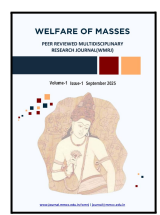




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Impact of Fintech on financial innovation in India

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ABSTRACT

Financial innovations in India have completely transformed the way in which finances are handled by millions of people in the country. At the centre of all the financial innovations in the country is the development of the fintech industry over the years. The country has witnessed a significant rise in the number of fintech start-ups that has fuelled financial innovations at all levels. The aim of this particular article is to explore the overall impact that fintech has had on financial innovation in the country. It can be said that the development of the fintech industry has led to innovative solutions that have made things easy for the entire population. Lending and transferring money is just a click away while wealth management can easily be done with the help of numerous digital apps. People have become more aware of their financial decisions and have the necessary resources to invest their money in the right places due to the financial solutions provided by fintech. The article has found that fintech has had a significant positive impact on financial innovations across all levels in the country. It has further been established in the study that the future of financial innovations is quite bright in a country with progressive economic growth.

1. INTRODUCTION:

Fintech is a term that is used to describe the integration of technology that is aimed at improving and automating the use and delivery of financial services in a nation (Goldstein, Jiang & Karolyi, 2019). The development of the fintech

industry is always complimented by financial innovations taking place in a particular region. The fintech industry of India is something that has transformed the way in which people manage and access their finances. The industry has

witnessed rapid growth and is forecasted to proliferate in the coming years. The fintech industry is currently valued at \$584 billion and is expected to rise to \$2.1 trillion by 2030 (Rathore, 2023). The rapid growth and adoption of fintech in the Indian market have been driven by a number of factors like a large and growing population, development of digital infrastructure, thriving ecosystem and efficient government intervention. The rapid growth and development of the fintech industry have helped India emerge as a market leader or global hub for financial innovation. There have been financial solutions that have changed the way in which financial transactions and decisions are made in the country.

India is a country with a huge population of 1.4 billion and this is something that provides significant scope for financial innovation. There has also been a rapid penetration of the internet and the adoption of smartphones in the country which have made it easy to access digital platforms and financial services (Gupta & Agrawal, 2021). Paytm, Phonepe and Google Pay are some of the prominent examples of financial innovations that have revolutionised the way in which the country handles its finances. Another financial innovation that has been supported by fintech in the country is the lending ecosystem of the country. It can be easily established that there is a wide range of financial innovations that have been supported by the development of fintech in the country. From mobile payment solutions to digital lending platforms and insurance technology to wealth management, financial innovation is visible at every stage of financial doings due to the development of fintech (Statista, 2023). The impact of fintech on financial innovation in the country has further had a profound impact on the millions of people in the country. The financial sector has entirely been transformed along with the experience of the people in the country. India is being hailed at the global level for the financial innovations that have transformed the way of making payments and a major role played in it is the development of fintech over the years. The government of India has developed numerous policies and regulatory frameworks that have guided the development of the digital infrastructure in the country and supported financial innovations.

Considering all of these aspects, the purpose of this article is to explore the impact that fintech has had on financial innovation in the country. The relationship between fintech and financial innovation will be investigated in the paper with the help of proper evidence and analysis to provide a more comprehensive account of the subject. The future of financial innovation in the country in light of further development of the fintech industry will also be explored in the research.

2. Literature review

2.1 Review of literature

As per Takeda & Ito (2021), Fintech or financial technology are those innovations that are used exclusively in the financial sectors for providing financial services. In 2008, when the world witnessed the financial crisis, the call for financial innovation started in the world. The term Fintech however is old as it was first coined in the year 1990s and the term was used to provide technological assistance to the backend consumers and the trade financial institutions. The term became popular after the 2008 financial crisis when the world was witnessing the importance and researchers started exploring the Fintech through studying the published journals and later on sharing their experiences through journals. After the year 2016 the research and innovation towards the Fintech started growing as large number of researcher getting interested in Fintech and Financial Innovations.

As mentioned by Suryono *et al.* (2020), digital transformation around the world had created several challenges and opportunities for the businesses and industries around the world. The digital transformation has triggered the emergence to use the technological innovation that is Fintech. Fintech is a technological solution for the financial dealers and customer where it provides a wide range of services. The services which are offered by Fintech are funding, payment, E-wallets facilities, and e-trading options. In the recent year the Fintech trends has risen and it had covered a largest segment of market around the world. Instead of this it has been facing some issues which includes issues in its search process, issues in the implementation of this technology.

