

# COVID-19 and Digital Financial Inclusion: Impact and Implications

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## **Abstract**

The study is a contribution to the growing body of literature on the adoption of digital financial services with the furtherance to the objectives of greater financial inclusion. The aim of the paper is to analyse whether lockdown restrictions have impacted the usage of digital financial services. In order to fulfil the objective of the study, the data of accessing financial services is collected through primary online surveys adopting convenience sampling. The results of the study reveal that new users have been added in the digital ecosystem during the lockdown and post lockdown period, although the percentage is lower as compared to the respondents who are using it before lockdown. Most of the new users are females and those who belong to the low income category and younger age group. The results of the paired t test also reveals that there is change in the pattern of the usage of financial services through digital channels before and after lockdown. Also, the most dominant reasons for adoption that came up in the study are societal influence, convenience and choice.

**Keywords:** Financial Inclusion, COVID-19, Digital Financial Services, Lockdown, SDG

## **Introduction**

Financial Inclusion refers to the easy and affordable availability of basic financial services like savings, insurance, investment, credit to all sections of the society alike. According to Asian Development Bank, “Financial inclusion means that all segments of a population – even those with the lowest incomes – can access formal financial products and services” (Wyman, 2017). Financial inclusion aims at including all sections of the population in the financial landscape and providing them with a range of services that help them participate in day to day economic activities and manage their finances.

Financial inclusion plays a key role in the economic and social well-being of the individuals. Having access to the financial services provides opportunity to the individuals to smooth out consumption and absorb economic

shocks. It in fact has been considered as an enabler of eight out of seventeen Sustainable Development Goals which include no poverty (SDG 1); zero hunger (SDG 2) ; good health and well-being (SDG 3) ; achieving gender equality (SDG 5); promoting economic growth and jobs (SDG 8); supporting industry, innovation, and infrastructure (SDG 9); and reducing inequality (SDG 10) along with the implicit role in strengthening the means of implementation through greater savings mobilisation for investment and consumption that can spur growth.

The rapid increase in digital technology is impacting various sectors of the economy and the financial sector is no exception. The financial services delivered and accessed through digital channels have assumed the form of digital finance (Ravikumar, 2019) which in turn is acting as a catalyst to drive financial inclusion. In India, there are several fintechs working to promote digital finance in the country, out of which majority belongs to the digital payments segment (Ravikumar, 2019). In fact, amidst the crisis during the pandemic, when there were nationwide mobility restrictions, digital payments have come to a rescue.

Financial inclusion has been a policy priority across the globe even before the Covid-19 pandemic hit the economy of the world and slowed down the economic activities. The current pandemic has hit several sectors of the economy. However, digital payments have seen an uptick. A rapid rise in transaction value and volume has been experienced during the period of pandemic.

Several containment measures have been adopted to reduce the spread of the virus. The nationwide lockdown, mobility restrictions, remote working conditions and social distancing norms (Pwc, 2020) have prompted people to shift to contactless methods of transactions. Increase in the mobile phones ownership and internet access has further created an opportunity to accelerate the process of financial inclusion (Sahay et al., 2020) amidst pandemic and reach the various segments of the population.

Covid 19 has impacted several areas of the economy. At the same time, programmes and schemes related to financial inclusion have also experienced a setback. Financial inclusion refers to the easy and affordable availability of basic financial services like savings, insurance, investment, credit to all sections of the society alike. However, digital technology has proved to be resilient in the time of pandemic and has helped in several ways from delivering essential items to providing a platform to make financial transactions.

Given the background, the aim of the current paper is to investigate the impact of covid restrictions on the usage of digital financial services. The

objective of the paper is to examine how lockdown restrictions and social distancing norms have impacted the usage of financial services through digital modes and whether there is any significant impact of such restrictions on the pattern of usage of digital financial services. The study is based on 7 broad categories of financial services.

The specific objectives of the paper are:

- (a) To study the impact of lockdown on the usage of digital financial services, and
- (b) To understand the reasons for the adoption of digital financial services.

