

# The Impact of FinTech on Retail Banking: Empirical Evidence from Bank for Investment and Development of Vietnam

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## ABSTRACT

This paper is aimed at (i) synthesizing the impacts of FinTech on retail banking; (ii) analyzing the Vietnam FinTech and retail banking sector (iii) assessing the impacts of FinTech on retail banking of Bank for Investment and Development of Vietnam (BIDV) – the biggest bank in Vietnam in term of asset with strong digital transformation and retail banking orientation. Using secondary data and internal information of BIDV, key findings are: *First*, the impacts of FinTech on retail banking are mixed. FinTech's growth has promoted banking services by enhancing the flexibility and usability of financial services with lower costs and more efficient risk management. FinTech also brought various negative impacts on retail banking such as being the direct competitor in some retail market segments, cybercrime, and strategic and credit risks to banks. However, the positive impacts surpass the negative impacts. *Second*, Vietnam's FinTech ecosystem and retail banking sector have been significantly developed and still have much potential. Both banks and FinTechs in Vietnam realize the win-win approach in cooperation, but banks still recognize the challenges of FinTech in their retail banking operations. *Third*, at BIDV, the impacts of FinTech on retail banking are significantly positive, resulting from motivation to strengthen digital transformation, to utilize technologies and collaboration for higher quality

services. FinTech helps BIDV to increase customers and transaction volumes, diversify products with innovative solutions and better service quality, safe transactions with cost savings. No negative impacts of FinTech on retail banking have been found at BIDV yet. *Fourth*, BIDV, State Bank of Vietnam (SBV) and other stakeholders should implement some solutions for better FinTech utilization in improving retail banking services and to mitigate the negative impacts in the future.

**Keywords:** digital transformation, FinTech, financial innovation, financial services, retail banking.

## BACKGROUND

The Fourth Industrial Revolution is reshaping industries, including retail banking sector. new players have. The financial technologies (FinTech) sector is rapidly growing, causing significant disruptions. FinTech has both positive and negative impacts on traditional banks by offering better and cheaper services through modern technologies, but also pressure on policymakers, regulators, and supervisors worldwide to achieve the right balance between fostering innovation and safeguarding the financial system. The quote "Banking is necessary, banks are not" gains

new meaning in this context, reflecting the evolving landscape and the complex impacts of FinTech on banking in general, and retail banking in particular.

In Vietnam, various studies have been done on FinTech and its roles/impacts on banking (Dang and Vu, 2020); Nguyen et al., 2020). However, the impact of FinTech and evaluation of how FinTech disrupts the retail banking industry or a specific inside story of a bank in Vietnam have not been discussed in detail. Therefore, this research is carried out to fill in this research gap. The main research questions will be answered: (i) How does FinTech impact retail banking? (ii) How is the situation of FinTech and retail banking in Vietnam? (iii) How did FinTech impact retail banking at BIDV? and (iv) How to improve retail banking services at BIDV with FinTech disruption?

## LITERATURE REVIEW

### *Retail banking*

Retail banking refers to the provision of financial services to individual consumers, typically on a smaller scale. This encompasses various services like payment solutions (such as current accounts, credit transfers, and plastic cards), savings, loans, mortgages, insurance, and pensions. Retail banking is offered by different types of institutions including commercial banks, savings banks, co-operative banks, building societies, credit unions, and finance houses. In which, commercial banks are dominant players in retail banking across most countries (Rose & Hudgins, 2013; Casu et al., 2015).

### *Financial Technology (FinTech)*

FinTech refers to innovative technology-driven solutions and services that aim to improve and streamline various aspects of financial activities, including lending, payments, savings, investments, and more (Financial Stability Board, 2017; BIS, 2018). FinTech is basically financial institutions using

technology to improve their processes, while TechFin is technology institutions providing financial services such as Alibaba, Alipay, Tencent, etc. In the past few years, the explosive growth of FinTech has put pressure on policymakers, regulators, and supervisors worldwide to achieve the right balance between fostering innovative FinTech and safeguarding the financial system (Maier, 2016; Dorfleitner et al, 2017; Patrick, 2017; Leong & Sung, 2018).

### *Impacts of FinTech on Retail Banking*

FinTech is considered “a crucial healthy evolution of financial markets” (BIS, 2018; Navaretti et al., 2018). Financial innovations are stated to benefit all parties in the financial system since they handle imperfections in transaction costs or market functions. Therefore, FinTech has various positive impacts on retail banking such as: (i) reducing the expenses associated with market searches, facilitating more efficient financial market connections via using AI and chatbots for customer services and analytics with personalized solutions; (ii) benefiting from economies of scale in managing large datasets for Big Data in understanding customers and reaching potential customers, therefore increase accessibility, convenience and efficiency; (iii) achieve more affordable and secure information transmission for risk management and compliance functions, enhance security; (iv) decrease the expenses of verification and regulatory load; (v) apply and enhance advanced technologies to provide innovative financial products and services, such as AI, machine learning (ML), advanced data analytics, cloud computing, and APIs (Tufano, 2003; Philippon, 2016; BIS, 2018; Navaretti et al., 2018; Tanda & Schena, 2019; Siek & Sutanto, 2019; Rangkuti et al., 2020). However, FinTech brought various negative impacts on retail banking, such as (i) competing directly with banks in providing financial services, particularly in payment and

lending, via platforms and automation, which also lead to banks' job disruption; (ii) cybersecurity concerns and customer data privacy when banks share data with fintech, as they heavily rely on digital platforms and the internet, making it susceptible to cyberattacks and data breaches, money laundering and customer protection; (iii) impose more strategic risk and credit risks to banks if banks rely too much on FinTech or compete too rush for getting the market shares occupied by Fintech (BIS, 2018; Navaretti et al., 2018; Tanda & Schena, 2019; Siek & Sutanto, 2019; Rangkuti et al., 2020).