As cited by Mention (2019), Fintech over the years is becoming a global phenomenon as more and more countries around the world are using the Fintech. The boost in the Fintech industry has been gained through the participation of India and China in this Fintech trends. The investment in the research and development of Fintech industry is growing day by day as in the year 2018 it had attracted around 12 billion USD investment from around the world. In the year 2018 the top Fintech firms from around the world had raised more than 31.85 billion USD and in future the figures can high as well. Today the Fintech is limited to exploring opportunities in digital payment and the technologies like AI and machine learning hasn't been explored yet. Hence, in future if the technological tools like Blockchain, IoT, AI and Machine Learning will be combined with the usage of Fintech it can revolutionized the future of the financial sector.

As per Chishti & Sinha (2022), financial innovation in India is progress day by day with the successful implementation of UPI system in Indian market. The carbon emission around the world has been increasing around the world and it had completely disrupted the financial section technological and financial innovation. India is the member of BRICS grouping which the group of world top emerging economies in which India, China, Russia, Brazil and South Africa are active members. In the BRICS meeting of the year 2021, the main focus of all the nations was to active sustainability and reduces the carbon emission from the financial process. For achieving this Fintech innovation will be the only option which was proposed and heavily discussed during that meet. According to Rastogi *et al.* (2021), the development and innovation of India's financial sector can be accessed after the launch of UPI whose abbreviation is Unified Payment Interface. This has attracted the world towards its as after the launch in the year 2016 it has become the main source of digital in India. UPI technical has helped to provide the digital payment services options for the poor and lower middle class citizens of India. The advantages of using UPI in India is that it is run and managed by the Government of India and Government doesn't seen any fees for carrying out any transactions through UPI. Hence, introduction of UPI in the Indian market can be seen as the revolutionary step.

As per Khokhar (2021), financial inclusion for all the citizens of the country is the aim decided by the Sustainable development goals in the year 2015. India in the last decade has taken aggressive steps towards the research and innovation of technological sector and the introduction aggressive policies. The government of India in the past few years has launched several schemes to create financial opportunities in India which includes the Start-up India Seed fund scheme, Start-up India investor connect and others. As mentioned by Goswami *et al.* (2022), India is among those countries which are rich in mineral resources, marbles and tourism. The income of the people of India is quite uneven and this unevenness is even more in the rural parts of India. Financial equality and financial inclusion in country like India is quite tricky task to execute. The researcher in this article had tried to highlight this with the help of carrying out systematic literature analysis. In this research there are certain variables that had been found and each of these variables had played a very important role in influencing the rural economy of India. Some of those variables includes social influence on the people, behavioural intentions of the India crowd, trust on the technology and usability.

According to Baporikar (2021), India is a dynamic economy whose number of unicorns are increasing on yearly basis and it is expected to increase further in future as well. The Fintech market of India is expected to reach the level of 2.4 billion USD as of the year by the end of 2020. The market of India has always been cash driven market where people are more depended on the cash for carrying out transactions. The transaction value through the Fintech sector in India was 33 billion USD in the year 2016 and it was expected to reach the market of 73 billion USD as of the year 2020. The growth story of India's Fintech is great but for competitor with the global counterpart it had to create strong pipeline of tech talents in the country and promote the start-up ecosystem in Fintech sector of India.

As mentioned by Painoli *et al.* (2021), Fintech in any part of the world provides alternative solutions for banking services. India is the country where most of the economic policies are made as per the consideration of the poor and farmers section of the society. This is the reason

why most of the banking institutions in India are either government owned or are government undertaking. The financial revolution in the banking sector has been boosted up by the inclusion of Fintech solutions. The market size of India is great hence the success ratio for getting the advances of those Fintech solutions is great. As per Rauniyar *et al.* (2021), financial innovation is one of biggest innovation of 21st century and this has helped many countries to improve their payment options and improve their payment procedure without any interference of cyber-attacks. These days due to technological innovation in the Fintech industries the Fintech solutions which have been invented yet includes artificial intelligence, block chain technology, IoT and the machine learning. The financial turmoil of the year 2008 has created much of devastation around the world and this has paved the way to innovative a digitalized financial system which is now known as Fintech solutions.

