REVIEW

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Navigating Innovation, Inclusion, and Ethical Challenges in AI-Driven Fintech: The Philippines

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Abstract: The purpose of this study is to investigate the ethical risks associated with the implementation of artificial intelligence (AI)-driven social fintech initiatives in the Philippines and how they support financial inclusion. The study examines nine fintech companies that operate in a variety of industries, such as digital banking, microlending, and blockchain-based waste-to-cash programs, using a qualitative multiple case study methodology. According to the research, fintechs use AI to provide automated onboarding, alternative credit scoring, and customized financial services. These tools are implemented using AI-enabled, mobile-first platforms that allow for quick expansion into underserved areas without depending on conventional banking infrastructure. Findings show that while such innovations significantly improve reach and efficiency, they also introduce ethical risks due to low financial literacy, data privacy concerns, cybersecurity vulnerabilities, and uneven consumer protections. The necessity of responsible AI integration, improved consumer protection, and flexible regulatory frameworks is highlighted by these risks. This study adds to the body of knowledge on inclusive digital finance in low-capacity digital environments by shedding light on the intricate trade-offs between innovation and ethics.

Keywords: artificial intelligence (AI), fintech, financial inclusion, ethical AI, Philippines

1. Introduction

The study of agents that perceive their surroundings and take action is known as artificial intelligence (AI), according to [1]. AI makes it possible for a variety of financial services applications, including chatbots, fraud detection, algorithmic credit scoring, and customized financial products. These tools are making financial services faster, more inclusive, and data-driven, which is revolutionizing the global fintech industry [2].

These technologies are increasingly being used for social impact in developing markets like the Philippines, in addition to efficiency and profitability [3]. *Social fintech*, which this study defines as the application of digital financial innovations to advance financial inclusion and meet the needs of marginalized populations, has emerged as a result of this change. AI's potential notwithstanding, its incorporation into fintech presents difficult moral and practical issues, such as algorithmic bias, data privacy issues, and consumer protection gaps, which are especially severe in environments with low levels of digital and financial literacy [4].

This study addresses the following research question: *How do AI-driven social fintech initiatives in the Philippines promote financial inclusion, and what ethical risks arise in their implementation?* To explore this, the study applies a qualitative multiple case study approach using desk research, reviewing industry reports, regulatory documents, and firm-level data. Purposively, nine Philippine

fintech companies from the digital banking, lending, and payments sectors were chosen because of their dedication to inclusive finance and active use of AI.

Research indicates that although AI facilitates more extensive reach and customized services, it also poses risks that, if left unchecked, could exacerbate already-existing disparities. The study comes to the conclusion that long-term, equitable fintech development depends on the responsible integration of AI, supported by adaptive regulation and enhanced digital literacy. By providing useful insights into the potential benefits and drawbacks of social fintech in a developing economy, this study adds to the expanding body of research on inclusive digital finance.

2. Literature Review

Fintech firms are aware of the region's potential to transform global payment and financial services systems. Major players like Visa, MasterCard, Intuit, and PayPal, as well as a growing number of regional product providers, represent the global fintech industry. In addition to increasing transaction efficiency, these developments have shed light on how people and organizations use financial systems.

Southeast Asia has the potential to become a global leader in digital banking due to the fintech industry's explosive growth in emerging markets. Leading the way in this shift are nations such as the Philippines. Government policies that encourage digital transformations are driving this trend in tandem with a young, tech-savvy populace. On the other hand, infrastructure gaps, profitability, and regulatory compliance pose significant challenges [5].

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Table 1
Comparative analysis of traditional fintech vs. social fintech

Aspect	Traditional Fintech	Social Fintech
Primary goal	Profit maximization	Financial inclusion and social responsibility
Focus	Individual transactions	Community-oriented solutions
Examples	Digital wallets, online banking	P2P lending, crowdfunding, recycling platforms
Challenges	Operational efficiency, scaling	Building trust, managing social impacts
AI role	Fraud detection, risk assessment	Ethical AI, behavior analysis, trust building

Regulatory compliance is especially complicated, and fintech businesses must manage the quickly evolving fields of consumer protection, data privacy, and anti-money laundering. For example, compliance with Circular 1108 of Bangko Sentral ng Pilipinas (BSP), which outlines guidelines for electronic money issuers, requires significant investment in technology and personnel. Furthermore, scalability for regional expansion for fintech companies is disrupted by the lack of harmonious regulations in ASEAN countries [6].

The Philippines' fintech companies' laterality rate is hindered by sufficient obstacles to profitability. A number of factors, such as increased operational costs, market saturation, and an undeveloped customer base for digital financial services, can account for this trend [7]. Furthermore, only a small percentage of the nation's licensed digital banks have benefited operationally, which worries the BSP. Emerging digital literacy and gaps in infrastructure, particularly internet access, were also major challenges. Digital financial services' reach is constrained in rural areas by the lack of reliable and reasonably priced internet access [8].

2.1. Theoretical framework

This study adopts a conceptual framework that contrasts **traditional fintech** with **social fintech** to analyze how AI is being deployed to advance or complicate financial inclusion goals. These two strands of fintech represent different logics of operation, innovation, and success metrics (see Table 1).

Focusing on efficiency, profitability, and technological innovation, traditional fintech primarily serves tech-savvy consumers and is primarily found in developed economies. Examples include digital wallets, online banking platforms, and AI-powered fraud detection systems. In this field, market share, scalability, and financial performance are used to gauge success.

Social fintech, on the other hand, integrates financial inclusion and social responsibility into its core mission. It targets underserved and marginalized populations, aiming to reduce inequalities and promote sustainable development. Examples include, first, peer-to-peer (P2P) lending, crowdfunding, recycling platforms, and financial education initiatives but also traditional fintech components that are valuing financial inclusion and promoting its services for social impact [9]. Social fintech measures success not only by financial metrics but also by its social impact and ability to empower communities.