The rest of the paper is organised as follows: Section 2 reviews the past literature; section 3 gives the description of the methodology adopted for the research, section 4 analyses and interprets the results and section 5 concludes the study.

### **Literature Review**

The story of financial inclusion in India begins from nationalisation of banks back in 1980s and now has been forwarded with the ambitious PM-JDY which has increased the percentage of banked to 80%. However, the definition of financial inclusion, particularly in Indian context has evolved to usage and is not confined to mere opening of bank accounts (Barik & Sharma, 2019). Although India has made strides in opening bank accounts it still lags in terms of usage.

Hence, for promoting financial inclusion to a greater extent and to reach varied demographics, digitalization is seen as a facilitator. There is consensus among the scholars that digitalisation can help in promoting financial inclusion (Demirgüç-Kunt et al., 2018). Sub-Saharan Africa is seen as a significant example of promoting financial inclusion among the masses through m-pesa (Rosengard, 2016). With the increase in the accessibility of mobile phones and the internet, digital adoption has become easier (Pazarbasioglu et al., 2020).

Digital means of financial services have been in the Indian economy since the 1990s. In fact, digital means have come to the rescue in the times of demonetization. Krishnan et al. (2019) in his study shows that digitally aware individuals were more resilient against the shocks of cash crunch during demonetisation. The same kind of resilience has been seen in the times of the current pandemic also. Ayadi & Shaban (2020) have highlighted the role of digital financial inclusion as a pillar of resilience in the times of pandemic. An uptick in the digital payments has been observed in the times

of pandemic (Pandey & Pal, 2020) where many have switched to digital payments because of no contact payments due to health concerns and also due to movement restrictions during lockdown.

The adoption of digital mediums to access financial services has been done for several reasons. Several researchers have tried to pinpoint the factors of adoption of digital modes of financial services at different periods of time. A study conducted by Taheam et. al. (2016) among the youth of Punjab on digital wallets identifies factors that influence the usage of digital payments via digital wallets. The findings of the study reveal that controllability & security, societal influence & usefulness and need for performance enhancement are the three major motivations behind the usage of digital wallets. A systematic literature review undertaken by Sahi et al. (2021) for the empirical studies of the year between 2015 to 2020 discovered that 'performance expectations' and 'ease of use' are the most dominant factors influencing the digital payments adoption. In their analysis of users' intentions to use digital payment systems during the COVID-19 pandemic in India, Jain & Chaudhary (2021) also discovered that 'performance expectations' have the most impacts on peoples' intentions to utilise digital payment systems along with the factor 'facilitating conditions'. During the Covid-19, 'Health precaution' is another variable added to the pool of studies conducted on the reasons for adoption of digital payments (Alwi et al.,2021) among others.

Given the background, this study further tries to understand the reason for the adoption by the users of different demographics who started using the digital financial services at different time periods such as pre lockdown, during lockdown and post lockdown (imposed during the Covid-19). The study aims to understand if the reasons are perceived, collating the different time periods, what are the dominating factors which influence the usage of digital financial services. Besides, the present study also tries to understand the impact of Covid-19 restrictions on the usage of several services that involve digital payments. The broader aim of the study is to analyse if Covid-19 has acted as a catalyst for the digital financial inclusion.

### **Methodology**

The primary aim of the study is to analyse if Covid-19 restrictions have contributed in the furtherance of financial inclusion objective. In order to fulfil this objective, an attempt is made to ascertain the impact of lockdown on the usage of financial services through digital channels. Along with that, the study also attempts to assess if new users have been added in the digital financial ecosystem in Covid-19 compulsions and a renewed effort to identify the reasons behind the adoption of digital modes has

been made. Therefore, to fulfil the purpose of the research a quantitative method of data collection has been employed and for the analysis, both descriptive and inferential statistics have been used. The primary data is used to reach the desired results.