2.2 Objectives of the study

- To explore the fintech landscape of India and its key growth drivers
- To investigate the fintech driven financial innovation in the country
- To examine the relationship between fintech growth and financial innovation in India
- To evaluate the future of financial innovation in relation to growth of Fintech.

3. Methodology

A mixed design has been used in the study which involves using both quantitative and qualitative data for the research. Qualitative data is referred to as textual or non-numerical information while quantitative data is referred to as numerical information (Kandel, 2020). Hence, both numerical and non-numerical information has been used in the research to provide a comprehensive account of the subject. On the other hand, a secondary method of data collection has been used in the research to collect both qualitative and quantitative information on the subject. The secondary method refers to collecting information from pre-existing sources that are made available to the public (Pandey & Pandey, 2021). Peer-reviewed journals, online articles,

government reports and statistical databases have been referred to for the collection of required data on the topic. The data available online on the development of the fintech industry and financial innovations have been collected for the last 5 years to perform the required analysis. On the other hand, the analysis of the entire collected data has been done in the forms of themes where multiple themes have been developed in the next section of the article to present the findings in a structured and organised manner. Further, the analysis of the quantitative data has been done with the help of MS Excel to understand the relationship between fintech and financial innovation. Correlation analysis have been done using MS Excel to assess the impact that fintech has had on financial innovation in the country.

3.1 Sample Details for Correlation Analysis

The correlation analysis was conducted using secondary data collected for a five-year period (2018–2022). The dataset consists of annual observations on fintech funding and selected indicators of financial innovation in India. Data were compiled from publicly available sources including Statista Research Department, EY India Fintech Report, NPCI reports, TRAI reports and other published government reports. For the purpose of correlation analysis, the following five variables were considered:

- Funding of Fintech Start-ups (US\$ Billion)
- Digital Payments (US\$ Billion)
- Neo-banking (US\$ Billion)
- Digital Assets (US\$ Billion)
- Digital Investments (US\$ Billion)

The dataset comprised **five annual observations (n = 5)** corresponding to the years **2018, 2019, 2020, 2021 and 2022**. The collected data were entered into Microsoft Excel and Pearson's Correlation Coefficient was calculated using the Data Analysis ToolPak to examine the relationship between fintech growth and financial innovation indicators.

Pearson's Correlation Coefficient was used to measure the strength and direction of the linear relationship between fintech funding and selected financial innovation indicators. The coefficient value ranges from -1 to $+1$, where values closer to $+1$ indicate a strong positive relationship,

values closer to -1 indicate a strong negative relationship, and values near zero indicate little or no linear relationship. The analysis was performed using Microsoft Excel.

The impact of Fintech services on the Indian financial market cannot be ignored in the current era. Due to the presence of an opportunistic landscape in India, the number of participants in the Unicorn events has also increased over the prior years. For example, Paytm and Policy Bazaar were the sole participants in the Unicorn Event of 2018, which has increased over time. According to the latest findings, around 24 unicorn companies have been acknowledged as a part of India's Fintech market (Assets. ey, 2022). This can further be linked with the identified change in Global Fintech aspects which have influenced the Fintech market of India. In other words, an alignment between the Global market and the Indian Fintech market can be observed which can be considered as a core reason behind India's stable growth in Fintech services. Studies have also suggested that India has acquired a top place in the list of Asia-PACific countries with an investment of \$7.8 billion in 2021.

India's current situation can be considered useful whereas investment in Fintech services can be considered beneficial for achieving economic growth. Several financial studies have been conducted over the prior years which have illustrated India as the third largest market for Fintech services (Assets.ey, 2022). An approximation has also been made which has depicted an achievement of 10x growth in the upcoming years.

The reason behind this type of high scope can be linked to the availability of high-speed internet, high-tech devices and others. According to financial calculations, the Fintech market of India is hoped to achieve an astonishing amount of \$200 billion in revenues and \$1 trillion in AUM. The outbreak of the pandemic can also be considered the key driver for the Fintech industry's high scope in the Indian market which has acted as an instigator for digital adoption. In other words, the pandemic outbreak in India has made the adoption of digital technologies a mandatory aspect.