AI plays an important role in both traditional and social fintech, as shown in the table above. In traditional fintech, AI is used for fraud detection, risk evaluation, and increasing operational efficiency. In social fintech, AI apps such as alternative credit scoring (using mobile phone data and social media activity) and customer engagement via chatbots are necessary to provide financial access to the underserved population. These devices help bridge gaps due to traditional credit history or lack of financial infrastructure, thus promoting financial inclusion [10, 11]. However, both businesses face similar challenges, especially with data privacy, algorithm bias, and regulatory compliance. As reliance on AI increases, ensuring that algorithms refrain from perpetuating biases is vital to maintaining fairness in financial services. Moreover, ethical AI is essential to avoid unfair lending practices and guarantees that financial services remain accessible to all [11].

In the Philippines, digital banking, lending apps, finance apps, and cashless ecosystems contribute to financial inclusion by expanding access to financial services to the communities. Most of these platforms adopt social fintech principles by giving priority to financial inclusion and responsible financial services. However, many work within a profitable model, which requires assessing their long-term commitment to social responsibility [7]. Their rapid adoption of AI-driven solutions raises important questions about the balance between financial innovation and ethical financial inclusion.

According to the Boston Consulting Group, the "ecosystem of trust" has become a popular business model, confirmed by the success of a customer engagement platform, Twilio, through identifying trends that shape brand-customer experiences in the Philippines. These trends include moving away from traditional loyalty programs, increasing chatbot interactions with interactive AI, effectively adopting inclusive verification methods, leveraging data effectively, and breaking down silos between business units. Fintech companies are now encouraged to concentrate on building more individual brand-customer interactions by taking advantage of technology.

2.2. The role of AI in social fintech

The convergence of fintech and AI holds great promise for tackling concerns pertaining to equality, education, health, and the environment. By supporting creative, data-driven solutions, these technologies can work together to support sustainable development [12]. AI improves financial services' efficiency and accessibility by addressing issues like information inequality and high operating costs [13, 2]. It makes it possible for digital platforms to minimize barriers to entry, enhance user experience, and offer more inclusive financial products. Maintaining a dynamic regulatory framework that strikes a balance between the benefits of innovation and the safety and comprehensiveness of the financial system will be crucial as AI develops [14]. As seen below, AI is currently being used to analyze behavior, foster moral behavior, and increase trust in social fintech. In social fintech, which emphasizes social responsibility, sharing economies, and social integration, trust is especially crucial.

2.2.1. AI's role in building trust

Through trial and error, AI agents can learn to emulate human-like trustworthy and trusting behaviors, particularly when training involves a variety of scenarios that replicate the complexity of the real world [15]. Building trust in fintech companies requires

openness and truthfulness. Promoting consumer trust in AI-powered banking systems requires maintaining human oversight and ensuring regulatory compliance. Clear AI techniques, effective risk management plans, methodical analysis of the effects of uncertainty, and the creation of an evaluation of digital maturity can all help achieve it. To further increase user acceptance and trust, it is essential to strengthen human oversight and promote AI literacy. Social norms, user attitudes, and perceived behavioral control all have a big impact on the adoption of AI-driven fintech solutions, so it is not just about technical efficiency [16]. In addition to technological advancements, fintech companies seeking to establish trust should take these behavioral factors into account to increase customer loyalty and adoption rates. In the paradoxical AI age, users' faith becomes confused with intelligence, perceiving AI as both powerful and mysterious. Because AI seems infallible, users with low AI literacy trust it more than they understand it [17]. This trust is motivated by AI's perceived autonomy and intelligence rather than anthropomorphism, or the idea that it is humanlike [18]. But this kind of trust is brittle and based more on perception than understanding. In the fintech industry, where businesses must strike a careful balance between regulatory clarity and the "magical" appeal of AI, this is especially clear. Trust in AI-driven financial systems runs the risk of crumbling under scrutiny in the absence of transparency and oversight.

AI systems can be made more dependable and trustworthy with the help of psychological research and the application of trust theories [19]. Building trust requires user-centered design, open communication about AI's potential and constraints, and encouraging cooperation between humans and AI. Biometric authentication driven by AI improves security and streamlines access, increasing the accessibility of financial services, particularly for marginalized groups [20].

2.2.2. Behavior analysis

By analyzing trends in credit history and spending patterns, AI algorithms can spot and stop fraud, protecting consumer assets. AI is able to identify irregularities that might point to fraud by creating profiles of typical consumer behavior, including spending patterns and transaction histories.

The ability of machine learning models to process and analyze large amounts of data to determine creditworthiness speeds up the loan approval process while reducing bias and increasing accuracy. In addition to conventional credit data, AI is able to assess behavioral indicators like patterns of financial management and repayment behavior. This method improves default prediction accuracy and encourages more environmentally friendly lending practices, especially in P2P financial ecosystems where personal information may be scarce [21].

2.2.3. Ethical AI

It is the responsibility of stakeholders to guarantee that AI systems are in line with the values and interests of society, taking into account concerns about privacy, transparency, and equity [22]. FATE is an acronym for ethics, transparency, accountability, and fairness. It serves as a framework to guarantee that AI and machine learning systems are created and implemented in an impartial, responsible, and morally sound manner.

AI system development and application should adhere to responsible innovation principles, taking society's interests into account at every turn. While leveraging the advantages of big data and AI, fintech companies may implement policies and procedures to guarantee the moral use of consumer information [23]. To guarantee accountability, it is essential to incorporate fairness and transparency into algorithms and to design systems with privacy concerns in mind [22].

The risks posed by AI are especially serious in the Global South, frequently having more detrimental effects than those observed elsewhere. Platforms driven by AI frequently use surveillance techniques to track user behavior, which raises questions regarding privacy, individuality, and long-term reliance. Social fintech platforms present financial inclusion as an opportunity for empowerment by combining AI and human agents to monitor and impact user behavior. Nevertheless, this system can commodify user data, creating a feedback loop that reinforces dependency through repeated small loan cycles [24].

Algorithmic bias is a serious problem that jeopardizes fintech's social mission by sustaining inequality and undermining confidence. Research has indicated that algorithmic transparency can enhance users' perceptions of fairness and satisfaction. Thus, preserving legitimacy and trust in AI systems depends on guaranteeing accountability and transparency [25].

