

Augmentation of Digital Financial Services in the Pandemic: A Micro Level Study in Delhi

Ankita Gupta^a and Dr. Bathula Srinivasu^{b*}

^aResearch Scholar, Department of Economics, Jamia Millia Islamia, New Delhi, India-110025

^bProfessor, Centre for the Study of Regional Development, Jawaharlal Nehru University, New Delhi, India-110067

*Corresponding Author

Abstract: Pandemic has provided impetus to the use of digital financial services during the pandemic. At the same time, the role of digital financial services in financial management and health protection during the crisis is an important challenge. Against this backdrop, the paper analyses the impact of the pandemic on the adoption and use of digital financial services and the perception of government and private employees regarding role of digital financial services during COVID-19. The paper exhibits that majority of the respondents had an access to digital financial services before the pandemic itself. But interestingly, there has been an upward mobility in the use of digital financial services during the pandemic. An individual being a female, educated and a government employee increases the probability of increase in the use of digital financial services while age has a non-negative relationship with the increase in the use of digital financial services. However, COVID-19 has still been unable to close the digital loop since the use of digital mode for merchant payments still remains restricted among respondents, more particularly among women. The use of digital financial services led to the health protection more than the financial management during the pandemic. Male and the general category could experience better financial management as a result of the use of digital financial services during the pandemic than females and other social classes respectively. Also, the younger individuals could better protect their health due to the use of digital financial services than elderly. Poor network connectivity, high risk, low awareness, digital illiteracy and lack of trust are significant challenges that have been identified during the pandemic.

Keywords: COVID-19, Digital Financial Services, Merchant Payments, Utility bills, Loan, Insurance, Debit Cards, Credit Cards, Internet Banking, Bank Accounts.

JEL Codes: G00, G200, G210

1. Introduction

The coronavirus disease (COVID-19) afflicted the whole world in 2020. WHO declared COVID-19 as a pandemic on 11 March, 2020 (T.A. Ghebreyesus, 2020). The countries responded to the pandemic by implementing lockdowns. People's source of revenue was destroyed as they lost their livelihoods due to curbs on economic activities during the lockdown (Arpita Raj, 2020). The pandemic has provided the necessary impetus for the digital transformation of financial services. Digital financial services can not only deter the transmission of the virus but can also provide financial assistance to those in need in the form of remittances, loans and direct benefit transfers from the government. Digital financial services includes a transaction account to keep funds secure, saving accounts and a broad range of financial services such as payments (remittances, transfers, merchant payments bills, etc.), investment, loan and insurance services delivered via digital channels (Benson et al., 2016). Digital finance during the pandemic allowed the government to disburse funds directly to the bank accounts of the people

in need and also allowed individuals and businesses to gain access to finance.¹¹ However, if digital financial services are quickly scaled up in response to the pandemic, security and transparency could be jeopardized, due to organizational limitations, cyberattacks, theft, money laundering, records, and privacy concerns. The ramping up of digital financial services during the pandemic can magnify current gender and age disparities in the use of digital financial services (Agur et al., 2020).

In order to promote social distancing and prevent the spread of the virus, Reserve Bank of India has made significant efforts to encourage people to use the digital payments which provides the convenience of carrying out financial transactions without visiting the bank branches (RBI Pushes Digital, 2021). India witnessed an exponential spike in the use of digital payments during the lockdown in 2020. In the post-lockdown period, 42% of Indians used digital payment methods (Digital Payments Swell, 2021). Several banks have reported a surge in the usage of the mobile and digital banking channels as the banks initiated new innovative means such as video KYC and WhatsApp banking. Digital Payments witnessed a record high growth in 2020 (Surabhi, 2020). The pandemic has caused a paradigm shift from cash transactions to digital financial transactions. The social distancing is found to have a significant impact on the use of digital payments in terms of both, number of transactions and value of transactions (Alber & Dabour, 2020). A study by Nair et al. (2021) concluded that the COVID-19 has resulted in the increased use of online banking applications amongst people belonging to different financial backgrounds in Kerala and helped them to maintain social distancing, thus protecting their lives amidst the pandemic. In India, the outbreak of pandemic has increased the number of mobile banking transactions and also, there has been shift towards online payment platforms immediately after the outbreak of pandemic (Agarwal et al., 2020). Digital financial services during the pandemic have been used more by the people who are financially literate, younger people and by those who are endowed with more financial assets (Fujiki, 2021).

A study in Romania by Baicu et al. (2020) studied the impact of COVID-19 crisis on consumer behaviour in retail banking. The study concluded that the variable relating to the impact of the COVID-19 pandemic on customers' lifestyles has a direct and positive impact on the variable relating to attitudes toward internet and mobile banking services, which is influenced by other variables such as internet and mobile banking security and bank confidence. The cash still prevailed even after the pandemic as the most commonly used ATM system was cash deposit and cash withdrawal. The growth in the use of mobile or online banking after pandemic was very minor as 81.3 per cent of the respondents were using online or mobile banking before the pandemic itself. Another study by Trisnowati et al. (2020) found that the pandemic increased the number of cash transactions and decreased the number of interbank and intrabank transactions in comparison to the standard times. However, there was discernible difference in the electronic money transactions in the pre and post COVID period. Electronic money transactions witnessed an increase of 2,117 per cent in Indonesia. When the planet grapples with COVID-19, two issues need to be considered: the value of having access to new technologies and infrastructure, as well as the possibility of accelerating digital financial inclusion by making large-volume payments (Miller et al., 2020).