4. Findings and results

4.1 Fintech landscape of India

Year	Unicorn event by year (24)
As of July 2022 (9)	 CoinSwitch  MobiKwik  Slice  BharatPe  Acko  Yubi  Onecard  Open  Oxyzo (Formerly Ofbusiness)
2021 (7)	 Cred  Chargebee  Digit  Groww  Zeta  CoinDCX  Upstox
2020 (3)	 Razorpay  Zerodha  Pine Labs
2019 (3)	 Razorpay  Billdesk  Zoho
Upto 2018 (2)	 Paytm  Policy Bazaar

Figure 1: Fintech Unicorn Event in India

(Source: Assets.ey, 2022)

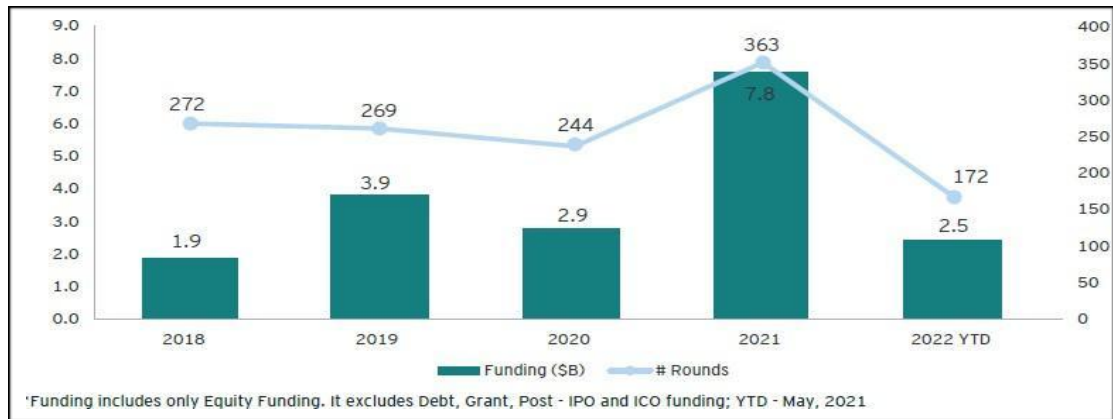


Figure 2: Fintech Funding

(Source: Assets.ey, 2022)

The high scope for Fintech growth in the Indian market can further be observed through its stages of investments along with the number of rounds. According to financial analysis, the amount of investment in the Fintech market of India was around \$1.9 billion which has faced an astonishing growth of \$3.9 billion (Assets. ey, 2022). A sudden decrease in 2020, can be observed which amounted to \$ 2.9 billion in terms of Fintech funding. This amount has achieved significant growth in 2021, which can be depicted through a high rate of investment.

The amount of Fintech funding in 2021 was \$ 7.8

billion which can be considered as the highest investment to date. The fluctuation in the Fintech funding statistics can be reasoned with the ongoing pandemic issues and other circumstantial events. According to statistical data, around 5.4% of the Fintech funding denotes their focus on Cryptocurrency and Blockchain and 44.4% of funding denotes some form of online payment system (Assets.ey, 2022). The rest of the function can be divided among other critical aspects such as Neo-banking, Insurance tech and other forms of Fintech services.