The goal of social fintech, which is to promote long-term socioeconomic upliftment, must be balanced with profitability [26]. The fintech industry's full potential is constrained by problems such as low digital literacy, high infrastructure costs, and cybersecurity threats [27]. Achieving a balance between profit and social impact requires better digital platforms, financial literacy initiatives, and regulatory support. Social fintech should take into account blended finance models, which combine public and private investments to de-risk projects, measure impact using metrics like Social Return on Investment, and involve local communities in solution design in order to achieve sustainable success [28]. Regulatory oversight is essential, with governments establishing clear ethical guidelines for AI use in fintech.

Adopting Explainable AI (XAI) will prioritize user consent, data privacy, and long-term financial empowerment while ensuring transparency and building trust. Additionally, the Global South viewpoint should be reflected in culturally contextualized approaches to XAI. AI systems developed primarily in the West lack an explanation that is compatible with regional financial systems and customs, like traditional savings groups. Furthermore, people in the Global South may find it easier to comprehend and trust AI applications if local languages and explainability norms are used. These applications are frequently created without taking into account the distinct cultural and social contexts of these regions [29].

The Global South's varied realities should be reflected in AI governance, which should transcend the dominance of affluent countries and tech behemoths. To address the particular difficulties faced by developing nations, this change should place a higher priority on equity, inclusivity, and sustainability. It is imperative to guarantee equitable representation, moral advancement, ecological sustainability, and cultural autonomy in order to make AI advantageous for all countries, not just a select few [30, 31].

2.2.4. Financial literacy and impact investments

Products powered by AI give educational resources more life, such as by reminding users of risks and rating investment justifications. By providing feedback on their investment choices, it seeks to raise individual investors' financial literacy and promote better decision-making. Moreover, AI helps identify risks and opportunities related to sustainability through assessing non-monetary aspects of investments, such as environmental, social, and governance (ESG) factors, which are crucial for long-term, socially responsible financial decisions.

2.3. AI-driven digital transformation and financial inclusion in the Philippines

The Philippines is recognized as the most digitally engaged country in South and Southeast Asia, with Filipinos spending more time online than in face-to-face interactions. The Covid-19 epidemic intensified this change, making mobile devices necessary for socialization, entertainment, and education. Filipinos are particularly active on social media and are rapidly engaged in online gaming and esports. Educational apps and online learning platforms have also gained popularity, showing increasing dependence on digital solutions for various social, educational, and entertainment needs. At the workplace, the Philippines is a leader in AI adoption, in which Filipino knowledge workers show higher usage levels than their global and regional counterparts. AI is seen as important to

maintain commercial competition, although concerns persist about a lack of clear implementation strategies [32].

Aligned with Sustainable Development Goal (SDG) 8, which promotes sustained and inclusive economic growth and decent work for all, Target 8.10 specifically calls for strengthening the capacity of domestic financial institutions to expand access to banking, insurance, and financial services for everyone. Despite lagging in physical infrastructure, such as automated teller machines (ATMs), as seen in Figure 1, the Philippines has seen rapid growth in account ownership, rising from 27% in 2011 to 53% in 2021 (Figure 2). This improvement, though modest compared to regional peers like Thailand and Singapore, highlights the role of fintech and mobile money in expanding access and compensating for infrastructural gaps.

The Philippines' fintech industry is expanding quickly thanks to rising digital adoption, government assistance, and a dedication

Figure 1
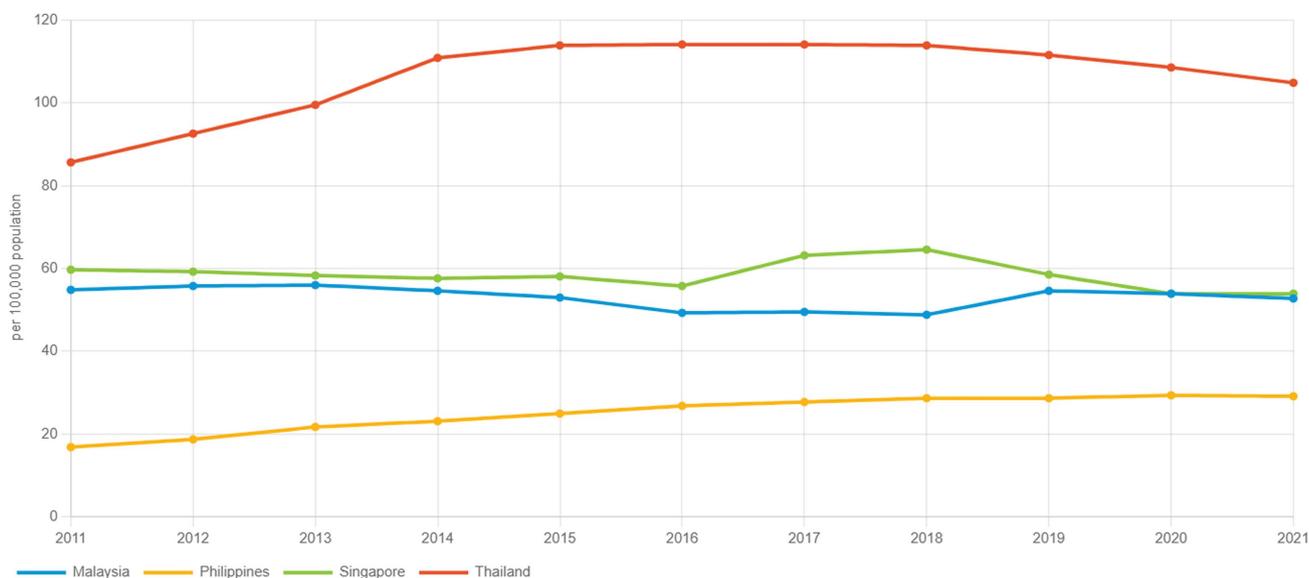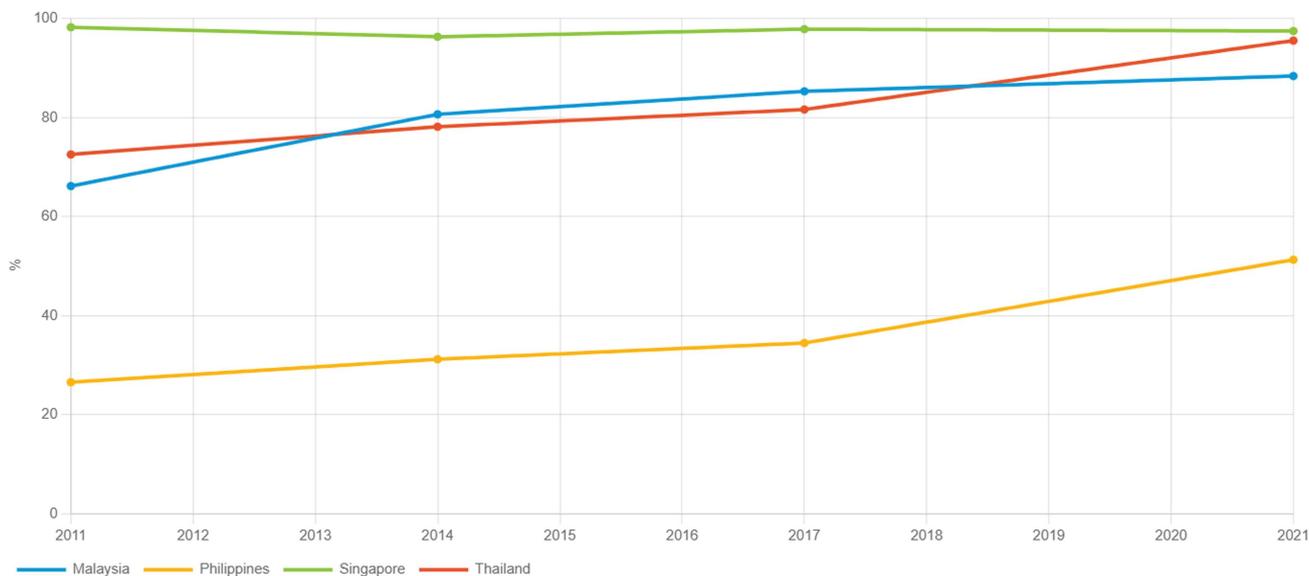**Number of ATMs per 100,000 adults [33]**

