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An comparative analysis on fintech innovations and its growth in India.

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Abstract

Due to rapid development in web technology, the financial services industry has seen drastic technology related changes over the past few years. Business firms improve IT departments in its efficiency and facilitate change into financial innovation. FinTech start-ups are establishing upon the standard markets, and developing customer friendly solutions. Banking and financial institutions develop heat and urge within themselves to excel their performance in web based financial solutions. It starts from multi-service low cost solutions to inbuilt huge Artificial Intelligence systems. Now the time has come to think and rebuild a self engineering system of protection against financial crimes and frauds. Newly developed financial systems and solutions should immune themselves from infections like hacking ,phishing etc. The statement is clear that challenges are in front of financial service technology. This paper deals with the fintech innovations and various technologies adapted by financial institutions and financial transactions and also to understand the trends of various technologies in India.

Key words: Cyber crime, financial solutions, Artificial intelligence system, cyber security, financial services

1.Introduction:

Financial innovation advances over time in finding new financial instruments and payment systems which supports and benefits the financial institutions in general and also in specific.

Financial technology innovation is the process of creating new technology for financial instruments and imparting the financial technologies in financial institutions, and markets.

Recent financial technology innovations are used in investment sectors and digital payments at large.

At present there are three types of financial innovations:

1. Institutional innovation-Capital one, electronic trading platforms such as direct banks, online payment services.
2. Product innovation- new product relate to derivatives, mortgages, foreign currency etc
3. Process innovations-new ways of doing financial transactions such as e-banking, EFTetc.

Financial innovations are based on the developments in computers and telecommunication sectors. This innovation was accepted and developed due to the reduction in transaction cost for e.g. ATM, EFT reduces the cost of financial transactions.

Social media development influences the financial service sector by allowing for a global reach, improving customer service, advancing marketing strategies, and even creating new products and services offered to the customers. Nowadays Financial companies have advanced technology and design its operations to overcome geographical boundaries and reach the customers in real time platforms. Due to the development of online technology bank operations and financial institution operations extended to its maximum to serve the customers in better way.

2.Review of literature:

a. Peter Gamber, Jascha Alexander Koch Michael sierung in their paper stated that the financial sector is undergoing a continuous up gradation in service delivery due to digitalization. Technology innovation in connectivity and speed in information processing as enhanced customer interface and in back end processes. This article reviews the current state of research in Digital finance and new technology in innovative business functions.

b. Thomas Philippon in their research assessed the impact of FinTech on the finance services and it focused on financial process and stability. The researcher stated that implementation of technology in financial services is expensive..The paper concludes that fintech creates changes in financial transactions and urges for new regulatory authority and challenges.

c. Cynthia Wevi Cai This paper leverage the gap between Economics and Financial research based on two applications of Fintech 1) Crowdfunding and 2) Block chain technology. The analysis states that the research on fintech is limited due to theoretical limitations. The paper further stated that crowdfunding and blockchain technology are the major platforms by which the financial institutions make an alternative. It concludes with that new intermediaries were created through block chain technology.

3.Objectives of the study:

- to study the recent trends in financial innovations and its impact on financial services.
- to study the growth and trends of fintech in India.
- to understand fintech and its security features relevant to the customers and the companies.

4. Analysis and Interpretation

The paper concentrates on Fintech, block chain technology, AI and cyber security and big data and cloud

a. Fintech trends:

Fintech is a combination of technology and financial services, it changes and transforms the business and its operations between the companies and customers. Fintech regulates and organizes the business in a better way. Fintech is used by all types of companies from start-up to well established companies. Due to huge requirements and changes in financial operations and services necessitate the new technology world wide.

Table-1 Worldwide Investments into fintech companies from 2015 to 2021 (in billion U.S dollars)

year	billion U.S dollars	Percentage increase
2015	67.1	-
2016	63.4	-5.514
2017	59.2	-6.624
2018	148.6	151.014
2019	213.8	43.876
2020	124.9	-41.471
2021	210.1	68.214

Source: Statista 2022

The above table shows that worldwide investments into fintech companies increased dramatically between 2017 and 2018, it reached 151.014% increase and between 2018 to 2019 it reached 43.876%. In 2020 fintech companies saw investments drop by more than one third, reaching a percentage decrease of -41.471, the investment value increased in 2021 up to 68.214% again. The investment value shows the performance of fintech companies in the world market.

