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IMPACT OF COVID-19 PANDEMIC ON FINTECH AND FINANCIAL INCLUSION IN INDIA

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ABSTRACT

The study seeks to investigate how the pandemic of Covid-19 has impacted customer engagement in using Fintech services and resultantly the status of financial inclusion in India. This study is empirical and analytical in nature. Digital payment is taken as a proxy of FinTech. The data is collected from primary and secondary sources. To understand what persuades a customer to use FinTech services, the response to a survey questionnaire has been obtained from 310 respondents through e-mail and hand collection. Factor analysis is used to investigate the factors that impacted customer engagement in digital payment, before and after the Covid-19 pandemic. The factors used in this model are access, usage, technology, and financial literacy. Results show that there is a significant positive relationship between all the factors and the use of FinTech services. There is a significant positive relationship between FinTech and financial inclusion, as already established by the previous studies. The findings of this review are pivotal as they can serve as useful input for the ongoing debate directed towards increased use of FinTech in achieving greater financial inclusion. The findings suggest that by advancing the technology and increasing financial literacy, access, and use of FinTech services can be increased which in turn will increase financial inclusion in developing countries.

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INTRODUCTION

The pandemic of Covid-19 has impacted every walk of life in a great way. The finance sector has also been greatly impacted by this pandemic, because of lockdown they could transact in cash. This situation called for an environment, where the entire population have a bank account, so that they may transact electronically. Unfortunately, this is not the case with India. India is a developing country, and its population is 1380 million. Around 20% people of in India do not have bank accounts (Statista, 2020) and millions more do not use their bank accounts regularly (Ernst & Young, 2019). Financial inclusion in India till now is 80% and the second largest-unbanked population in the world. According to the World Bank's Global FinDex database report, "when we dug deep, we discovered that approximately 48 percent of the country's bank accounts have seen no transaction records." The data indicates the grave issue in achieving financial inclusion, which is one of the frameworks through which Inclusive growth can be accomplished in developing countries like India (Morgan & Pontines, 2014). “Financial inclusion is intended to pull the “unbanked” people into theofficial financial system, with a view to providing financial services covering from payments, savings, and transfers to credit and insurance.” Financial inclusion encompasses access to financial products and services such as bank insurance, bank accounts payment services & remittance, financial consultancy, etc. (Durai & Stella, 2019).

Sustainable Development Goals (2030) financial inclusion is positioned noticeably as an enabler of other developmental goals, with a target in eight of the seventeen goals. SDG 1 is about eliminating poverty; SDG 2 is about achieving food security, ending hunger, and promoting sustainable agriculture; SDG 3 is about profiting from health and well-being; SDG 5 is about achieving gender equality and economic empowerment of women; SDG 8 is about promoting jobs and economic growth; SDG 9 is about supporting innovation, industry, and infrastructure; and SDG 10 is about reducing inequality (Truby, 2020). Furthermore, there is an implied role for greater financial inclusion in SDG 17 on improving the means of implementation through increased savings mobilization for investment and consumption, which

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can stimulate growth. Financial inclusion is a process of providing access to the financial services and products for the most vulnerable groups such as people from low-income and weaker sections of society at a very low affordable cost in a proper and transparent way by the recognized institutional participants (RBI Report, 2022). In order to increase the rate of Financial Inclusion in India, the government introduced a very promising scheme, named Pradhan Mantri Jan Dhan Yojana (PMJDY) in 2015. The primary reason for this scheme is that each resident of India should have easy access to open saving accounts and the advantages of this scheme such as RuPay debit and credit cards, zero balance accounts, and a simple loan option. This scheme gives them trust in a superior tomorrow (Joshi & Rajpurohit, 2016). After all these steps taken by the Government of India, there is uneven access to financial services with 20% of the population being unbanked and in 80% of financial inclusion, half of them or half of the bank accounts are inoperative means they are not using their accounts or no transactions since long (World Bank Report, 2020; Statista, 2020).

To address this problem, Financial Technology (FinTech) is one of the most widely researched areas at the present time. FinTech is the use of modern innovation in the field of finance. It is fundamentally the utilization of creative and disruptive innovation for offering financial services (Rabbani et al., 2020). The term "FinTech" refers to corporations or company representatives combining financial services with new innovative technologies (Dorfleitner et al., 2017). Vasiljeva and Lukanova (2016) "They look like banks, they talk like banks, but are not regulated like banks." Furthermore, the expression FinTech is fresh to the new development and integration. In the banking business, there are several innovations and developments that are transforming customers' behavior and their knowledge of financial services. Firms are offering noveldigital solutions as alternatives to traditional banking services (Senyo & Karanasios, 2020). The more extensive objective of financial technology is to meet the unmet demand of those, whose financial needs are not being fulfilled by traditional financial players. So, in a way, FinTech expects to add to the more extensive objective of financial inclusion (Popescu, 2019). Mehrotra (2019) FinTech is helpingwomen, the poor, farmers, and youngsters to avail of financial services riding on the technology of smartphones, network coverage, mobile-based banking, and financial solutions and thus bringing them under the ambit of financial inclusion. Nair et al. (2021) the FinTech Revolution creates new avenues for financial inclusion. This applies specifically to theutilization of digital money, mobile accounts, e-wallets, and the formation of biometric smart cards (Naumenkova et al., 2019).