### **Data Source**

In the face of the constraints of physical access during pandemic periods, primary data was acquired using an online survey. The data has been collected from respondents by preparing an online questionnaire and distributing it via survey link through online modes including emails and social media. A convenient sampling method was used to reach out to respondents. Before sending out the final survey link, a pilot survey was done to ensure that the questions were comprehensible and that the replies were genuine. The pilot survey was done with 18 respondents, and various changes were made based on their views and inputs. The completed questionnaire was then distributed to a larger group of respondents who were chosen based on convenience and judgement, ensuring that they use digital services. A total of 575 respondents were reached out and the responses were generated in the time period of four months. The collected responses were then reviewed for completeness, resulting in a final sample of 517 respondents who were deemed to be suitable for further investigation.

### **Techniques of analysis**

For data analysis, appropriate statistical techniques are used with descriptive precision to detailed analysis.. Percentages have been used to analyse the percentage of users on the basis of the time period when they made their first digital transaction. Exploratory Factor Analysis (EFA) is used to identify the reasons behind the usage of digital modes of financial services. The statistical technique of Paired t- test is employed to check if the difference in the usage of the seven services through digital channels is significant. SPSS Software version 21 has been used for analysis involving calculation of mean and t values with their significance. The Paired t test is used to explain whether lockdown restrictions during covid has catalysed the usage. As paired t test is used to examine the difference between the means of the two sets of observation, this test is considered to be the most suitable to fulfil the objective of the study.

### **Data Analysis and Interpretation**

The data has been analysed under three different heads.

#### **Profile**

This paper first of all profiles the respondents on the basis of first time

usage of digital modes for making financial transactions. The profiling shows that out of 517 respondents, 422 have started using digital financial services before lockdown, implying that majority of the participants are already familiar with the use of digital means of making transactions and Covid-19 is not the primary reason that has pushed the users to go digital to complete their transactions. 68 respondents started using it during the lockdown period and only 27 began making digital transactions in the post-lockdown period. So, 81.6 % of the respondents have already been using digital modes before lockdown. Whereas 18.4% of the respondents have started using the services during lockdown period or post lockdown period.

**Table 1: Time of first digital transaction**

Point of time	Gender	Age (in yrs.)				Income (in Rs.)						Grand Total
		<25	25-45	46-65	Total	Upto 10000	10001-30000	30001-60000	60001-100000	>1 lakh	Total	
Before Lock-down	M	43	135	39	217	30	38	56	34	59	217	422 (81.6%)
	F	55	128	22	205	56	55	49	26	19	205	
During lock down period	M	14	6	2	22	11	9	3	1	3	22	68 (13.2%)
	F	30	14	2	46	29	4	2	6	0	46	
Post Lock-down (2020 onwards)	M	5	5	0	10	3	4	1	0	2	10	27 (5.2%)
	F	10	5	2	17	11	2	2	2	0	17	
<b>Total</b>		<b>157</b>	<b>293</b>	<b>67</b>	<b>517</b>	<b>140</b>	<b>112</b>	<b>113</b>	<b>69</b>	<b>83</b>	<b>517</b>	<b>517</b> (100%)

Note: M represents Male

F represent Female

During the lockdown period, 46 females and 22 Males started using digital financial services whereas post lockdown period, 17 females and 10 males made their first digital transaction. This shows that nearly 66% of the new users are females as compared to 34% of males. Most of the new users are the younger lot which belong to the age group 'below 25'. Out of 95 new users (both during and post lockdown period), 59 are 'below 25' of age, 30

are in the age group '25-45' and 6 are in the age group '46-65'. In each age group the number of new users who are females is relatively greater than the males. This shows that more females have started using the digital modes of financial services. This may be due to the reason that women have started being active professionally and financially.

Further, the majority of the respondents in the new user group have income 'below 10,000'. Approximately 57% (54) of the new users have their monthly income up to Rs. 10,000. Out of which, 40 started using digital modes for transactions during the lockdown period and 14 started it post lockdown. Only 5 users in the income bracket 'more than 1 lakh' out of 83 are the new users and are all males. The rest of the users are using digital modes before lockdown restrictions were imposed. The results reveal that the higher proportion of new users belong to the low income category. This may be due to the reason that small ticket transactions have become easier and this may have prompted low income groups to make such transactions digitally.

