Volume: 4 Issue: 2 Pages: 05-10

Impact of Green Fintech Services for the Growth of Banking Sector in India

[*1] S Nazima Kausar and [2]Prof. D Anjaneyulu

[*1] Research Scholar, Department of Commerce, Sri Krishnadevaraya University, Ananthapuramu, Andhra Pradesh, India.

[2] Head of the Department, Department of Commerce, Sri Krishnadevaraya University, Ananthapuramu, Andhra Pradesh, India.

Article Info.
E-ISSN: 2583-6528
Impact Factor (SJIF): 6.876
Peer Reviewed Journal
Available online:
www.alladvancejournal.com

Received: 28/Jan/2025
Accepted: 29/Feb/2025

***Corresponding Author**
S Nazima Kausar
Research Scholar, Department of Commerce, Sri Krishnadevaraya University, Ananthapuramu, Andhra Pradesh, India.

Abstract
Fintech is a term, short for financial technology that refers to the collaborative integration of finance and technology. This integration is leveraged by banks and financial service firms to enhance the efficiency of their operations and deliver improved financial services to customers. Fintech solutions have empowered banks to enhance efficiency, cut costs, and elevate customer experiences. Banks harness fintech innovations, including artificial intelligence and block chain, to offer customers secure transactions and personalized services. It is also imperative to prioritize sustainable banking to safeguard the environment from disasters. Banks in India have begun adopting green banking practices, such as online banking, mobile banking, Green channel counters, e-statements, green loans, solar ATMs, etc. Green banking involves promoting environmentally friendly practices and reducing the bank's carbon footprint.

Purpose: The research underscores the importance of green fintech services in fostering the growth of the banking sector in India, aligning with principles of sustainable development.

Research Outcome: The paper explores the diverse green fintech services adopted by banks for sustainable banking practices, traces the advantages of green fintech and examines the challenges faced in India.

Keywords: Fintech, green banking, sustainable banking.

1. Introduction

Fintech describes the application of technology to provide financial services and products. This encompasses banking, insurance, investing, and other financial areas. India is a strong global competitor in implementing green finance strategies, with a need for expediting the development of green finance products and increasing the number of financial institutions offering green credit facilities. The fintech sector in India has received significant funding, accounting for 14% of global funding. India is ranked #2 in deal volume. The market opportunity for fintech in India is projected to reach $2.1 trillion by 2030. In 2022, Indian fintech were the second most funded start up sector in the country.
(www.investindia.gov.in, Financial Services Sector in India).
India's green finance sector is rapidly growing, transforming the nation's economic landscape. Despite being a prominent topic among researchers for the past five years, the concept of green finance remains theoretically ambiguous. Green finance refers to financial arrangements specifically used for environmentally sustainable projects or projects that address aspects of climate change**.**

2. Review of Literature

This paper employs quantitative methodologies such as statistical hypothesis testing and regression analysis, utilizing convenient random sampling, to enhance the understanding of how fintech is affecting the traditional banking sector in Indonesia. The study considers several key and practical variables-including customer satisfaction, net promoter score, promotion, and ease of use-to explore the predominant value propositions influencing the adoption of fintech or traditional banking products. Michael Siek; Andrew Sutanto. (2019).
The findings indicate that banks collaborating with fintech companies exhibited superior management performance and higher efficiency scores both before and after the advent of fintech, compared to banks listed on the National Stock

Exchange (NSE) and locally owned banks, as per model M4. Ntwiga, Davis Bundi, (2020). The collaboration between fintech and banks led to a notable reduction in the cost of intermediation and an increase in the scale of operations, along with a decrease in returns to scale. This suggests that fintech-bank collaborations positively impacted efficiency in the banking sector. Andrea P ´erez (2021).

This study seeks to explore fintech's strategy for entering the financial services sector and how banks are responding to fintech's development. It employs qualitative research methods, including in-depth interviews and content analysis. Both primary and secondary data are utilized to ensure a comprehensive investigation. The study reveals that fintech is inherently innovative, employing innovative strategies to penetrate the financial services industry, while banks have already positioned themselves to compete effectively in the digital age. Diyan Lestari, Basuki Toto Rahmanto (2021). Green financing emerges as the most suitable and supportive financing tool for energy efficiency compared to other options. The differences in attributes, financing mechanisms, fund flow systems, transaction systems, and varying levels of support from financial institutions are key factors that reduce the role of financial inclusion and FinTech in promoting energy efficiency. Hongda liu, PinboYao, Shahid Latif, Sumaira Aslam, Nadeem Iqbal. (2021).