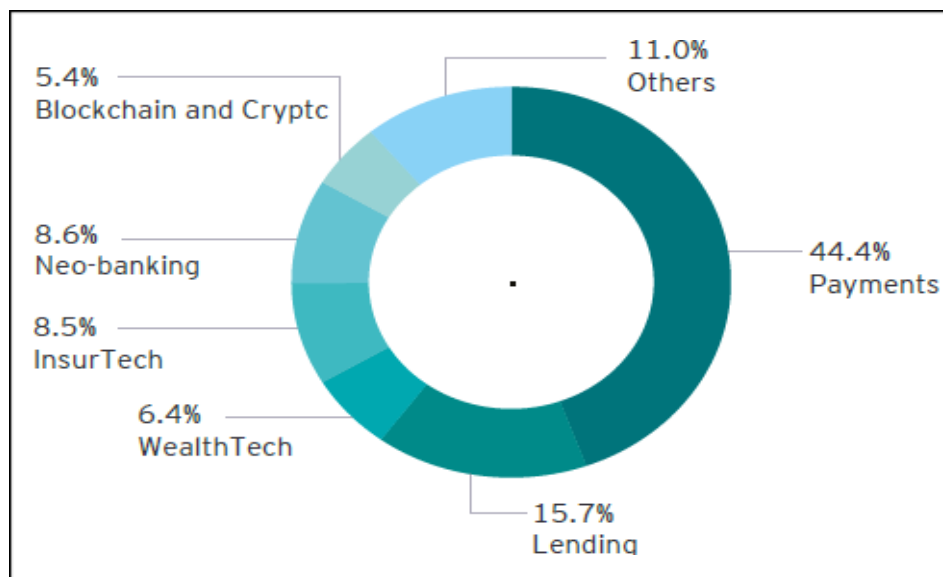


Figure 3: Fintech funding percentage

(Source: Assets.ey, 2022)

4.2 Key growth drivers of Indian Fintech

The presence of high opportunity in the Indian Fintech market can be aligned with the identified growth rate of Fintech investments. Access to adequate financial support along with appropriate regulatory stance can be considered as a positive business environment which can be considered as a key driver of Indian Fintech services. The growing economic structure of India can be addressed as useful for firms looking forward to investing in Fintech services. According to Bau & Matray (2023), the government of India's decision to provide automatic approval in "Foreign Direct Investment " can be reasoned with its access to foreign capital. In other words, access to foreign capital can also be lined with the growing trend in the Indian market which denotes a high scope for Fintech services.

Adoption of modern technology can also be portrayed as a positive factor that can complement the inclination towards Fintech investment. The government of India's inclination towards investment in modern technologies can also be considered as a key driver which has allowed the Indian Fintech market to acquire significant boost in the current period. As per the findings, the investment in information and technology was around 91 billion U.S. dollars in 2021 which has faced an increase in the current era (Sun, 2022). An estimation has also been made which illustrates an amount of 111 billion U.S. dollars worth of investment in 2024. Apart from that, the availability of a skilled workforce can also be addressed as a key driver of the Fintech market in India.

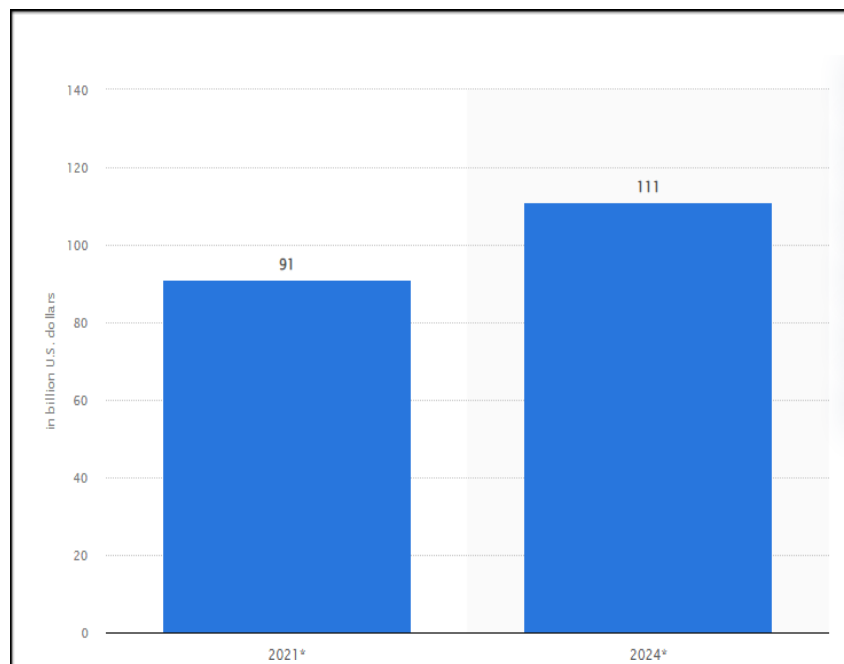


Figure 4: ICT valuation in India

(Source: Sun, 2022)

