

DOI: 10.26794/2587-5671-2023-27-1-76-90
JEL G2, G21

Role of Digitalisation in Rural Banking Sector in Madurai, India

S. Karunakaran, N. Gopinathan

VIT Business School, Vellore Institute of Technology, Chennai, India

ABSTRACT

The Indian banking sector has reached greater heights in recent days because of adopting and involving in the Digitalisation of banking. Though India is moving forward with digitalisation process, our nation faces several setbacks and opposition, which has to be crossed specifically in the rural banking system. The current research work has attempted to examine these challenges and setbacks which are found commonly in rural banking digitalisation. This paper **aims** in analysing the impacts and influences of Digitalisation in rural banks of Madurai city, Tamil Nadu. Moreover, the study is surveying multiple influencing factors like literacy rate, education qualification, income quality, gender equality and socio-economic position. Finally, some suggestions and conceptions to increase the maximum reach of knowledge and importance regarding the Digitalisation of banks in rural regions are suggested to the government and banking sectors. Regional based loan schemes and mechanisms and procedures must be encouraged by banks. Income assessment, repayable capacity in the rural areas of Madurai has to be initiated. The study focuses on research-based on quantitative tools. The Study aims in explaining the various positive outcomes of bank digitalisation via digital banking and financial inclusion here in India. The present study provides the awareness of the digital world and the advantages of adopting them in rural India for various banking services. The paper concludes that there is a need for digital establishments and digital banking in most rural areas all over India.

Keywords: digitalization; banking sector; rural banks; statistical analysis; influence factors; financial literacy; India

For citation: Karunakaran S., Gopinathan N. Role of digitalisation in rural banking sector in Madurai, India. *Finance: Theory and Practice*. 2023;27(1):76-90. DOI: 10.26794/2587-5671-2023-27-1-76-90

Роль цифровизации в сельском банковском секторе в Мадуре, Индия

С. Карунакаран, Н. Гопинатан

Бизнес-школа ВИТ, Веллорский технологический институт, Ченнаи, Индия

АННОТАЦИЯ

В последнее время индийский банковский сектор достиг больших высот, благодаря внедрению и участию в цифровизации банковского дела. Хотя Индия движется вперед в процессе цифровизации, она сталкивается с рядом трудностей и противодействий, которые необходимо преодолеть, в частности, в сельской банковской системе. В рамках проводимых в настоящее время исследований была предпринята попытка проанализировать эти проблемы и проблемы, которые обычно возникают в процессе оцифровывания банковских счетов в сельских районах. **Целью** исследования является определение проблем, возникающих при внедрении цифровизации в банках сельских регионов – на примере города Мадурай штата Тамилнад. В рамках исследования рассмотрены такие факторы влияния, как уровень грамотности населения, уровень образования, качество доходов, гендерное равенство и социально-экономическое положение. Авторы статьи выдвигают свои **предложения** и концепции для правительства и банковского сектора, направленные на повышение максимального уровня знаний и важности цифровизации банков в сельских районах. Банки должны поощрять региональные кредитные схемы, механизмы и процедуры. В сельских районах Мадурай должна быть начата оценка доходов и платежеспособности. Исследование проведено с использованием научно-исследовательских и количественных инструментов. Цель исследования заключается в разъяснении положительных результатов цифровизации банковского сектора через цифровой банкинг и финансовые услуги в Индии. Настоящее исследование позволяет узнать о цифровом мире и преимуществах внедрения различных банковских услуг в сельских районах Индии. В статье делается **вывод** о том, что в большинстве сельских районов Индии существует потребность в цифровых учреждениях и цифровых банках. **Ключевые слова:** цифровизация; банковский сектор; сельские банки; статистический анализ; факторы влияния; финансовая грамотность; Индия

Для цитирования: Karunakaran S., Gopinathan N. Role of digitalisation in rural banking sector in Madurai, India. *Финансы: теория и практика*. 2023;27(1):76-90. DOI: 10.26794/2587-5671-2023-27-1-76-90

INTRODUCTION

In general, Digitalisation is considered the active involvement of new digital and trending technologies in the business context to increase the revenue and more possible opportunities for ongoing projects. In other words, it is the procedure of shifting a business to the next level, i.e. digital company. In general, the term digitalisation refers to the integration of available trending latest techniques and business activities to improvise them even more effectively [1]. For example, if a bank is rendering its services online and a customer can make transactions and other bank-related activities online, it is called “Digital banking”. Digitalisation refers to the conception of “digital transformation of the economy and the social status of a nation” [2]. Nowadays, Digitalisation in several sectors and business has become more intense and trending in the present decade. Digitalisation made a strong impact in addition to the recent innovations in business and trends. Therefore, the organisations and firms need to update to current digital strategies and stay focused on the factors and ideas that provide more profits in their respective business.