Aji et al. (2020) showed that COVID-19 may influence the intention to use e-wallet by consumers which is directly affected by its perceived risk and perceived usefulness. It was also identified that perceived usefulness of e-wallet completely mediates the effect of government support on the intention to use e-wallets. Further, there existed a difference in government support and intention to use e-wallet relationship between Indonesia and Malaysia. Daqar et al. (2021) showed that Fintech perception and behaviour (fintech behaviour before COVID-19, fintech behaviour after COVID-19 and fintech perception after COVID-19) had the highest influence on and relationship with forecasting COVID-19 spread among individuals (52.5 per cent). It is believed by the people that the spread of COVID-19 can be reduced by changing their financial behaviour during the pandemic by shifting to contactless payment methods. Even though the COVID-19 provides a push for digital payments, it can also undo the progress

¹¹According to the report titled "Direct Benefit Transfers: Status and Challenges Ahead", around 98

crore beneficiaries have received cash support in 2020-21.

made so far in gender equality and sustainable development. The COVID-19 provides the right opportunity to scale up the impact of digital financial service if the private, government and development organisations adopt digital wages method. However, appropriate training needs to be provided beforehand and also gender should be prioritized to enable women's economic empowerment (Dalal, 2020).

The use of digital financial services will intensify to a large extent in the post-pandemic world. A study revealed that intention to use the mobile wallet applications is positively and linearly determined by its perceived ease of use, usefulness, security, social influence, health precaution and transaction cost (Alwi et al., 2021). It has been reported that even though people have opened their bank accounts to receive the fund transfers from the government, their use remain restricted to cash out services mainly. Thus, the use of the bank accounts for digital financial transactions remains limited amongst certain section even today. Such people prefer to pay their utility bills in cash and do not own any mobile wallet applications. The most significant roadblock in the way of digital finance is confidence in the protection of money, as well as additional fees paid in digital transactions and a variety of other factors. The government and employers can help build an inclusive financial system by using automated deposits and paying wages directly into bank accounts. (Klapper, 2020).

2. The Context

In India, even though the digital financial inclusion process initiated in the early 2015, the real surge has taken place after the pandemic. The health concerns caused by the pandemic has propelled the individuals to shift towards digitalized use of financial services. Also, Covid-19 pandemic resulted in loss of livelihood amongst several individuals. Hence, COVID-19 pandemic is an important time to determine the efficacy of digital financial services in India.. It can reduce the leakage of cash into the economy by facilitating use of digital payments for all the transactions and financial services since the use of cash can spread the virus. In the backdrop of this, it is crucial to assess the impact of the pandemic on the adoption and use of digital mode for various financial services and also to know the perception of individuals regarding the role played digital financial services in the financial management and also in preventing the spread of the virus during the pandemic. In this regard, the paper attempts to explore the adoption and use of digital financial services, the perception regarding the role of digital financial services in dealing with the corona led crisis and also the challenges faced by them in the use of digital financial services.

3. Research Gap and Objectives

Many of the researchers have assessed the impact of COVID-19 on financial transactions and consumers behavior in banking. However, these studies did not identify the determinant for the upward mobility during pandemic. Also, the impact of digital financial services on the financial management and health protection of people amidst the pandemic has also not been explored earlier. In the above context, the paper makes an attempt i) to explore the use of various digital financial services during the pandemic and their associated socio-economic determinants, ii) to analyse the association of the impact of digital financial inclusion with the socio-economic variables, iii) to identify the challenges faced in using digital financial services during the pandemic.

4. Research Methodology

The paper is based on the primary data and employs a mixed method approach, i.e., both quantitative and qualitative data have been used. The qualitative data measures the perception of individuals regarding the impact of digital financial services while the quantitative data comprises of various indicators calculated for the access and use of digital financial services.

The data was collected using a pre-structured Google Form questionnaire. Around 170 formal sector employees from Delhi during the month of May and June, 2021 were approached using the purposive and snowball sampling technique. The role of digital financial services analysed are health protection role and financial management role. A five-point Likert scale was used to know the perception of the respondents regarding the role of digital financial services during COVID-19: one being strongly disagree and five being strongly agree. Various statistical tools have been used to perform the analysis which includes Principal Component Analysis (PCA), Cronbach Alpha

test, Kruskal Wallis H test, Mann-Whitey U test, Logistic Regression and descriptive statistics. Bar Graphs and Pie charts have also been drawn wherever required for better illustration of the data.

5. Analysis and Discussion

5.1 Demographic Status of the Respondents

While analysing the demographic status of the respondents, it has been identified that majority of the respondents are male (78.8 per cent), while females are just 21.2 per cent (Table 1). Age distribution of the respondents is biased somewhat towards youth as 65.3 per cent of the respondents belong to age group 18-38. Majority of the respondents are highly educated as around 43.5 percent are graduates, 37.6 per cent are post graduates, 14.7 per cent have diploma and 1.8 percent are M.Phil./Ph.D. while just 2.5 per cent of the respondents have passed senior secondary level education. About 34.7 per cent of respondents are government sector employees and 65.3 per cent are private sector employees. The highest number of the respondents belong to general category (83.5 per cent), followed by OBC (12.5 per cent), SC (3.5 per cent) and then ST (0.6 per cent).