Figure 2
Proportion of adults (15 years and older) with an account at a bank or other financial institution or with a mobile-money-service provider [33]

to financial inclusion. The central bank has set a goal of 70% banking penetration by 2030 and wants to promote financial inclusion. However, in terms of financial inclusion, the Philippines lags behind its ASEAN neighbors, with about half of the Filipino population remaining unbanked. Digital banks have a small market share and a high debt default rate [34]. Nevertheless, AI keeps improving security, lowering structural barriers, and advancing financial inclusion.

2.3.1. Innovations driving financial inclusion

The BSP has given authorities to six digital banks: Maya Bank, Tonik Digital Bank, Overseas Filipino Bank, UNObank, UnionDigital Bank, and GoTyme Bank, indicating the growing regulatory recognition of the role of digital banking in the Philippine financial landscape [35]. However, high operational costs, intensive competition, and advanced non-performing loan rates, which are four times higher than in the comprehensive banking sector, contribute to ongoing financial losses. In particular, the GoTyme Bank, which was launched in October 2022, reported significant initial losses but estimated profitability by the end of 2025, emphasizing that the digital bank usually takes five to seven years to become profitable. On the other hand, large banks with strong regulatory inspections manage risks more effectively. This suggests that in the context of the Philippines, regulatory policies should be responsible for the difference in bank size and market dynamics to ensure financial stability [36].

Next, shared mobility services like Angkas Bike, GrabCar, and Ubike are contributing to sustainable transportation options while supporting environmental goals. Also, P2P lending platforms like Blend.PH, SeedIn, Bukas, Kiva Philippines, and Acudeen extend credit to underserved communities, fostering economic growth. Additionally, crowdfunding platforms such as Seedbox, Largesse, Cropital, Investree, and Crowdrise support startup funding and are regulated by the Securities and Exchange Commission (SEC). AI enhances crowdfunding platforms, like SeedIn, by optimizing investment matching and capital access. Among others, microfinance institutions like CARD MRI, the ASA Philippines Foundation, and Negosyong Pinoy facilitate group lending, allowing individuals without collateral to access credit through shared accountability. Social impact investing initiatives, such as the Philippine Investment Alliance for Impact, target sectors like affordable housing and healthcare.

The Philippines is using technology to increase financial literacy. The BSP is pursuing financial education through an initiative like its e-learning Academy (BELA), which will be accessible by 2025, to support underdeveloped and underserved communities. Additionally, TESDA provides free financial literacy modules in collaboration with BSP and BDO Foundation, with AI potential to enhance course interactivity.

2.3.2. How AI is being used

With platforms and programs designed to encourage digital transactions and financial inclusion, the Philippine financial sector is embracing AI [37]. Fintech is being transformed by AI in a number of ways, improving financial services' accessibility, efficiency, and personalization (see Table 2).

2.3.3. Policy and regulatory considerations

Fintech lending in the Philippines is dependent on social capital, regulatory frameworks, and digital infrastructure in addition to technological advancements. It is common knowledge that nations with robust institutions, high levels of trust, and easy access to the internet see faster growth in fintech, while those with less robust governance frameworks encounter difficulties in gaining traction. Strong legal protections and investments are vital for financial inclusion. Reference [38] investigates how the rule of law and government size affect microfinance efficiency. Strong legal frameworks and government integrity improve financial efficiency, according to their research, while tax revenues and public spending increase social efficiency by funding financial literacy and infrastructure. Financial and social efficiency are supported by economic growth, while social efficiency is enhanced by inflation, which raises the demand for loans. Policymakers should therefore bolster legal safeguards, make investments in digital finance infrastructure, and enact balanced taxation policies in order to maximize microfinance performance.