Today Digitalisation has set foot in all the fields [3]. Since the beginning of the 21st century, several digital techniques such as mobiles, the internet, internet banking, artificial intelligence, IoT have been developed. They have become an important aspect of every human’s day-to-day lifestyle [4]. The following *Figure 1* will explain the current trend in banking technologies after the implementation of Digitalisation in India.

Challenges and Issues Faced by Digital Banking in Rural Regions of India

- No proper financial literacy and digital literacy
- No trust and vulnerability towards the digital system
- Non-acceptance of Digitalisation of the banking system
- Inadequate knowledge about Digitalisation and their advantages
- The natural setup of the rural regions, their mindsets and economic situations.

Suggestions and Strategies to Encourage Digitalisation in Rural Regions of India

- It enhances the infrastructure.
- Introducing low-cost smartphones to access banks online.
- They are providing basic knowledge about the cashless economy.

- Revamping of rural economy and gaining their trust towards Digitalisation
- Boosting and enhancing policies
- They are creating awareness of encouraging the use of banking applications through smartphones.

Major Contribution

The major contribution of the study is described below,

- To investigate the role of Digitalisation and the new trends available in the Indian banking sector of south India-Tamil Nadu.
- To critically analyse the services prevalent in rural regions of Tamil Nadu.
- To figure out the gender impact found in rural digital banking services of Tamil Nadu.
- To evaluate the major issues and difficulties faced by the customers in digital banking from rural regions of Tamil Nadu.
- To observe the improvement of ruralisation and their quality of services in public and private digital banks of Tamil Nadu.

Paper Organisation

The following sections disclose the details about the paperwork, Section 1 briefing about the banking sector and their performance after the involvement and implementation of Digitalisation in rural regions of Tamil Nadu. Later the importance and purpose are being mentioned. Finally, the major benefactions of the work are mentioned. Section 2 illustrates a survey made on existing literature and concepts based on the roles and responsibilities of the banking sector and the Digitalisation of banks. Section 3 describes the methodology section. Here is how the paperwork will be executed, and the major components in the paper are focused. The conceptual framework is made here. Section 4 has discussed the major analysis and discussions of the work. Section 5 provides the findings of the research work. Section 6 discusses the conclusion and future work of the research.

LITERATURE REVIEW

Digitalisation can be defined as converting the present data into a digital form by adapting to new technology. This kind of acquisition is quite essential for the banking sector. By espousing Digitalisation, banks will be able to bestow strengthened customer services. With the help of current technological trends, people have been supported with round the clock access to their respective banks through either online banking or mobile applications. With this method, handling a massive amount of liquid cash

has become much easier and simpler. One of the major benefits of Digitalisation is that customers are opting for cashless transactions. Folk need not necessarily vary liquid cash anymore to make transactions at any time and place [5]. The world currently sees a rapid swift happening towards the digital shift in a globalised modern economy. The present paper focuses on the impacts of Digitalisation, which has occurred in the socio-economic situation of Romanian specificities. The research work implies that the understanding of Digitalisation is much needed and are quite causing some influence in several aspects [6].

The inequalities found majorly in socio-economic bereaves lead lives with low income to have a healthy life. Their well-being and economic status are widely dependent on the mainstream financial setup. Amartya Sen, an economist and a Noble laureate, has proclaimed that “Health and inclusion are key precepts of a well-functioning society under the ‘capability approach”.

Here the capability approach denotes the human improvement and development that can provide considerable independence to the economic transactions, normative utilities of choices and happiness and societal inclusion. The current paper aims to study the effect of Digitalisation based on financial inclusion on banks belonging to the public sector present in India. The paperwork suggests a few registered improvements to be encouraged and motivated [7].

Information and communication technologies are providing novel chances and confrontations for the developing country’s economic betterment. The current study focuses on socio-economic development seen in the background of the Indian economy. Since India is considered as one of the largest economies, found globally [8]. The banking sector is regarded as the backbone of every nation’s economy. If banks adopt Digitalisation, then the whole system can be exposed to technology and have an increased impact all over the nation’s economy [9]. Banks are also promoting these techniques because today, most customers prefer to do their transactions online rather than waiting in queues. The banking services have also developed with many styles like transactions using Unified Payments Interface (UPI), Plastic money (Credit Cards, Debit Cards and Smart Cards), Point of Sale, electronic fund transfer and clearing services, online trading accounts, telephone banking, Internet Banking, Immediate Payment Service (IMPS), Mobile Banking are some of the recent products offered by the bank. The digital banking system will help to reduce robbery and the risk of involving liquid cash.