Table 1. Demographic status of the respondents

Variables	Level	Percentage (%)
Gender	Male	78.8
	Female	21.2
Age	18-28	31.8
	28-38	33.5
	38-48	19.4
	48-60	12.9
	Above 60	2.4
Education	Senior Secondary level	2.4
	Graduate	43.5
	Post-Graduate	37.6
	Diploma	14.7
	M.Phil./Ph.D.	1.8
Occupation	Government Sector Employee	34.7
	Private Sector Employee	65.3
Monthly Income	Below 20,000	9.4
	20,000-40,000	31.8
	40,000-60,000	26.5
	60,000-80,000	11.8
	Above 80,0000	20.6
Social Class	General	83.5
	OBC	12.4
	SC	3.5
	ST	0.6

Source: *Author's Calculations*

The sample is quiet representative of each of the income class category. Also, the sample has got various categories of employment distribution, i.e., private sector and government sector employees. As it is seen in the sample, the shift of the employment towards the private sector is more visible in the post reform era in India. The monthly income of the respondents is also at an increasing level with almost 26.5 percent respondents in 40,000-60,000 brackets. This evidences that the major chunk of the working population is getting more than nominal wages.

5.2 Access to Digital Financial Services during COVID-19

The results for access to digital financial services are illustrated in Table 2. Majority of the respondents (99.4 per cent) had their own bank accounts, which along with funds in that bank account, is an important factor to improve welfare with the help of digital finance (Ozili, 2018). The digital finance delivers financial services via mobile and internet wherein mobile, computers or cards link the individuals to the digital payment infrastructure (Manyika et al. 2016). As a result, access to these ICT devices is critical for accessing the digital financial services. It can be seen that 48.8 per cent of the respondents own smart phone, 1.2 per cent own laptop, 49.4 per cent own both smart phone and laptop while just 0.6 per cent owns none. Thus, majority of the respondents owned the digital mode to access digital financial services. About 91.8 per cent of the respondents owns debit card, 77 per cent own credit card and 68.8 per cent had access to internet banking. The access to credit card is comparatively low amongst government sector employees (30.51 per cent), women (19.44 per cent) and elderly aged above 48 (23.07 per cent). Digital financial services are unsettling to the elderly, who prefer paper-based interactions (GPFI & OECD, 2019) which explains the low level of access among elderly. Majority of the government employees (59.31 per cent) belong to the age group of 38-60 in sample data which explains low level of access among government employees in comparison to private sector employees. Further, low level of access to credit cards among women is mainly due to low level of women participation in financial activities. The data also suggests that access to internet banking is also low amongst government sector employees (52.54 per cent) in comparison to the private sector employees (77.48 per cent). More advanced financial services are offered by credit cards and internet banking in comparison to the debit cards. This explains their low level of access among elderly, government sector employees. and women who must be using more of cash withdrawal services, a service mainly used via debit cards.

Paytm is the most accessed mobile wallet application by the respondents (58.8 per cent), followed by Google Pay (47.6 per cent), PhonePe (38.8 per cent), Amazon Pay (20.6 per cent), BHIM Axis Pay (12.9 per cent) and others (12.35 per cent). About 7.65 per cent of the respondents did not have access to any of the mobile wallet application. Hence, it can be concluded that the respondents had reasonable access to digital financial services.

Table 2. Access to financial services and digital financial services

Variables	Level	Percentage (%)
Bank Account	Yes	99.4
	No	6
ICT device owned	Smart Phone	48.8
	Laptop	1.2
	Both	49.4
	None	0.6
Access to Debit Card	Yes	91.8
	No	8.2
Access to Credit Card	Yes	45.3
	No	54.7
Access to Internet Banking	Yes	68.8
	No	31.2
Access to Mobile Wallet Applications	Paytm	58.8

	Google Pay	47.6
	Amazon Pay	20.6
	PhonePe	38.8
	BHIM Axis Pay	12.9
	Other	12.35
	None	7.65

Source: *Author's Calculations*

5.3 The Use of Digital Financial Services during COVID-19

The pandemic prompted the respondents to use various financial services such as loans, insurance services, remittances, etc. since many people faced disruptions in their source of income, though organised sector workers faced it to a lesser extent in comparison to the informal sector workers. As per the figures in Table 3, 33.5 per cent of the respondents experienced delay in receiving their salary and 35.3 per cent received reduced salary during the pandemic. It is evident from the data there has been a shift in the method of payments of wages from paying through treasury bills (cash payments) to transferring using bank accounts and further to e-payment of salaries using mobile banking/wallet applications. Few of the respondents even received remittances/financial help from friends (14.1 per cent), relatives (11.8 per cent), employer (2.9 per cent), government (1.8 per cent) and others (2.9 per cent) such as Non-Government Organisation (NGOs). The loss of income during the pandemic led 9.4 per cent of the employees to avail loan and 21.8 per cent of the respondents to purchase insurance due to the health crisis. Thus, the data reflects that penetration of financial services such as loan and insurance were significant during the pandemic. However, loan and insurance were availed more by the private sector employees because the pandemic has disrupted their incomes more in comparison to the government sector employees.