The table clarifies that most of the new users in the lowest income group that is 'up to 10000' are the females. Of the total 54 new users in the above mentioned income groups, 40 are females and 14 are males. This could be attributed to lockdown restrictions prompting females to adopt digital modes to fulfil daily necessities. Hence, while profiling the respondents on the basis of the point of time for the first time usage of financial services through digital channels, it was observed that the Covid-19 restrictions have made low income respondents as well as the youngest age group, taken as below 25, as well as females, to use digital financial services.

### **Reasons for Adoption**

After profiling, an attempt to identify the reasons was made. For the purpose of identifying the reasons, factor analysis is used to identify the reasons behind the adoption of digital financial services. Several possible reasons were compiled and then the respondents were asked to mark their response on the scale of importance. Through factor analysis 14 statements defining the reasons for adoption have been categorised under four factors. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) Test was applied to check for the appropriateness of exploratory factor analysis. The KMO = .776 suggests that it is fit for further analysis.

**Table 2: Factors relating to reasons for adoption and factor loadings**

REASONS FOR ADOPTION	FACTORS				Communalities
	1	2	3	4	
Speed of transaction	.147	.293	.092	<b>.625</b>	.506
Anytime (24*7 access)	.018	.307	.140	<b>.670</b>	.563
No human contact (especially in the current pandemic time)	.021	.373	<b>.486</b>	.171	.405
Convenient	-.114	<b>.707</b>	.088	.309	.617
Less costly (cost effective)	.292	<b>.669</b>	-.081	.066	.544
Flexibility (anywhere access)	.080	<b>.720</b>	-.057	.150	.550
No other choice (as compulsion)	.224	<b>.429</b>	.290	-.559	.630
Incentives/discounts/gifts/cashbacks	<b>.598</b>	.209	.039	-.020	.403
Transparency	.266	.381	-.015	<b>.393</b>	.370
Positive satisfying experience of friends, relatives and family members	<b>.750</b>	.029	-.012	.226	.615
To participate in digital India initiative	<b>.715</b>	.118	.153	.096	.558
Peer pressure (feeling of backwardness/to avoid feeling of being left out)	<b>.684</b>	-.071	.272	-.172	.577
Lockdown	.102	-.096	<b>.790</b>	-.012	.643
Demonetization drive	.177	-.052	<b>.761</b>	.028	.615
Eigen values	3.264	2.03	1.285	1.018	
% of Variance	23.317	14.502	9.18	7.269	
Cumulative % of Variance	23.317	37.819	46.999	54.268	
Extraction Method: Principal Component Analysis Rotation Method: Varimax with Kaiser Normalization					
Kaiser-Meyer-Olkin Measure of Sampling Adequacy = .776					



**Table 3: Naming of factors related to reasons of adoption of digital financial services**

Factors	Factors Naming	Ex-plained Variance	Statements Loaded	Loading
<b>Factor I</b>	Societal influence And incentives	23.317	Incentives/ discounts/ gifts/ cashbacks	.598
			Positive satisfying experience of friends, relatives and family members	.750
			To participate in digital India initiative	.715
			Peer pressure (feeling of backwardness/to avoid feeling of being left out)	.684
<b>Factor II</b>	Convenience and choice	14.502	Convenient	.707
			Less costly (cost effective)	.669
			Flexibility (anywhere access)	.720
			No other choice (as compulsion)	.429
<b>Factor III</b>	Compulsions	9.180	No human contact (especially in the current pandemic time)	.486
			Lockdown	.790
			Demonetization drive	.761
<b>Factor IV</b>	Favourable-features	7.269	Speed of transaction	.625
			Anytime (24*7 access)	.670
			Transparency	.393

Factor I comprises four statements which points to the role of family and friends, peer pressure, incentives or discounts and digital India initiative explaining the factor loadings from .598 to .750. Hence, Factor I is named as 'societal influence and incentives'. Factor II consists of another four statements signifying cost, convenience, flexibility and compulsion. Hence, factor II has been named as 'convenience and choice'. Factor III includes the statements that point to the unexpected events or the government policies that might force the usage of digital channels to access financial services leading to the compulsive usage of the digital modes. Hence, factor III is named as 'compulsions' having factor loading varying from .486 to .790.

