Leveraging Fin-tech to Transformation and Promotion of Financial Inclusion - A Smart PLS Approach

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Abstract:

The idea to write this paper is to examine the dynamic and integrated thinking of Fin-tech environment to promote "Financial inclusion". We selected four endogenous variables i.e. (Banking, Wealth management, Risk management, Insurance) which could impact on the success or failure of "Financial Inclusion" through fin-tech. This paper finds and enlightens the synergic relationship of fin-tech and financial inclusion through SMART-PLS. For this research the endogenous variable is "financial inclusion" and exogenous variable is "fin-tech". We develop a Likert scale questionnaire, and follow convenient sampling methodology. We have 165 responses from different domain of financial professional who have more than seven years of experience. All the finding having a quantified relevance with our findings, and further develop inside-out/outside approach. This paper identified the most significant factors which is having a highest impact on financial inclusions, and develop a cyclical relationship among them in a long-run.

Key words: *Sustainability, exogenous, endogenous, SMART-PLS, latent variable*

Introduction

There must be an effort to involve as many people from all facets of society as possible in the development of the Indian economy, particularly when the goal is to achieve sustainable development. The country's rural population lacks financial literacy and awareness, and the majority of people do not have access to formal credit, which is a barrier to the economy's expansion. This is a significant problem for the nation's economic development.

Since early 2015, the term "fintech" has become more common. This refers to the merging of financial services offered by different clients with improvements and advancements in the technological sphere. FinTech, or new financial technologies, has exploded globally. As a result, over the past five years, academic writing on fintech has significantly increased.

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FinTech encourages the expansion of the financial sector. In order to lessen information asymmetry, it will be simpler to gather and evaluate data in the financial market. FinTech, a recently coined term in the financial sector, is now frequently used to refer to cutting-edge technologies embraced by financial service providers. Artificial intelligence and big data-based trading and investment techniques can reinvent the financial market's price discovery mechanism and increase transaction speed, fostering the market's liquidity and boosting its efficiency and stability. More effectively analysing, forewarning about, and preventing systemic hazards in the financial sector.

The fundamental idea is that Fintech evolved more out of necessity than innovation, primarily as a result of advances in the field of financing services and the explosive growth of technology. Since technology and financial services are being combined in this case, a number of platforms and applications are being created to make it easier for you to use financial services like banking, insurance, risk management, and wealth management.

Literature Review

Financial technology is altering market structures in the provision of financial services by enhancing existing business models and creating new ones. Growing connectivity, improved network effects, and an ever-improving capacity for data processing have all contributed to the extremely high levels of investor interest in fintech. The impact of fintech on financial inclusion is having a revolutionary effect on growth and development in some country contexts. This is encouraging because rapid innovation and adoption of new technology almost always drives transformation at the size and pace required to realise objectives like those outlined in the Sustainable Development Goals. The growth of fintech is hastening financial inclusion and economic participation in developing countries, but it also carries risks for both individuals and the system as a whole. (Rose Innes & Andrieu, 2022)

(Sekmen & Hatipoglu, 2019) The research stated that the most significant factor affecting the state of the market today is technological progress. The way the financial system functions could change as a result of the adoption of these innovations. High-frequency trading and algorithmic trading, two relatively recent developments in the financial markets, have a significant impact on a number of market indices, including liquidity, competition, pricing efficiency, market quality, and volatility. But the extent and trajectory of these effects are still unclear to us. Therefore, even though improvements in financial technology are essential for market expansion, they have the potential to have a significant disruptive effect on the financial markets. Once a market function changes, all market participants require some time to adapt. As a result, regulatory organisations need to closely monitor technological developments in the financial markets and develop adequate safety measures to prevent any potential disruption.

(Mohammed, 2021) The results of the study suggest that effective financial decisions serve as a link between successful financial risk management and effective derivative strategies. The availability of effective derivative strategies and the timely application of those techniques

improve the effectiveness of financial decisions regarding investments, loans, credits, the purchase of any policy, and expenditures. By minimising the risks, good financial decisions enable the FRM to lessen the adverse effects of hazards. When creating and putting into practise financial strategies to prevent or reduce risk damages, hedging promotes excellent decision-making, which is crucial to financial risk management. Making sound financial decisions is crucial for managing a company's overall operations.