Table 3. Disruptions in Salary and Financial Services used during COVID-19

Variables	Level	Percentage (%)
Faced Disruption in Salary	Delay in Receiving	33.5
	Reduction in Salary	35.3
Received Remittances from	Friends	14.1
	Relatives	11.8
	Employer	2.9
	Government	1.8
	Other	2.9
Availed Loan	Yes	9.4
	No	90.6
Purchased Insurance	Yes	21.8
	No	78.2

Source: *Author's Calculations*

The mode of carrying out financial transactions and sending/receiving payments by the respondents during the COVID-19 is displayed in Table 4. It can be seen from the table that majority of the respondents (84.1 per cent) received their salary digitally while 8.8 per cent received it via cash and 7.1 per cent received their salary in the form of cheques. About 82.5 per cent of the respondents used the digital mode to receive remittances from other people. A total of 76.2 per cent of the respondents who have availed loan during the pandemic have used the digital mode while others (23.8 per cent) visited the bank branch for the same. Similarly, 75 per cent of the respondents who purchased the insurance amidst the pandemic relied on the digital mode. Around 72.4 per cent of the respondents paid utility bills digitally, whereas just 31.2 per cent of the respondents have used the digital mode to make payments for the purchase of goods and services. Hence, the use of digital mode for merchant payments remains restricted even during the pandemic. The silver lining, however, is that 56.5 per cent of the respondents

used both cash as well as digital mode to pay for the purchase of goods and services and cash mode of payment was used by just 12.4 per cent of the respondents. Thus, there exists a potential for digital transformation with respect to the merchant payments in India. The result is of significant importance since the use of digital mode for in-store purchases reduces the leakage of cash into the economy and is classified as the last stage in the pathway to digital financial inclusion (Radcliffe & Voorhies, 2012). Therefore, it can be concluded that COVID-19 has been unable to close the digital loop, i.e., leakage of money back into the cash. However, COVID-19 has reduced the dependence of economy on cash to a certain extent since majority of the respondents availed the financial services digitally. Since the respondents in the study belong to formal sector, the condition for the informal sector and amongst the poor may be considerably worse posing a serious threat to complete digital financial inclusion in India.

Interestingly, the use of digital mode to avail financial services, paying utility bills, merchant payments is comparatively low among women. Only 15.29 per cent of women used digital mode to pay utility bills in comparison to 57.06 per cent of men. Similarly, just 7.75 per cent of women used digital mode for payment of purchase of goods and services. Thus, there exists gender disparities in the use of digital financial services. The reasons can be due to limited financial capabilities and ability to use digital technology among women. Another significant result is that the use of digital mode for advanced financial services (loan and insurance) among government sector employees is comparatively low in comparison to the private sector employees. It has been observed just 3.39 per cent and 10.17 per cent of government employees availed loan and insurance digitally in comparison to 12.61 per cent and 21.62 per cent of private sector employees respectively. However, the level of digital merchant payments and digital utility bills payment is almost similar amongst government employees and private sector employees is almost the same. The use of digital mode to avail inter-temporal financial services such as loan and insurance requires trust in digital financial services (Radcliffe & Voorhies, 2012). Thus, efforts should be concentrated in building the trust among people with respect to using digital financial services.

Table 4. Mode of payments/financial services used by the respondents during COVID-19

Payments/Financial Services	Mode of services	Percentage (%)
Salary	Digitally	84.1
	Cheque	7.1
	Cash	8.8
Remittances Received	Digitally	82.5
	Cash	17.5
Loan Availed	Digitally	76.2
	Visiting the bank branch	23.8
Insurance Purchase	Digitally	75
	Visiting the bank branch	25
Utility Bills Payment	Digitally	72.4
	Cash	4.1
	Both	23.5
Purchase of Goods/Services	Digitally	31.2
	Cash	12.4
	Both	56.5

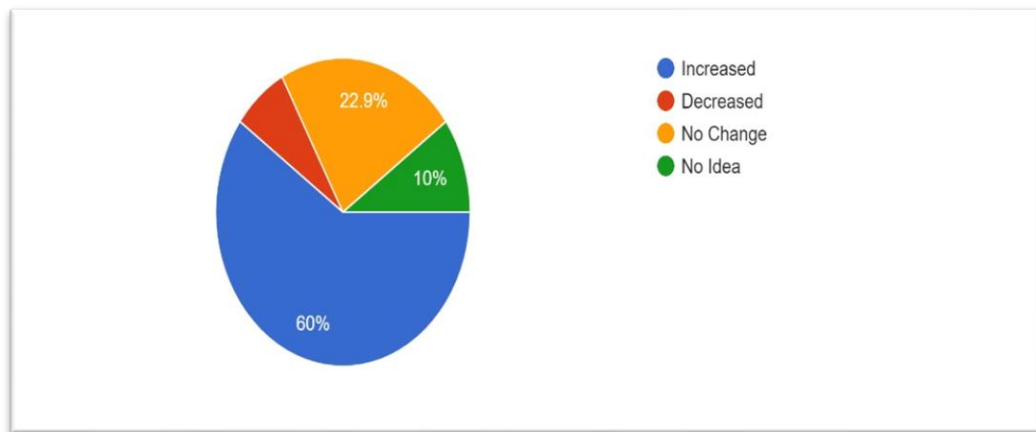
Source: *Author's Calculations*

5.4 Mobility in the Use of Digital Financial Services during COVID-19

The mobility in the use of digital financial services induced by COVID-19 is illustrated in Figure 1. Majority of the respondents (60 per cent) witnessed an increase in the use of digital financial services. Only 7.1 per cent of the respondents felt that their use of digital financial services has decreased, 22.9 per cent of the respondents experienced no change while 10 per cent had no idea about the impact of COVID-19 on their use of digital

financial services. Altogether, it can be concluded that there has been an upward mobility in the use of digital financial services amongst the respondents during COVID-19.