Through programs like the Regulatory Sandbox Framework and ASTERisC*, the BSP is instrumental in promoting financial inclusion. Cloud-based regulatory technology ASTERisC* provides real-time cyberthreat advisories, detects compliance gaps, and automates cybersecurity supervision. By encouraging transparency, improving security, and advancing financial inclusion, ASTERisC*, which was honored with the 2023 Cyber Resilience Initiative Award, fortifies digital financial ecosystems.

Table 2
Samples for applications of AI in financial services and inclusion in the Philippines

Application Area	AI Implementation Sample
Financial Inclusion	GCash utilizes AI, through GScore, to assess user creditworthiness based on in-app activity. Tonik Bank uses AI to assess creditworthiness based on alternative data.
Enhanced Security	GoTyme Bank helps undocumented people obtain financial access by using Daon's IdentityX platform for biometric verification.
Detecting Anomalies	By looking for odd patterns in financial data, the Commission on Audit uses AI and data analytics to find irregularities and corruption in government transactions.
Credit Scoring	Banks work with Trusting Social, an AI-powered credit scoring platform, to guarantee strict data privacy regulations.
Plastic Waste Collection	Plastic Bank uses blockchain and AI to incentivize plastic waste collection.
Predicting and Understanding Human Behavior	Netopia AI analyzes data from surveys, social media, and digital interactions. It forecasts actions, offering insights into cognitive and emotional behavior.
Promoting Financial Literacy	GCash uses AI to enhance financial literacy. Personalized insights and recommendations based on users' financial behaviors are offered.

The Open Finance Framework encourages safe, consent-based data sharing, while the BSP's Regulatory Sandbox Framework allows for the controlled testing of new technologies to support fintech growth. Cooperatives and microentrepreneurs are empowered by initiatives like Co-opbiz.ph and the Digital Financial Inclusion Awards, which close financial gaps and promote inclusive economic growth. In order to protect consumers as the financial industry becomes more digital, the BSP introduced the Anti-Financial Account Scamming Act.

The nation's digital banking and crowdfunding industries both depend heavily on legal compliance. Trust in the digital economy is promoted by regulatory frameworks such as the Data Privacy Act and the Securities Regulation Code, which protect financial transactions and personal information. High loan default rates are among the difficulties facing the digital banking industry, though, which is why the BSP has mandated sizeable capital reserves to guarantee financial stability.

Support from the government is still essential for digital transformation. In order to lower transaction costs, the BSP's Digital Payments Transformation Roadmap (2020–2023) encourages digital payments and financial inclusion through unified QR code systems (QRPh). Furthermore, by utilizing digital platforms for better data management, accessibility, and transparency, collaborations such as the one between the The United Nations Development Programme and the Department of Social Welfare and Development improve social protection services.

At the same time, the Philippine government is pushing for the integration of AI in various sectors. Data privacy, intellectual property rights, and liability concerns are just a few of the legal and ethical issues surrounding AI that are being addressed by initiatives like the National Artificial Intelligence Roadmap, the Philippine Innovative Startup Act, and House Bill No. 7396 [39]. Transparent AI is necessary to comply with data protection laws. The Data Privacy Act of 2012 (Republic Act No. 10173) of the Philippines stipulates stringent guidelines for the gathering, processing, and storage of personal data. To adhere to this regulation, fintech businesses must put strong data security measures in place, get users' express consent, and guarantee data minimization. Additionally, the National Privacy Commission has released detailed guidelines on the application of AI in decision-making, highlighting the importance of accountability and transparency.

3. Methodological Framework and Case Study Results

3.1. Research methodology

By 2024, there will be about 335 fintech companies in the Philippines, with 116 in the payments sector and 73 in the lending sector. In contrast to developed countries like the United States and the United Kingdom, which each have over 10,000 fintech companies, this figure is noteworthy but still small. Though it trails regional leaders like Singapore, the Philippines contributes to the 1,580 fintech companies in the ASEAN-6 [40]. By using AI to take advantage of gaps in financial inclusion and trends in digital adoption, the fintech industry in the Philippines is developing quickly [41].

This study uses desk research to support its qualitative multiple case study methodology. In order to represent a variety of industry segments, such as payments, lending, and digital banking, nine fintech companies with operations in the Philippines were specifically chosen. Among the selection criteria were their declared dedication to financial inclusion and their track record of utilizing AI or digital innovations. The following search terms were used in the selection process: "AI in Philippine fintech," "digital banking in the Philippines," "inclusive finance," "AI credit scoring," "ethical risks in fintech," and "social fintech."

Data sources included company websites, industry reports, regulatory filings, policy documents, and academic literature. The objective was to find trends, tactics, and obstacles shared by fintech initiatives to advance inclusive finance, with an emphasis on the technological, ethical, and legal ramifications.

3.2. Selected case studies

3.2.1. Plastic bank

Plastic Bank, a Canadian for-profit social fintech, tackles ocean plastic pollution and poverty by paying people to collect plastic waste. Operating in the Philippines, Indonesia, Brazil, Egypt, Thailand, and Cameroon, it provides dignified income opportunities while preventing plastic from reaching the ocean. Plastic Bank earns money by selling the recycled plastic—branded as "Social Plastic®"—collected through its ecosystem to partner companies for use in manufacturing. It also monetizes its blockchain-based traceability and impact verification services, enabling brands to meet ESG goals in the country.

Plastic Bank uses a blockchain-based platform to track plastic collection from branches to processors, ensuring transparent transactions [42, 43]. Members trade the plastic they collect for digital tokens that can be used to purchase necessities, health insurance, and school supplies. By providing competitive rates, the platform encourages communities; collectors in the Philippines make money every month.

Plastic Bank works with companies like Coca-Cola Philippines and SC Johnson to increase its influence. Through the tracking of plastic collection data, its technology facilitates compliance with the Extended Producer Responsibility Act of 2022. The company's app-based system integrates electronic banking for junk shops and waste collectors, thereby promoting financial inclusion. Plastic Bank is still growing, with 206 branches in Metro Manila and Luzon, and plans to open in Cebu and Mindanao. Waste management is improved, community livelihoods are raised, and corporate sustainability initiatives are supported by utilizing blockchain and AI.