The digital transformation of financial services raises significant policy concerns related to competition, regulatory boundaries, and ensuring fair competition. Potential outcomes may lead to a "barbell" scenario characterized by a few large providers and numerous niche players, impacting competition, concentration, and market composition. Erik Feyen, Jon Frost, Leonardo Gambacorta, Harish Natarajan and Matthew Saal (2021). This chapter delves deeper into the evolving relationship between FinTech and banking, building upon earlier discussions. It explores the extent of FinTech disruption on traditional financial institutions, highlighting how the dynamics between new FinTech firms and banks have evolved over time. Santiago Carbó-Valverde, Pedro J. Cuadros-Solas & Francisco Rodríguez-Fernández. (2021)

Fintech refers to products and services that leverage technology to enhance traditional financial offerings, typically providing faster and more convenient solutions. Often developed by start-ups, these innovations aim to enhance retail and corporate banking, either in collaboration with or in competition with established financial institutions. This paper aims to elucidate the concept and significance of financial technology, illustrating how banks and fintech companies mutually benefit from their existing cooperation. Amer Abdelwali AlMomani, Khalid Faris Alomari (2021).This research aims to provide a descriptive analysis of the historical, current, and future landscape of Fintech and traditional banking, focusing on Indonesia as a case study. The study utilizes a descriptive analysis research method and qualitative approaches. The analysis is conducted by critically reviewing relevant scientific journals, examining the facts of the Fintech phenomenon in Indonesia, and studying documentation papers from banking institutions. Future Mercurius Broto Legowo, Steph Subanidja, Fangky Antoneus Sorongan, (2021).

The objective of this paper is to review Fintech in the banking industry, updating knowledge about technological innovation in banking, identifying major trends, and outlining future research directions. Gianluca Elia, Valeria Stefanelli, Greta Benedetta Ferilli (2022). The quantitative study evaluated the influence of fintech on sustainable green practices, with green banking activities acting as a mediator. Conducted in Karachi, Pakistan, the study utilized a questionnaire with 31 questions answered by 302 banking professionals. The findings revealed that green banking activities mediated the relationship between fintech adoption and sustainable banking practices. Samina Naz, Muhammad Asif. (2023).

In this study, regression and correlation analyses, along with secondary data from the RBI, were used to analyse the impact of fintech and digital financial services on financial inclusion in India. The results indicate that fintech businesses have played a significant role in promoting financial inclusion in the country, especially among the middle class. These findings can be valuable for policymakers striving to integrate every individual in India into a formal financial system. Mohamad Asif, Mohd Naved Khan, Sadhana Tiwari, Showkat K. Wani, firoz Aslam (2023).

In 2018, the World Bank Group and the International Monetary Fund introduced the Bali Fintech Agenda. This initiative acknowledges the importance for regulators and policymakers to actively participate as technology reshapes finance. It aims to capitalize on new efficiencies and opportunities to enhance financial access and achieve financial inclusion, all while ensuring financial stability and consumer protection. Erik Feyen, Harish Natarajan, Matthew Saal, (2023).

3. Objectives and Methodology

- To evaluate how fintech is affecting the expansion of the financial industry.
- To ascertain which financial technologies are most frequently employed in the banking and financial services market.
- To investigate the advantages of green fintech services and the difficulties India faces.

This study's complexity is explained by the meticulous collection of appropriate information from several sources. Primary and secondary methods are used in data collection. To completely comprehend the research objectives, this paper focuses on secondary data, which is gathered from a variety of sources including websites, newsletters, organizational news reports, consultant reports, books, journals, and manuals. The majority of secondary data, which provides information on market trends, is derived from research papers and declarations. The secrecy of information on Fintechs, the Indian financial system, and upcoming initiatives drives the selection of secondary sources, allowing for review and analysis without compromising confidentiality**.**

4. Green Fintech Services in India

Fintech refers to cutting-edge solutions that enhance and automate the delivery and utilization of financial services. It is profoundly impactful in finance, fundamentally altering operations in the Banking, Financial Services, and Insurance (BFSI) sectors. In India, fintech is the third-largest in the world, following China and the USA. The sector is projected to grow at a Compound Annual Growth Rate (CAGR) of 24.57%. (https://www.investindia.gov.in/sector/bfsi-fintech-financial-services).The green development of the economy is closely linked with advancements in science and technology, which are essential for improving efficiency. Fintech primarily encompasses technologies applied in the financial services sector, including mobile payments, money transfers, loans, fundraising, and asset management. Fintech innovation focuses on digitally transformative technologies such as Big

Data, Internet of Things (IoT), Artificial Intelligence (AI), cloud computing, and block chain.