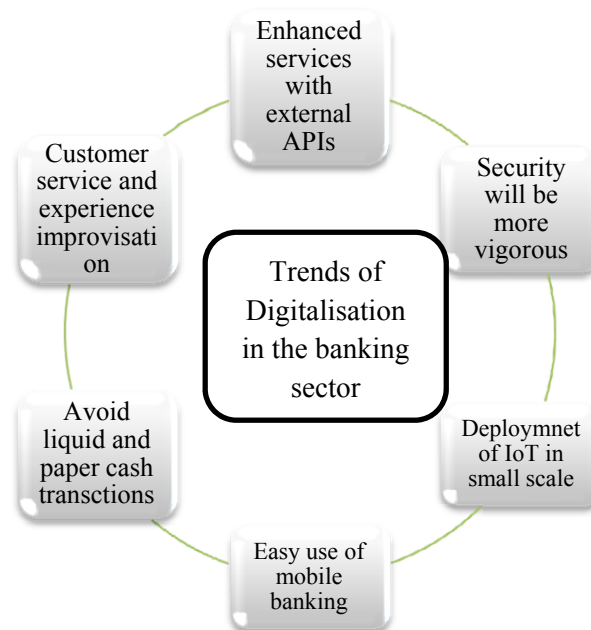


Fig. 1. Various Digitalisation Trends Available in the Banking Sector

Source: Authors' compilation.

The present study concentrates on the emergence of Digitalisation in banking sectors for a better Indian economy and nation [10]. There is a massive change happening worldwide in the area of digital technology in the human lifestyle. This is termed the “digital transformation”.

Today, Digitalisation is happening in all fields with emerging technology, and it has become a notable trend [11]. The current paper aims in explaining the various positive outcomes of bank digitalisation via digital banking and financial inclusion here in India [12]. The Indian government has adapted itself to the Digitalisation of the country to make India a Digital India. In this process, the entire banking system of the whole nation has transformed and empowered with the Digitalisation of emerging technology. The government schemes and policies encourage the new Digitalisation in banks and their system infrastructures [13].

The present study provides the awareness of the digital world and the advantages of adopting them in rural India for various banking services [14]. Digitalisation is the process of upgrading the current business status to a more advanced and digital form to increase revenue and more value-producing chances. For these major positive reasons, the implementation and encouragement of Digitalisation in all sectors, mainly in banking, have gained a centre of attraction and embracement [15]. The process of Digitalisation is engaging in an active and major role in framing the Indian banking scenario. Since smartphones with an

internet connection speed of 3G and 4G are available, it is making banking digitalisation even more easy and accessible. The current research paper is working on the needs and necessities of banking sector digitalisation [16].

Internet banking has become the trending topic of banking services and connections in recent times. The paper also aims in investigating the various trends of the Digitalisation of the banking system [17]. The financial system is indeed engaging in a significant role in the growth and enhancement of the nation's economy. The modern world out there has filled fully with emerging and developing techniques of the internet in the area of banking and other sectors, respectively [18]. The banking sector and Digitalisation have become integral features in our life, and without these, the world would be nothing. All the banks are involved and investing in digital initiatives to provide more enhanced customer output. Digitalisation will increase more customisation and connect the customers easily. The paper aims to discuss the various advantages and disadvantages of the Digitalisation of the banking sector in India [19].

Research Gaps

- According to the RBI, the Indian banking sector is capable enough and deliberately efficient. The economic and financial situation in India is faraway upper level to many other nations in the world. The studies conducted on market, credit and liquidity risk recommends that banks in India are quite flexible, strong and have resisted well with worldwide deflation rigorously.
- India's loan services done in digital form stood at nearly US\$ 75 billion during the financial year 2018. However, it is estimated to reach 1 trillion US\$ by the end of the 2023 financial year as suitability analysis is yet to perform.
- The rural digital banking services in certain rural parts of India has not been implemented effectively and efficiently, suggested by certain studies.
- Several factors are affecting the reach and usage of banking services such as Digital infrastructure, rural dividend's, Education qualification, literacy rate, poverty and need for banking services should be studied effectively.