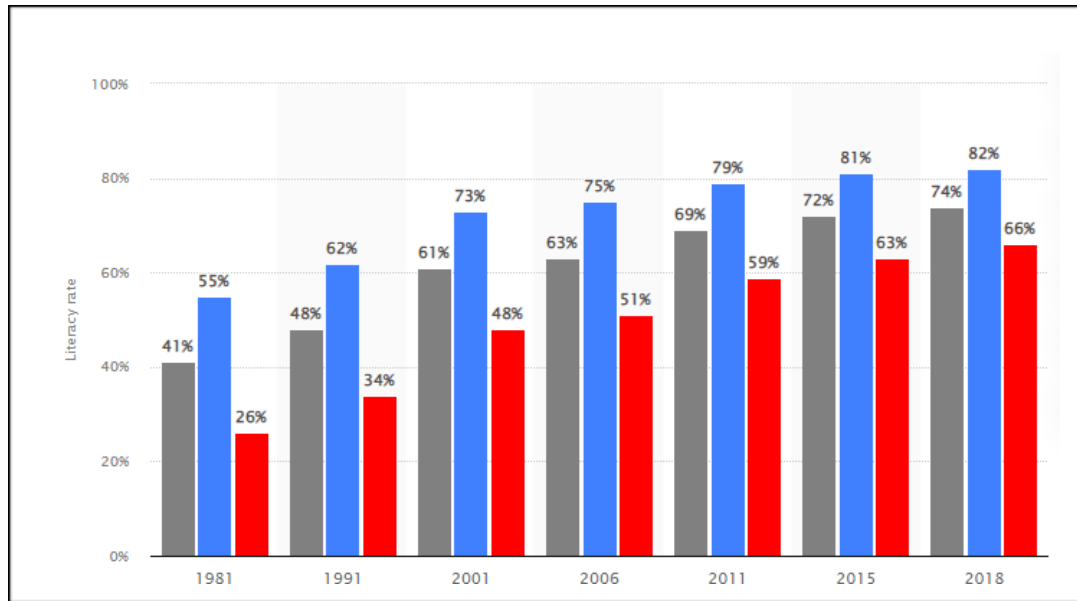


Figure 5: Literacy rate in India

(Source: O'Neill, 2023)

According to recent studies, a stable growth rate in the Indian literacy rate can be observed. For example, the literacy rate among men in India was 55% in 2018 and the female literacy rate was 26%. The current analysis also depicts around 82% literacy rate among men and 66% literacy rate among women (O'Neill, 2023). Hence, the increasing literacy rate in India can be considered beneficial for the Fintech market where a high rate of investment seems a beneficial aspect. India's inclination towards mobile devices can also be considered a sign of high scope in terms of Fintech services. For example, the number of wireless subscribers in India was 1038.45 million (Trai.gov.in, 2023). It can further be acknowledged as a key driver of Fintech investment.

4.3 Fintech driven financial innovation in India

The higher investment in the Fintech industry can also be aligned with the rise of innovative measurements and approaches. For example, digital adaptation in India can be displayed through the rising number of internet users, mobile users, internet users from rural areas and others. Studies have suggested that around 47% of the population of India between the age group of 16 to 64 is known for using the internet on a daily basis (Assets. ey, 2022). The amount of mobile penetration rate is 81% which can be considered

adequate. Several surveys have also been conducted which illustrated that the percentage of mobile internet users is around 91%. According to findings, the number of rural internet users in 2021 was 352 million. Apart from that, the number of users in urban areas is 294 million which can be considered as an appropriate scope for investing in Fintech.

UPI development can also be considered as a part of innovative measurements that can be linked with the investment in Fintech services. The usage of UPI or "Unified Payments Interface" can be observed in the payment system of India (Npci.org.in, 2023). This has allowed the majority of the Fintech users in India to indulge in online payment activities. The beneficial aspect of the digital payment system can be portrayed through the minimisation of transaction costs which can be observed in the regular banking services. The technological landscape of India can also be insured as a beneficial outcome where critical and useful aspects such as Aadhar, Jan Dhan, and mobile usage can be addressed as major contributions (Pib.gov.in, 2023). According to a survey, India is known for having around 800 million mobile phone users which has further supported the growth of the Fintech industry. These types of approaches can further be considered as public infrastructure representing the digitalisation aspect in India.