The COVID-19 epidemic has forced adjustments in many segments of the economy and business plans, along with customer behavior in a wide range of fields, including day-to-day payment patterns. Many digital solutions have enabled cashless payments. The links between payments, pandemics, and technology are becoming clearer, particularly since the COVID-19 epidemic has been identified as a driver of the digital transition (Huterska et al., 2021). The Pandemic has given rise to the need for contactless payment and this fact has significantly increased the use of digital payment. As a result, the use of alternative payment methods is increasing. The mobile wallet has been one of the tools in use. Mobile payment methods have provided convenient and simple services to a multi-functional network. Mobile payment refers to a specific payment method performed on mobile devices. There are several types of mobile payment services available. In addition, dueto the Covid-19 outbreak and the virus's rapid global spread, various procedures such as alternative paymentoptions instead of cash have been modified. Several experts advise decreasing the use of cash so that consumers can apply alternate techniques (Alwi et al., 2021). Prior research has been heavily focused on opportunities and challenges, trends, and growth in the payment system (FinTech) same country or across countries (Suryono et al., 2020; Nurfadilah & Samidi, 2021; Tonuchi, 2020; Tripalupi & Anggahegari, 2020). The impact of FinTech on financial inclusion in the setup of a covid-19 pandemic is a less explored area and very limited research available on this. To fill this void, this research attempts to specifically understand the impact of digital payment on financial inclusion in India under a covid-19 situation.

The study is empirical and analytical in nature and depends on both primary and secondary data. 310 respondents completed a self-administered questionnaire in primary data, and secondary data were obtained from the RBI Report (2022), Global FinTech reports, FinTech company's reports, articles, blogs, and other scholastic journals during theyear 2018-2021. The study employed factor analysis to assess the impact of the Covid-19 epidemic on India's payment system, FinTech, and financial inclusion. This result indicates there is a significant and positive relationship between digital payments and financial inclusion. Covid-19 has caused a tremendous amount of volatility and has changed the segment for good. Access, Usage, Technology, and financial literacy are the factors significantly contributing to increasing the use of FinTech and ultimately the rate of financial inclusion. Our study suggests that financial literacy is a very crucial factor in accelerating the growth of financial inclusion. Policymakers must emphasize to increase the rate of financial literacy to achieve the objectives of financial inclusion and inclusive growth.

The rest of the work is organized as follows: First part gives an overview of the subject matter. Then we conducted a literature review on covid-19 surrounding FinTech, digital payment, and Financial Inclusion. The third section consists of research methodology, formulation of objectives, and hypothesis development. The fourthpart includes testing of hypothesis, analysis of data, and discussions. Lastly, the fifth part highlights the research outcomes, conclusion, limitations, and further research.

Objectives of the Study

- To study the adoption of payment systems before, during, and after the lockdown.
- To identify the reasons for the shift towards digital payments.
- To evaluate the impact of Covid 19 pandemic on FinTech and Financial Inclusion in India.
- To analyze the growth of FinTech and Financial inclusion in India during Covid 19.

LITERATURE REVIEW

The pandemic Covid-19 has had a substantial effect on speeding up the trend toward a cashless society everywhere. In the context of this pandemic condition, the tendency toward financial technology transactions has intensified. In their financial transactions and activities, consumers are aimingto reduce the use of cash. They are exploring alternate contactless payment techniques, without any physical intervention, to execute this electronically (Abu Daqar et al., 2021). Although conventional banking procedures have been questioned, COVID-19 has been used in digitization andnovel ways such as mobile e-wallets as an important step in individual banking and in cash. World Health Organization (WHO) warns individuals not to utilize cash as much as possible since coronavirus remains alive. The disease will therefore continue to spread. This has encouraged bankers to take imaginative and new payment options such as e-wallets into consideration (Alwi et al., 2021). Tut (2020) worked on pandemic evidence on electronic payment systems and find that consumers are moving away from the more expensive modes of payment and toward less expensive modes of payment. The first step toward financial inclusion is to have an account. A genuine inclusion necessitates the ability to use these accounts conveniently and safely (payments, digital payments via a mobile phone, or the internet) (Kasradze, 2020). The Global FinDex dataset includes information on who holds the account, as well as whether people make payments from these accounts. 1/5 of accountholders indicated that in the last 12 months they have been unable to put or withdraw money from their accounts andthese accounts are therefore regarded inactive and, of course, cannot be seen as supporting financing inclusion (Ozili & Arun, 2020). Despite the mammoth efforts of the government, the problem of financial exclusion is still haunting.

