IMPACT OF DIGITAL BANKING PRODUCTS DURING COVID-19 IN RURAL AREAS OF VELLORE DISTRICT

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ABSTRACT

Objective: The purpose of the study is to identify the impact of digital banking products during the Covid-19 pandemic. It also aims to analyze the importance and problems of digital products during the pandemic.

Method: To achieve the research objective, quantitative approaches were utilized. SPSS 3.0 is used for statistical analysis. The period of study lasted for 6 months. The sampling unit chosen is in and around the Vellore district. Percentage analysis, Correlation, Chi-square test, and T-test are used for the study.

Results: The results reveal that ATM services, Internet banking, and Digital payment apps were the most used digital products by customers and they can even able to pay their utility bills on time. and the customers can even pay their utility bills easily through net banking, mobile banking, and digital payment apps.

Conclusion: The study suggests that banks have to take necessary action to resolve customer issues such as network issues and server errors. By concentrating on these issues, it is expected that banks will address all the digital issues faced by their customers in the future.

Keywords: Contactless Cards, Innovation, Artificial Intelligence, Internet of Things, Mobile Banking.

IMPACTO DE PRODUCTOS BANCÁRIOS DIGITALES DURANTE LA COVID-19 EN ÁREAS RURALES DEL DISTRITO DE VELLORE

RESUMO


Resultados: Os resultados revelam que os serviços de ATM, serviços bancários via Internet e aplicativos de pagamento digital eram os produtos digitais mais usados pelos clientes e que eles podem até pagar suas contas de serviços públicos em tempo hábil. Além disso, os clientes podem pagar suas contas de serviços públicos facilmente por meio de serviços bancários via rede, serviços bancários via celular e aplicativos de pagamento digital.

Conclusão: o estudo sugere que os bancos devem tomar as medidas necessárias para resolver problemas dos clientes, como problemas de rede e erros de servidor. Ao concentrarem-se nestas questões, espera-se que, no futuro, os bancos abordem todas as questões digitais enfrentadas pelos seus clientes.

Palavras-chave: Cartões Sem Contato, Inovação, Inteligência Artificial, Internet das Coisas, Banco Móvel.

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1 INTRODUCTION

Banks have come a long way from the introduction of ATMs through the contactless payment cards of today. Banks were also shown their continuous adaptation and gradation of the latest digital technology. During this Coronavirus outbreak and the present pandemic situation, continuous lockdowns persisted for a longer period in most countries of the world. In a state like Tamil Nadu, it persists for around the period of five months or more. In this situation, banks were unable to function physically but their functions were still carried out digitally. The importance of advancement in digital technology in the banking sector has been realized by most of them during this pandemic. Even the significance of digital payments was also realized. The utility of Artificial intelligence, Cloud computing, Chatbots, and the Internet of Things in banks was highly encouraged. This study made an effort to discover the impact of digital products on banks in the present scenario.

The automatic teller machine was the first invention to take place inside the banking business and was a part of digital banking products when it was introduced. The purposes of withdrawing money, depositing money, and checking account balances were all served by using ATMs. After some time had passed, mobile internet was also made available. After the public availability of the Internet, online banking slowly began to gain traction. Checking account balances, transferring funds via National Electronic Funds Transfer (NEFT) and Real Time Gross Settlement (RTGS), making online payments, paying utility bills, applying for loans, and requesting chequebooks were done through online banking. The next step is mobile banking, which includes UPI apps, mobile wallets, and contactless credit and debit cards.

Based on their respective methods of development, all banks have embraced these digital offerings. Artificial intelligence, blockchain technology, augmented reality, and cloud computing have all been adopted by banks as part of their innovation processes. Because of the widespread lockdowns during the COVID-19 outbreak, customers could not complete their banking business in person. Using digital transactions was the simplest and only viable option available to them. This study mainly focuses on identifying the impact of digital banking products during the COVID-19 pandemic. It also aims to analyze the importance and problems of digital products during the pandemic.