METHODS

This research is mainly concerned with analysing the impact of Digitalisation in rural regions of Madurai city in the state of Tamil Nadu. Digitalisation has brought some major changes in the banking

sector, with many innovations and enhancements yet to come. With the help of Digitalisation, a vibrant future can be imagined. The national, state and international banks have attained some enormous benefits because of adapting to new technologies. The conception of online banking has reduced the trouble of standing in queues and resulted in yearning for a lot of revenue. These days, Digitalisation in banking is a hot topic to pick for discussions; current research is sticking to the empirical and quantitative analysis methods. Since the data gathered is from secondary sources. The respondents seemed to have bank accounts in either public banks or private banks. Further study is carried out using statistical analysis; a conceptual framework and Hypothesis are also framed accordingly. Since the study focuses on research-based on quantitative tools, the study is exploratory and conclusive.

Data Collection

Since the research is performed by using secondary data, which were gathered from existing sources like published papers, journals and articles from Dec 2020 – June 2021. The sample size was about 200 respondents belonging to the rural regions of Madurai, Tamil Nadu, southern India. For more reliability, the statistical analysis is also done in the research with the help of a statistical tool called IBM SPSS.

Conceptual Framework

With the support of a conceptual framework, the reach of Digitalisation of the banking sector and the use of digital banking systems is being analysed for rural regions. To be more specific, the analysis is carried out in the southern area of India. The city of Madurai was selected for carrying out the research. The following *Figure 2* will show the respective conceptual framework of the proposed work.

The conceptual framework describes in detail the proposed research work. The focus of the work is to concentrate on the adopted level of digital banking in rural regions. To identify the status of Digitalisation, Economic development, socio-economic development of the nation, and particular persons. The framework considers the facts like economic and socio-economic development as the dependent variable; the moderating variables are like types of services, the extent of usage of that services in rural regions are considered. The independent variable is the rural banks and their respective services. Keeping all these factors in consideration, the Hypothesis is framed accordingly.