To solve this issue, FinTech is widely used nowadays by different countries. The term Financial Technology (FinTech) is the use of modern innovation in the field of finance. It is fundamentally the utilization of creative and disruptive innovation for offering financial services (Rabbani et al., 2020). The word "FinTech" refers to companies or representatives of companies that integrate financial services with advanced and modern technologies (Dorfleitner et al., 2017). FinTech functions in the finance industry are obvious and are aimed at offering cheaper prices, and greater and better access to all financial services (24/7) (Tam & Hanh, 2018). Senyo and Karanasios (2020) find that FinTech leverages existing infrastructure, acts as an aggregator and innovator, and uses a combination of strategies of competition and cooperation to solve the problem of financial inclusion. FinTech is the primary engine for financial inclusion in developed and emerging countries with the growth of Industrial Revolution 4.0 (Duvendack & Mader, 2019). Conducted a meta-analysis to understand the impact of FinTech on financial inclusion and found that the result was positive but not transformative.

Table 1. Selected Research on Payment, FinTech, Covid-19, and Financial Inclusion in India and Worldwide

Years	Author of the study/ Report	The subject of the study	Main findings of the study
2022	Chowdhury et al., 2022	The goal of this study is to determine E-Banking customers' faith in the influence of customer satisfaction on the E-Banking infrastructural facility and E-Banking Communication environment.	● It is found that the private bank's E-Banking Customer Trust value is much greater than that of the public banks. Customers, both male and female, have equal faith in the constantly expanding E-Banking transaction procedure. ● In the event of a Covid-19 pandemic, the E-Banking transaction procedure should swiftly expand in the future to ensure good health.
2021	Latta & Sarkar, 2021	This paper examined the role of the digital economy prior to and during COVID19, and also discuss the scope of digital use in the economy in various sectors and domains.	● The pandemic caused terror in people's thoughts as financial bills may beconsidered to convey the fatal infection. This made more complicated transactions for the common person. ● Mobile banking has been very useful in promoting social distancing policies andoffering clients 24/ 7 financial services during times like COVID-19.
2021	Huterska et al., 2021	The aim was to discover the elements that cause customers to select cashless payments in retail and service locations during the COVID-19 epidemic using card payments.	● The extraordinary circumstances of the COVID-19 outbreak influenced consumer behavior. It has been a driving force behind greater consumer acceptance of non-cash payments by emphasizing the significance of factors that were previously overlooked in customer choice and payment preferences research.
2021	Vasenska et al., 2021	The study is to use the financial technology of individual consumers in Bulgaria before and after the crisis. A questionnaire survey by 242 individual respondents is included in the approach.	● The results acquired from the current research show that most people do not yet know whether using FinTech instruments for financial transactions in banks or non-banks will influence the financial stability of economic objects during this crisis.

2021	Puthusserry et al., 2021	This study looks into a very essential but underutilized channel and focuses on its function in overcoming the multilayer mental distance experienced by Internationalizing SMEs originating in an emerging economy.	● They consider board members' roles in solving key internationalization difficulties, especially PD mitigation. Evenwhen compared to global trends, the Indian Fintech sector, which is characterized by creative start-ups, is seeing dramatic and quick expansion.
2021	Purba et al., 2021	To make an attempt by developing an approach for evaluating the digital innovation viewpoint in the use of Financial Technology by buyers, particularly in theperiod of the Covid-19 epidemic in Indonesia in 2020.	● With the presence of digital application technology, consumers can be placed using a financial technology installment stage just as a food conveyance include. ● This innovation can be introduced in the two IOS and Android cell phones to give safe, pleasant, beneficial, and efficient online ordering.
2021	Sharma et al., 2021	The research investigates the possible benefits and problems associated with contextual variations between and within nations. During the Covid-19 scenario, self-help groups were critical in empowering their members by offering options for livelihood support and money generation.	● It is implausible to commemorate the arduous and heroic efforts made by all volunteers to achieve vital needs during the COVID-19 epidemic. Volunteer organizations/individual volunteer support agencies work tirelessly to provide food and other necessities to such persons. ● The SHG movement in India has grown from micro savings and credit organizations that sought to empower poor rural ladies into one of the world's largest forums for the underprivileged.
2020	Mogaji, 2020	To address financialvulnerability as a specific challenge for nations, institutions, and, individualcitizens in the aftermath ofCovid-19.	● Changes in personal circumstances, like being made unemployed, can make people financially vulnerable, leading them to change their financial behavior andinteract in gambling activities to get more money or use payday loans, which are not sustainable.
2020	Al Nawayseh, 2020	The purpose of this research is to look into the influence of FinTech apps inbuilding resilience during the COVID-19 disease outbreak. The study examines empirically the elements that influence Jordanians' desire to adopt FinTech applications.	● This suggests that a user's willingness for using FinTech apps is influenced by his or her perception of societal impact, benefits, and beliefs. Customers' risk perceptions did not affect their intention to utilize FinTech apps during theCOVID-19 pandemic, but they did affect their belief in the service.
2020	Sheng et al., 2021	This paper gives an outline of methodological advances in the study of big data analytics and how they might be better applied to contemporaryhierarchical concerns.	● Concerning these promising regions, they discussed various freedoms that will arise for the administration to research local areas to utilize different logical ways to deal with help global and local endeavors to manage the extraordinary difficulties achieved by the COVID-19 epidemic and its fallout, which will have long haul suggestions for the worldwide economy.
2019	Wonglimpiyarat, 2019	This paper examines the spread of financial technology, or FinTech, in the banking industry.	● They draw insightful conclusions from the fact that the systemic characteristics of theinnovation process change over time. Along the stages of innovation, innovators may employ various strategies for exploiting the innovation, and this process determines the systemic nature of the innovation.