5. Government Initiatives

Government support has played a crucial role, not only in terms of regulation but also by providing essential enabling assistance. Various government initiatives in India, such as Startup India, the Digital India program, India Stack, Jan Dhan Yojana, as well as regulatory sandboxes by the RBI and IRDAI for Fintech, have significantly accelerated the growth of the Fintech industry. Moreover, a robust public digital infrastructure supported by Aadhar, UPI, account aggregation, and others, coupled with a favourable regulatory environment, has facilitated and enhanced the technological transition in India. Regulators like the RBI, IRDAI, and SEBI have implemented various measures to ensure increased accountability and the continuous availability of a secure and affordable digital financial system.

- **Jan Dhan Yojana**

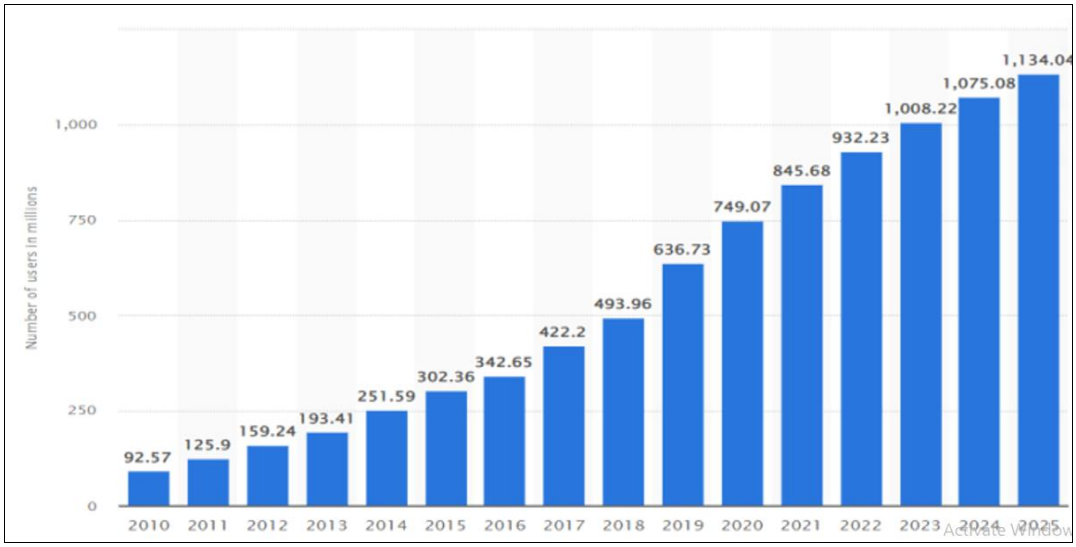
PMJDY aims for financial inclusion at grassroots level by enrolling beneficiaries in new bank accounts, enabling direct benefit transfers, and accessing various financial services applications**.**

Table 1: Pradhan Mantri Jan-Dhan Yojana (All figures in Crore) Beneficiaries as on 21/02/2024

Bank Name/Type	Number of Beneficiaries at rural/semi urban centre bank branches	Number of Beneficiaries at urban metro centre bank branches	No Of Rural-Urban Female Beneficiaries	Number of Total Beneficiaries	Deposits in Accounts (In Crore)	Number of Rupay Debit Cards issued to beneficiaries
Public Sector Banks	25.38	15.08	22.26	40.46	171428.34	30.58
Regional Rural Banks	8.31	1.36	5.60	9.67	42507.98	3.48
Private Sector Banks	0.74	0.81	0.83	1.55	6398.53	1.23
Rural Co-operative Banks	0.19	0.00	0.10	0.19	0.01	0.00
Grand Total	34.61	17.25	28.79	51.86	220334.86	35.29

Source: pmjdy.gov.in (Pradhan Mantri Jan Dhan Yojana)