4.4 Impact of Fintech on financial innovation in India

Table 1: Fintech and financial innovation in India (2018-2022)

Year	Funding of fintech start-ups (in billions \$)	Digital payments (in billions \$)	Neo-banking (in billions \$)	Digital Assets (in billions \$)	Digital Investments (in billions \$)
2018	1.6	54.29	4.39	11.56	109.8
2019	2.8	71.21	9.4	9.58	187.1
2020	2.2	96.41	18.56	38.7	247.8
2021	8	130.5	34.67	216	422.9
2022	4.2	153.3	53.6	145.8	589

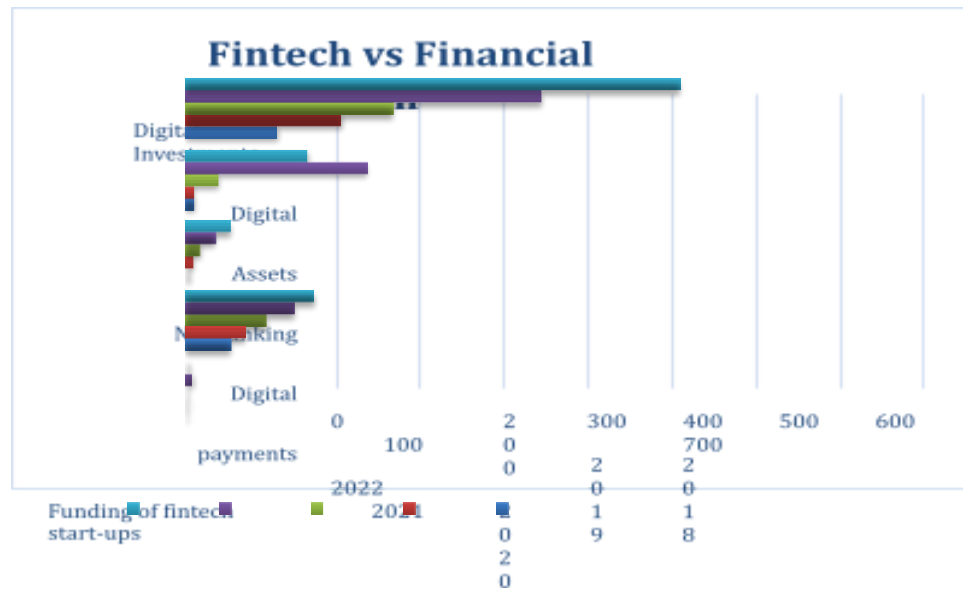


Figure 6: Graph depicting the trends in financial innovation and fintech in India over the past five years (2018-22)

(Source: Self-developed using data from Statista Research Department)

Based on the above data, it is visible that digital assets, payments, neo-banking and digital investments have continuously grown over the years in India. The fundings to Fintech start-ups has also more than doubled in the last five years

from \$1.6 billion in 2018 to \$4.2 billion in 2022. Hence, the relationship between the growth of fintech and financial innovation has further been studied with the help of correlation analysis and the results of which have been provided below.

Table 2: Correlation analysis

	<i>Funding of fintech start-ups</i>	<i>Digital payments</i>	<i>Neo-banking</i>	<i>Digital Assets</i>	<i>Digital Investments</i>
Funding of fintech start-ups	1				
Digital payments	0.679939731	1			
Neo-banking	0.598238386	0.984183	1		
Digital Assets	0.937189335	0.856238	0.806976	1	
Digital Investments	0.63085929	0.986305	0.997738	0.820728	1

Based on the results of the correlation analysis it can be established that there is a positive relationship between fintech and elements of financial innovation like digital payments, digital assets, neo-banking and digital investments. The relationship is also strong between the variables since the co-efficient value is more than 0.5 or 50%. Hence, the impact of fintech has been significant on financial innovation in India since there is a strong positive relationship between the two elements.