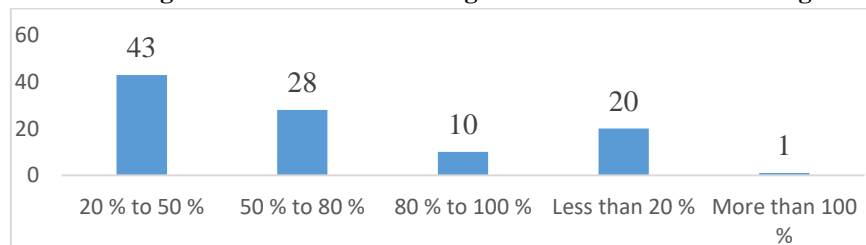
Figure 1. The Mobility in the use of digital financial services during COVID-19



Source: *Author's Calculations*

Figure 2 represents the percentage by which the use of digital financial services has increased among the respondents who reported it to have increased. About 19.6 per cent of the respondents experienced an increase of less than 20 per cent. A total of 42.1 per cent of the respondents experienced an increase of 20-50 per cent, 27.5 per cent experienced an increase of 50-80 per cent, 9.8 per cent experienced an increase of 80-100 per cent and just 9.8 per cent experienced an increase of more than 100 per cent.

Figure 2. Percentage Increase in the use of Digital Financial Services during COVID-19



Source: *Author's Calculations*

Table 5. Logistic Regression[1]			
S. No.	Variable	Sub-Variable	Dependent Variable: Increased Use of Digital Financial Services During COVID-19
			Exp. Beta (S.E.)
1	Gender	Female	1.001 (.465)
2	Age	18-28	1.536 (1.309)
		28-38	1.184 (1.264)
		38-48	1.122(1.285)
		48-60	.494 (1.302)
3	Education	Senior Secondary Level	.361 (1.796)
		Graduate	1.747 (1.314)
		Post-Graduate	1.184 (1.260)
		Diploma	1.206 (1.329)
4	Occupation	Government Sector Employee	1.806 (.442)
5	Monthly Income	Below 20,000	.147 (.798) *
		20,000-40,000	.273 (.666) **
		40000-60,000	.610 (.597)
		60,000-80,000	.827 (.697)
7	Constant		1220626421 (40193)
Source: Author's Calculations			

1[1] * denotes significance at 5 per cent alpha level and ** denotes significance at 10 per cent alpha level.

The logistic regression examines the factors which determines the increased use of digital financial services during COVID-19. The value of Exp (B) greater than 1/less than 1 denotes that increase in one unit with respect to that factor increases/decreased the odds of increase in the use of digital financial services.

The odds of increased use of digital financial services increases for women since the exp (B) for female is greater than 1 (Table 5). Despite the increased use of digital financial services by the females, the gender gap in the use of digital payments has remain constant till 2014, as per Global Findex Report, 2021 (Klapper et al., 2021). The Exp (B) for age up to 48 is greater than 1 and for age category of 48-60, Exp (B) is less than 1. This implies that age has a non-linear relationship with the increase in use of digital financial services. The Exp (B) for higher level of education (graduate, post-graduate and diploma) is greater than 1 which implies that increase in education by 1 unit increases the odds of increased use of digital financial services. Then, Exp (B) for occupation being greater than 1 indicates that being a government sector employee increases the odds of increased use of digital financial services. Then, Exp (B) for monthly income is less than 1 and is significant. This implies that increase in the monthly income by one unit decreases the odds of increased use of digital financial services. The result is in contrast with the findings of (Bathula & Gupta, 2021).

5.5 The Role and Impact of Digital Financial Services During the COVID-19 – An Analytical Perspective

The respondents were asked about their perception regarding the role of digital financial services during the pandemic using various statements. Principal Component Analysis (PCA) was performed on all the statements and two components were identified, Financial Management (two items) and Health Protection (three items), as shown in Table 6. The first components, financial management explained 42.02 per cent of the variance while the second component, health protection explained another 34.811 per cent of the variance. Before using PCA, K.M.O test of Sample Adequacy and Bartlett's test of Sphericity was applied to test the adequacy of the sample size and inter-correlation among the items respectively. Both the tests turned out to be significant.

Table 6. Principal Component Analysis

Factors	Statements	% Of Variance Explained
Financial Management	Digital financial services gave you the confidence to face the financial loss during COVID-19.	42.02%
	Digital financial services helped you manage financial needs during COVID-19.	
Health Protection	Digital financial services helped you to maintain social distancing during COVID-19.	34.811%
	Digital financial services helped prevent the transmission of COVID-19.	
	Digital financial services created a sense of security that cash is accessible at any time of the day without delay in case of any health emergency during COVID-19.	

Source: *Author's Calculations*

The Cronbach Alpha value of 0.803 for health protection and 0.779 for financial management reflects the internal consistency of the items (Table 7).

Table 7. Reliability Analysis

Factor	Number of variables	Cronbach's Alpha
Health Protection	3	0.803
Financial Management	2	0.779

Source: *Author's Calculations*

5.5.1 Digital Financial Services Led Financial Management during COVID-19

The perception of people regarding the financial management role of the digital financial services during COVID-19 are show in Table 8. The responses of 'strongly agree' and 'agree' have been clubbed together as 'agree'.

Around 46.4 per cent of the respondents agreed that digital financial services provided them the confidence to face the financial loss during COVID-19. More than 50 per cent of the respondents felt that digital financial services helped them to manage their financial needs during COVID-19. Hence, the role of digital financial services in financial management during the pandemic seems significant.