(Ivana Martinèeviæ et al., 2020) The financial technology (fintech) revolution in the financial industry is examined in the article "Fintech Revolution in the Financial Industry" by Ismail Musabegovic, with particular attention paid to both the advantages and disadvantages of this development. According to the author, fintech has the power to upend the conventional financial sector and open up brand-new prospects for development and expansion. In the study, the effects of fintech are examined on a number of facets of the financial sector, including banking, payments, and investment management. The identified research gap is the need for more empirical studies on the efficiency of fintech in addressing the difficulties of financial inclusion and promoting access to financial services, especially in developing nations. In order to fully reap the rewards of fintech, the study emphasises the significance of collaboration between fintech businesses and conventional financial institutions.

Fintech credit has periodically made it easier for financially marginalized businesses and individuals to access capital while providing investors with more choices. However, increasing credit losses in some nations suggest that additional testing of these innovations over the course of an entire financial and economic cycle is required. The variety of business structures in the industry has posed significant challenges for both practitioners and regulators. These challenges include ensuring appropriate investor and consumer protection as well as the prompt assessment of risks to the financial stability of the economy as a whole. Fintech lending offers both challenges and opportunities, but both of these effects could be strengthened if commercial banks adopt these innovations more widely. (Stijn Claessens et al., 2020)

(Mercurius Broto Legowo et al., 2021)The paper focuses on the historical, contemporary, and future effects of business drivers, FinTech mechanics, and technological innovation on the existence of FinTech and the Bank. It is anticipated that the current partnership between the modern bank and the fintech industry will increase financial inclusion in banking. Future FinTech and BigTech companies must be carefully considered by the Future Bank. In order to inform future ideas, research is necessary to fully understand the impact of FinTech on banks and banking systems.

Ismail Musabegovic's article, "Influence of Financial Technology (FinTech) on Financial Industry," examines how fintech has affected the financial sector. The study examines the potential advantages and drawbacks of fintech for consumers and financial institutions, including increased effectiveness, lower costs, and greater access to financial services. The author also emphasises potential hazards like regulatory difficulties and cyberthreats. More empirical research on the effects of fintech on financial institutions and consumers is required to fill

the identified research gap, particularly in regards to its impact on financial stability, consumer protection, and the role of regulators. (Ismail Musabegovic et al., 2019, #)

(Gabor & Brooks, 2017) The impact of financial technology (fintech) on financial inclusion in developing countries is examined in Daniela Gabor's article, "The Digital Revolution in Financial Inclusion: International Development in the Fintech Era." The author contends that while fintech may increase underserved populations' access to financial services, it also presents difficulties like the digital divide and the possibility of financial exclusion. The article emphasises the need for more investigation into the potential risks and advantages of fintech as well as its role in promoting financial inclusion. The need for a more detailed understanding - how fintech affects financial inclusion, particularly in low-income and developing countries, has been identified as a research gap.

(Morgan, 2022) Peter J. Morgan examines the effects of financial technology (fintech) on financial inclusion in Southeast Asia and India in his article "Fintech and Financial Inclusion in Southeast Asia and India." The potential advantages and difficulties of fintech for fostering financial inclusion in the area are analysed by the author. According to the study, fintech can increase underserved populations' access to financial services, especially in rural areas. It also highlights potential hazards like worries about data privacy and the digital divide. More empirical research on the efficiency of fintech in promoting financial inclusion in Southeast Asia and India is required, particularly in terms of its impact on poverty reduction and economic growth. This research gap has been identified.

(Bazarbash, 2019) Majid Bazarbash's article "FinTech in Financial Inclusion: Machine Learning Applications in Assessing..." explores how machine learning can be used to evaluate credit risk and advance financial inclusion. The study looks at how well machine learning algorithms can predict borrowers' creditworthiness, especially when it comes to underserved populations. The author makes the case that machine learning can increase financial inclusion by decreasing bias in current credit scoring techniques and increasing credit availability for underserved groups. More empirical research is needed to determine how well machine learning algorithms work to promote financial inclusion, especially in developing nations where it can be difficult to assess credit risk because of the lack of credit history and information.

Major Reference

Report of RBI - National Strategy for Financial Inclusion 2019-24

The importance of financial inclusion in promoting economic growth and reducing poverty is becoming more widely acknowledged. The ability to access formal financing can increase job growth, reduce sensitivity to economic shocks, and boost investments in human capital.