Source: Researcher's Compilation

Hypothesis of the Study

H_1: Access, (AC1, AC2, AC3, AC4) Usage, (US1, US2, US3, US4, US5, US6) Technology (TH1, TH2, TH3, TH4) and Literacy (LT1, LT2, LT3, LT4) are positively related to the use of FinTech and Financial Inclusion.

MATERIALS AND METHODS

This study is empirical and analytical in nature. Digital payment is taken as a proxy of FinTech. The data is collected from primary and secondary sources. For gathering the primary data convenience sampling wasconducted using a self-administered questionnaire, completed by 310 respondents and this study employed both an offline (face-to-face) and an electronic (online) strategy to collect applicable data with theplan of viewing the image from two viewpoints-

Firstly, the researcher used Google Forms to distribute questionnaires to Indians through several social media channels (Facebook, WhatsApp, Email, and Telegram, among others). Second, the researcher targeted responses

from market wage earners, taxi drivers, street vendors, unemployed individuals, and among others.Secondary data has been collected from RBI Report (2022), Global FinTech reports, FinTech company's reports, articles, blogs, and other scholastic journals. The factor analysis is conducted to examine the relationship between the factors and financial inclusion. The factors used in the model are access, usage, technology, and literacy. The duration of the study is 2018-2021. The Cronbach's alpha is 0.699/0.7, proving its reliability and validity. This test was pursued with relevant data analysis and evaluation. To conduct this statistical test, IBM Statistical Package of Social Sciences (SPSS) statistics 28.0.1.0 (142) is used.

RESULTS

Analysis of data is separated into two sections which are a) Analysis of Demographic and b) Factor Analysis. Descriptive Statistics is used to analyze data. The data collected is significant because the study has collected 310 responses. For one variable, the minimal sample size proposed was five; additionally, asample size of one hundred is satisfactory, but a sample size of more than two hundred is considerably moreacceptable to complete the factor analysis (Hassan et al., 2012). Factor analysis isconducted to comprehend the relationship between Access, (AC1, AC2, AC3, AC4) Usage, (US1, US2, US3, US4, US5, US6) Technology (TH1, TH2, TH3, TH4), and Literacy (LT1, LT2, LT3, LT4) and financial technologies and financial inclusion.

Descriptive Analysis

The number of respondents who participated in this study was 310, out of which respondents 41.6% were between the ages of 25-35 years, 39.4% were between the ages of 15-25 years, were 13.5% between the ages of 35-45 years, 3.9% between the ages of 45-55 years, 1.6% between the ages of 55-65 years and 0% above the ageof 65 years. According to their gender, 58.1% are males, 41.9% are females and 0% are others. In terms of, educational qualifications 25.5% are Undergraduates, 27.4% are post-graduates & most of the respondents 47.1% are Graduates. According to the employment status of the 310 respondents, 26.8% are students, 31.0% are self-employed, the highest 41.3% are employees, and 1.0% are retired. The greatest part of the responder's income level is less than 20000Rs P/m (51.6%), pursued by 25.8 percent who have an income of 20000-40000 Rs. P/m, 10.00 percent who have an income of 40000-60000 Rs. P/m, 5.2 percent who havean income of 60000-80000 Rs. P/m, and 7.4 percent who have an income of more than 80000 Rs. P/m. As for the place of residence 47.4% lives in the village followed by 21.3% of people who lives in the city with a population over 500000 followed by 16.8% of people who live in the city with a population up to 500000 and followed by 14.5% people lives in the city with population up to 100000.