Table -2 Contribution of technology to Customer retention (Technology,Media and Telecommunication) and FS(Financial services)

Areas of customer retention	TMT% FS%
Personal digital contact	13.2 9.1
Personalized service	11.5 10.8
trust	10.2 10.9
faster service and processors	9.4 12.2
Ease of use	9.2 13.1
Cost(cheaper,lower rate)	8.9 8.1
Design of interface and platform	8.6 7.9
product design	7.7 8.5
personal human contact	7.1 7.2
Rewards	6.7 5.1

source:PwC Global Fintech Survey 2019

The above table shows that for financial services the technology ease to use is 13.1% and the next contribution is faster service and processors 12.2%. This shows the consumers prefer faster and ease to use technology.

TMT% and FS%

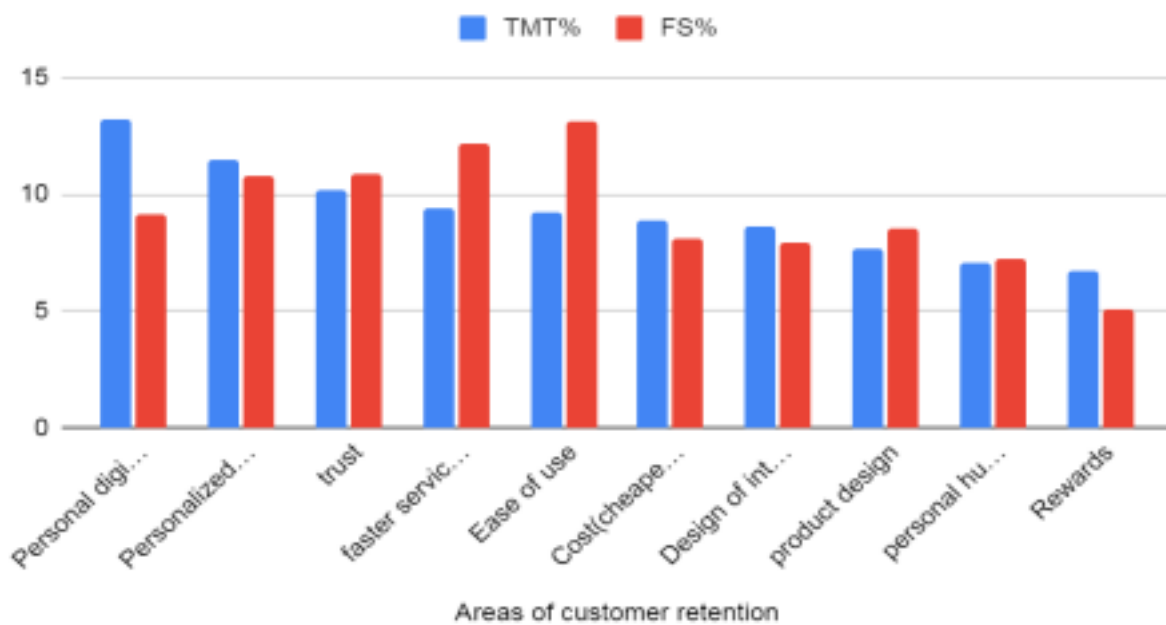


Table 3-showing contribution of technology in (**Technology,Media and Telecommunication**) and **FS(Financial services)**)

Technology	TMT% FS%
Internet of Things(IOT)	52 36
Artificial Intelligence	51 56
5G	48 39
Cloud	45 43
Big Data	44 44
Block chain	41 40
Robotic process automation	40 31
Voice technology	40 29
Biometrics	40 28

The above table shows that the technology Artificial Intelligence (AI) contributes 56% in Financial services ,Big data 44%,cloud 43% and Block chain 40%. The latest technological innovations interface with the financial sector and the financial concepts by which the integration leads to the development of both the sectors by large.