Source: AffairsCloud.com

The six pillar of the national strategy are:

- Universal access to financial services
- Providing basic bouquet of financial services
- Access to livelihood and skill development
- Financial literacy and education
- Customer protection and Grievance redressal
- Effective Coordination

Our research revolves around the primary pillar of the national strategy i.e. "*Universal access to financial services"*. Any member of society, regardless of their income level, social standing, or geographic location, should have access to financial services. This is known as having universal access to financial services. It is a crucial part of financial inclusion, which aims to advance economic growth, combat poverty, and enhance the welfare of individuals and communities.

In order to promote financial inclusion and economic development in India, the National Strategy for Financial Inclusion 2019–24 places a strong emphasis on the value of universal access to financial services as a key pillar of its initiatives. The strategy aims to ensure that everyone has access to a variety of cost-effective and accessible financial services that can help them boost their quality of life and livelihoods, regardless of their socioeconomic status or location.

Objective

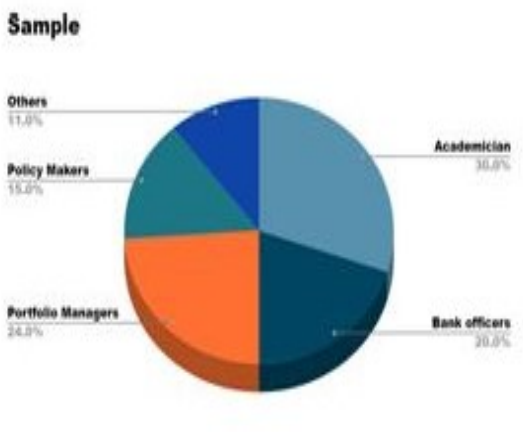
- To understand the role of Fintech in promoting financial inclusion
- To explore and quantify the impact of Fintech on the Banking Sector
- To understand and quantify the role of Fintech in Insurance Industry
- To quantify and assess the role of Fintech played in wealth management
- To comprehend the role of fintech in Risk management

Research Methodology

Data Collection and Demographic Analysis

We have selected the sample size through convenience sampling. The primary data is collected for the research. A questionnaire was circulated in the northern part of India. A total of 185 responses were collected. The gender ratio of the respondents was, 44% of the respondents were female and 56% were male. The composition of the sample was, 30% were academician, 24% were portfolio managers, 20% of the sample size was bank officers, 15% were policy makers and the remaining 11% includes students and people with different prowess.

Convenience sample size suggested by Barclay et al.(1995), must be ten times of the number of arrows pointing towards specific constants. In our model given above, there are 17 arrows so the sample size should be minimum 170. Our sample size is 185 which is significant in number to run the research model.



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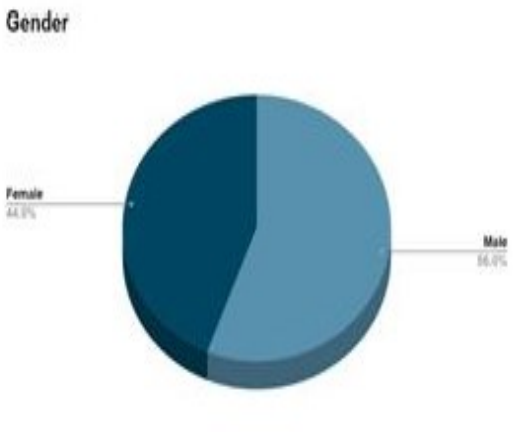

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Hypothesis

To understand the role of Fintech in promoting financial inclusion, we came up with the following as our hypothesis.

H0: Fintech is positively and significantly inclined with financial inclusion

H1: Fintech is not positively and significantly inclined with financial inclusion

In order to comprehend whether Fintech plays a role in transforming the financial industry, the following are the hypothesis.

H0: Fintech plays a significant role and has brought a positive shift in the financial industry.

H1: Fintech does not play a significant role and has not brought a positive shift in the financial industry.

In the research, we aim to develop a quantitative model ***"Leveraging Fintech To Accelerate Financial Inclusion - F2F Model"***. This model will facilitate us in testing our hypothesis.

(Leveraging Fintech To Accelerate Financial Inclusion) - SMART PLS

There are separate exogenous and endogenous variables for both of our hypotheses which will be tested in our research model.