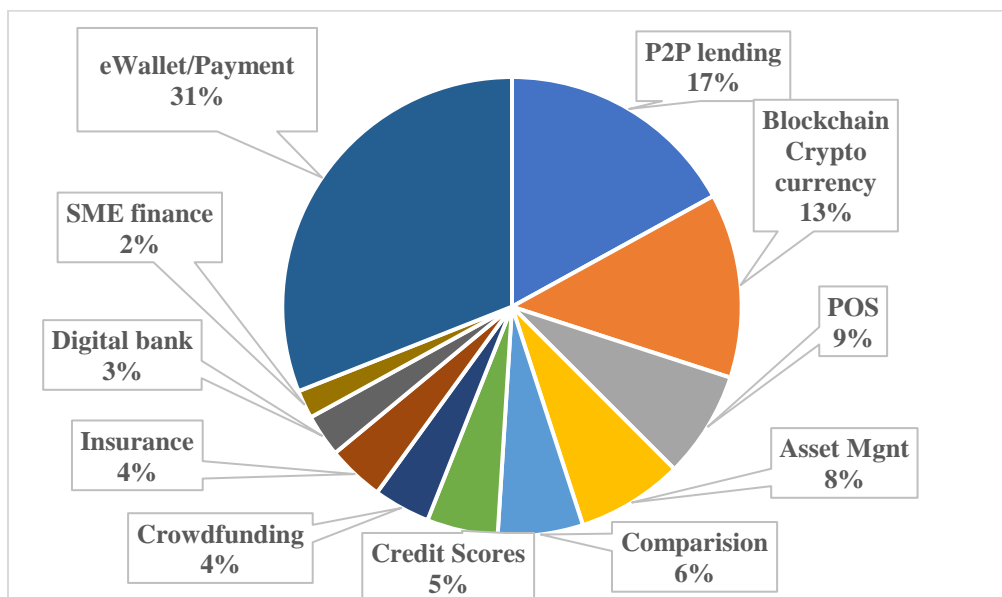
Retail banking has undergone radical changes by FinTech, which impacted the way that financial services are offered, accessed, and used. Although there are many advantages to these effects, there are also problems that must be solved if the sector is to keep expanding and remaining stable. These drawbacks certainly

exist, but not all FinTech-bank cooperation projects are affected by them.

## Overview of Vietnam FinTech and retail banking sector

### *Vietnam FinTech at a glance*

Vietnam's FinTech sector has experienced significant growth in recent years due to the widespread adoption of digital practices in business, the booming e-commerce industry, and the push for digital payments, driven in part by governmental support. The number of FinTech companies in the country has surged, quadrupling from 44 in 2017 to over 150 in 2022, with dominant growth of payment (43 payment intermediaries registered with State Bank of Vietnam), and the expansion of other verticals such as online lending, data analytics, credit scoring and/or data management, financial comparison sites, POS, blockchain (FSIP, 2021).



Source: *Fintech News Singapore (2021)*

Fig 1: Ratio of FinTech transaction values by types in Vietnam

The detailed development of FinTech ecosystem is presented in Appendix 1. The future of this market is also promising when most FinTech firms in Vietnam are still in their early stages of development (47% of FinTech

companies were in the startup stage), as presented in Appendix 2.

Mordor Intelligence Research & Advisory (2023) indicates the expected growth of the Vietnam FinTech market in terms of transaction value from USD 34.50 billion in

2023 to USD 63.87 billion by 2028, at a CAGR of 13.11%. Currently, 72% of FinTech companies have collaborated with banks, only 14% develop new services and 14% are ready to compete with banks.

### Vietnam retail banking sector

Located in Southeast Asia, Vietnam is very promising retail market, with 98.53 million population at golden age period (median age of 32.7); high internet access rate, with 77.93 million internet users, accounting for 79.1% of the population. Mobile coverage and usage are widespread, with 161.6 million mobile subscribers (164% of the population), of which 96.9% are smartphones (Kemp, 2023). Total enterprises reached almost 900, 000, of which

97% are small and medium enterprises (MPI, 2022). Vietnam's banking industry achieved significant progress, particularly in retail banking thanks to its digital transformation and cooperation with Fintech.

*First, all of Vietnamese banks are in digital transformation process, focusing on retail banking services.* Of which, 75% transformed in all front-end and back-end, 13% set up new digital channel/branches. 31.7% banks have internal sandbox and 28.6% have digital hub (SBV, 2022, Le Thanh Tam, 2023).

*Second, most of retail banking services have been digitalized to certain levels.* Of which, some services such as e-wallet, bank card, e-payment, deposit, have been 100% digitalized by at least 1 credit institution.

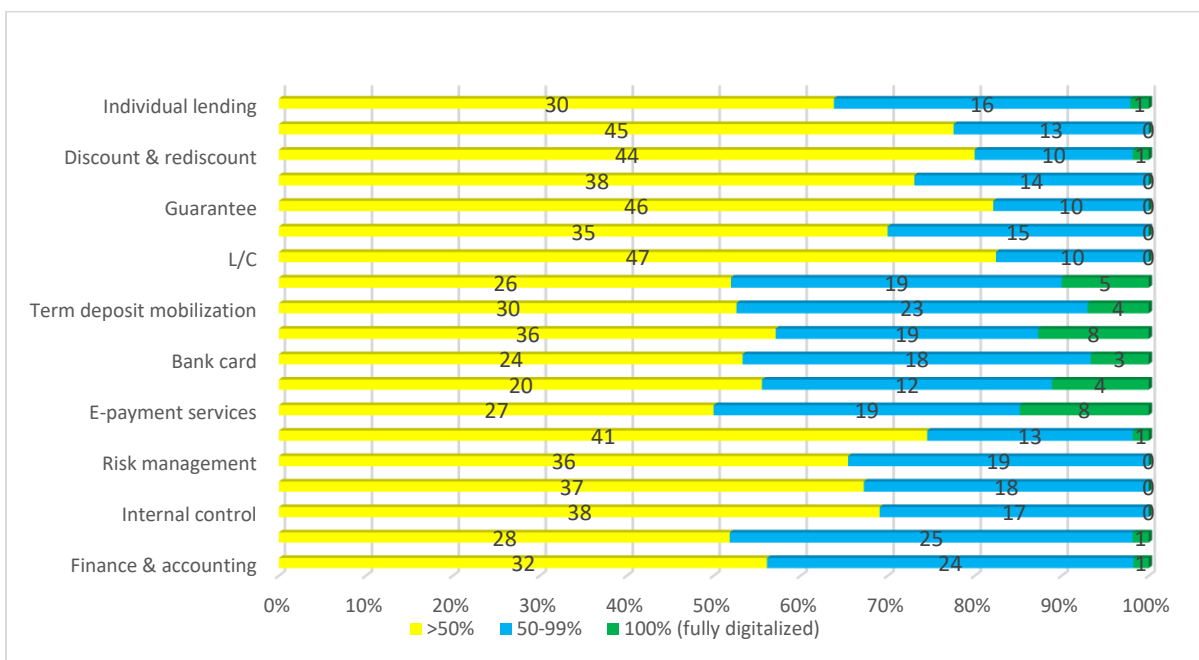


Fig 2: Number of banks having digitalized services and level of service digitalization. Source: SBV (2022)

*Third, online/mobile banking became popular for real-time transactions.* SBV's 2022 study showed a decline in physical branch transactions, especially among 18-54 age group. Non-cash transactions increased 77% in volume and 30% in value in the period 2020-2021. Digitized account opening gained

traction, replacing traditional methods (see Appendix 3).