2 THEORETICAL FRAMEWORK

During the past crisis, cash was the only demand by consumers because it was a standard medium of exchange. But in the present scenario, data in each country differs accordingly. For instance, in the USA, cash in circulation has increased recently. But in the UK, ATM withdrawals have fallen. The COVID-19 outbreak led to the heavy holding of cash as a precautionary action by consumers and there is an increase in the use of online payments, mobile payments, and cash payments. The development of digital usage differs from one society to another and from one consumer to the other (Auer, et al., 2020). Every aspect of the banking industry, from retail to small and medium businesses to corporate and wealth management, has undergone a period of digitalization. With the rise of technology-first, challenging financial institutions and innovative young businesses offering a tailored client experience, the pace of digital transformation within financial institutions has quickened over the past decade (De Venn, 2023).
The process of digitalization has its origins in the need for consumers to access information pertaining to fundamental features of their banking accounts, such as monitoring their account balances. This, in turn, enables a smooth transition towards engaging in transactional services, such as moving funds. Additionally, it is seen that beyond the first acceptance phase, consumers tend to expand their usage of online and mobile services. This expansion is influenced by their awareness of the various offerings supplied by the bank and their perception of the security associated with these options (Carbo-Valverde, et al., 2020).

Banks hold a paramount position within the financial sector, necessitating political intervention to ensure the seamless continuity of their operations. Banks are taking a more proactive approach to establishing control systems, as evidenced by the results of the study, which shows that they are utilizing Management Control Systems. The evaluation of sustainable capacity in banking demonstrates that the digital banking transition has had a significant and beneficial impact in the banking field (Saputra, et al., 2023).

The research conducted by the Bank Administration Institute shows that nearly half of the people used digital products during the pandemic situation and the majority of them are planning to increase the utilization of digital products after the pandemic. The pandemic scenario pushes people into the digital world which helps them to utilize Artificial Intelligence (AI) Technology, video and voice chat, and social media platforms. According to the research, majority of the people utilize digital products to transfer money and for payment of bills (Dahlgren, 2020). Customers expect their banks to offer digital banking options. Their app usage increased after the COVID-19 pandemic. Digital transactions would be replaced by new technologies post-COVID-19. So, banks intend to focus on omnichannel, modular banking, open banking, and intelligence-driven banking. The Omni channel will emphasize mobile banking with built-in access and authentication. Open banking and modular banking would enable digital technology (Subbanna, 2020).

Consumers are less optimistic about using M-wallet in terms of perceived satisfaction, but the results demonstrated that perceived value, trust, compatibility, and social influence all have important influences on behavioural intention. Customer intent to use M-payment services appears to be most influenced by perceptions of trust and compatibility. For the financial system as a whole to function smoothly, government intervention is necessary, and banks play a major role (Hasan, et al., 2023). The Customers were highly satisfied with mobile banking services and moderately satisfied with ATM service during the Covid lockdown period. Customers used their bank debit cards at another bank's ATM as well. This facility is worthwhile for the customers during the pandemic situation. Hence mobile banking services provide a higher level of satisfaction for customers for transferring their cash to another account from their place itself. During the pandemic scenario, most of the banks faced high expenses, declining revenue and credit losses. So, the greater use of technology will be critical in controlling costs (Parimalarani, & Rathi Meena, 2020).

The value of transactions on UPI has reached a peak during COVID-19 to reduce the chance of handling cash. Though Digital payment methods are simple, people prefer to use cash as an easier mode. But during the pandemic, they utilize digital payment methods rather than cash (Beniwal, & Ghosh, 2020). The utilization of contactless digital payment methods for peer-to-peer transactions and retail transactions has played a significant role in upholding social distancing measures and mitigating the transmission of the COVID-19 virus. Certain nations have implemented measures to encourage the use and utilization of mobile money and electronic wallets. As an illustration, it is noteworthy to mention that Uganda has implemented a reduction in mobile money transfer costs, whereas Egypt and Myanmar have opted to raise the transaction size limitations (Agur, et al., 2020).

The majority of customers, over 70%, have demonstrated a preference for digital products according to the study. Furthermore, a significant proportion, around 80%, utilize...
mobile payment applications, while nearly 30% choose contactless payment methods. The use of artificial intelligence plays a crucial role in the mitigation of fraudulent transactions during the COVID-19 pandemic (Oetli, 2020). The COVID-19 scenario drives retailers to shut down and sell online. Online fraud rises with the popularity of online transactions. Therefore, financial institutions must spend time and money preventing fraud. During this period, Apple Pay and Google Pay have increased. This allows clients to pay digitally without touching the card. The pandemic caused PayPal, Amazon, and Instacart to witness excessive jumps in large product purchases. IoT-enabled devices let internet users buy everyday products. Digital payment gateways enhance seller sales and make product delivery easy for customers (Jain, et al., 2020).