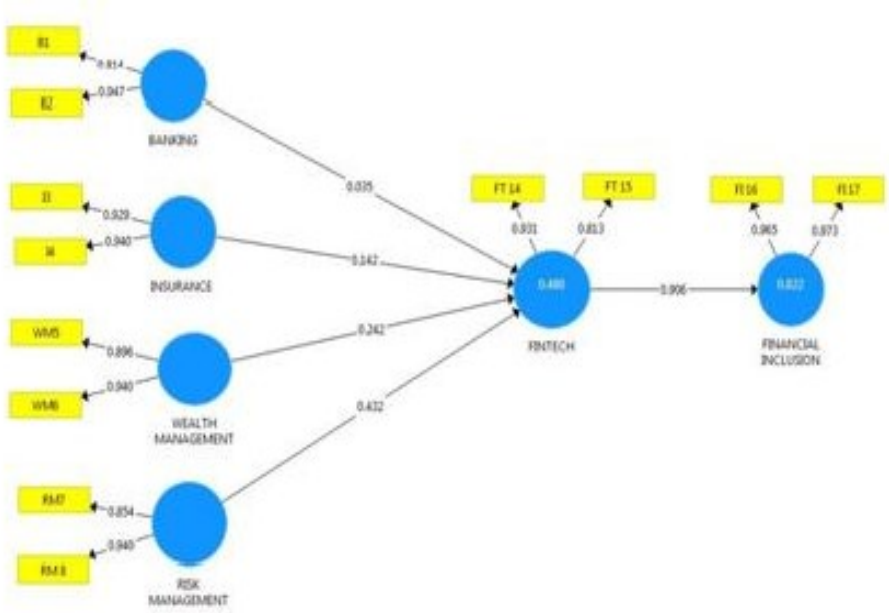
H0: Fintech is positively and significantly inclined with financial inclusion

Exogenous Variables	Endogenous Variables
Banking	Fintech
Insurance	
Wealth Management	
Risk Management	

H0: Fintech plays a significant role and has brought a positive shift in the financial industry.

Exogenous Variables	Endogenous Variables
Fintech	Financial Inclusion

Fig- 1



The blue circles depict the exogenous and endogenous variables of our hypotheses, and these yellow boxes are the sub variables of these exogenous and endogenous variables. Arrows depict presumably causal relationships. A single arrow directs attention from cause to effect. The direct impact of one variable assumed to be a cause on another variable assumed to be an effect is indicated by a path coefficient. As path coefficients are computed using regressions, they are not standardized. The main purpose of regression analysis is to identify the relationships between changes in the independent variables and changes in the dependent variable.

For evaluating one of our hypotheses, fintech plays a significant role and has brought a positive shift in the financial industry. For this study, the exogenous variables, or independent variables, include banking, insurance, wealth management, and risk management. The dependent variable, or endogenous variable, is fintech.

The coefficient of regression of sub variables (B1, B2, I3, I4, WM5, WM6, RM7, RM8) in the case of banking, insurance, wealth management and risk management reflect that the variables have a direct relationship.

Banking and insurance's coefficients of regression in relation to fintech are 0.035 and 0.142, respectively, indicating that changes in these independent variables (banking & insurance) won't have a substantial impact on fintech. Regression coefficients for wealth management

and risk management in relation to fintech are, respectively, 0.242 and 0.432, both of which are marginally significant. This illustrates how the movement of these two exogenous factors will result in a small change in the endogenous variable, which is Fintech.

The other hypothesis, fintech is positively and significantly inclined with financial inclusion. For validating it, the exogenous variable is Fintech and Financial inclusion in our endogenous variable. The coefficient of regression between both variables is 0.906. This indicates that the movement in Fintech will strongly lead to the movement of financial inclusion.

The Adjusted R-squared accounts for the number of independent factors used to forecast the target variable. By considering the effect of additional independent variables that have a tendency to distort the outcomes of R-squared measurements, adjusted R-squared, a modified form of R-squared, increases accuracy and reliability.

By looking at the model, we can make a primary observation of the endogenous variable. The number of circles shows how much the variance of the latent variable is being explained by the other one variable. Further the number of arrows represent the path coefficient.

The coefficient of the determination, **R2 is 0.480** for "Fintech" endogenous latent variable. This means that sic latent variables explain **48%** for the variance in "Fintech" The coefficient of the determination, **R2 is 0.882** for "Financial Inclusion" endogenous latent variable. This means that sic latent variables explain **82.2%** for the variance in "Financial Inclusion" Hair et al (2011, 2013) suggest focuses on marketing issues, R2 value of 0.75..0.50 & .25 respectively substantial, moderate & weak for endogenous latent variable.