*Fourth, Vietnamese banks reported strong profits, driven by retail banking services.* Retailed loans accounted for 40-50% of bank loans. Deposit and payment services of retail clients also contribute more than 50% to the total operation of banks.

**Table 1: Profitability of Vietnamese banks vs other banks in the region**

Banks	ROE	ROA
Vietnamese State-owned commercial banks	14.46	0.87
Vietnamese joint-stock commercial banks	19.13	1.65
Joint-venture banks, foreign banks in Vietnam	4.87	0.66
Thai banks	5.8	0.8
Malaysian banks	5.98	0.89
Singaporean banks	13.81	0.77

Source: Authors' compilation from reports of SBV, Trading Economics

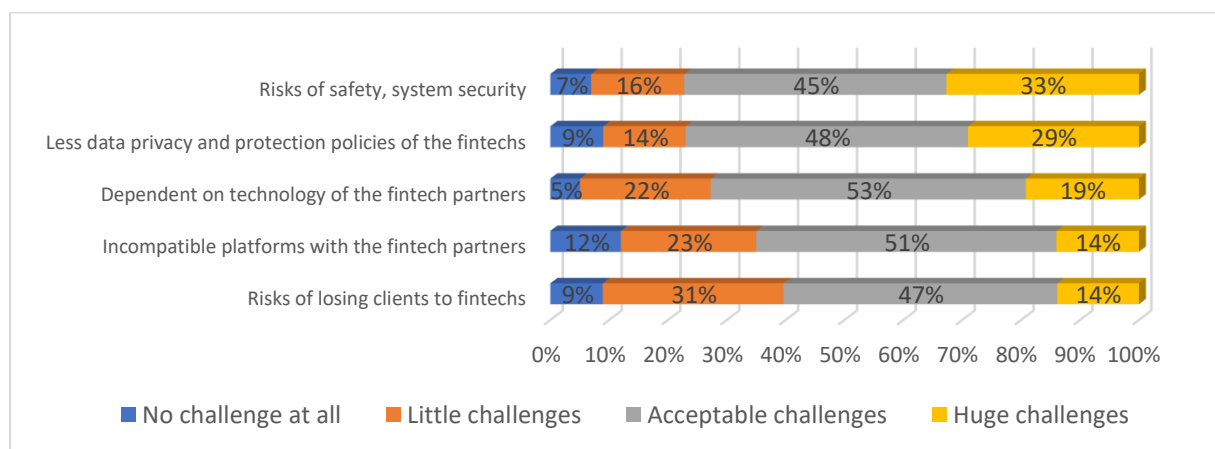
Compared to banks in other ASEAN countries, Vietnamese banks have higher profitability in both ROE and ROA. However, ROEs are much higher, showing the high leverage ratios of commercial banks. Joint-stock commercial banks focus more on the retail market and have much higher profitability ratios than state-owned commercial banks. Most banks in Vietnam posted records in profitability over the last year thanks to strong credit growth and reduced provisioning. Only a few faced a declined profit due to their investment in stocks, bonds, and currencies (Nguyen Thanh Hung, 2023; Quynh Trang, 2023).

*Fifth*, Industrial Revolution 4.0's technologies like AI, Big Data, and Blockchain redefined retail banking as tech-driven, offering financial and non-financial products for improved customer experience. Digital transformation is changing the shape of the retail banking landscape. The top banks keep improving their current mobile application by integrating various products and features. Four in ten retail

banking customers are using e-wallets which are very strong for their user experience, ecosystem, and promotions. As an alternate strategy, some banks have launched all new brands for their digital bank (a new form of banking that digitizes all the activities and services). Banks are investing to digitalize their products and services as a core strategy to compete for retail banking customers.

*Sixth*, banks and Fintechs cooperation has grown significantly. More banks are diversifying their cooperation approaches with Fintechs and encouraging innovation. The cooperations are in different forms: investment, start-up programs for FinTech incubation, loan origination, front-end customer acquisition, and payment processing. Traditional banks, despite their history, brand recognition, and customer data, often lag behind FinTech companies in technology. Therefore, many banks, including 82% of Vietnamese commercial banks, are focusing on collaborating with FinTechs to enhance their digital strategies and diversify service delivery channels (SBV, 2022). This gives many opportunities for B2B startups to develop their innovative business models. This is also promoted by overall financial inclusion (FSIP, 2020; Le Thanh Tam, 2023).

*Seventh*, some banks recognized the challenges in cooperation with FinTech, focusing on safety and system security, data privacy.



**Fig 3: Challenges the banks recognized in cooperating with FinTech**  
Source: SBV (2022), Le Thanh Tam (2023)

Banks realized the key challenges in cooperating with Fintech. The proportion of banks considered as having huge challenges includes: 33% found the risks of safety and system security, and 29% realized the risk of data privacy and protection policies. Even if banks cooperate with Fintechs, they still feel the challenge of losing existing clients to FinTechs (14%). Therefore, the “win-win” approach and “frenemy” relationship between banks and FinTechs always exist.

### Empirical evidence from the Bank for Investment and Development of Vietnam (BIDV)

#### BIDV at a glance

Established in 1957, BIDV is the biggest bank in Vietnam in term of total asset and equity, 15 million clients, nationwide network, and is one of the four biggest banks (Big4). BIDV has big market share (more than 11% of credit; and almost 13% of deposit). BIDV started to focus on retail segment from 2008. In the last 15 years, BIDV has reached significant achievements in the retail banking market (BIDV, 2023).