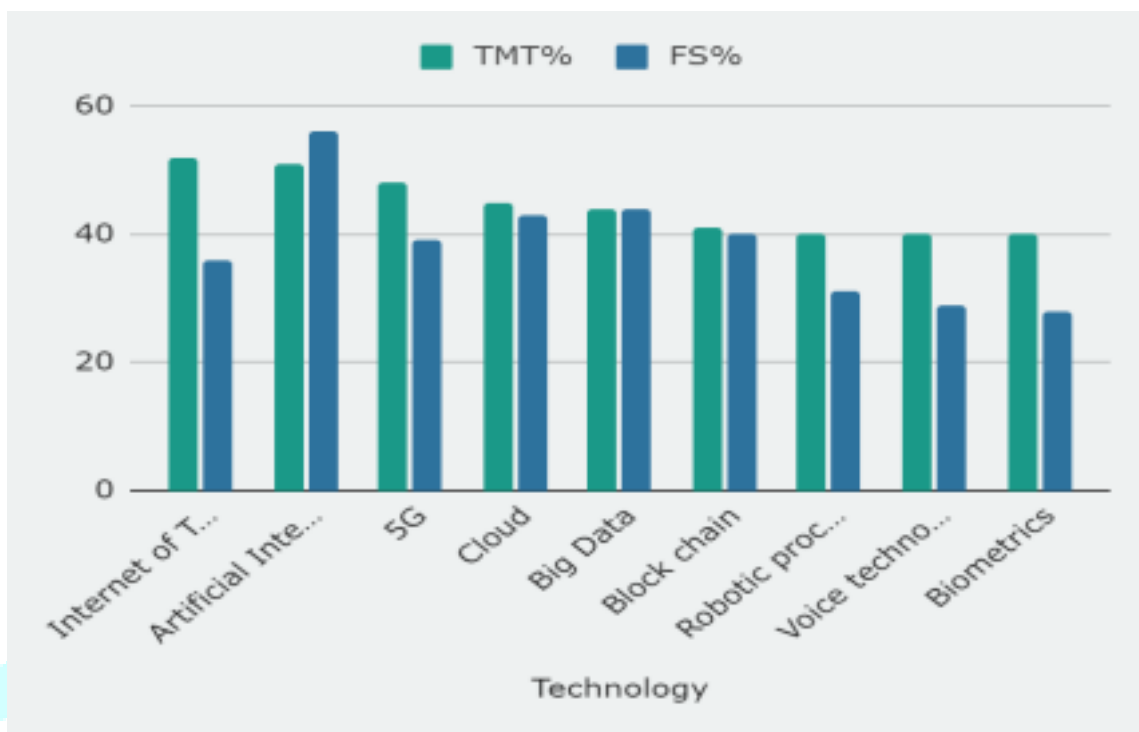


Table 4: Comparative analysis of Block chain Technology and artificial intelligence growth

year	Market size in Percentage million US \$block e increase chain technology	Market size in Percentage million US increase \$Artificial intelligence
2016	210.2 -	357.89 -
2017	399.5 90%	841.13 135.02
2018	548.2 37.22%	1622.4 92.88
2019	885.4 61.51%	2887.54 77.95
2020	1430 61.50%	4806.3 66.44
2021	2322.5 62.41%	7714.17 60.50
Mean	965.97	3038
Variance	625719	7805847
S.D	791.02	2793
Coefficient of Variance	81.88	91.95
Kurtosis	0.709074	0.260112
K-S test statistic	.21855	.2106
Correlation	0.9988	
P value	.8825	.9058

Source:Statista

The above table shows analysis of market size of block stain technology and artificial intelligence the percentage increase in the years 2016 and 2017 is high in both blockchain technology and artificial intelligence.The variance and the standard deviation of both the technology shows that they differ in the market size year by year.The increase