The country's digital population is anticipated to reach over 658 million subscribers by February 2022, which is apparent in the launch of the Digital India initiative.
Figurer 1:

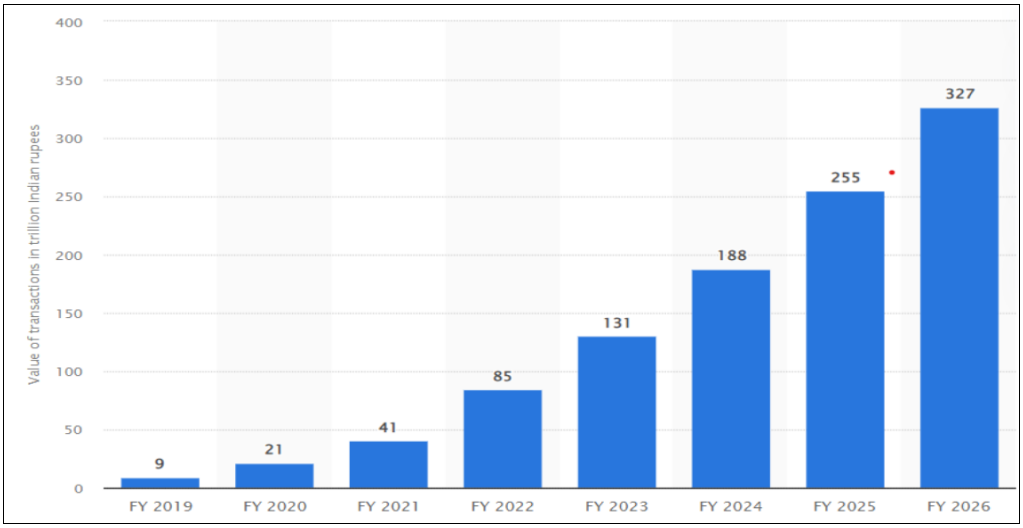


Source: digitalindia.gov.in

Fig 1: Number of Users (In Millions)

- **Unified Payments Interface**

The Unified Payments Interface (UPI) is a system that integrates multiple bank accounts into a single mobile application (of any participating bank). It combines various banking features, seamless fund routing, and merchant payments into a single platform. UPI also facilitates "Peer to Peer" collect requests, which can be scheduled and paid as per the user's requirement and convenience. Each bank provides its own UPI app for Android, Windows, and iOS mobile platforms. According to data from the NPCI, in January 2024, there were 12.20 billion UPI transactions worth ₹18.41 lakh crore (equivalent to $222.17 billion), marking a 41.72% increase in transaction value compared to January 2023. In 2023, the total annual value of UPI transactions in India reached ₹182 lakh crore (equivalent to $2.2 trillion), reflecting a 59% increase in transaction volume and a 45% increase in transaction value compared to 2022.
Figurer 2:



Source: npci.org.in

Fig 2: Value of UPI transactions (In Trillion Indian Rupees)

- **Bharat Interface for Money (BHIM)**

Bharat Interface for Money (BHIM) offers a fast, secure, and reliable way to make digital payments through your mobile phone using the UPI (Unified Payment Interface) platform. It is available as a mobile app and also through the USSD (Unstructured Supplementary Service Data) platform via the *99# service. BHIM simplifies the process of digital transactions, making it accessible to a wide range of users. BHIM has been crafted for swift and secure user on boarding, featuring a best-in-class and intuitive user interface that makes digital transactions seamless. It has proven to be a significant boon for merchants, enabling them to accept payments directly into their bank accounts. Upon sign-up, all users, including merchants, receive a ready-to-use Virtual Payment Address (VPA) and an exclusive, ready-to-print QR code, simplifying the payment process for both parties.

- **Trade Receivables Discounting System (TReDS)**

TReDS, or Trade Receivables Discounting System, is an electronic platform designed to facilitate the financing or discounting of trade receivables of Micro, Small, and Medium Enterprises (MSMEs) through multiple financiers. These receivables can be due from various entities, including corporates, government departments, and Public Sector Undertakings (PSUs). TReDS helps MSMEs access funds by selling their trade receivables at a discounted rate, providing them with working capital and improving their liquidity.