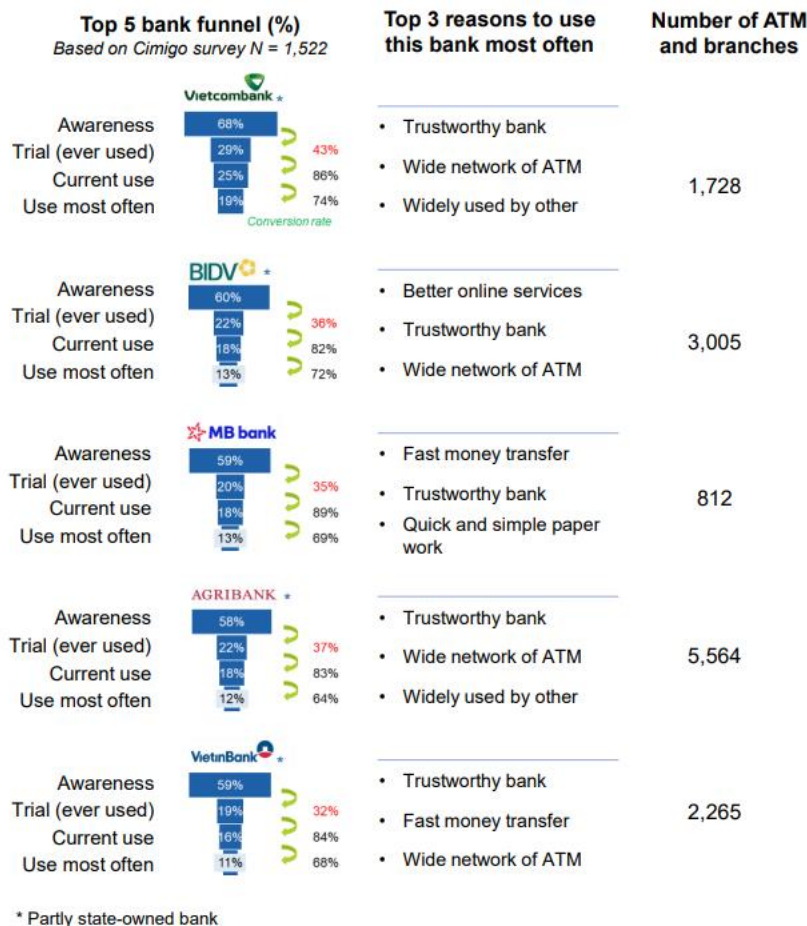


Fig 4: Saliency and usage of top banks in retail banking sector  
Source: Cimigo (2022)

BIDV is ranked second in term of saliency and usage in retail market, just behind Vietcom bank. The brand power in retail market of

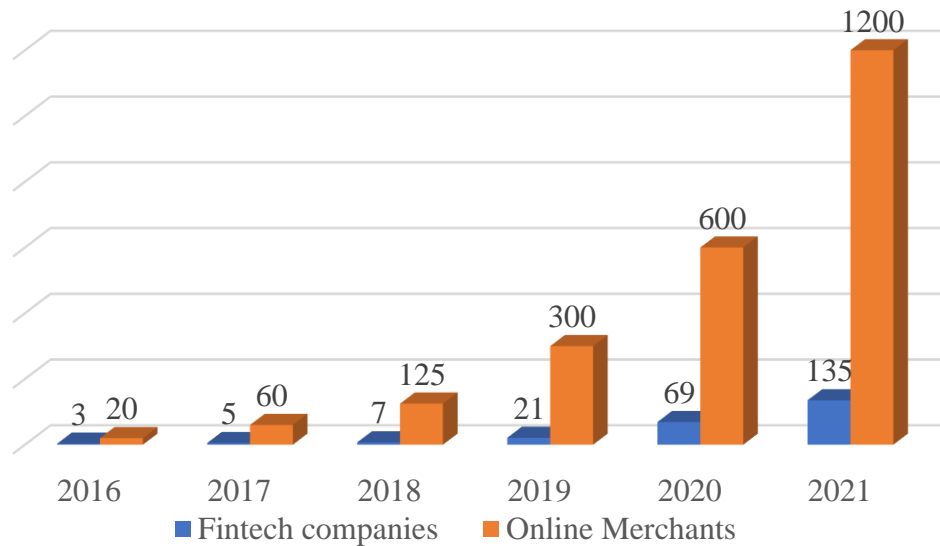
BIDV is 36.4 with the 3<sup>rd</sup> rank. Net promote score (NPS – to rate the likelihood that clients would recommend the banks to a friend) of

BIDV in 2021 is 82, higher than average 74 of all banks (Cimigo, 2022).

### ***BIDV cooperation with FinTech in retail banking***

BIDV's strategy, initiated in 2016 and outlined in its 2020 plan, focuses on expanding its ecosystem, particularly through FinTech collaborations. The 2022 report indicates BIDV's integration with 46 licensed payment

FinTech firms, 99 firms across various sectors from education, hospital, insurance, security... and almost 1.200 companies in the field of ecommerce and payment ranging from Financial Product to Lifestyle Products (see Appendix 4). Figure 5 showed the growth of integration with FinTech companies and Online merchants to build BIDV's digital ecosystem from 2016 to 2021.



Source: BIDV (2022)

Fig 5: The number of FinTech firms and online Merchants connected with BIDV.

In 2021, BIDV and VNPAY – a Vietnamese FinTech leader- announced a partnership to provide a special service for BIDV's retail customers to use Loyalty points based on Blockchain technology, and virtual cards using Cloud computing. This was a strong initiative between a FinTech and a bank to use the advanced technology to provide the services to customers.

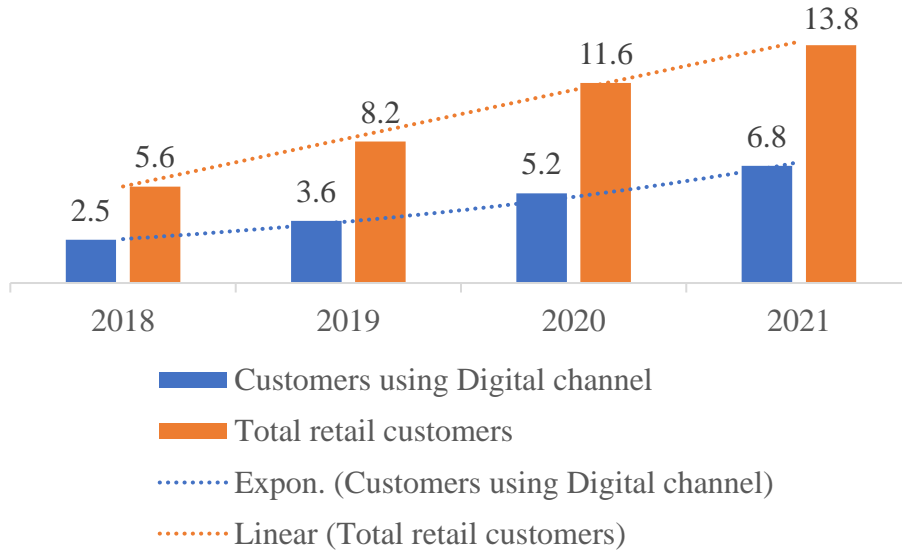
### ***Positive impacts of FinTech on BIDV retail banking***

The digital transformation strategy, taking the ecosystem as the development pillar, and

expanding diversified cooperation with FinTech companies in Vietnam have helped BIDV achieve initial results.