There is a growing concern among executives in the banking industry regarding the capacity of banks to effectively recognize, manage, and evaluate the risks associated with cyberattacks. Additionally, there is apprehension about the regulatory authorities' ability to accurately perceive and effectively respond to catastrophic dangers and assaults that directly impact the integrity of the banking system. The absence of sufficiently trained and specialized personnel poses a significant challenge (Kitsios, et al., 2021).

Financial institutions are implementing biometric technologies to secure bank transactions by recognizing individuals based on their distinctive physical and behavioural traits. Authentication and validation are crucial phases in the user transition that require varying levels of security. Advancements in technology provide effective security solutions, such as biometrics (Khanboubi, et al., 2019).

In this study, the hypotheses are formulated to derive the relationship or difference between the demographic variables and the variables from the data collected from the rural customers.

3 METHODOLOGY

A descriptive research design has been used in the study. An empirical study has been undertaken for the study. The sample size chosen for the study is 138 based on Yamane’s formula (1967). Out of which 21 are invalid and for 17, no responses were recorded. Hence the sample size of 100 was taken into account. SPSS 3.0 is used for statistical analysis. The period of study lasted for 6 months from April 2021 to October 2021. The sampling unit chosen is in and around the Vellore district. Both primary and secondary data were used for the collection of data. Primary data was collected through a survey by circulating the self-administered questionnaire. The questionnaire had four sections. Section A consisted of the personal information of the respondents such as age, education, occupation, and income. Section B consisted of the utility of digital products during the pandemic. Section C consisted of the importance of digital banking products and the final section consisted of the various problems encountered by customers with digital banking products. Likert five-point scale such as “strongly agree”, “agree”, “moderate”, “disagree”, and “strongly disagree” has been used in the study. Secondary data was collected from the recent articles that were published online during the pandemic period.

The tools used for the study are Percentage analysis, Correlation, Chi-square and T-test based on the formulated hypothesis. Using SPSS 3.0 reliability and validity tests were performed to validate the questionnaire.
4 RESULTS AND DISCUSSION

The data was obtained with the aid of the pre-designed questionnaire. The demographic variable shows that the respondents were between the ages of 26 to 35 years (28%), 36 to 45 years (26%), 46 to 55 years (18%), 16 to 25 years (16%), and above 55 (12%). In terms of gender, the respondents are classified as (60%) male and (40%) female. In terms of education, nearly (37%) of them are undergraduate degree holders, followed by postgraduate degree holders (21%), higher Secondary (19%), professional studies (15%), and SSLC (8%). Under the Income profile, the respondents were between the income level of 4,00,000 to 5,00,000 (24%), 3,00,001 to 4,00,000 (22%), 1,00,001 to 2,00,000 (20%), 2,00,001 to 3,00,000 (20%) and more than 5,00,000 (14%). In terms of occupation, nearly (38%) of them are private employees, followed by government employees (28%), students (14%), business (12%) and retired (8%).

The below table shows the percentage analysis for the preferred bank by customers in the Vellore district. The result shows that nearly (34%) of the respondents preferred the State Bank of India for performing digital banking transactions followed by Indian Overseas Bank (20%), HDFC Bank (18%), ICICI Bank (18%) and Axis Bank (10%).

<table>
<thead>
<tr>
<th>Items</th>
<th>Frequency</th>
<th>Valid Percent</th>
<th>Cumulative Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indian Overseas Bank</td>
<td>20</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td>State Bank of India</td>
<td>34</td>
<td>34</td>
<td>54</td>
</tr>
<tr>
<td>HDFC Bank</td>
<td>18</td>
<td>18</td>
<td>72</td>
</tr>
<tr>
<td>ICICI Bank</td>
<td>18</td>
<td>18</td>
<td>90</td>
</tr>
<tr>
<td>Axis Bank</td>
<td>10</td>
<td>10</td>
<td>100</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>100</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

Source: Prepared by the authors (2023)

The hypothesis was formulated to derive the accurate results. Table 2 shows the correlation analysis between education and unsecured transactions.

