowledge from more digitally advanced countries like India (Sari et al, 2023). The workforce's low capacity to manage and utilize new technologies hampers the growth and sustainability of fintech innovations.</p> | <p>4. High Financial Technology Adoption Rate</p> <p>India has emerged as a prime destination for the digital payment revolution, with a fintech adoption rate of 87%, significantly higher than the global average of 64% (Kiran & Sharma, 2023). This indicates that India has established a mature fintech ecosystem, making it a key player in knowledge transfer to emerging markets like Indonesia.</p> |
| <p>5. Low performance in Basic Literacy Skills.</p> <p>The PISA Survey of 2018 ranked Indonesia 71st out of 79 countries in terms of basic literacy (OECD, 2018), which directly correlates to the poor performance in digital literacy. This low level of basic literacy is a major barrier to the effective transfer of fintech knowledge, as individuals may struggle to understand complex financial concepts and digital tools.</p> | <p>5. According to ISACA, Indian workforce already had certification amount 10,000 holder certifications ISACA, the global IT professional association and learning organization with more than 150,000 members, is nearing 10,000 members in India and has surpassed 10,000 current certification holders (ISACA, 2021). According to data, it can transfer knowledge from the Indianfrom the Indian workforce that is IT certified by ISACA to the Indonesian workforce for increase digital literacy skillsthe Indonesian.</p> |
| <p>6. Limited Digital Infrastructure and Connectivity.</p> <p>Indonesia struggles with digital infrastructure challenges, particularly in rural and remote areas, which hampers access to digital financial services. According to the World Bank (2021), Indonesia's broadband penetration and internet speed are still below global standards, limiting access to fintech solutions for a large portion of the population. This gap in</p> | <p>6. Regulatory Support and Government Initiatives</p> <p>India has developed a favorable regulatory framework for fintech, with initiatives like the National Payments Corporation of India (NPCI) and RBI's Digital Payment Vision. These policies support the growth of the fintech industry, making India an attractive model for knowledge transfer (Patel & Kumar, 2022). By contrast, Indonesia's fintech regulatory environment is still</p> |

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|--|---|
| <p>infrastructure needs to be addressed to effectively transfer fintech knowledge.</p> | <p>evolving, which can create a barrier to effectively implementing new knowledge from India.</p> |
|--|---|

India is the country with the biggest population and currently India has a strong demographic whose average age is 29 years old (Ministry of Statistics and Programme Implementation of India, 2022). Anita Swain and Sunita Swain investigate India as the 1st population country in the world with around 60% which can contribute to the economy of the country and people of India support Make in India, Make in India means products made by India with providing the skilled workforce in India. The ‘Skill India’ mission requires more focus on entrepreneurship skills for enhancing job generation in the country. Various schemes like PMKVY, DDU-GKY etc. have been launched by the Government of India for making Indian youth skilled and employable. Indian youth should be aware of such schemes, get required training and make themselves employable. It is possible to transfer knowledge from India by implementing the scheme of PMKVY, DDU-GKY, etc. to Indonesia by training the workforce of Indonesia to increase skill and knowledge of Indonesian workforce.

5. Implication

1. Enhancing Digital Literacy for Effective Fintech Adoption

Indonesia’s low digital literacy is a significant barrier to fintech adoption. As highlighted, only a small portion of Indonesia's population is proficient in handling digital information and data (MCI, 2020). For knowledge transfer to be successful, digital literacy initiatives must be implemented. India’s experience in scaling digital literacy programs, such as the use of Aadhaar for digital identity and financial inclusion, offers valuable insights. For instance, India’s implementation of the Pradhan Mantri Gramin Digital Saksharta Abhiyan (PMGDISHA) program has successfully improved digital literacy in rural areas. A similar initiative in Indonesia could help improve digital skills across its diverse population, particularly in remote regions. By prioritizing educational programs, workshops, and government initiatives, Indonesia could bridge the digital divide and better equip its workforce to absorb and utilize fintech knowledge.

2. Building Workforce Skills to Align with Fintech Innovations

Indonesia's workforce is less equipped with advanced digital and fintech skills compared to India, which boasts a high percentage of its fintech workforce with a STEM background (Kumar et al., 2023). The implication is that, for Indonesia to fully leverage fintech knowledge transfer, there needs to be a focus on upskilling the workforce. This could involve developing specific training programs for fintech professionals, partnering with educational institutions, and collaborating with global fintech companies to boost expertise in digital financial technologies. For instance, India’s collaboration with academic institutions such as the Indian Institutes of

Technology (IITs) has significantly contributed to the development of a skilled fintech workforce. A similar initiative in Indonesia, involving partnerships between local universities and fintech companies, could enhance the expertise needed to support the expansion of digital financial services. By focusing on such skill-building efforts, Indonesia can improve its workforce's capability to effectively adopt and implement fintech solutions.

3. Digital Infrastructure Development

The poor digital infrastructure in Indonesia poses a challenge to fintech adoption (World Bank, 2021). For successful knowledge transfer, Indonesia must invest in improving internet connectivity, especially in rural areas. India's experience with building the India Stack and the Unified Payments Interface (UPI) infrastructure could serve as a guide. India's development of the India Stack has enabled seamless digital payments and identification systems across the country. This infrastructure, which includes initiatives like the UPI, has significantly boosted financial inclusion. Indonesia could adopt a similar approach by investing in scalable digital infrastructure and fostering public private partnerships (PPPs) to enhance both internet access and payment platforms. Through such efforts, Indonesia can improve its digital financial ecosystem and promote greater fintech adoption.