Finally, factor IV is named as 'favourable features' and includes the factors that make it easier for the users to use digital services. The factor loading for this factor ranges from .393 to .670.

The factor analysis shows that the experience of friends and family and the incentives are the most prominent reason behind the adoption of digital modes for undertaking financial transactions with explained variance 23.317. This may be due to the fact that financial transactions involve money and people being conscious of losing money rely generally on the experience of those who are already using it as it might build much confidence among the users. Moreover, watching others successfully transacting through digital channels builds the confidence among the users to use such instruments for sending and receiving money. 'Convenience and choice' is the other factor that contributes to the reason for adoption explaining the variance 14.502. The restrictions like demonetisation drive, lockdown, no contact during pandemic have further contributed to the usage of digital financial services. The statement lockdown has the highest loading on the factor i.e. .790, followed by demonetisation drive having loading .761. However, no contact as a contributing statement in the factor has the lowest loading i.e. .486. This further implies that although no contact has been a compulsion during the pandemic as it involved health concerns, it is not the dominant factor impacting the usage of digital services. The fourth factor 'favourable features' has the least explained variance (7.269) which includes features like speed, 24\*7 access and transparency. Hence, the factor analysis shows that the main reason why people are using digital transactions is because others are also using it and the convenience it provides. It is less based on restrictions like demonetisation or lockdown or no contact due to health concerns.

Although the study observes in the previously shown results that lockdown is not the dominant factor in the usage of digital financial services, yet new users have been added in the digital ecosystem during and post lockdown period implying its significance in impacting the usage of digital financial services in a cash dominated society like India. This further raises the interest to analyse if the lockdown restrictions have contributed in changing the pattern of making of financial transactions through digital channels or have brought about any change in the frequency of making such transactions. Hence, in order to investigate the impact of Covid-19 and the lockdown restrictions, the data is further processed and analysed as follows so as to examine whether there is any significant difference in the means of the uses of seven categories of financial / digital services before and after lockdown.

Paired T-test has been conducted to check the hypothesis whether there

is a significant difference between the usage of digital financial services before and after lockdown.

**Table 4: Services and their usage before and after lockdown**

List of services	Before lock-down		After lock-down		t values (sig value)
	Mean	SD	Mean	SD	
Banking (deposits, withdrawals, draft, FDRs, credit card, debit card, money transfer, loan, EMI)	4.51	2.234	5.31	2.037	-8.488 (.000)**
Shopping (goods/services eg. groceries, fashion, AC, fridge, TV, cars)	4.22	2.181	5.12	2.051	-9.270 (.000)**
Payment of bills/fees/services (electricity, DTH, water, fastag, school fees, doctor's fee, lawyer's fee, licence fee, passport fee, application fee etc., eating out, zomato services, food services)	4.58	2.185	5.61	1.824	-10.991 (.000)**
Travel & hospitality (airlines, railways, bus, cabs, OLA/UBER)	4.02	2.424	3.57	2.706	3.996 (.000)**
Business related services (Accounting services- maintaining books, inventory, accounting software, accounting apps, online returns - IT, GST etc. , online ESI/PF payments)	2.59	2.517	3.02	2.704	-7.039 (.000)**
Investments (stock market, shares, mutual funds, purchase gold/silver, insurance, real estate- property)	2.33	2.514	2.83	2.706	-6.339 (.000)**
Other services (immigration, visa)	1.65	2.332	1.57	2.332	1.227 (.220)

Note: \*\* represents the result is significant at 5% level of significance

Various services that are used through digital mediums are identified and then the seven broad categories of services are compiled and included in the study which are: Banking, shopping, payments of bills/fees/services, travel and hospitality, business related services, investments such as stock market, shares etc. and other services including immigration and visa.