Table 8. Perception of People Regarding Role of Digital Financial Services in Financial Management during COVID-19

S. No.	Statements	Percentage (%)
1	Digital financial services gave you the confidence to face the financial loss during COVID-19.	46.40%
2	Digital financial services helped you manage financial needs during COVID-19.	58.20%

Source: *Author's Calculations*

5.5.2 Digital Financial Services led Health Protection during Covid-19

The perception of the respondents regarding the health protection role of digital financial services during COVID-19 is illustrated in Table 9. The data suggests that 78.8 per cent of the respondents opined that the digital financial services have helped them to maintain social distancing during the pandemic. The second highest response rate (75.3 per cent) is with respect to the accessibility of cash via digital financial services during the pandemic to deal with any health emergency. A total of 73.5 per cent of the respondents expressed that the digital financial services have helped them in preventing the transmission of the corona virus. Thus, digital financial services played a noteworthy role in health protection during the pandemic. The results are similar to the trend found by Nair et al. (2021) and Daqar et al. (2021). Interestingly, the role of digital financial services in health protection was more pronounced among the respondents than the financial management role during COVID-19.

Table 9. Perception of People Regarding Role of Digital Financial Services in Health Protection

S. No.	Statements	Percentage (%)
1	Digital financial services helped you to maintain social distancing during COVID-19.	78.80%
2	Digital financial services helped prevent the transmission of COVID-19.	73.50%
3	Digital financial services created a sense of security that cash is accessible at any time of the day without delay in case of any health emergency during COVID-19.	75.30%

Source: *Author's Calculations*

5.5.3 Impact of Digital Financial Services during the COVID-19

The impact of digital financial services led financial management and health protection has been examined using Mann-Whitney U test and Kruskal Wallis H test. Both the tests are non-parametric tests as all the variables were found to be non-normally distributed. Kruskal Wallis H test identifies any significant difference between the two or more groups of independent variables (age, education, social class and income) on a continuous or ordinal dependent variable (health protection and financial management). On the other hand, Mann-Whitney U test examines difference between two independent groups of a variable (gender and occupation) on a continuous or ordinal dependent variable (health protection and financial management).

The impact of financial management led by digital financial services differed with respect to gender (Table 10). The impact has been more on men than women. The gender disparities in the access and use of digital financial services explains the low impact of digital financial services in terms of financial management on women.

Table 10. Mann-Whitney U Test Measuring the Impact of Digital Financial Services

Variables	Health Protection		Financial Management	
	Mann-Whitney U Value	2 tailed Sig.	Mann-Whitney U Value	2 tailed Sig.
Gender	2125.5	0.273	1651.5	.004**
Occupation	2919	0.243	3193	0.789
Source: Author's Calculations				
**Denotes significance at 1 per cent alpha level.				

Source: *Author's Calculations*

While bringing the results for the Kruskal Wallis H test, there exists difference in the impact of health protection led by digital financial services with respect to age (Table 11). Also, the impact of financial management differed with respect to the social class. However, Kruskal Wallis H test cannot identify the groups which differ from each other. Therefore, Mann Whitney U test has been performed to identify the groups whose mean differ from each other. The results are shown in Table 12.

Table 11. Kruskal Wallis H Test Measuring the Impact of Digital Financial Services

Variables	Health Protection		Financial Management	
	Chi-Square Value	Asymp. Sig.	Chi-Square Value	Asymp. Sig.
Age	6.301	.098*	4.058	0.255
Education	3.883	0.422	4.579	0.333
Social Class	4.821	0.185	10.759	.013*
Income	2.822	0.588	1.178	0.882
Source: Author's Calculations				
*Denotes significance at 5 per cent alpha level.				

Source: *Author's Calculations*

There exists difference between the means of general category and OBC category with respect to financial management led by digital financial services (Table 12). The mean for financial management role was higher for general category respondents than for OBC category. Also, the impact of health protection was higher for the respondents belonging to 18-28 age category than respondents belonging to 38-48 age. Thus, the use of digital financial services prevented health of young respondents more than the elderly.

Table 12. Significance of Mean Difference-Mann Whitney U test²

Objective	Variables		Mann-Whitney U Value	2 tailed Sig.
Financial Management (Social Class)	General	OBC	864.5	.002**
		SC	379.5	0.651
		ST	36.5	0.517
	OBC	SC	37.5	0.14
		ST	1	0.182
	SC	ST	1	0.571
Health Protection (Age)	18-28	38-48	1107.5	.011*
		48-60	745	0.2
		Above 60	494.5	0.254

² *Denotes significance at 5 per cent alpha level and **Denotes significance at 1 per cent alpha level.

	38-48	48-60	853.5	0.464
		Above 60	576.5	0.58
	48-60	Above 60	335	0.629
Source: Author's Calculations				

Source: *Author's Calculations*

6. Digital Financial Services – Major Challenges

With the given internet infrastructure in India, on needs to understand and analyse the challenges that are being faced by the stakeholders. In this context, Table 13 exhibits the major challenges faced by the respondents in using digital financial services during the COVID-19. Top five challenges expressed by the respondents were poor network connectivity (62.4 per cent), followed by riskiness (55.3 per cent), low awareness (48.2 per cent), digital illiteracy (47.1 per cent) and lack of trust (46.5 per cent). Despite the fact that India is the largest market for telecom providers, poor network quality is still a major issue. Mobile subscribers in India complain of poor network signals and download speed even after paying higher charges for the 4G network (Sapkale, 2020). Only about 23.5 per cent of the respondents opined that the digital financial services are costly and 38.2 per cent felt that they do not need to use digital financial services.