H1: There is a significant relationship between education and unsecured transactions under mobile banking.

<table>
<thead>
<tr>
<th>Education</th>
<th>Pearson Correlation</th>
<th>Sig. (2 tailed)</th>
<th>N</th>
<th>Education</th>
<th>Unsecured transactions while using mobile banking</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pearson Correlation</td>
<td>Sig. (2 tailed)</td>
<td>N</td>
<td>1</td>
<td>.188 .061 100</td>
</tr>
<tr>
<td>Unsecured transactions while using mobile banking</td>
<td>Pearson Correlation</td>
<td>Sig. (2 tailed)</td>
<td>N</td>
<td>.188 .061 100</td>
<td>1 100</td>
</tr>
</tbody>
</table>

*Correlation significance at the 0.05 level (2-tailed)
Source: Prepared by the authors (2023)

The p-value of 0.188 is more than 0.05 at a 95% accuracy level. It means there is no significant relationship between education and the unsecured transactions of mobile banking.

Table 3 shows the correlation analysis between Income and Withdrawal of money at any time.

H2: There is a significant relationship between the income of the respondents and any time of withdrawal of money from an ATM.
The p-value of 0.67 is more than 0.05 at a 95% level of accuracy. This means there is no significant relationship between the income of the respondents and any time withdrawal of money from an ATM.

Table 4 shows the correlation between occupation and Avoidance of physical cash.

H3: There is a significant relationship between the occupation and the Avoidance of physical cash by utilizing digital payments.

The p-value of 0.50 is more than 0.05 at a 95% accuracy level. This means there is no significant relationship between the occupation of the respondents and the Avoidance of physical cash by utilizing digital payments.

Chi-square tests were performed to find out the relationship between the variables. The cross-tabulation test result for occupation and utility bills shows that the majority of private employees (31%) agreed to payment of utility bills on time through net banking. Nearly (20%) of government employees agreed that they can able to make payments on utility bills on time, and the remaining groups such as students, business and retired accounted for (11%), (10%) and (8%) and agreed on the same.

Table 5 shows the chi-square test results on occupation and payment of utility bills.

H4: There is a relationship between the Occupation of the respondents and the Payment of utility bills on time.

The P value of 0.486 is more than the alpha value of 0.05. Hence the null hypothesis is accepted. So, there is no relationship between the occupation of the respondents and the payment of utility bills on time.
The cross-tabulation result for age and UPI payments reveals that the age group of 36-45 (16%) agreed upon UPI payments are not reaching on time to others. The age group of 26-35 (12%), 16-25 (10%) 46-55 (8%) and above 55 (8%) agreed the same.

H5: There is a relationship between the Age of the respondents and the unreached UPI payments on time.

<table>
<thead>
<tr>
<th>Table 6: Age and Unreached UPI Payments</th>
<th>Value</th>
<th>df</th>
<th>Asymptotic Significance (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>11.675</td>
<td>8</td>
<td>.166</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>13.224</td>
<td>8</td>
<td>.104</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>1.979</td>
<td>1</td>
<td>.159</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Prepared by the authors (2023)

The above table reveals that the P value of 0.166 is greater than the alpha value of 0.05. Hence the null hypothesis is accepted. So, there is no relationship between the age of the respondents and the unreached UPI payments on time.

The cross-tabulation for education and server issues shows that nearly (24%) of undergraduates agreed that online banking is affected by server errors. (14%) postgraduates agreed with the same, followed by professional studies (12%), higher secondary (10%) and SSLC (6%).

Table 7 shows the chi-square result for education and server issues.

H6: There is a relationship between the Education of the respondents and the Server issues that arise in online banking.

<table>
<thead>
<tr>
<th>Table 7: Education and Server issues</th>
<th>Value</th>
<th>df</th>
<th>Asymptotic Significance (2-sided)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Chi-Square</td>
<td>6.691</td>
<td>8</td>
<td>.570</td>
</tr>
<tr>
<td>Likelihood Ratio</td>
<td>8.060</td>
<td>8</td>
<td>.428</td>
</tr>
<tr>
<td>Linear-by-Linear Association</td>
<td>.121</td>
<td>1</td>
<td>.728</td>
</tr>
<tr>
<td>N of Valid Cases</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Prepared by the authors (2023)

The P value of 0.570 is greater than the alpha value of 0.05. Hence the null hypothesis is accepted. So, there is no relationship between the Education of the respondents and the Server issues that arise in online banking.