The above Table 4 shows that payments for various services is the most widely used digital service, followed by banking and shopping for both before and after lockdown periods whereas investments and other services like visa and immigration are availed least digitally.

The significance value ( $=.00<.05$ ) for payment of bills/fees/services indicates that the difference in usage in the given time periods for the category of fee payment for different services like education, entertainment and bill payments etc. This category has experienced a jump in the uses during the lockdown period followed by payments related to shopping. The category of shopping includes shopping for goods like grocery, fashion, electronics etc. Furthermore, this jump in digital payments is evident as bill payment and shopping related to grocery, clothing and electronics etc. falls in the essential and necessary category. Therefore, the shift to the different modes for availing such services is evident amidst mobility restrictions. Moreover, the fear of spread of virus and preference of people for digital mediums including small vendors might also have contributed in this jump.

The results are also significant for digital banking indicating that there is a difference in the average usage of digital banking before and after the lockdown period. On the other hand, the digital payments related to travel have experienced a reduction. The fall in digital payment related to travel is obvious due to mobility restrictions imposed to contain the Covid-19 virus. Similarly, immigration and Visa services have also experienced a fall in digital usage. However, the results reveal that the difference is not significant between two time periods in this category. The digitalization in this category is not driven by pandemic as the nature of this service is such that it requires personal consultations.

Furthermore, an uptick in the usage of business-related services such as accounting, inventory management, online return filing has also been observed due to lockdown. Similarly, there is a rise in the investments as well, through digital channels. However, the difference is not as high as other services like bill payments, shopping and banking.

According to the table, there is a significant difference in the usage of the Digital payments for the six services except for immigration and Visa services. This may be attributed to lack of awareness regarding such services

or these services are not used as frequently as others. Moreover, restrictions on the overseas movement could also be one of the reasons behind low usage of such services.

This analysis highlights that while there is a high degree of shift in the services that are necessary and essential, the shift in business and investment is not as high, though it exists. Pandemic did make people jump to the digital bandwagon, some did for convenience and safety and others for compulsion.

### **Discussion and Conclusion**

The results indicate that new users have been added to the group of the users of digital financial services. However, the percentage of the new users is low in comparison to those who are already using it. 57% of the users belong to the low income category and have marked their income as Rs. 10,000. This shows that small ticket transactions have become easier and convenient through digital modes and might have prompted them to resort to this mode of transaction. More females have also started using digital channels for accessing various services. This shows that women are also trying to keep pace with the male counterparts when it comes to digital services for financial matters. It is interesting to note that both male and female respondents in the income group 'more than 1 lakh' have been using digital modes for financial services before the lockdown period. Further, a higher proportion of younger generation, that is, below 25 are also among the new users. Moreover, the analysis shows that the main reason for adoption is 'societal influence' as well as convenience and choice of the usage of digital instruments for monetary transactions. The usage by family and friends is the major driver behind the usage. This also points towards the shift from digital adoption by only tech-savvy individuals to mass adoption. The results reveal that covid is not the sole reason for the usage of digital transactions. However, it has an impact on the level of usage of digital modes to access several services. Further, the highest impact of Covid-19 restrictions was on payment of fees, entertainment etc. followed by shopping and banking. The service that was adversely hit was 'travel' which is quite evident as mobility restrictions have reduced the spending on travel and hence through digital modes as well. The analysis also reveals that the number of women among new users is higher relative to the male counterparts, implying that lockdown restrictions have pushed more females to access services like bill payments, shopping, banking etc. through digital channels.

Financial inclusion has been a policy priority for the government of India and several steps have also been taken in this regard. However, India still lags behind in terms of usage of financial services. Digitalisation has