One of the interesting results is that low awareness and digital illiteracy are two out of the top five challenges despite majority of the respondents being highly educated. This envisages a serious issue as even the highly educated people are not aware about the digital financial services or are digitally illiterate. Digital literacy is a significant issue that contributes to low broadband adoption (Madanapalle, 2020). This leads to significant reduction in the use of digital financial services. Therefore, awareness campaigns and financial literacy initiatives should be introduced not only target the poor and illiterates but even for the highly educated people.

Table 13. Challenges faced during COVID-19 in using digital financial services

Challenges	Percentage (%)
Poor Network Connectivity	62.4
Risky	55.3
Low awareness	48.2
Digital Illiteracy	47.1
Lack of Trust	46.5
Lack of Personalised Services	42.4
Financial Illiteracy	39.4
Lack of Need	38.2
Costly	23.5

Source: *Author's Calculations*

7. Conclusions

The paper has analyzed the effect of COVID-19 on the use of digital financial services for government and private sector employees in Delhi. The analysis reveals that majority of the respondents owned the digital modes to access digital financial services during the pandemic. However, the access to credit cards was found to be low among women, government employees and elderly. The reasons include the low level of financial capabilities and willingness to use advanced digital financial services among them. During the pandemic, the digital mode was widely used by the employees to receive salaries, remittances, paying utility bills, availing loans and insurance but not for merchant payments. Thus, COVID-19 could not shut the digital loop and stop the leakage of cash into the economy since the use of digital mode for in-store purchases remain limited even during COVID-19. However, there exist potential to deepen the penetration of digital merchant payments.

Gender disparities were visible in the use of digital financial services. However, there was an upward mobility in the use of digital financial services amongst the employees during the pandemic. The odds in favour of upward

mobility were higher for females, educated, government sector employees, low-income individuals and had a non-linear relationship with age. Hence, even though there exist gender inequalities in the use of digital financial services, the increase in the use of digital financial services by women is expected to lessen the divide. It can be said that the health protection role of digital financial services was more pronounced amongst respondents than the financial management role. Interesting observation is that the impact of financial management differed with respect to gender and social class. Men experienced more financial management as a result of the use of digital financial services in comparison to women. Then, the impact of health protection role was most pronounced among middle aged respondents. The top five challenges identified are poor network connectivity, high risk associated, low awareness, digital illiteracy and lack of trust. Surprisingly, educated people also experienced the top five challenges along with women, elderly and government employees.

Some important policy implications emanate from the results. The banking personnel need to enhance trust among the vulnerable groups such as elderly, women and others with respect to the use of digital financial services. This requires organising awareness campaigns such as setting up physical centres at various locations to provide in hand training to use digital financial services and also safe and secure ways of using them. However, it needs to be ensured that awareness and digital literacy campaigns do not just target the vulnerable sections such as women, illiterates, poor etc., along with the educated population. In addition to the several steps taken by the government to facilitate small value digital payments, the government should further make it mandatory for every merchant to have a digital payment method employed at their shops.

References

- [1] Agarwal, D. V., Poddar, S., & Karnavat, S. J. (2020). A Study on Growth of Mobile Banking in India During Covid-19. *Palarch's Journal of Archaeology of Egypt/Egyptology*, 17(6), 9461–9485.
- [2] Agur, I., Peria, S. M., & Rochon, C. (2020). *Digital Financial Services and the Pandemic: Opportunities and Risks for Emerging and Developing Economies*. IMF.
- [3] Aji, H. M., Berakon, I., & Md Husin, M. (2020). COVID-19 and e-wallet usage intention: A multigroup analysis between Indonesia and Malaysia. *Cogent Business and Management*, 7(1), 1-16. <https://doi.org/10.1080/23311975.2020.1804181>
- [4] Alber, N., & Dabour, M. (2020). The Dynamic Relationship between FinTech and Social Distancing under COVID-19 Pandemic: Digital Payments Evidence. *International Journal of Economics and Finance*, 12(11), 109–117. <https://doi.org/10.5539/ijef.v12n11p109>
- [5] Alwi, S., Nadia, M., Salleh, M., Alpandi, R. M., & Farazh, F. (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.
- [6] Baicu, C. G., Gârdan, I. P., Gârdan, D. A., & Epuran, G. (2020). The impact of COVID-19 on consumer behavior in retail banking. Evidence from Romania. *Management and Marketing*, 15(s1), 534–556. <https://doi.org/10.2478/mmcks-2020-0031>
- [7] Bathula, S., & Gupta, A. (2021). The determinants of financial inclusion and digital financial inclusion in India: a comparative study. *The Review of Finance and Banking*, 13(2), 109–120. <http://dx.doi.org/10.24818/rfb.21.13.02.02>
- [8] Benson, C. C., Mashayekhi, C. N. M., Clotteau, N., Zimmer, T., Antunes, B., Grin, Y., Potgieser, P., Nguyen, Q., Wright, G., Feingold, N., Santhur, A., Bosini, J., Leach, J., Smirnova, O., & Bondarenko, E. (2016). *International Telecommunication Union (ITU)- Focus Group Digital Financial Services (FG DFS)*. ITU.
- [9] Dalal, P. (2020, September 24). Scaling the Impact of Digital Financial Services: The Opportunity and Imperative during COVID-19. *Business Fights Poverty*. <https://businessfightspoverty.org/scaling-the-impact-of-digital-financial-services-the-opportunity-and-imperative-during-covid-19/>
- [10] Daqar, M. A., Constantinovits, M., Arqawi, S., & Daragmeh, A. (2021). The role of fintech in predicting the spread of Covid-19. *Banks and Bank Systems*. 16(1), 1–16. [https://doi.org/10.21511/bbs.16\(1\).2021.01](https://doi.org/10.21511/bbs.16(1).2021.01)
- [11] Digital Payments swell by 76% during Jan-March quarter this year. (2021, April 13). *The Economic Times*. <https://government.economictimes.indiatimes.com/news/digital-payments/digital-payments-swell-by-76-during-jan-march-quarter-this-year/82052639>