Table 2. Demographic Profile of 310 Respondents

Demographic	Frequency	Percentage
Age		
15-25 years	122	39.4%
25-35 years	129	41.6%
35-45 years	42	13.5%
45-55 years	12	3.9%
55-65 years	5	1.6%
Above 65 years	0	0
Gender		
Male	180	58.1%
Female	130	41.9%
Others	0	0
Education		
Under-Graduate	79	25.5%
Graduate	146	47.1%
Post-Graduate & Above	85	27.4%
Employment Status		
Student	83	26.8%
Self-Employed	96	31.0%
Employee Retired	128	41.3%
	3	1.0%
Income		
Less than 20000Rs P/m	160	51.6%
20000-40000 Rs P/m	80	25.8%
40000-60000 Rs P/m	31	10.0%
60000-80000 Rs P/m	16	5.2%
80000 & Above Rs P/m	23	7.4%
Place of Residence		
Village	147	47.4%
The city with a population of up to 100000	45	14.5%
The city with a population of up to 500000	52	16.8%
The city with a population of over 500000	66	21.3%

Source: Primary Data, the author created the questionnaire.

Note: This review's demographic analysis of all responders is presented in this table. Appendix A contains alist of all the questions.

Factor Analysis

First Factor – Access

(Table 3) Factor first, is referred to as the primary factor, and it is the most important and fundamental factor that accounts for the largest variance percentage (27.922). The variables and their loadings are tabulated below-

Table 3. Significant loadings of variables for Factor 1- Access

SN.	Statement	Variables	Significant Loadings
1	Do you own a smartphone?	AC1	**0.730**
2	Do you operate a bank account?	AC2	**0.798**
3	Do you use your smartphone for any financial transactions?	AC3	**0.622**
4	**Do you have an ATM card?**	**AC4**	**0.737**

Note: The table shows the results of the questionnaire's access level. Appendix A contains a listof all variables.

Under this factor, a total of four variables were loaded. This major factor seems to have a high loading on the majority of commonly developed variables. The affirmative loading indicates that all variables are significantly connected with one another, implying the importance of customer access to financial information.

Second Factor – Usage

(Table 4) There are so many variables connected to usage has significantly positive loadings in the subsequent factor. A positive correlation between variables causes positive loading.This second component is responsible for the second-most percentage of variance, 6.395.

Table 4. Significant loadings of variables for Factor 2- Usage

SN.	Statement	Variables	Significant Loadings
	What are the advantages of using digital payment over conventional payment during a lockdown?		
1	User Friendly	US1	**0.892**
2	Secured	US2	**0.872**
3	Faster Settlements	US3	**0.879**
4	How many times have you made online transactions through digital platforms before lockdown, in a week?	US4	**0.831**
5	How many times have you made online transactions through digital platforms during the lockdown, in aweek?	US5	**0.825**
6	**How many times you are using digitalpayments post lockdown, in a week?**	**US6**	**0.855**

Note: The table shows the results of the questionnaire's access level and the total factors were 6.Appendix A contains a list of all variables.

There is a total of six variables that loaded relatively in this factor. Based on the data in the above table, we can conclude those usage variables are positively related to one another.

Third Factor– Technology

(Table 5) The third factor accounts for 5.752 of the total variances. This factor has significant positive loadings as well. Below is a list of variables and their significant loadings.

Table 5. Significant loadings of variables for Factor 3- Technology

SN.	Statement	Variables	Significant Loadings
	Why was there a shift in preference from offline to online payment during a lockdown?		
1	Fast and convenient	TH1	**0.906**
2	Safe and secured	TH2	**0.889**
3	No physical contact in making payments	TH3	**0.864**
4	**Rewards**	**TH4**	**0.696**

Note: The table shows the results of the questionnaire's technology factor. Appendix A containsa list of all variables.

In this factor, four variables were heavily loaded. The variables' positive loadings indicate that they have a positive relationship with one another.

Fourth Factor– Literacy

(Table 6) The fourth factor accounts for 5.564 of the total variances. This factor has significant positive loadings as well. Below is a list of variables and their significant loadings.

Table 6. Significant loadings of variables for Factor 4- Literacy

SN.	Statement	Variables	Significant Loadings
	What factors hampered the use of digitalpayment systems during a lockdown?		
1	Digital illiteracy	LT1	0.722
2	Lack of Infrastructure	LT2	0.717
3	Security	LT3	0.816
4	Do you feel digital literacy is a must for using adigital payment system?	LT4	0.897

Note: The table shows the results of the questionnaire's literacy factor. Appendix A contains alist of all variables.

In this factor, four variables were heavily loaded. The variables' positive loadings indicate that they have a positive relationship with one another.

KMO Statistics- Validity of Test

(Table 7) This table displays two tests that indicate our data's eligibility for structure detection. The Kaiser- Meyer-Olkin Measure of Sampling Adequacy is a statistic that mirrors the level of fluctuation in our variables that could be clarified by basic variables. High scores (around 1.0) imply that factor analysis maybe effective with our data. If the value is less than 0.50, the factor analysis results are unlikely to be meaningful (Chan & Idris, 2017).