4. Creating a Favorable Regulatory Environment

India's fintech regulatory environment has been instrumental in fostering fintech growth, with initiatives like the National Payments Corporation of India (NPCI) and the RBI Digital Payment Vision. In contrast, Indonesia's regulatory framework for fintech is still evolving, which can complicate knowledge transfer. Indonesia must focus on developing a comprehensive and supportive regulatory environment for fintech to thrive. India's regulatory approach, including the establishment of the National Payments Corporation of India (NPCI) and the RBI Digital Payment Vision, has created a stable environment for fintech innovation and secure digital transactions. Indonesia could benefit from a similar strategy by strengthening its regulatory framework to support fintech growth, ensuring that policies promote innovation while addressing critical issues such as data security, consumer protection, and financial inclusion. In doing so, Indonesia can establish a conducive environment for the fintech sector to thrive.

5. Promoting Financial Inclusion and Digital Payments

India's fintech ecosystem, underpinned by initiatives such as Jan Dhan-Aadhaar-Mobile (JAM) and the success of UPI, provides a solid foundation for increasing financial inclusion. Indonesia could adopt similar strategies, leveraging digital financial services to reach unbanked populations. India's JAM initiative has successfully integrated digital identity, mobile technology, and banking services to provide financial access to millions of previously unbanked individuals. By adopting a similar model, Indonesia could enhance its financial inclusion efforts, especially in remote and underserved areas. Knowledge transfer from India's experience in integrating fintech solutions with traditional banking systems and providing affordable digital payment options could play a key role in extending financial services to Indonesia's unbanked population.

6. Recommendation

Recommendation for this study is:

1. Increase digital skill, increase digital literacy index, and advance of performance among the Indonesia's workforce by government of Indonesia support to technology (IT) certification. IT certification can increase the knowledge and skills in technology, especially financial technology. The other way is, Indonesia can collaborate with India's workforce to increase digital skill among Indonesian workforce, India's workforce can serve as a legacy or training or hands on project as a model for Indonesia's fintech development.
2. The government supports financial technology by providing and enforcing laws to protect the data of financial technology and enforcing the law such as user's data that contain name, phone number, balance, etc that should be protected as financial technology in India. Financial technology in India has protect by data protection bill, data protection bill An Act to provide for the processing of digital personal data in a manner that recognises both the right of individuals to protect their personal data and the need to process such personal data for lawful purposes (Ministry of Law and Justice, 2023).
3. The government of Indonesia should back up the data regularly. The government of Indonesia can back up using the cloud. Cloud is technology that enable to store the data without any risk lose the data that causes by disaster such as earthquake, fire, etc. The other way is install firewall, Indian organizations have the option to use firewalls to better defend their networks from cyber attacks. Reliable firewall software can improve security and protect your systems from brute force attacks and prevent irreversible damages from cyber security incidents. It means the government of Indonesia can install firewall software to improve data security of financial technology in Indonesia.
4. The government should invest in technology as India invests and initiates *BharatNet* to rural areas. *Bharat Net* aims to improve connectivity across rural areas. These technological improvements are critical to fintech growth, though challenges such as cyber threats persist (India Brand Equity Foundation, 2023). To increase the quality of digital infrastructure in Indonesia, the government needs to invest the technology in rural areas such as connectivity, electricity, etc. The aim of investing in technology in rural areas is to reach the access of financial technology in rural areas to easy and simple transactions. It has an impact to increase digital literacy and digital experience in rural areas.

7. Conclusion

According to Mordor Intelligence, Financial Technology in India is growing rapidly. In 2024 Market Size amounts to USD 111.14 Billion and it predicts growth to 2029 amount USD 421.48 Billion (Mordor Intelligence, 2024). In India itself, the financial system has a significant change that has proven to be a disruptive force in Banking, Financial Services, and Insurances.

Indonesia as the 4th biggest population has potential in the financial market. Indonesian Financial Services Authority also investigated the transaction of e-wallet amount more than 63 Million in 2017-2021, transaction of lending amount more than and more than 20 Billion wealth technology and digital trading in 2021 (BCG, International Financial Service Authority, 2023). It means market of financial technology is potential but there is many challenges that happen to transfer knowledge in Indonesia is:

1. Low digital skills among the workforce, this gap suggests a lack of integration of digital literacy into various sectors of the economy, impeding the growth of fintech.
2. Low Digital Literacy Index. This suggests that Indonesians lack basic skills in navigating and evaluating digital content, which is crucial for fintech adoption and digital payment systems.
3. Low performance in Basic Literacy Skills. This suggests that Indonesians lack basic skills in navigating and evaluating digital content, which is crucial for fintech adoption and digital payment systems.

These studies use PESTEL analysis, fit-gap analysis, SWOT Analysis to measure the challenges and potential between financial technology in India and Indonesia. According to PESTEL Analysis and SWOT Analysis is India possible to transfer knowledge the financial technology to Indonesia by transfer knowledge and skills from expert workforce, India has a strong IT and tech talent pool, supporting fintech startups and innovations, regulations, financial technology has protected by *Protection Bill* and *RBI's regulations* that play a crucial role in shaping the market and *National Action Plan on Climate Change* helps mitigate some of these risks such as data mitigation. So, it is possible for India to transfer knowledge about data mitigation to Indonesia.

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