Table 8 shows the test results for the independent sample T-test on gender modes of payment.

H7: There is a significant difference between the Gender and Modes of online transfer of cash.

| Table 8: Independent Sample Test results- Gender and Modes of online transfer |
|---------------------------------------------|---------------------------------------------|---------------------------------------------|---------------------------------------------|
| Levene's Test for Equality of Variances     | t-test for Equality of Means                | Mean Difference                             |
| F    | Sig. | t      | df  | Sig. (2-tailed) | Std. Error Difference | 95% Confidence Interval of the Difference |
|      |      |        |     |                |                     | Lowerr | Upper |
|      |      |        |     |                |                     |        |       |

Impact of Digital Banking Products During Covid-19 In Rural Areas of Vellore District

![Image](image.jpg)

<table>
<thead>
<tr>
<th>Able to do all sorts of online transfer of cash</th>
<th>Equal variance assumed</th>
<th>1.089</th>
<th>.299</th>
<th>1.316</th>
<th>98</th>
<th>.191</th>
<th>.1833</th>
<th>.13929</th>
<th>-.09308</th>
<th>.45975</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equal variance not assumed</td>
<td></td>
<td>1.296</td>
<td>79.128</td>
<td>.199</td>
<td>.18333</td>
<td>.14151</td>
<td>-.09833</td>
<td>.46500</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Source:** Prepared by the authors (2023)

The significance level of the two-tailed test is 0.191 which is more than the level of significance of 0.05. This denotes that the null hypothesis is accepted. Hence, there is no significant difference between the Gender and all modes of online transfer of cash.

The reliability test was performed based on the Cronbach alpha coefficient using SPSS 3.0 separately. The result shows that the Cronbach alpha for the variables with N of 19 items is **0.830**. Since the alpha value for all the variables is more than 0.8, the reliability of the variables is very good.

Validity measures the validity of the variables with the help of correlation. Item to total correlation was applied to the data collected on all the variables to check the internal consistency of the measures. Since the correlated value for the variable in the questionnaire is more than the table value of 0.25 with a sample size of 100, the questionnaire is validated.

The results reveal that during the COVID-19 pandemic situation, ATM services, Internet banking and Digital payment apps were the most used digital products by customers. Most of the customers agreed that they can withdraw their money easily whenever they require it and even, and they can even pay their utility bills easily through net banking, mobile banking and digital payment apps. Though the customers can able to withdraw money from ATMs easily, due to lockdown restrictions on timings they cannot able to withdraw whenever they require. The customers felt secure while using the mobile banking facility.

Though online banking is very useful during the pandemic situation, it is highly affected by server errors and digital payment apps suffer from network issues. The majority of the customers felt that UPI app payments were not reaching the other person on time and most of the customers were not aware of mobile ATMs themselves.

5 CONCLUSION

In the service market, the bank plays a very important role in the society. It has developed far beyond the concept of lending money and accepting deposits to the digitalization of its products and services. Though digital banking products were known to the customer their importance and usage have been largely realized during the Covid-19 situation. Without the concept of digitalization of banking products people can’t able to proceed with their daily activities by purchasing their household goods online and payments through UPI apps. If banks continue to implement their digital innovations surely it can able to help the general public as well as the government by maintaining proper records.

Digitalization of Banking helped a lot for most of them during the Covid-19 pandemic situation. Net banking and digital payment apps play an eminent role in this current situation. For this, the bank should increase security by implementing additional protection. Server errors and network issues have to be tackled properly from the end of the bank. The bank has to take action against these issues. Unified Payments Interface apps sometimes do not reach the other party on time. To resolve this, the bank has to monitor these apps to avoid this problem in future.

The present study connotes the impact of digital products of specific banks such as HDFC Bank, Indian Overseas Bank, State Bank of India, Axis Bank and ICICI Bank. In future
research, some other banks other than the banks mentioned in this paper can be included in the study. Further, this study gives more importance to digital banking products. In future research, importance can be given to other attributes such as the customer relationship with banks and their distinguished services in comparison with others.

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