Bartlett's sphericity test examines the hypothesis that the correlation matrix is a personality framework, indicating that our variables are inconsequential and accordingly unsatisfactory for structure location. Little upsides of the significance level (under 0.05) show that a factor analysis might be beneficial to our information.

Table 7. Result of KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of SamplingAdequacy.		**.853**
Bartlett's Test of Sphericity	Approx. Chi-Square	7066.620
	df	595
	Sig.	.000

The Kaiser-Meyer-Olkin Measure of Sampling Adequacy for these data is 0.853, which is in the Meritorious category. As a result, the data's validity has been confirmed. Furthermore, Bartlett's test of sphericity is highly significant (P<0.001), indicating that factor analysis will be appropriate.

Table 8. Communalities of 34 items

		Initial	Extraction
1	Do you own a smartphone?	1.000	.746
2	Do you operate a bank account?	1.000	.717
3	Do you use your smartphone for any financial transactions?	1.000	.747
4	Do you have an ATM card?	1.000	.636
5	Do you have access to financial inclusion mechanisms like Self Help Groups, Microfinance Institutions, Banks, Post Office, etc.?	1.000	.628
6	Tick the first financial institutions you have interacted with-	1.000	.534
7	Do you have an internet facility in your smartphone?	1.000	.680
8	Are you using any payment Apps (Applications)?	1.000	.844
9	What are the applications you are using most?	1.000	.667
10	If you are using the application, since how long you are using.	1.000	.726
11	If you are not using any application, it's because,	1.000	.648
12	What are the advantages of using digital payment over conventional payment during a lockdown? (Ranking, 1 – Leastand 5 – High) [User Friendly]	1.000	.853
13	What are the advantages of using digital payment over conventional payment during a lockdown? (Ranking, 1 – Least and 5 – High) [Secured]	1.000	.830
14	What are the advantages of using digital payment over conventional payment during a lockdown? (Ranking, 1 – Leastand 5 – High) [Faster settlements]	1.000	.839
15	How do you typically pay your bills?	1.000	.473
16	Why do you use cash for transactions?	1.000	.621
17	How many times you made online transactions through digital platforms before lockdown, in a week?	1.000	.810
18	How many times you made online transactions through digital platforms during a lockdown, in a week?	1.000	.822
19	How many times you are using digital payments post lockdown, in a week?	1.000	.850
20	Do you like to test new technologies?	1.000	.727

21	Have you registered for any new E-wallet transactions during a lockdown?	1.000	.660
22	Do you prefer using digital payment for high-value transactions?	1.000	.544
23	Why was there a shift in preference from offline to online payment during a lockdown? (Ranking, 1- Least and 5- High)[Fast and convenient]	1.000	.865
24	Why was there a shift in preference from offline to online payment during a lockdown? (Ranking, 1- Least and 5- High) [Safe and secured]	1.000	.844
25	Why was there a shift in preference from offline to online payment during a lockdown? (Ranking, 1- Least and 5- High) [No physical contact in making payments]	1.000	.818
26	Why was there a shift in preference from offline to online payment during lockdown? (Ranking, 1- Least and 5- High) [Rewards]	1.000	.653
27	How do you rate the security of digital payment?	1.000	.703
28	Do you think the government should mandate digital payment in place of cash payments post lockdown?	1.000	.481
29	What factors hampered the use of digital payment systems during a lockdown? (Digital illiteracy)	1.000	.772
30	What factors hampered the use of digital payment systems during a lockdown? (Lack of Infrastructure)	1.000	.618
31	What factors hampered the use of digital payment systemsduring a lockdown? (Security)	1.000	.743
32	What factors hampered the use of digital payment systems during lockdown? (Additional Charges)	1.000	.632
33	What factors hampered the use of digital payment systems during lockdown? (Others)	1.000	.641
34	Do you feel digital literacy is a must for using a digital payments system?	1.000	.825
	TOTAL	**1.000**	**.991**

Note: Extraction Method: Principal Component Analysis.

(Table 8) The principal component analysis is based on the fundamental assumption that all variance is shared prior to the extraction of the communalities. The level of variance in every factor that is represented is shown by networks. Introductory communalities are assessments of the change in every factor that can be clarified by the parts in general or factors. For correlation analysis, this is dependably equivalent to 1.0 for principal component extraction.

The amount of variance explained by the retained components in each variable is indicated by the communalities after extraction, which demonstrates that loadings less than 0.6 are minimized in the conclusion. Extraction communalities are assessments of the change in every factor that the parts represent. Because the sample size is more than 300, the average communalities in this table are greater than 0.7, indicating that the extracted components accurately represent the variables.