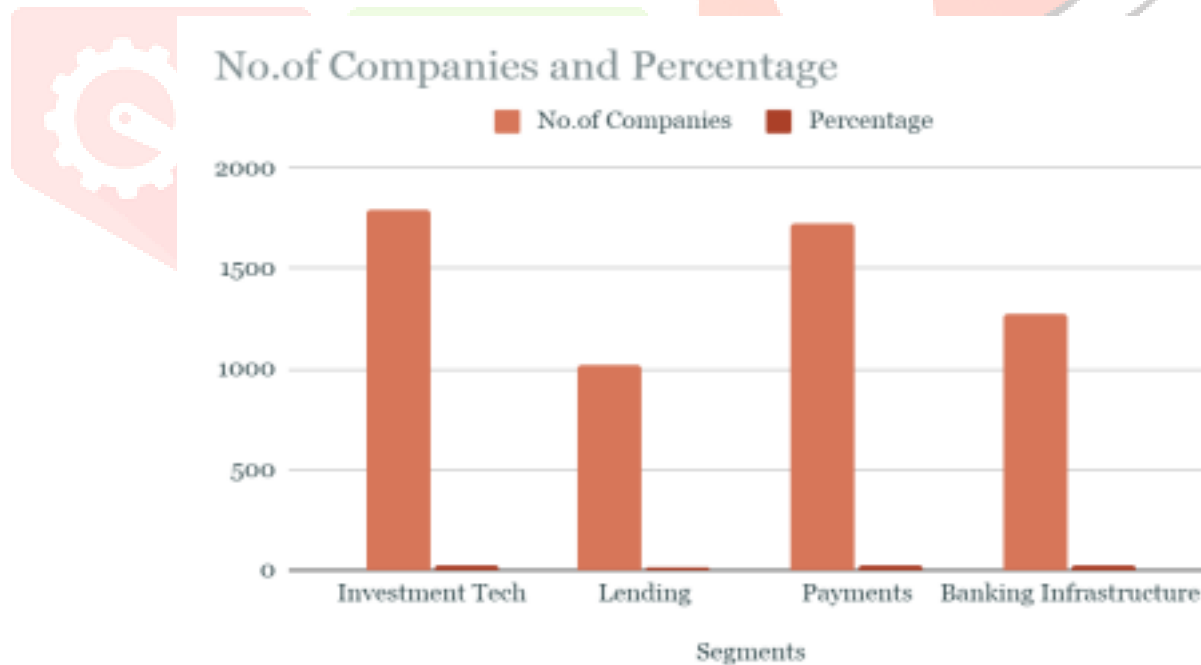
in the both the technology where high till 2019 where as after 2019 it started decrease in there percentage increase. coefficient of variance is high in both the cases and correlation is strongly positive since both the technology increasing in its market size at the same sense that the data does not differ significantly from the normal distribution. It can be inference that both the technology has the similar line of market size and the performance value in the global market

Table 5:Segment Wise fintech companies in India

Segments	No.of Companies	Percentage
Investment Tech	1788	28
Lending	1021	16
Payments	1725	27
Banking Infrastructure	1277	20
	6386	100

Source:BLinc insights

The above table shows that segment wise fin tech companies in India the major contributors are Digital payments(27%) and investment Tech(28%).



The above charts depicts segment wise contributors towards Fintech companies, digital payments and investment tech are the major contributors.

Table 6:Fin tech Funding in India

Year	Amount in billion \$
2017	3.7
2018	2.1
2019	4
2020	2.7
2021	3.1

Source: Statista

The above table shows the growth of Fintech funding in India. The funding was high (4 billion \$) in 2019 and in 2021 it is 3.1 billion \$.

Cyber security

Cyber security is the convergence of people, processes and technology that come together to protect organizations, individuals or networks from digital attacks.

Cyber security is the protection of internet-connected systems, including hardware, software and data, from cyber-attacks. Cyber Security is important because without any understanding or consideration of the issue of the attacks will be of very intense.

5. Summary of findings:

1. Technological innovations create a lot of impact on the financial service sector, the impact is in such a way that both technologies are ahead with advancement and requirements of the customers.
2. Investments in fintech companies increased worldwide.
3. Digital payments is considered to be the major transaction in the financial service sector. The companies that were dealing with these transactions give the support to the technological companies and supporting platforms.
4. In the financial service sector artificial intelligence contributes more when compared to other technologies.
5. The technology development companies consider using the ease of technology services and personalized services are the main priority towards their end users.
6. Block chain technology creates Trend in encrypt asset and converge artificial intelligence
7. Customer intelligent platforms provide customer engagement optimization and integration of various apps and provide real-time feedback and insights.
8. Artificial intelligence is the backbone of financial sector innovations and its development.

9. Financial technology companies faces a very huge challenge on the cyber security issues.This is due to the development of social media , internet financial data hacking and online payments and purchases.The security of the financial data is more important when compared to other data.

6. Conclusions

It can be concluded that financial innovations and its challenges are related with technological innovations and its platform. Financial data must be highly secured and the various trends such as fintech blockchain internet artificial intelligence provides an effective platform and support for all the financial innovations in the financial service sector.

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