- **India Stack**

The term "India Stack" denotes an ensemble of free application programming interfaces and virtual public goods designed to enable easy access to economic basics including recognition, data, and payments. While the project's name includes "India," its vision extends beyond a single country and can be implemented in any nation, regardless of its development status. The proposal for this project emerged in India, where it was swiftly adopted by millions of people and businesses, empowering the nation to become ready for the digital age and encouraging financial and social inclusiveness.

E-Payments for Everyone, Everywhere, and Every Time (4E's)

The central idea of Payments Vision for 2025 is 'electronic payments for every person, every place, and every time' (4Es). It seeks to offer quick, easy, affordable, reliable, and safe e-payment solutions to all users. It aims to achieve this through activities centered on five key goals: Integrity, Inclusion, Innovation, Institutionalization, and Internationalization. These goals emphasize building trust, expanding access, driving innovation, establishing strong institutions, and enhancing global connectivity in electronic payments.

Table 2: Technological Advances provided by banks in the Financial Industry

Type of Bank	No	Machine Leaning		AI		Block Chain Computing		IOT	
		No/%		No/%		No/%			
Public	15	10	66.66	14	93.33	14	93.33	0	0
Private	7	3	42.85	6	85.7	4	57.14	0	0
Foreign	8	7	87.57	8	100	8	100	3	37.5

Source: Compiled by researcher

Conclusion: Information about financial technology used by Indian commercial, public, and international banks is provided in this table, indicating the most commonly used technologies among the three types of banks. According to the data:

- 66.66% (10 out of 15) Private banks employ Machine learning.
- 93.33% (14 out of 15) Artificial intelligence is used by private banks.
- 93.33% (14 out of 15) Block chain computing is utilized by private banks.

For Public Banks

- 42.85% (3 out of 7) use machine learning.
- 85.7% (6 out of 7) use artificial intelligence.
- 57.14% (4 out of 7) use block chain technology.

For Foreign Banks

- 87.5% (7 out of 8) use machine learning.
- 100% (8 out of 8) use artificial intelligence.
- 100% (8 out of 8) use block chain technology.
- 37.5% (3 out of 8) use IoT technology.

Comparing international banks to private and public sector banks, the data clearly shows that the former have a greater rate of technology adoption.Foreign banks have a higher adoption rate of machine learning, artificial intelligence, block chain, and IoT technologies. Private Banks show moderate adoption rates, while public sector banks have the lowest adoption rates across these technologies.

Studies reveal that green finance is crucial because sustainable financial practices can revolutionize industries through investments in energy efficiency and environmental preservation. Many financial technology companies are incorporating green financial systems to mitigate CO2 emissions and promote efficient resource utilization. Leading Indian fintech companies such as Paytm, PhonePe, MobiKwik, and PayU are actively engaged in these efforts. These businesses frequently urge users of their mobile apps to participate in sustainable financing projects and embrace CO2-reducing habits like walking and taking public transportation.

Green financing is freeing the fintech industry from traditional limitations, which is highly advantageous. As the world progresses towards sustainability, the future of green fintech in India looks promising. Fintech has played a significant role in helping companies reduce their environmental footprint, primarily through advanced technologies like block chain, artificial intelligence, and data analytics. Emerging fintech business models are designed to reduce greenhouse gas emissions and ultimately eliminate all negative environmental impacts. Green fintech in India fosters the growth of environmentally sustainable projects and mitigates climate impact through its debt mechanisms and various other financial initiatives.

6. Benefits of Green Fintech on our Economy

Green fintech derives significant benefits from adopting climate-resilient systems. Here are some key advantages:

- **Sustainable Finance System:** A sustainable finance system ensures a steady flow of investments with high transparency.
- **Green Bonds:** Green bonds discourage investments in high carbon-emitting projects, thereby promoting environmentally friendly alternatives.
- **Enhanced Quality of Life:** These initiatives are poised to improve human life without compromising nature.
- Green Loans: Green loans are expected to expedite green projects and make substantial contributions to reducing greenhouse gas emissions, thereby aiding in the fight against climate change.
- **Management of Green Banks:** Proper management of green banks leads to positive revenue and environmental impact. These banks fund climate change projects, develop safe water systems, and support other projects aligned with the United Nations Sustainable Development Goals (SDGs).