*First, number of customers increase significantly.*

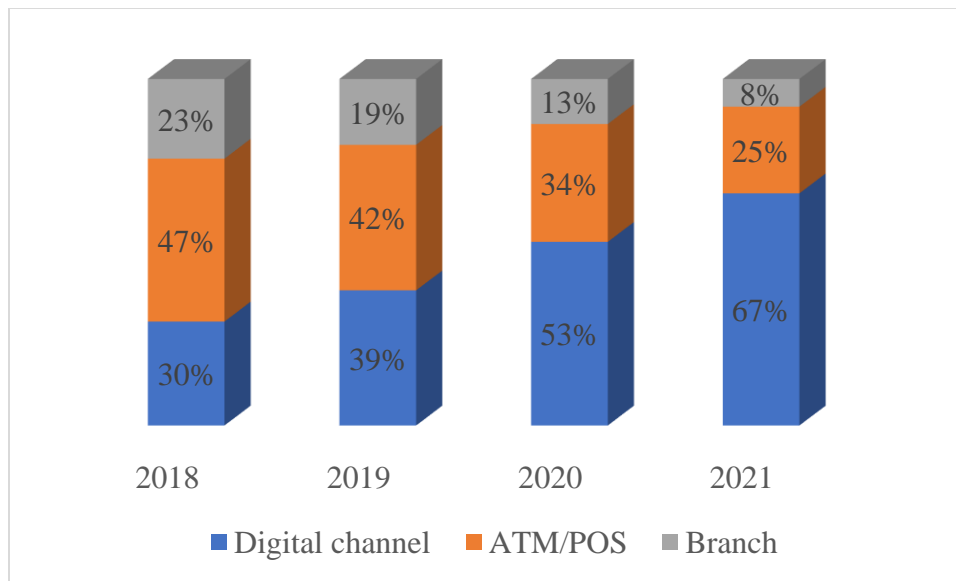
Despite the Covid 19 pandemic since 2019 to 2021, BIDV's retail business has still achieved double-digit growth and contributed more than half of the total income of the whole bank, maintained, and grew its market share of credit and retail capital well.



Source: BIDV (2022b)  
 Fig 6: The number of retail customers and customers using the digital channel of BIDV

The retail banking strategy associated with the digital strategy resulted in over 100% increase in market share of the digital customer base after less than 3 years, The number of individual customers reached more than 13.8 million customers, accounting for almost 14% of the country's population. The digital transformation strategy, taking the ecosystem as the development pillar, and

expanding diversified cooperation with Fintech companies in Vietnam have helped BIDV achieve initial results. *Second, the transaction via digital channels also improved.* Traditional channels have been less used than digital channels in retail banking transactions.



Source: BIDV (2022)  
 Fig 7: Proportion of transactions through channels at BIDV



In 2018, only 30% of transactions were via digital channels. However, by 2021, this number was more than double (67%). The remaining 8% of transactions were at branches. This shift marks the right development and strategy for BIDV to serve its individual customers.

*Third*, the cooperation between BIDV and FinTech companies offers several advantages such as (i) *Enhanced customer reach*: Collaboration enables banks to reach underserved customer groups through digital finance. New technologies remove geographical barriers, making financial services more accessible, efficient, and cost-effective for BIDV; (ii) *Product diversification and quality enhancement*: BIDV can develop a wider range of products and services by partnering with FinTech companies. This leads to improved banking services' quality and better alignment with customer needs; (iii) *Innovative solutions and better service delivery*: FinTech collaboration empowers BIDV to offer a broader portfolio of digital products, including personalized offerings. FinTechs aid in enhancing traditional service delivery, such as in consumer and commercial lending; (iv) *Infrastructure for new business models*: FinTechs provide foundational infrastructure for secure, accessible, and dynamically marketed new business models. In the payment fields, BIDV has adopted strategies to cooperate effectively with e-wallets provided by FinTech firms to address competition; (v) *Safe transactions and cost savings*: Collaborative efforts ensure safer and cost-effective transactions. BIDV already applied advanced technologies, like customer identification (KYC), that guarantee transaction safety and customer convenience; (vi) *Mutual benefits of volume and cost efficiency*: Both BIDV and FinTech gain from high transaction volumes and low operating costs. BIDV can attract and retain customers through attractive promotions; (vii) *Co-investment opportunities*: Collaboration

fosters opportunities for joint investments in new technologies and innovative programs, driving development for both BIDV and the FinTech firms (Nguyen Chien Thang, 2022; BIDV, 2022).

BIDV's collaborations with Momo and Nexttech for eKYC<sup>1</sup> services and merchant acquisition exemplify successful partnerships. In 2020, BIDV and Momo signed an agreement to share the customer base via eKYC service, in which Momo allowed its customers can open a BIDV's current account online via BIDV's eKYC service using some advanced technology as: Face matching; Live check; OCR<sup>2</sup> and fraud management (see Appendix 5). During 2020 and 2021, BIDV and Nexttech - a popular FinTech with a range of innovative products like Fastcar for taxis and Nganluong for payment gateway - entered a partnership to acquire merchants via Mobile POS, this helped BIDV to expand their merchant network and boost the card transaction at merchant using Mobile POS instead of physical POS as the past.

Overall, FinTech companies can be viewed as catalysts for positive change and collaboration, pushing traditional banks to be more open and adaptable, ultimately benefiting the financial industry. In BIDV case, its Vice CEO - in charge of Digital transformation (2018-2021) - stated that FinTech have not vied with the traditional bank yet. While FinTechs currently focus on specific segments where the bank is not active, they could potentially become rivals in the future.

### ***Negative impacts***

Thanks to the effective approach of BIDV to digital transformation and cooperation with FinTech, no negative impacts were found at BIDV. BIDV is preparing well to mitigate the risks and costs efficiently in relation to FinTech.

## Recommendations

FinTechs provide great opportunities for improving and developing retail banking services but also can cause bad impacts on both the financial sector and consumers. To counteract the harmful effects of FinTech on retail banking, the objective is to strike a balance between innovation and responsible, moral application.

Therefore, even though the negative impacts of FinTech on retail banking have not existed in the case of BIDV, the recommendations should be considered not just for BIDV but also for other banks in Vietnam, and the State Bank of Vietnam – the Central Bank which regulates the financial institutions.

### *Recommendations to BIDV*

*First, strengthening risk management, especially risk from third parties such as FinTech partners:* Implement robust control environments and comprehensive risk management processes while adopting supervisory programs to ensure safety, soundness, and stability. Mitigate risks associated with FinTech applications. Apply strong risk management practices to outsourced activities, ensuring standards akin to those maintained internally. Focus on due diligence, operational risk management, continuous monitoring, and audit rights. Extend risk management culture to third-party collaborations.

*Second, boosting digital transformation:* Prioritize digital transformation efforts focus on (i) Transition of simple transactions from traditional channels to digital banking platforms; (ii) Develop modern sales channels, including telesales, cross-selling, and online registration; (iii) Enhance centralized operations through online service registration, reducing counter work; (iv) Digitize branch trading channels through automated systems and multi-function ATMs; and (v) Enhance customer interaction channels, including virtual call centers and mobile app support.