3.2.2. Tonik: "That's right, luvs!"

Tonik, the first digital bank in the Philippines, is transforming retail banking through easily navigable mobile solutions. Tonik, which has a BSP license, provides unbanked Filipinos with safe, affordable, and technologically advanced banking in order to combat financial exclusion. The bank is proactively marketing its service as a catalyst for financial inclusion while preserving financial stability by collaborating with various AI-powered solutions.

Tonik uses cloud computing and AI to optimize services and runs its business entirely online. It mainly depends on AI infrastructure and tools created by global and Western tech companies. It uses Vision AI/Document AI (Google) to automate customer onboarding and Daon, a biometric authentication company based in the United States, to cross-reference identities. Its Apigee API Management-powered application programming interfaces-first strategy improves transaction efficiency, and its collaborations

with 7-Eleven and pawnshops make cash deposits and withdrawals easier.

Tonik improves security and reduces latency by implementing Fusion Essence, a banking software produced in the United Kingdom, in an Azure data center, a cloud platform created in the United States. It ensures a smooth banking experience by integrating Switzerland's BPC (Banking, Payments, Context) SmartVista platform for secure transactions and fraud management. Using Google Cloud Storage and BigQuery, Tonik created a digital lake to store and aggregate data for better financial services.

In order to improve its business operations and service offerings, Tonik Bank has actively partnered with a number of solution providers. Its lending procedures are enhanced through a partnership with CredoLab, a Singapore-based company that creates credit scores using alternative data. The goal of this partnership is to make it simpler for Filipinos to obtain favorable interest rates and quick approvals. Tonik partnered with CRIF to automate loan decisions and collections. Through this collaboration, Tonik can improve efficiency while lowering expenses and risks associated with credit decision-making and collection procedures. Finastra's cloud-based Fusion Essence powers its core banking services from start to finish. This solution, which offers scalability and agility, helps Tonik launch retail deposit and customer loan services in the Philippines.

By using playful branding techniques, such as referring to customers as "luv" and "hun," Tonik quickly became well-known. It gained high app ratings and established its position as a leader in promoting financial inclusion in the Philippines by securing 230,000 users and $30 million in deposits in its first year. Tonik also uses alternative data to analyze customer behavior and customize its product offerings in order to further improve user personalization.

Tonik's primary source of income is lending, with a particular emphasis on consumer loans, in contrast to traditional banks. With a risk-adjusted return on capital of 25%, this model is highly profitable and sets Tonik up for quick loan book growth. Nonetheless, Tonik's assertive lending approach also presents moral questions. Customers may be charged interest rates of up to 7% per month, which, when annualized, is significantly higher than typical bank lending rates and may disproportionately impact borrowers who are already struggling financially. The distinction between inclusive lending and exploitative debt is blurred by such rates, which are promoted as convenient credit. Even though Tonik and Expertly Credit Solutions' partnership under the Financial Institutions Strategic Transfer Act aids in the restructuring of non-performing loans, many people who are already caught in cycles of high-interest debt may find that these interventions are too late.

3.2.3. GCash finance app

GCash, the top finance app in the Philippines, is revolutionizing financial accessibility by utilizing digital banking and mobile money. It addresses financial exclusion by offering a seamless platform for investments, savings, credit, loans, insurance, and transactions that are all accessible through smartphones and is managed by Mynt [41].

GCash, which has 81 million active users and 2.5 million merchants, has transformed economic behavior and become a cultural phenomenon. It offers investment options, including cryptocurrency wallets, through GInvest, facilitates savings through GSave, and extends credit through GCredit. The success of GCash is a result of its extensive alliances with both domestic and foreign financial institutions. It guarantees accessibility even in the absence of internet connectivity by incorporating SMS-based payments. In line with the SDGs of the United Nations, GCash advocates for climate action, security, and financial inclusion. Being the biggest cashless ecosystem in the Philippines, it keeps promoting digital financial empowerment.

In order to combat financial exclusion, GCash has increased its financial literacy programs, including Pera Talks and financial wellness initiatives. Even though these programs are aimed at underprivileged communities, their viability is still in doubt. While financial literacy is important, structural reforms should also be implemented to remove systemic obstacles to financial access. Partnerships between GCash and local government entities are a step in the right direction, but sustained involvement and noticeable advancements in financial infrastructure are necessary for them to be effective. By providing individualized recommendations and insights, GCash is using AI to raise the financial literacy of its users. This strategy encourages prudent financial practices and improves the platform's capacity to meet individual financial needs. With the help of AI, GCash hopes to improve the impact, relevance, and accessibility of financial education—especially for users with little financial experience.

However, as e-wallets become more and more integrated into everyday transactions, GCash scams in the Philippines highlight the weaknesses of digital financial platforms. Consumer fraud losses in 2024 totaled P76.49 million, underscoring the growing sophistication of cybercriminals who trick users with spoofing, phishing, and unauthorized transfers.

The operational risks were further highlighted by a recent glitch in GCash's "Send to Many" feature, which resulted in unauthorized transactions and raised questions about the platform's resilience against fraud and technical malfunctions. Even though GCash fixed the impacted accounts and strengthened security protocols like OTPs and face verification, these incidents show that there are still risks. GCash and regulatory agencies such as the Cybercrime Investigation and Coordinating Centre emphasize public awareness and vigilance in order to combat scams. But the growing volume of cybercrime complaints suggests that systemic changes and more robust enforcement are required.

3.2.4. JuanHand: AI-powered lending with privacy concerns

JuanHand, a fintech lending app by WeFund Lending Corp., has provided fast, accessible loans in the Philippines since 2018. Using Finvolution's AI, JuanHand approves loans within five minutes, requiring only basic borrower information and a valid ID—no collateral or proof of income needed.

JuanHand streamlines online lending, but its data privacy policies have drawn criticism. The National Privacy Commission (NPC) discovered in 2021 that the app improperly obtained the contacts, location, and calendar events of borrowers. JuanHand's service agreement was found to have violated the Data Privacy Act by processing information without a valid reason and keeping borrower data indefinitely. The NPC consequently directed the removal of the app.

JuanHand's case demonstrates the conflict between fintech innovation and AI-driven efficiency. This highlights the necessity of more stringent regulations to guarantee that AI-powered financial services put customer privacy and protection first.