Adjusted R Square

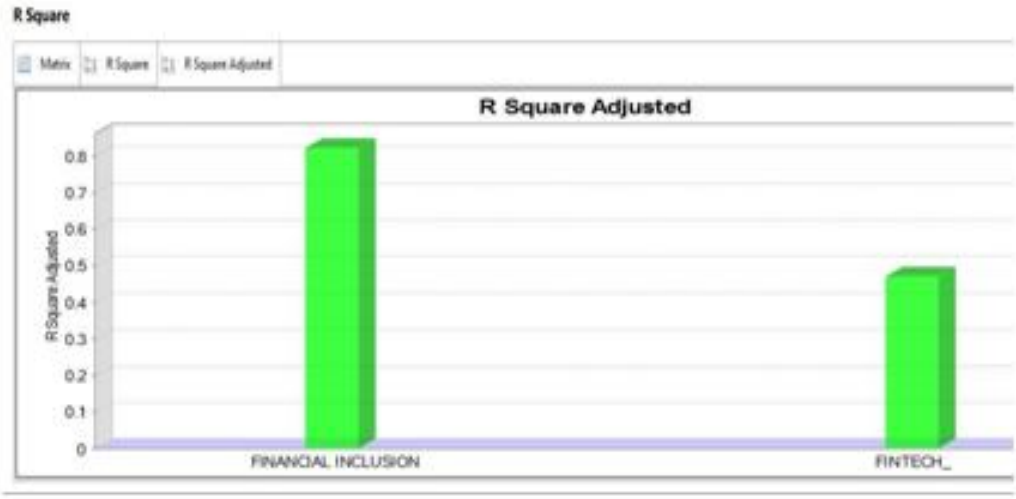


Fig- 2Source: Computed

Discriminant Validity - Fornell-Larcker Criterion

Discriminant Validity

Fornell-Larcker Criterion | Cross Loadings | Heterotrait-Monotrait Ratio (HTMT) | Heterotrait-Monotrait Ratio (HTMT)

	BANKING	FINANCIAL IN...	FINTECH_	INSURANCE	RISK MANAGE...	WEALTH MAN...
BANKING	0.883					
FINANCIAL IN...	0.437	0.969				
FINTECH_	0.397	0.906	0.874			
INSURANCE	0.866	0.436	0.387	0.935		
RISK MANAGE...	0.352	0.613	0.632	0.286	0.898	
WEALTH MAN...	0.360	0.521	0.571	0.381	0.608	0.918

Fig-3 Source: Computed

The discriminant validity test is a statistical study used to determine whether two notions or measures are distinct and do not overlap. One of the most widely used methods for evaluating the discriminant validity of measurement models is the Fronell-Larcker criterion. This criterion states that the correlation between a construct and any other construct, must be greater than the square root of the average variance extracted by the construct.

The degree of shared variance between the latent variables of the model has typically been evaluated using the Fornell-Larcker (1981) criterion.

Each latent variable's square root of AVE should be greater than the correlation coefficient among the latent variables according to Gefen, D., & Straub, D. (2005).

- As the correlation between a construct and the relevant latent variable in our model is larger than the correlation between the construct and other latent variables in the model, thus the construct has good discriminant validity.
- A careful examination reveals that this criterion is met. Once we've accomplished this, we can say with certainty that the study's discriminant validity has been proven.

Construct Reliability and Validity - Cronbach's Alpha

Construct Reliability and Validity is carried out to ensure the validity and reliability of the research findings as well as the quality and accuracy of the measurement instrument. Under this test, Cronbrach's Alpha is a tool used to evaluate a measurement instrument's internal consistency and to guarantee the reliability and accuracy of findings.

The internal consistency of a set of items, or how closely related they are to one another as a group, is measured by Cronbach's alpha. It is regarded as a measure of the reliability of the scale.