## Recommendation to SBV and other stakeholders

Recommendations for the SBV and other stakeholders include: (i) establishing a secure financial environment with regulatory support to foster collaboration between commercial banks and FinTech companies; (ii) developing a comprehensive legal framework for FinTech companies to ensure healthy competition, promote inclusive and sustainable finance, and enhance the stability of the banking system; (iii) investing in robust information technology infrastructure and secure networking to ensure reliable information security and (iv) enacting standardized connectivity between the banking system and FinTech firms. This standardization should cover customer information security, data sharing, and guidelines for data network utilization, enhancing overall security and collaboration.

## Legal Responsibility

The authors are responsible for the accuracy and transparency of all the data and information provided in the paper.

### *Declaration by Authors*

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**Conflict of Interest:** The authors declare no conflict of interest.

## REFERENCES

1. ADB (2020), “Fintech and financial literacy in Vietnam”, *ADBI Working Paper Series*. <https://www.adb.org/sites/default/files/publication/616781/adbi-wp1154.pdf>
2. BIDV (2022), *Internal BIDV's digital report*.
3. BIDV (2022b), *BIDV's Exco reports 2019-2021*.
4. BIDV (2023), *Annual report 2022*.
5. BIS (2018), *Sound Practice: Implication of FinTech Development for Banks and Bank Supervisors*, Basel Committee on Banking Supervision.
6. Bömer, M., & Maxin, H. (2018). Why FinTechs cooperate with banks—Evidence from Germany. *Zeitschrift Für Die Gesamte*

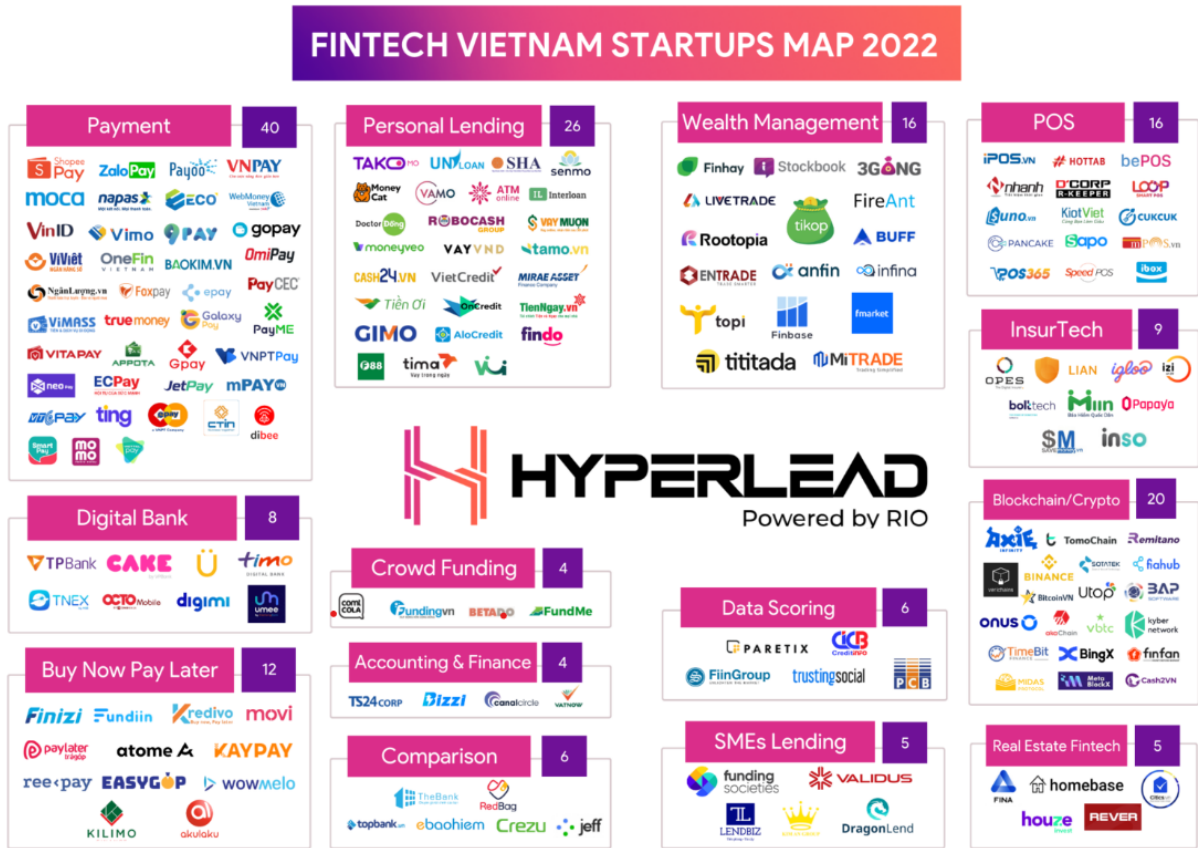
- Versicherungswissenschaft*, 107(4), 359–386. <https://doi.org/10.1007/s12297-018-0421-6>
7. Casu, B., C. Girardone, and P. Molyneux (2015), *Introduction to Banking*, Harlow: Pearson.
  8. Cimigo (2022), *Retail banking 2022: Retail customer perspectives and experiences*, [https://www.cimigo.com/wp-content/uploads/woocommerce\\_uploads/2022/12/Vietnam-retail-banking-2022-d1tru0.pdf](https://www.cimigo.com/wp-content/uploads/woocommerce_uploads/2022/12/Vietnam-retail-banking-2022-d1tru0.pdf)
  9. Dang, T. T., & Vu, H. Q. (2020). FinTech in Microfinance: A new direction for Microfinance institutions in Vietnam. *The Journal of Business Economics and Environmental Studies*, 10(3), 13–22. <https://doi.org/10.13106/JBEES.2020.VOL10.NO3.13>
  10. Dorfleitner, G, Hornuf, L, Schmitt, M & Weber, S (2017), “Definition of FinTech and description of the FinTech industry”, *FinTech in Germany*, Springer, Cham, pp. 5-10.
  11. Financial Stability Board (2017) *FinTech*. <https://www.fsb.org/work-of-the-fsb/financial-innovation-and-structural-change/FinTech/>
  12. Findexable (2021), Global FinTech ranking report 2021, [https://findexable.com/wp-content/uploads/2021/06/Global-FinTech-Rankings-2021-v1.2\\_30\\_June.pdf](https://findexable.com/wp-content/uploads/2021/06/Global-FinTech-Rankings-2021-v1.2_30_June.pdf)
  13. Fintech News Singapore (2023), Vietnam’s Fintech Emerges as Most Funded Sector With a 249% Surge, August 14, 2023, <https://fintechnews.sg/77316/vietnam/vietnam-s-fintech-emerges-as-most-funded-sector-with-a-249-surge/>
  14. FSIP (2020), “Vietnam Fintech Ecosystem Mapping”, *Internal report for FCDO (UK Government) and State Bank of Vietnam*.
  15. FSIP (2021), “Report on Equity Crowdfunding in Vietnam”, *Internal report for FCDO (UK Government) and Ministry of Finance, Vietnam*.
  16. Global FinTech ranking report (2021) [https://findexable.com/wp-content/uploads/2021/06/Global-FinTech-Rankings-2021-v1.2\\_30\\_June.pdf](https://findexable.com/wp-content/uploads/2021/06/Global-FinTech-Rankings-2021-v1.2_30_June.pdf)
  17. Hyperlead (2023), *Vietnam Fintech Market Report 2022*, March 2023, <https://hyperlead.vn/blog/news/bao-cao-thi-truong-fintech-viet-nam-2022/>
  18. Kempt, S. (2023), *Digital 2023: Vietnam*, <https://datareportal.com/reports/digital-2023-vietnam>
  19. Le Thanh Tam (2023), *Developing Fintech Ecosystem for Financial Inclusion* (In Vietnamese), National Economics University Publishing House.
  20. Leong, K & Sung, A. (2018), “FinTech (financial technology): what is it and how to use technologies to create business value in FinTech way?”, *International Journal of Innovation, Management and Technology*, Vol. 9, No. 2, pp. 74-78.
  21. Maier, E 2016, “Supply and demand on crowdlending platforms: connecting small and medium-sized enterprise borrowers and consumer investors”, *Journal of Retailing and Consumer Services*, Vol. 33, No. 6, pp. 143-153.
  22. Mordor Intelligence Research & Advisory (2023). *FinTech in Vietnam Market Size & Share Analysis - Growth Trends & Forecasts (2023 - 2028)*. Mordor Intelligence. Retrieved August 23, 2023, from <https://www.mordorintelligence.com/industry-reports/vietnam-FinTech-market>
  23. MPI (2022), *Digital transformation an urgent need for SMEs*, Updated on November 20, 2022 at <https://vietnamlawmagazine.vn/digital-transformation-an-urgent-need-for-smes-59216.html>
  24. Navaretti, G. B. M., Calzolari, G. M., Mansilla-Fernandez, J. M. M., & Pozzolo, A. F. M. (2018). FinTech and Banking. Friends or Foes? *SSRN Electronic Journal*. <https://doi.org/10.2139/ssrn.3099337>
  25. Nguyen Chien Thang (2022), “The Impacts of Fintech on Retail Banking: BIDV case study”, *Master Thesis*, PGSM Program.
  26. Nguyen Thanh Hung (2023), “Recommendations for improving business performance and safe, sustainable development at State-owned commercial banks”, SBV website dated June 08, 2023 at [https://www.sbv.gov.vn/webcenter/portal/vi/menu/fm/ddnhnn/nctd/nctd\\_chitiet;jsessionid=2LlJzixSunDGi5KIHDofFWXqzlebgcfFZ0S98IA2eZUnDw3s7RJd!1129196177!-751445635?centerWidth=80%25&dDocName=SBV569621&leftWidth=20%25&rightWidth](https://www.sbv.gov.vn/webcenter/portal/vi/menu/fm/ddnhnn/nctd/nctd_chitiet;jsessionid=2LlJzixSunDGi5KIHDofFWXqzlebgcfFZ0S98IA2eZUnDw3s7RJd!1129196177!-751445635?centerWidth=80%25&dDocName=SBV569621&leftWidth=20%25&rightWidth)