3.2.5. Ownbank: Circumventing the digital banking moratorium

Ownbank is a prime example of how fintech companies deal with regulatory constraints, supported by Ant Financial and Akulaku. Ownbank joined the market in October 2023 by purchasing and rebranding the faltering Rural Bank of Cavite, in spite of the

BSP's ban on new digital banking licenses. Using a similar tactic to Akulaku's previous move in Indonesia with Bank Neo Commerce, Ownbank was able to grow its clientele from 1,500 to 500,000 loan accounts. In order to improve decision-making and increase customer satisfaction, OwnBank in the Philippines intends to use AI to analyze customer data and provide individualized financial advice, credit, and loan options.

By leveraging rural banks' existing infrastructure, Ownbank offers high-interest deposits—up to 12% annually—competing aggressively with established digital banks. However, concerns persist over the financial stability of rural banks, given past fraud cases such as the Legacy Group scam and convictions of Rural Bank of Subangdaku executives. The BSP has since closed multiple rural banks over governance failures.

The strategy used by Ownbank draws attention to the advantages and disadvantages of online banking. It increases competition and offers financial support to banks that are having trouble, but it also raises questions about regulatory gaps and possible financial instability.

3.2.6. Tala: AI-driven financial inclusion

Tala is a financial technology company that offers digital financial services via an Android app, such as financial education and instant credit. Using AI and machine learning to evaluate creditworthiness and increase financial access, Tala, which operates in the Philippines, Kenya, Mexico, and India, seeks to close the financial gap for marginalized communities.

Through the use of alternative data, Tala's AI-driven underwriting process assesses a borrower's capacity to repay, making loans available to those without conventional credit histories. The business places a high priority on openness in AI applications, guaranteeing unambiguous communication with clients, industry participants, and authorities. Additionally, Tala maintains fairness and data privacy in its lending practices, adhering to high ethical standards. Tala investigates large language models to improve customer interactions beyond underwriting. These include AI agents that send out personalized, humanlike reminders for past-due payments.

Financial insecurity is still a major problem in the Philippines, according to the company, as 74% of Filipino borrowers use Tala loans for household expenses. This pattern suggests that necessity drives borrowing more than anything else. A high demand for digital financial services and a lack of alternatives are also indicated by the fact that most new Tala customers end up keeping wallets. Long-term financial stability is not the issue raised by this dependence, but rather financial vulnerability.

While many borrowers, particularly women, report increased confidence and financial decision-making power, financial precarity persists. Only a fraction of women in the Philippines believe their families' financial situation is stable, reflecting broader economic challenges. Moreover, despite high trust in Tala, Filipino borrowers readily share personal data, raising questions about digital literacy and data protection awareness. Tala has introduced financial literacy initiatives, such as TALAkayan with Salve Duplito and wet market tours, to educate users.

3.2.7. Blend.PH: AI-powered P2P lending with social impact

A P2P lending platform called Blend.PH links lenders and borrowers in the Philippines and provides easily accessible financial solutions. The platform, which was created in 2016 and is run by Inclusive Financial Technologies, allows borrowers to apply for fast cash loans without collateral and lenders to make online investments.

Through ethical lending and responsible borrowing, Blend.PH advances financial literacy. It works under BSP rules and aims to formalize unofficial lending practices. The platform evaluates borrowers' financial behavior in a market with few credit scoring systems using a proprietary algorithm. Additionally, it provides franchise loans to affiliated brands.

3.2.8. Cropital's AI-driven credit scoring model for farmers

Cropital is a fintech social enterprise that connects small-scale Filipino farmers with investors through a P2P crowdfunding platform. Since its founding in 2015, it has raised over PHP 100 million, assisting 1,600 farmers across 10 provinces [44]. Traditional banks often reject farmers due to their lack of formal credit histories. As part of the Department of Science and Technology's TECHNICOM program, Cropital created a machine learning-based credit scoring model to address this. Instead of using conventional financial records, the AI model evaluates creditworthiness based on past repayment data, farm productivity metrics, and behavioral patterns.

Through collaborations with PhilGuarantee and the Philippine Crop Insurance Corporation, Cropital has increased financial accessibility while reducing risk. But 8% of debtors still default, frequently as a result of climate-related hazards. Furthermore, Cropital first worked in the provinces of the Visayas before shifting its attention to Central Luzon and Ilocos because of the high expenses and environmental conditions [45].

Cropital's AI-powered credit scoring improves farmers' access to financing, but it has issues with risk management and scalability. More advancements in AI modeling and climate risk adaptation are necessary for sustained impact.

3.2.9. Knowledge management in Investree Philippines

Investree Philippines, the nation's first crowdfunding platform licensed by the SEC, uses Project NEXUS to improve innovation, efficiency, and compliance. Employees have better access to operational and regulatory insights when documentation and training are centrally located, which enhances risk management and decision-making.

Customers enjoy increased security and transparency, while employees gain from more efficient procedures. However, information retrieval and cross-departmental collaboration still present difficulties. Enhancing AI-powered knowledge management could improve scalability and compliance even more. In order to ensure sustainable growth in Philippine fintech, Investree shows how structured knowledge management strikes a balance between social impact and profitability [45].

An AI-based credit evaluation tool has been launched by Investree Philippines, a joint venture between Filinvest Development Corporation and Investree Singapore, to improve financing accessibility for small and medium-sized businesses (SMEs) in the Philippines. This creative strategy seeks to solve conventional financing issues that frequently impede the expansion of SMEs, such as a lack of collateral, a short credit history, and exorbitant interest rates. Investree aims to use AI to provide a more thorough and effective assessment of SMEs' creditworthiness, allowing them to obtain the capital they require and more successfully support the nation's economic resilience.

3.3. Result

In the Philippines, social fintech initiatives powered by AI are crucial to increasing financial inclusion, particularly for underserved and unbanked populations. Three main conclusions can be drawn from the chosen case studies: (1) increased financial access

due to technological advancements; (2) varied applications of AI for risk assessment and personalization; and (3) new ethical and legal issues, especially those pertaining to data privacy, digital literacy, and platform resilience.