Table 9. Total Variance of Factors

Components	**Initial Eigenvalues**			**Extraction Sums of Squared Loadings**			**Rotation Sums of SquaredLoadings**		
	Total	**% Of Variance**	**Cumulative %**	**Total**	**% Of Variance**	**Cumulative %**	**Total**	**% Of Variance**	**Cumulative %**
1	11.448	27.922	27.922	11.448	27.922	27.922	7.975	19.452	19.452
2	2.622	6.395	34.317	2.622	6.395	34.317	3.257	7.944	27.396
3	2.358	5.752	40.069	2.358	5.752	40.069	3.127	7.627	35.023
4	2.281	5.564	45.633	2.281	5.564	45.633	2.175	5.305	40.327
5	1.761	4.295	49.928	1.761	4.295	49.928	1.878	4.580	44.907
6	1.655	4.036	53.964	1.655	4.036	53.964	1.818	4.434	49.341
7	1.307	3.187	57.152	1.307	3.187	57.152	1.719	4.194	53.535
8	1.214	2.960	60.111	1.214	2.960	60.111	1.684	4.106	57.641
9	1.149	2.802	62.913	1.149	2.802	62.913	1.408	3.435	61.076
10	1.115	2.718	65.631	1.115	2.718	65.631	1.399	3.413	64.489
11	1.032	2.517	68.148	1.032	2.517	68.148	1.326	3.235	67.723
12	1.006	2.453	70.602	1.006	2.453	70.602	1.180	2.879	70.602
13	.908	2.215	72.817						
14	.895	2.183	75.000						
15	.826	2.014	77.014						
16	.782	1.907	78.921						
17	.732	1.786	80.707						
18	.689	1.682	82.389						

19	.636	1.552	83.941
20	.621	1.514	85.455
21	.577	1.407	86.863
22	.555	1.354	88.217
23	.505	1.232	89.449
24	.484	1.180	90.629
25	.462	1.126	91.755
26	.420	1.024	92.779
27	.403	.982	93.761
28	.368	.899	94.660
29	.329	.803	95.463
30	.307	.749	96.212
31	.265	.646	96.858
32	.247	.603	97.462
33	.210	.513	97.975
34	.185	.451	98.426
35	.151	.367	98.794
36	.139	.338	99.132
37	.120	.292	99.424
38	.102	.249	99.673
39	.084	.204	99.877
40	.050	.123	10.000

Note: This table displays the Extraction Method: Principal Component Analysis.

(Table 9) Total Variance explained is shown in the above table, while Eigenvalue really represents the quantity of extricated factors whose aggregate ought to be equivalent to the quantity of things exposed to factor analysis. Primarily inspired by Initial Eigenvalues and Extracted Sums of Squared Loadings for examination and understanding. The presence of eigenvalues is more noteworthy than one is needed for perceiving the quantity of parts or factors communicated by chosen factors. The proportion of variance column indicates how much variance within the concept that component accounts for.

A total of 12 factors are identified from the data, with the eight factors accounting for over 60% of the variance within the construct.

Rotated Component Matrix

(Table 10) The rotational component matrix assists us in determining what the components stand for. The goal of the rotation is to minimize the range of factors that have strong loadings on the variables under consideration. The rotation has no effect on the analysis itself, but it simplifies interpretation.

Table 10. Rotated Component Matrix[a]

	Component											
	1	2	3	4	5	6	7	8	9	10	11	**12**
Do you own a smartphone?							.343		.730			
Do you operate a bank account?							.798					
Do you use your smartphone for any financial transactions?			.622									
Do you have an ATM card?							.737					
Do you have access to financial inclusion mechanisms like Self Help Groups, Microfinance Institutions, Banks, Post offices, etc..?					.479							
Tick the first financial institutions you have interacted with-								-.628				
Do you have an internet facility in your smartphone?									.761			
Are you using any payment Apps (Applications)?			.704									

What are the applications you are using most?			.705			
If you are using the application, since how long you are using?	.458	.417		-.352		
If you are not using any application, it's because of,						.792
What are the advantages of using digital payment over conventional payment during a lockdown? (Ranking, 1– Least and 5 – High) [User Friendly]	.892					
What are the advantages of using digital payment over conventional payment during a lockdown? (Ranking, 1– Least and 5 – High) [Secured]	.872					
What are the advantages of using digital payment over conventional payment during a lockdown (Ranking, 1 – Least and 5 – High) [Faster settlements]	.879					
How do you typically pay your bills?			.317			.327
Why do you use cash for transactions?					.657	
How many times you made online transactions through digital platforms before lockdown, in a week?		.831				
How many times you made online transactions through digital platforms during a lockdown, in a week?		.825				
How many times you are using digital payments post lockdown, in a week?		.855				
Do you like to test new technologies?	.594					
Have you registered for any new E-wallet transactions during A lockdown?			.615			
Do you prefer using digital payment for high-value transactions?			.410	.400		
Why was there a shift in preference from offline to online payment during a lockdown? (Ranking, 1-Least and 5- High) [Fast and convenient]	.906					
Why was there a shift in preference from offline to online payment during a lockdown? (Ranking, 1-Least and 5- High) [Safe and secured]	.889					