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27. Nguyen, D. D. Dinh, H. C., & Nguyen, D. V. (2020). Promotion of FinTech Application for the Modernization of Banking-Finance System in Vietnam. *The Journal of Asian Finance, Economics and Business*, 7(6), 127–131. <https://doi.org/10.13106/JAFEB.2020.VOL7.NO6.127>
  28. Nguyen, M. N. (2022) *Vietnam: Largest banks by total assets 2022*. Statista. Retrieved August 23, 2023, from <https://www.statista.com/statistics/755846/biggest-banks-by-total-assets-vietnam/>
  29. Patrick, S. (2017), “Taming the Beast: A Scientific Definition of Fintech”, *Journal of Innovation Management*, 4 (4): 32-54. ISSN 2183-0606. PricewaterhouseCoopers.
  30. Philippon, T. (2016), “The fintech opportunity”, Working Paper, New York University, Stern School of Business, July 2016.
  31. Philippon, T. (2016), “The fintech opportunity”, Working paper, New York University, Stern School of Business, July 2016.
  32. Quynh Trang (2023), “2022 marks new profit records for banks”, *VNExpress* dated Feb 13, 2023, <https://e.vnexpress.net/news/business/data-speaks/2022-marks-new-profit-records-for-banks-4569114.html>
  33. Rangkuti, R. P., Amrullah, M., Januar, H., Rahman, A., Kaunang, C., Shihab, M. R., & Ranti, B. (2020), “Fintech Growth Impact on Government Banking Business Model: Case Study of Bank XYZ”, *2020 8th International Conference on Information and Communication Technology (ICoICT)*.
  34. Rose, P. S. and S. C. Hudgins (2013), *Bank Management and Financial Services*, 9th Edition. London: McGraw Hill.
  35. SBV (2021), *Internal report on Bank Digital Transformation*, State Bank of Vietnam.
  36. SBV (2022), *Internal report on Bank Digital Transformation*, State Bank of Vietnam.
  37. Siek, M., & Sutanto, A. (2019), “Impact Analysis of Fintech on Banking Industry”, *2019 International Conference on Information Management and Technology (ICIMTech)*.
  38. Tanda, A. & Schena, C.M. (2019), *FinTech, BigTech and Banks*, Palgrave Macmillan Studies in Banking and Financial Institutions
  39. Tien, L. (2020). *Vietnam FinTech startup go from 44 in 2017 to 121*. Vietnam Investment Review - VIR. <https://vir.com.vn/vietnam-fin-tech-startup-go-from-44-in-2017-to-121-81170.html>
  40. Tufano, P. (2003). Chapter 6—Financial Innovation. In G. M. Constantinides, M. Harris, & R. M. Stulz (Eds.), *Handbook of the Economics of Finance* (Vol. 1, pp. 307–335). Elsevier. [https://doi.org/10.1016/S1574-0102\(03\)01010-0](https://doi.org/10.1016/S1574-0102(03)01010-0)