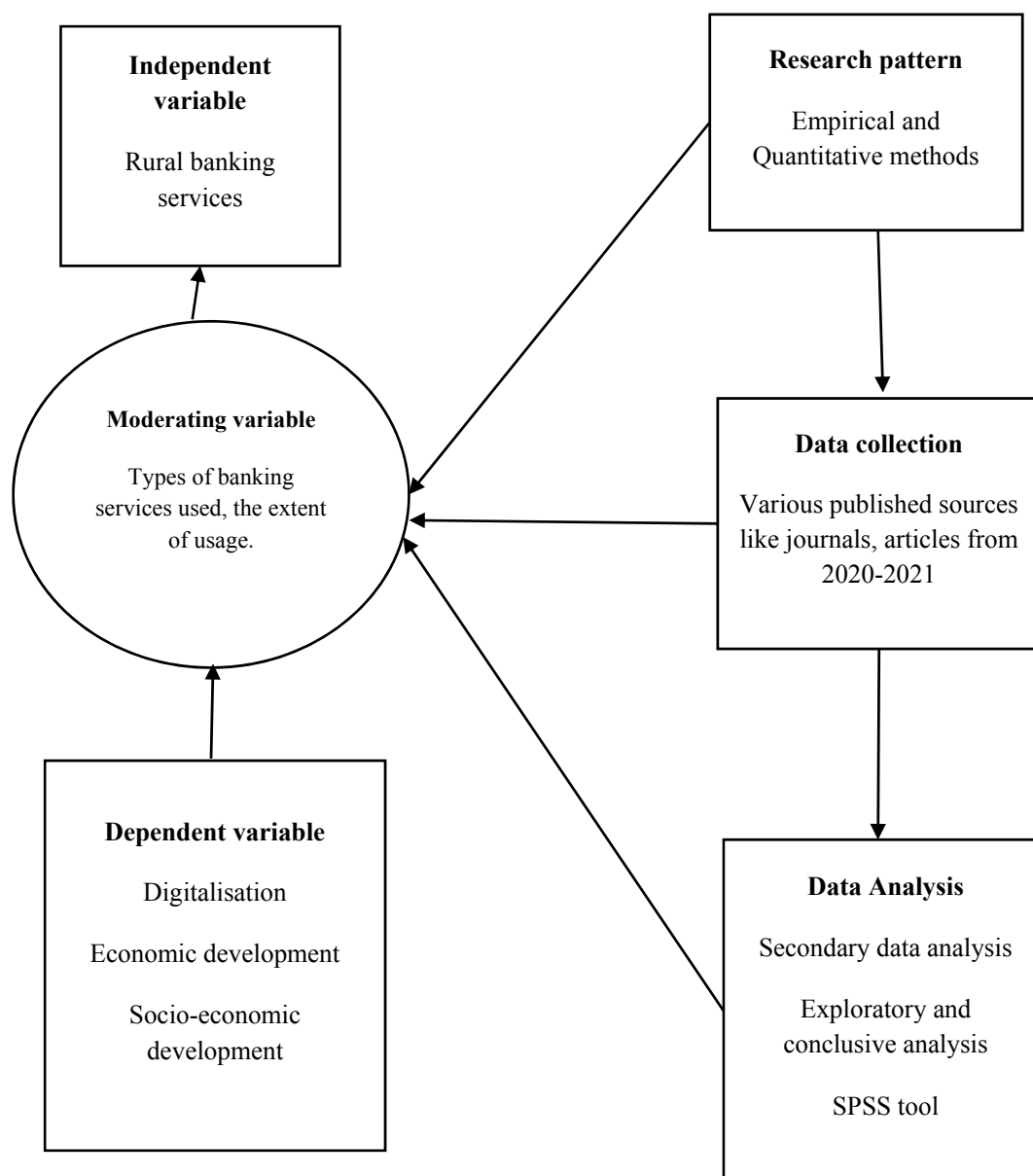


Fig. 2. Conceptual Framework

Source: Authors' compilation.

Hypothesis

H₁1: Digital banking services are prevalent in the rural areas of Tamil Nadu, Madurai.

H₁0: Digital banking services are not prevalent in the rural areas of Tamil Nadu, Madurai.

H₂1: The perception of digital banking to increase the standard of the economy in the rural regions of Madurai, Tamil Nadu is noteworthy.

H₂0: The perception of digital banking to increase the standard of the economy in the rural regions of Madurai, Tamil Nadu is not noteworthy.

Demography Profile

The analysis is further carried out with the secondary data gathered online in Madurai, Tamil Nadu, with

200 respondents. The following table will provide the details about their demographic analysis and their percentage, respectively.

Table 1 furnishes the demographic profile for rural banks (public and private) customers, which are considered the most important variables in this research work. Since this research work is a secondary data basis analysis, the data were collected from existing and published studies, journals, papers and articles. The survey had 200 respondents, out of which the male (102) was more dominant than female (98) customers. The age group was classified as 18–25, 26–35, 36–45, 46–60 and 61 & above respectively with customers count of 35, 63, 57, 32, 1st 13. This shows that people in middle age have more accounts.

Table 1
Demographic Analysis

Data demography		Percentage
Gender		
Male	102	51
Female	98	49
Age		
18–25	35	17
26–35	63	31
36–45	57	29
46–60	32	16
61 and above	13	7
Literacy rate		
SSLC	24	12
HSC/diploma	20	10
Bachelor degree	138	69
Master degree	18	9
Profession		
Student	98	49
Own business	38	19
Employed	32	16
Unemployed	8	4
Housewife	24	12
Marital status		
Married	102	51
Single	80	40
Separated	3	2
Widowed	5	7

Source: Authors' compilation.

Next is the Literacy rate of customers grouped and their total customers as SSLC – 24 customers, HSC/diploma – 20 customers, Bachelor degree – 138 customers, and customers with a master's degree are 18. Followed by the profession of the customers grouped as students – 98 customers, having own business – 38 customers, Employed in various organisations – 32 customers, Unemployed 8 customers, Housewife –

24 customers respectively. The next field is recording their marital status with married – 102 customers, Singles – 80 customers, and Separated – 3 customers and widowed – 5 customers.

Since the respondents have accounts with private and public banks, the study is also carried out in that way; from the details gathered, it was found that 5 major public and private sector bank customers were found in the responses. Therefore, they are grouped according to their banks, respectively, along with the analysis made regarding the digital banking system.

Public Banks

The following is tables and graphs representing the list of Public sector banks and their research-based analysis, respectively [21].

Table 2 describes the various government bank customers of the research study. It was found that a major part of consumers in the rural region of Madurai had their bank accounts in government banks. 102 respondents had government bank accounts. The following is the 5-point Likert scale analysis done on public banks of rural regions in Madurai, Tamil Nadu.