Construct Reliability and Validity

Matrix	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
	Cronbach's Al...	rho_A	Composite Rel...	Average Varian...
BANKING	0.738	0.924	0.876	0.780
FINANCIAL IN...	0.936	0.947	0.969	0.939
FINTECH_	0.705	0.812	0.866	0.764
INSURANCE	0.855	0.860	0.932	0.873
RISK MANAGE...	0.770	0.868	0.893	0.807
WEALTH MAN...	0.817	0.858	0.915	0.843

Fig-4 Source: Computed

- Banking, Insurance, Wealth management and Risk management are very good predictor of Fintech as the values are more than .7
- To test the internal consistency reliability shows the value, past literature suggest to use "composite reliability" as a replacement of Cronbach alpha (Bagozzi & Yi, 1998; Hair et al,2012). From the table all values show more than.7, higher level of internal consistency reliability has been reflected in all the latent variables.

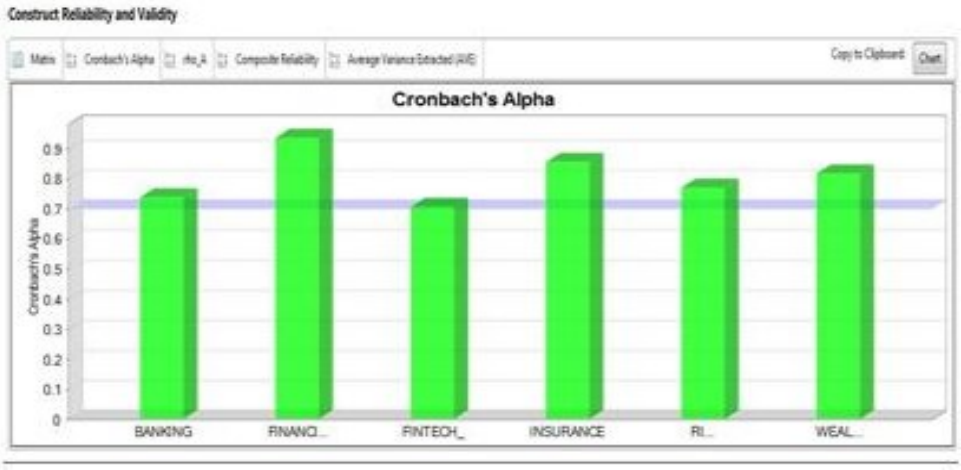


Fig-5 Source: Computed

Model Fit

The model fit analysis in SMART-PLS done by SRMR. Standardized root mean squared residual, the difference between actual and predictor is known as residual. Hu & Bentler (1999) suggested that SRMS close to .8 or less than is a reasonable fit. A zero value indicates a perfect fit between actual and prediction. **The SRMR value of our model output given by SMART-PLS is 0.083. This output value signifies that the model has a good fit.**

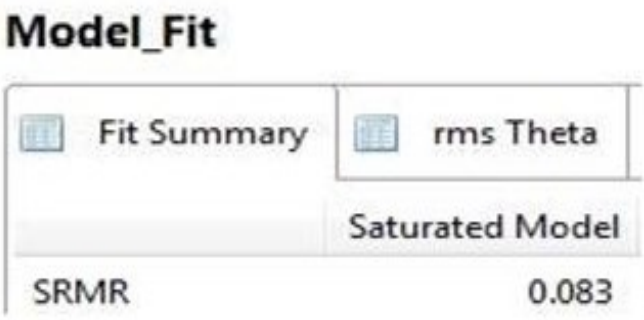


Fig-6 Source: Computed

Conclusion

Fintech has been instrumental in fostering financial inclusion by giving underserved communities access to convenient and affordable financial services. Fintech is assisting in bridging the financial divide between the economically excluded and the mainstream economy through digital payments, microfinance, mobile banking, and financial education. Fintech has revolutionised the financial sector by increasing the usability, effectiveness, and affordability of financial services. Fintech's continued development will probably lead to more innovation and disruption in the financial sector.

Customers are typically less likely to adopt new technologies owing to their faith and confidence in the traditional banking and insurance systems. Customers' satisfaction with privacy and security issues is a prerequisite for the adoption of new technologies. Even though it is quicker and less expensive than using traditional methods, it still takes some time to gain the trust of the customer.

The financial industry's wealth management sector has been significantly impacted by fintech, which has sparked innovation, increased productivity, and improved client satisfaction. Fintech's continued development will probably lead to more disruption and change in the wealth management sector.

Fintech has significantly impacted risk management in the financial sector by enhancing financial institutions' capacity for data collection and analysis, fraud and cyber threat detection, and regulatory compliance. Fintech's continued development will probably lead to more

advancements in risk management innovation and assist financial institutions in better managing and mitigating risk.

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