Why was there a shift in preference from offline to online payment during a lockdown? (Ranking, 1- Least and 5- High) [No physical contact in making payments]	.864										
Why was there a shift in preference from offline to online payment during a lockdown? (Ranking, 1- Least and 5- High) [Rewards]	.696										
How do you rate the security of digital payment?	.584										
Do you think the government should mandate digital payment in place of cash payments post lockdown?		.616									
What factors hampered the use of digital payment systems during a lockdown? (Digital illiteracy)			.722								
What factors hampered the use of digital payment systems during a lockdown? (Lack of Infrastructure)				.717							
What factors hampered the use of digital payment systems during a lockdown? (Security)									.816		
What factors hampered the use of digital payment systems during a lockdown? (Additional Charges)				.621							
What factors hampered the use of digital payment systems during a lockdown? (Others)			-.750								
Do you feel digital literacy is a must for using digital payments system?											**.897**
TOTAL	**.833**	**.383**	**.310**								

Note: Table displays the Extraction Method: Rotation Method and Principal Component Analysis: Varimax with Kaiser Normalization.[a]

Rotation Converged in 10 Iterations

There is a moderate to strong correlation between among 12 items in (Table-11) and a component of factor 1. And in such cases, the correlations between -0.628 and -0.750 are considered relatively tiny and are excluded from the matrix.

Table 11. Component Transformation Matrix

Component	1	2	3	4	5	6	7	8	9	10	11	12
1	.787	.364	-.347	.122	.111	-.191	-.080	.203	-.060	-.098	-.032	.035
2	-.348	.532	.212	.676	-.034	-.262	-.085	.045	.013	-.066	-.011	.101
3	.257	-.144	.632	.006	.480	-.203	.423	.018	.154	-.093	-.043	.172

4	.376	-.447	.380	.420	-.403	.069	-.343	-.112	-.159	.030	.031	-.116
5	.196	.283	.047	.060	-.373	.229	.420	-.312	.516	.293	-.048	-.236
6	.047	.254	.244	-.094	.166	.530	-.292	.129	.216	-.341	.525	-.129
7	.023	-.098	-.206	.272	.512	.062	-.114	-.381	-.034	.554	.375	.017
8	-.042	-.141	.032	.171	.253	.286	-.280	.447	.417	.253	-.534	-.042
9	-.006	-.034	.005	.150	-.173	.267	.431	.605	-.312	.331	.300	.162
10	.093	.387	.328	-.307	-.044	.262	-.234	-.190	-.333	.328	-.283	.424
11	.017	-.130	-.054	-.112	-.259	-.265	-.204	.086	.501	.102	.303	.654
12	.016	-.148	-.274	.327	.044	.469	.233	-.274	-.026	-.419	-.177	.486

Note: Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

The variables' values are described in the table above following factor extraction using the Rotation Method: Varimax with Kaiser Normalization.

DISCUSSIONS

The current research looked at the relationship between customer-related factors and their impact on FinTech and financial inclusion in India. The findings show that there is a significant positive relationship among such variables. Ease of use, safety, and security of their fund; frictionless transactions, etc. are the variables that give people the confidence to involve in online financial transactions. The result is in the line of findings of (Daragmeh et al., 2021). The results also indicate the areas where more emphasis should be given to accelerate the use of FinTech services and the rate of financial inclusion. Though the study indicates that the use of smartphones for any financial transactions is significant, there is further room to create an eco-system where people can use their smartphones for almost all financial transactions. Reward system is one area, which can be used to persuade more and more people to use online modes of transactions. Financial literacy is considered a base of financial inclusion and increasing the rate of financial literacy will increase the pie of FinTech and resultantly financial inclusion in India. Our study confirms the outcome of (Ahmad et al., 2021). That FinTech could accelerate the growth of financial inclusion

CONCLUSIONS

This study is as one of the first in developing countries to cover FinTech (payment system) and Financial Inclusion, in the setup of the Covid-19 epidemic. The study sought to investigate how this COVID19 pandemic has impacted the use of FinTech services and in turn financial inclusion and concludes that the advancement of technology has accelerated the use of FinTech services. The study emphasizes the fact that a well-developed eco-system, with increased level of financial literacy can significantly boost the adoption of Fintech services and in turn financial inclusion.

Albeit this investigation makes several contributions, it has limitations also, like we have taken just one of the factors- digital payment, as the proxy of FinTech. Most quiet that we could also focus on other FinTech proxies such as Micro Insurance, Lending, Equity financing, and so on, though it is a very broad part of the Fintech, that's why we have taken only the digital payment. Future studies will likely investigate the influence of the COVID-19 pandemic on fintech adoption in both progressed and arising economies. Second, further study can be conducted to discuss how to enhance digital literacy, and last is to analyze the same situation after the Covid-19 incident to see whether people are using these services.

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