-
- [12] Fujiki, H. (2021). Household financial services, financial literacy, and COVID-19 pandemic. *Applied Economics Letters*, 1–4. <https://doi.org/10.1080/13504851.2021.1878092>
- [13] GPFI and OECD (2019). *G20 Fukuoka Policy Priorities on Aging and Financial Inclusion*. In GPFI and OECD. <http://www.centerforfinancialinclusion.org/fi2020/mapping-the-invisible-market/aging-financial-inclusion>
- [14] Klapper, L. (2020, December 17). COVID-19 Shows Why we must build trust in Digital Financial Services. *World Economic Forum*. <https://www.weforum.org/agenda/2020/12/covid-19-trust-in-digital-financial-services/>
- [15] Klapper, L., Singer, D., & Ansar, S. (2021). *The Global Findex Database 2021: Financial Inclusion, Digital Payments and Resilience in the Age of COVID-19*. The World Bank. <https://www.worldbank.org/en/publication/globalfindex/Report>
- [16] Madanapalle, A. (2020, March 1). The Problems and Possible Solutions for the internet experience in India. *Digit*. <https://www.digit.in/features/general/digit-mag-the-problems-and-possible-solutions-for-the-internet-experience-in-india-54252.html>
- [17] Manyika, James et al. 2016. *Digital Finance for All: Powering Inclusive Growth in Emerging Economies*. McKinsey Global Institute. [https://www.mckinsey.com/~media/McKinsey/Featured Insights/Employment and Growth/How digital finance could boost growth in emerging economies/MGI-Digital-Finance-For-All-Executive-summary-September-2016.ashx](https://www.mckinsey.com/~media/McKinsey/Featured%20Insights/Employment%20and%20Growth/How%20digital%20finance%20could%20boost%20growth%20in%20emerging%20economies/MGI-Digital-Finance-For-All-Executive-summary-September-2016.ashx)
- [18] Miller, M., Klapper, L., Teima, G. & Gamser, M. (2020, August 30). How can Digital Financial Services help a World coping with COVID-19? *World Bank*. <https://blogs.worldbank.org/psd/how-can-digital-financial-services-help-world-coping-covid-19>
- [19] Nair, A. B., Prabhu, K. S., Aditya, B. R., Durgalashmi, C. V., & Prabhu, A. S. (2021). Study on the Usage of Mobile Banking Application during COVID-19 Pandemic. *Webology*, 18(SpecialIssue2), 190–207. <https://doi.org/10.14704/WEB/V18SI02/WEB18066>
- [20] Ozili, Peterson K. 2018. Impact of Digital Finance on Financial Inclusion and Stability. *Borsa Istanbul Review*, 18(4), 329–40. <https://doi.org/10.1016/j.bir.2017.12.003>
- [21] Radcliffe, Daniel, and Rodger Voorhies. 2012. A Digital Pathway to Financial Inclusion, *SSRN Electronic Journal*. December, 1–17. <https://doi.org/10.2139/ssrn.2186926>
- [22] Raj, A. (2020, May 12). 67% Workers Lost Livelihoods in COVID-19 Lockdown: Household Survey. *The Quint*. <https://www.thequint.com/coronavirus/67-workers-lost-livelihood-over-covid-19-lockdown-survey#read-more>
- [23] RBI Pushes Digital Payments in the time of COVID-19. (2020, March 16). *The Economic Times*. <https://bfsi.economictimes.indiatimes.com/news/policy/rbi-pushes-digital-payments-in-the-time-of-covid-19/74655639>
- [24] Sapkale, Y. (2020, January 24). Mobile Subscribers Suffer Poor Networks, Low Data Speeds and Services: No Grievance Redressal. *Money Life*. <https://www.moneylife.in/article/mobile-subscribers-struggle-poor-networks-low-data-speeds-and-services-no-grievance-redress/59257.html>
- [25] Surabhi. (2020, December 25). Fintech: Digital Payments got a Covid boost in 2020. *Business Line*. https://www.thehindubusinessline.com/money-and-banking/digital-payments-got-a-covid-boost-in-2020/article33419349.ece#comments_33419349
- [26] T.A. Ghebreyesus. (2020). *WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 March 2020*. World Health Organisation. <https://www.who.int/dg/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-march-2020>
- [27] Trisnowati, Y., Muditomo, A., Manalu, E. P. S., Zulfikar Kesuma, P., Adriana, D., & Rini Dwiyan, H. (2020). The COVID-19 pandemic's impact on Indonesia's electronic retail payment transactions. *Proceedings of 2020 International Conference on Information Management and Technology, ICIMTech 2020*, August, 504–509. <https://doi.org/10.1109/ICIMTech50083.2020.9211232>