3.3.1. Financial inclusion through technological innovation

Each of the nine case studies shows how fintechs leverage technology to connect with marginalized populations that were previously shut out of traditional financial systems. Plastic Bank's integration of financial inclusion and environmental sustainability is a prime example of an intersectional strategy. GCash, Tonik, and Tala in particular exhibit quick adoption by providing low-barrier-to-entry mobile-first services. GCash's 81 million users, including those without internet access via SMS-based features, reflect deep market penetration. Accessibility requirements for the unbanked are further lowered by JuanHand's instant approval processes.

By using AI-based credit scoring to get around the lack of official financial data, Cropital and Blend.PH also innovate around sector-specific needs. First-time borrowers can now access capital thanks to these innovations, which demonstrate how AI can replace conventional requirements (such as credit histories or proofs of income) with alternative data.

3.3.2. AI applications for risk management, personalization, and scalability

AI is being used in many different areas, such as customer behavior modeling (Tonik, GCash), identity verification (Tonik), and credit evaluation (Tala, Cropital, Investree). With the use of productivity and behavior data to reduce risk, Tala and Cropital specifically use AI to provide microloans to consumers without traditional credit histories. Tonik and JuanHand optimize decision-making speed and cost-efficiency by automating loan approvals and collections. By using AI to provide tailored financial advice, GCash improves financial literacy. AI can help SMEs and social businesses by making better data-driven credit decisions, as demonstrated by Investree and Blend.PH.

These instances highlight the trend toward user-centric, adaptive financial services, where AI allows for scalability and customizes offerings to meet the needs and risks of each individual. Additionally, the trend indicates that without increasing physical infrastructure, AI is essential to facilitating financial innovation.

3.3.3. Ethical risks and regulatory gaps

Although there are many advantages, the case studies highlight significant ethical concerns that come with quick digitization. Concerns regarding data sovereignty and moral lending practices in the Global South are raised by Tonik Bank's AI-powered model, which mainly depends on Western-developed technologies like Google Cloud, Microsoft Azure, and Finastra. Furthermore, even though its high-interest lending encourages financial inclusion, it targets users who are already financially vulnerable. The JuanHand case exposed glaring data privacy violations, as regulatory action resulted from excessive data collection and uninformed consent. This demonstrates how improper regulation of AI systems can lead to their deployment in ways that infringe upon user rights. A growing concern is the threats to cybersecurity. Millions were lost as a result of GCash being vulnerable to phishing, scams, and a technical issue. These instances erode confidence and show how even widely used platforms can be compromised. These hazards are increased by gaps in digital literacy. Concerns regarding informed consent

and exploitation arise because users of GCash and Tala frequently divulge personal information without fully comprehending the ramifications. Fintech innovation may be able to circumvent regulations, as demonstrated by Ownbank's purchase of a rural bank to get around requirements for digital banking.

Moreover, algorithmic opacity, particularly in credit scoring and fraud detection, presents difficulties for accountability and transparency even though AI facilitates automation and efficiency. Customers might not comprehend how their data is handled or why they were refused credit.

3.4. Limitations and further research

Longitudinal data or thorough monitoring of important social impact metrics is not included in this study. It is crucial to track metrics like the number of low-income households obtaining affordable housing, advancements in healthcare coverage for marginalized communities, and closings in the financial inclusion gap as indicated, for instance, by the proportion of adults with access to formal or mobile financial accounts, in order to more accurately evaluate the success of fintech initiatives. Evaluation of the long-term socioeconomic effects of fintech initiatives in the Philippines requires longer-term research.

While the concept of a "social investment life-course multiplier" suggests that policies in education, childcare, and work–life balance enhance skill development, workforce participation, and long-term economic resilience [46], this multiplier effect was not empirically assessed in this study. However, the logic behind it aligns with the core principles of social fintech—namely, that targeted digital financial services can reinforce broader social policy goals by improving access to education financing, enabling parental leave savings, or supporting gig workers through inclusive insurance and credit schemes.

Future studies should look at the interactions between social investment strategies and AI-enabled fintech innovations over time and across geographical boundaries. Evaluating how AI enhances the targeting, effectiveness, and adaptability of financial inclusion tools, as well as whether it multiplies socioeconomic benefits, is all part of this. A more nuanced understanding of how AI and fintech work together to shape inclusive and sustainable digital transformation would be possible with comparative analyses and disaggregated data (by gender, age, income, or geography, for example).

4. Conclusion

In the Philippines, AI-driven fintech greatly promotes financial inclusion by reaching underprivileged groups through mobile-first platforms, alternative credit scoring, and customized services. Innovations such as Tonik, Plastic Bank, and GCash show how banking, microloans, and sustainable financial solutions are now more accessible. However, these gains are tempered by critical ethical risks: high-interest lending targeting vulnerable groups, data privacy violations, cybersecurity threats, low financial/digital literacy, and regulatory gaps. Despite its potential for inclusion, AI may worsen inequality if it is not governed responsibly.

Recommendations

Enforcing stricter data privacy compliance to prevent unethical practices, requiring algorithmic transparency to detect bias in credit scoring, and growing the BSP's regulatory sandbox to safely test innovations are all ways to strengthen regulation. Prioritizing consumer protection means limiting predatory interest rates, requiring

transparent risk disclosures in local languages, enforcing cybersecurity laws to stop scams, and putting in place quick fraud response systems. Scaling AI-enabled financial literacy initiatives and funding digital infrastructure in rural areas are necessary to close access gaps. Adopting FATE principles with cultural relevance and rewarding social impact in addition to profit in licensing are two ways to promote ethical, inclusive AI. Last but not least, more cross-sector cooperation is required to jointly develop inclusive policies and guarantee that the viewpoints of the Global South are represented in AI governance.

Ethical Statement

This study does not contain any studies with human or animal subjects performed by the author.

Conflicts of Interest

The author declares that she has no conflicts of interest to this work.

Data Availability Statement

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

Author Contribution Statement

Tetiana Schipper: Conceptualization, Methodology, Resources, Writing – original draft, Supervision.

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