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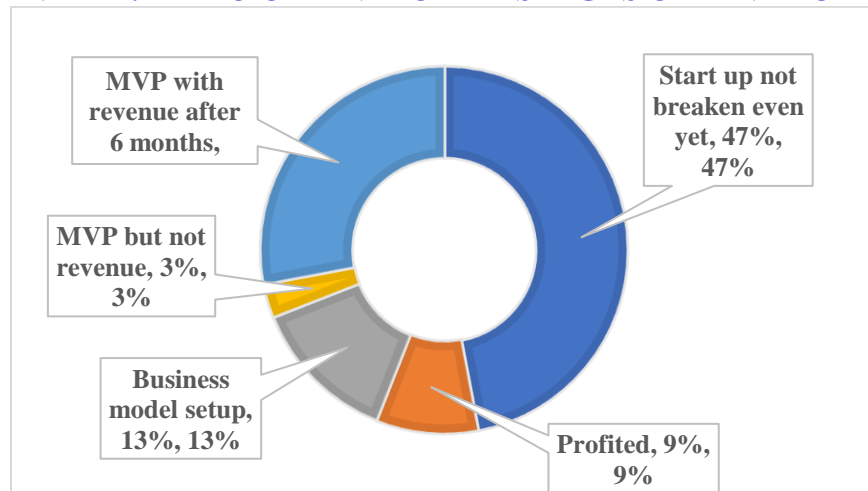
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## APPENDIX 1: OVERVIEW OF VIETNAMESE FINTECH ECOSYSTEM 2022



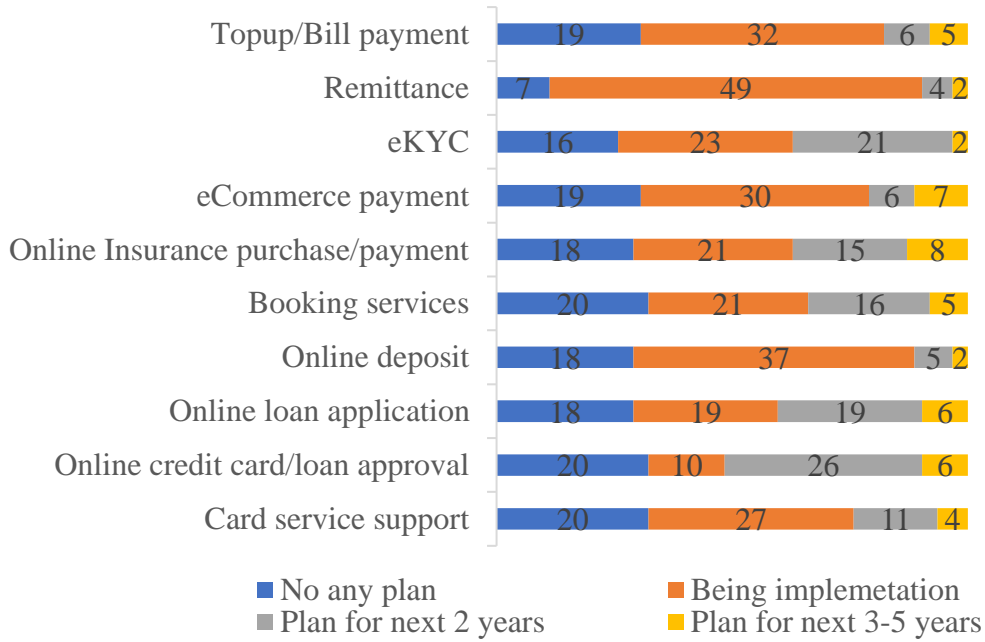
Source: Hyperlead (2023)

## APPENDIX 2: RATIO OF FINTECH BY STAGES OF DEVELOPMENT



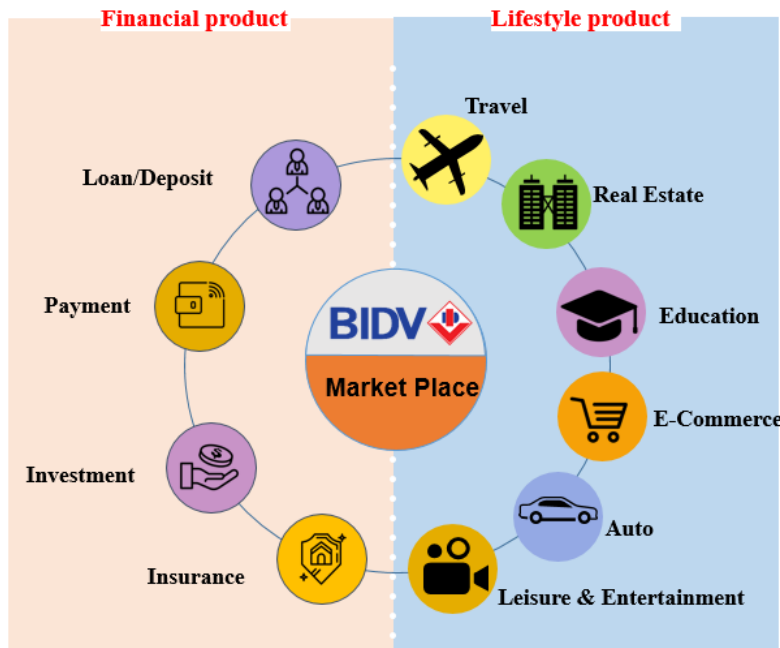
Source: SBV (2022).

### APPENDIX 3: SITUATION OF DEPLOYMENT BANKING SERVICE ON DIGITAL CHANNELS AT BIDV



Source: SBV (2022).

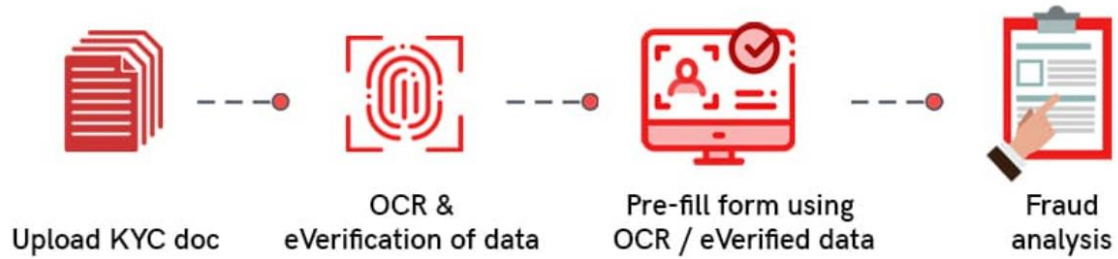
### APPENDIX 4: DIGITAL ECOSYSTEM MAP OF BIDV



Sources: Internal BIDV's ecosystem strategy report (2022), Nguyen Chien Thang (2022)

## APPENDIX 5: eKYC PROCESS FLOW AT BIDV

### eKYC PROCESS FLOW



Sources: Internal BIDV's digital report (2021), Nguyen Chien Thang (2022)