4.5 Fintech and the future of financial innovation in India

The growing demand for digital innovation has led to higher maturity of the Fintech industry of India, fintech can be seen as an umbrella term which includes technology-enabled financial services that contribute to improving the business models of the organisation. The payment companies in particular are particularly the most important as they help in providing online payment solutions through mobile wallets and different digital gateway methods. The fintech companies are also infamous for lending companies to develop their digital solutions. Insurance and investment companies also benefit from this innovation as they are able to manage funds and provide insurance digitally to people. Fintech is deeply rooted in everyday economic transactions. In research carried out on fintech adoption, it has been found that around 84% of the surveyed participants were well aware of fintech

services and around 20% use at least two fintech services (Mention, 2019). Firms across India have recognized the potential which financial innovation provides to organisations and its contributions to helping startup organisations prosper.

The increase in fintech technology shows the capability of the Indian technological sectors, the companies in the Indian financial sectors can provide personalised customer-centric services to the people through this method. It has been observed that the investments in the Fintech technologies of India have also increased with time, in 2013, investments in these emerging technologies were observed to be \$12.2 billion, however by the year 2018 the investments raised by the top fintech industries had been around \$31.85 billion. Globally it has been observed that the investments have been around \$31.85 billion (Mention, 2019). It should be mentioned that the growth of the fintech sector has been due to a number of factors, the growth in capital income of people, broader financial inclusivity and larger access to internet connection across India have contributed to this growth, and the Indian Fintech sector is expected to grow further.

5. Discussion

The Fintech industry can be considered as a rising factor which can be observed in the global market. Bhatnagar et al. (2022) have also illustrated that India is often considered a Fintech hub in the global market. In other words, the Indian market can be

considered as a feasible option where investment can be made in the Fintech services. Reasons such as these can further be linked with the increasing demand towards technological adaptation. The rising amount of the ICT market can also be aligned with the Indian market's capability to invest in Fintech services. For example, the rising number of investments in Fintech services can be addressed as an attribute of India's emerging market. In other words, the landscape of India in terms of Fintech services has illustrated a high scope for investing in Fintech services. The rising number of innovative measurements can also be considered as the outcome of significant investment in Fintech services which have allowed the Indian market to reach a higher success rate.

The presence of an adequate business environment can be addressed as a major driver for the Fintech market which denotes availability of capital support. The Indian government's automation of FDI approval can be linked with this outcome which has allowed India to achieve higher financial support for fulfilling necessary goals. The increasing literacy rate can also be considered as a major driver which has allowed Fintech services in India to achieve a high success rate. Gautam et al. (2022) have also illustrated a robust connection between digital literacy and Fintech integration. Hence, it can be addressed that the Indian market denotes a high scope for investment which can ensure the successful integration of Fintech services.

5.1 Comparative Discussion with Previous Literature

The findings of the present study are consistent with earlier research on fintech and financial innovation in India. The Pearson correlation analysis revealed a strong positive relationship between fintech funding and indicators of financial innovation, including digital payments, digital assets, neo-banking and digital investments. These findings support the observations of Goldstein et al. (2019), who argued that fintech serves as a catalyst for financial innovation through the adoption of digital technologies. Similarly, Gupta and Agrawal (2021) reported that the rapid expansion of fintech in India has significantly accelerated digital financial services and improved financial accessibility. The present findings also align with Rastogi et al. (2021), who highlighted the transformative role of the Unified Payments Interface (UPI) in strengthening digital payment adoption and promoting financial inclusion.

Furthermore, the results are consistent with the work of Rupeika-Apoga, R. (2022). which identified fintech as a key driver of technological innovation and future growth in the global financial sector. Although the present study confirms these earlier findings, it is based on secondary data covering only five annual observations (2018–2022). Therefore, while the observed positive relationships are in agreement with previous literature, future research using larger datasets and more advanced statistical techniques such as multiple regression or panel data analysis would provide stronger empirical evidence.

6. Conclusion

The core aim of this study is to demonstrate the impact of Fintech innovation on the Indian market. The overall findings of this study have demonstrated that the Indian market is known for having an appropriate market situation that can ensure successful investment and outcome through Fintech integration. The volatile nature of the modern market and rising complexities in the economic structure can also be considered as the foremost reason which has made it necessary for the modern South to focus on Fintech investment. The limitation of this study can be portrayed in the usage of secondary data. Including primary data can be considered as a feasible approach that can enhance the quality of the outcomes.

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