been seen as a means to increase financial inclusion through increased use of mobile phones and internet connections. Previously, in Indian context, PMJDY has been initiated to increase the number of banked and then demonetisation has contributed in the push to digital financial services and now Covid has been added as another dimension to the journey of India towards financial inclusion. The results of the study reveals that new users have been added in the digital ecosystem during the lockdown and post lockdown period, although the percentage is lower as compared to the respondents who are using it before lockdown. It is also observed that usage has increased among the females and the respondents below the age of 25 along with those who have marked their monthly income as less than 10,000. The change in the usage of various services through digital channels has also been observed. The frequency of use in bill payments, shopping and banking via digital modes has increased after lockdown restrictions, along with the decline in the frequency of payments related to travel. This has been observed during 2021 when the data is collected and some mobility restrictions were still there. However, whether there would be a sustained use in digital modes to access such services is yet to be seen. The results of the study point out that the nationwide lockdown and mobility restrictions have prompted people to switch to digital modes of making financial transactions and hence impacted the frequency of the usage of digital services, digital financial services in particular. The greater change has been in the services like digital bill payments, online shopping, digital banking and the uptick in investment has also been seen but to a lesser extent. Thus, it can be concluded that to some extent Covid-19 can be seen as a catalyst for driving greater usage of digital financial services through digital modes.

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## References

- Impact of the COVID-19 outbreak on digital payments.* Pwc. <https://www.pwc.in/industries/financial-services/fintech/dp/impact-of-the-covid-19-outbreak-on-digital-payments.html>
- Alwi, S., Salleh, M. N. M., Alpandi, R. M., Ya'acob, F. F., & Abdullah, S. M. M. (2021). Fintech as financial inclusion: Factors affecting behavioral intention to accept mobile e-wallet during Covid-19 outbreak. *Turkish Journal of Computer and Mathematics Education*, 12(7), 2130-2141.

- Ayadi, R., & Shaban, M. (2020). Digital Financial Inclusion: a Pillar of Resilience amidst Covid-19. *EMEA policy paper*.
- Barik, R., & Sharma, P. (2019). Analyzing the progress and prospects of financial inclusion in India. *Journal of Public Affairs*, 19(4), e1948.
- Demirgüç-Kunt, A., Klapper, L., Singer, D., Ansar, S., & Hess, J. (2018). The Global Findex Database 2017: Measuring Financial Inclusion and the Fintech Revolution. Washington, DC: World Bank.
- Financial Inclusion and the SDGs*. <https://www.uncdf.org/financial-inclusion-and-the-sdgs>
- Jain, K., & Chowdhary, R. (2021). A Study on Intention to Adopt Digital Payment Systems in India: Impact of COVID-19 Pandemic. *Asia Pacific Journal of Information Systems*, 31(1), 76-101.
- Krishnan, N. K., Johri, A., Chandrasekaran, R., & Pal, J. (2019, January). Cashing out: digital payments and resilience post-demonetization. In *Proceedings of the Tenth International Conference on Information and Communication Technologies and Development* (pp. 1-16).
- Pandey, N., & Pal, A. (2020). Impact of digital surge during Covid-19 pandemic: A viewpoint on research and practice. *International journal of information management*, 55, 102171.
- Pazarbasioglu, C., Mora, A. G., Uttamchandani, M., Natarajan, H., Feyen, E., & Saal, M. (2020). Digital financial services. *World Bank*, 54.
- Ravikumar, T. (2019). Digital financial inclusion: A payoff of financial technology and digital finance uprising in India. *International Journal of Scientific & Technology Research*, 8(11), 3434-3438.
- Rosengard, J. K. (2016). A quantum leap over high hurdles to financial inclusion: The mobile banking revolution in Kenya.
- Sahay, M. R., von Allmen, M. U. E., Lahreche, M. A., Khera, P., Ogawa, M. S., Bazarbash, M., & Beaton, M. K. (2020). *The promise of fintech: Financial inclusion in the post COVID-19 era*. International Monetary Fund.
- Sahi, A. M., Khalid, H., & Abbas, A. F. (2021). Digital payment adoption: a review (2015-2020). *Journal of Management Information and Decision Sciences*, 24(7), 1-9.
- Taheam, K., Sharma, R., & Goswami, S. (2016). Drivers of digital wallet usage: Implications for leveraging digital marketing. *International Journal of Economic Research*, 13(1), 175-186.
- Wyman, O. (2017). *Accelerating financial inclusion in South-East Asia with digital finance*.