7. Challenges for Green Fintech in India

Indeed, green financing comes with its share of challenges. Some key challenges include:

- **Gaining Consumer Acceptance:** Encouraging consumers to embrace green financial products and services can be challenging due to lack of awareness or misconceptions.
- **Prioritizing the Planet over Profit:** Balancing financial objectives with environmental priorities can be difficult, especially in profit-driven industries.
- **Aligning Environmental and Financial Objectives:** Ensuring that green finance initiatives align with both environmental goals and financial viability can be complex.
- **Securing Funding amid Competing Needs:** Green projects often compete with other priorities for funding, making it challenging to secure sufficient investment.
- **Addressing Inefficiencies in Green Finance:** Overcoming inefficiencies in green finance, such as high transaction costs or limited access to funding is crucial for the sector's growth and effectiveness.

8. To Accelerate the Pace of Green Financing and Achieve Faster Results, Consider the Following Suggestions

- **Promoting Investments in Clean and Green Technologies:** Encourage investments in technologies that promote sustainability and reduce carbon emissions.
- **Encouraging Various Sectors to participate in the Green Movement:** Advocate for increased participation from industries and sectors to adopt environmentally friendly practices.
- **Advocating for the Use of Green Bonds:** Promote the use of green bonds to finance environmentally sustainable projects.
- **Stimulating the Development of More Green Projects:** Encourage the development of a wide range of green projects to address different aspects of sustainability.
- **Aligning Financial Decisions with Sustainable Development Projects:** Ensure that financial decisions prioritize sustainable development projects that have a positive impact on the environment.
- **Implementing Necessary Changes to Green Financing Policies:** Make necessary changes to policies and regulations to create a conducive environment for green financing and investment.

Conclusion

Government initiatives have significantly boosted fintech adoption in the banking sector, with more banks integrating fintech into their operations. The TReDS initiative has been particularly impactful, with 21 banks participating and artificial intelligence emerging as a commonly adopted technology. With a growing prevalence of innovation over the years, internet banking techniques such as digital payment methods, smartphones for banking, and green financing have transformed traditional banking.

Green Fintech is crucial in transitioning to a low-carbon future, making sustainable companies more than just a trend. The fintech sector is increasingly adopting sustainability with new products, funds, and investment strategies. Our research indicates that while green financing in India is rapidly advancing, there is a need for improved management systems to support sustainable long-term economic growth.

References

1. Diyan Lestari Basuki Toto Rahmanto. Fintech and Its Challenge for Banking Sector. The Management Journal of BINANIAGA. 2023; 6:55-70.
2. Feyen EH, Natarajan H, Saal M. Fintech and the Future of Finance: Market and Policy Implications. Fintech and the Future of Finance, 2023, 374.
3. Mohammad Asif MK. The Impact of Fintech and Digital Financial Services on Financial Inclusion in India. Journal of. Risk and Financial Management. 2023; 16(2).
4. Samina Naz MA. Fintech's Role in Sustainable Banking Performance: Are Green Banking Policies Driving Sustainability in Pakistan's Banking System. Gomal University Journal of Research. 2023; 39(3):295.
5. Gianluca Elia VS. Investigating the role of Fintech in the banking industry: what do we know? European Journal of Innovation Managemen. 2022; 26(5):1365-1393.
6. Amer Abdelwali Almomani KF. Financial Technology (FinTech) and its Role in Supporting the Financial and Banking Services Sector. International Journal of Academic Research in Business and Social Sciences. 2021; 11(8):1793-1802.
7. Erik Feyen JF. Fintech and the digital transformation of financial services: implications for market structure and public policy. BIS Papers, 2021, 64.
8. Hongda Liu PY. Impact of Green financing, Fintech, and financial inclusion on energy efficiency. Environmental Science and Pollution Research. 2021; 29:18955-18966.
9. Mercurius Broto Legowo SS. Fintech and bank: past, present, and future. Teknik Komputer. 2021; 7(1):94-99.
10. Santiago Carbó-Valverde PJS. Fintech and Banking: An Evolving Relationship. In Disruptive Technology in Banking and Finance Financial Economics, 2021, 161-194.
11. Perez A. Sustainability, Digital Transformation and Fintech: The New Challenges of the Banking Industry. MDPI, 2021.
12. M Siek AS. Impact Analysis of Fintech on Banking Industry. International Conference on Information Management and Technology, 2019.
13. Ntwiga DB. Can Fintech shape the dynamics of consumer credit usage among the UN (der) banked? KBA Centre for Research on Financial Markets and Policy Working Paper Series, 2019; 34:45.