Table 3 furnishes the details of the analysis made with the 5-point Likert scale. These contained various information about online banking. The respondents for public banks were 102 in total, so the percentage and statistical analysis calculations were also made accordingly. The first question was regarding the time of having their accounts with their respective public banks. The responses were received as follows: 0–12 months – 15 respondents, 1–5 years – 19 respondents, 6–10 years – 25 respondents, 10–15 years – 26 respondents, and 15 years and more – 17 respondents. Followed by analysing the awareness of the online banking system: Very much – 17 respondents, Much – 28 respondents, average – 24 respondents, Little – 19 respondents, and very little – 14 respondents in total. The next question was analysing the Familiarity with available banking services shown in figure 6 like managing accounts – 20 respondents, Fund transfer services – 54 respondents, Investment options – 5 respondents, Applying for new cheque book – 10 respondents and using for online bills payment – 13 respondents. Next, the user perspective about the online banking system in rural regions was analysed: Strongly agree – 17 respondents, agree – 38 respondents, Neutral – 34 respondents, Disagree – 10 respondents, and strongly disagree – 3 respondents. Finally, the Preference over traditional banking with digital banking was analysed: Strongly agree – 10 respondents, Agree – 32 respondents, neutral – 20 respondents, Disagree – 22 respondents, Strongly disagree – 18 respondents.

Table 2

List of Public Banks of 102 Respondents

No.	Public banks	Total users	Percentage
1	State bank of India	38	37
2	Canara bank	24	23
3	Indian overseas bank	22	21
4	Indian bank	12	12
5	IDBI bank	6	7
	Total	102	100

Source: Authors' compilation.

Private banks

The following is tables and graphs representing the list of Private sector banks and their research-based analysis, respectively [22].

Table 4 describes the various Private bank customers of the research study. It was found that only a few respondents were consumers in the rural region of Madurai had their bank accounts in private banks. On the other hand, 98 respondents had private bank accounts. The following is the 5-point Likert scale analysis done on public banks of rural regions in Madurai, Tamil Nadu.

Table 5 furnishes the details of analysis made with the 5-point Likert scale for private banks. These contained various information about online banking. The respondents for private banks were 98 in total, so the percentage and statistical analysis calculation was also made accordingly. The first question was regarding the time of having their accounts with their respective private banks. The responses were received from: 0–12 months – 12 respondents, 1–5 years – 25 respondents, 6–10 years – 31 respondents, 10–15 years – 14 respondents, and 15 years and more – 16 respondents. Followed by analysing the awareness of the online banking system: Very much – 16 respondents, Much – 15 respondents, average – 37 respondents, Little – 18 respondents and very little – 12 respondents in total. The next question was analysing the Familiarity with available banking services: Managing accounts – 13 respondents, Fund transfer services – 28 respondents, Investment options – 17 respondents, Applying for new cheque book – 15 respondents and using for online bills

Table 3

5-Point Likert Scale Analysis for Public Banks

Likert scale values	Responses	Percentage
Period of using public banks		
0–12 months	15	15
1–5 years	19	18.5
6–10 years	25	24.5
10–15 years	26	26
15 and more years	17	17
Awareness of online banking		
Very much	17	17
Much	28	28
average	24	24
little	19	18.5
Very little	14	13.5
Familiarity with banking services online		
Managing accounts	20	19.5
Fund transfers	54	52.5
Investment options	5	5
New cheque book request	10	10
Online bills payment	13	13
User perspective of online banking		
Strongly agree	17	17
Agree	38	36.5
Neutral	34	33.5
Dis agree	10	10
Strongly disagree	3	3
Preference over traditional banking for digital banking		
Strongly agree	10	10
Agree	32	31
Neutral	20	19.5
Dis agree	22	21.5
Strongly disagree	18	18

Source: Authors' compilation.

Table 4

List of Private Banks of 98 Respondents

S.no	Private banks	Total users	Percentage
1	Axis bank	15	15
2	HDFC bank	17	17
3	ICICI bank	14	14
4	City union bank	35	35
5	Karur Vysya bank	17	17
	Total	98	100

Source: Authors' compilation.

payment – 25 respondents. Next, the user perspective about the online banking system in rural regions was analysed: Strongly agree – 26 respondents, Agree – 27 respondents, Neutral – 26 respondents, Disagree – 10 respondents, and strongly disagree – 9 respondents. Finally, the Preference over traditional banking with digital banking was analysed: Strongly agree – 24 respondents, Agree – 23 respondents, neutral – 19 respondents, Disagree – 20 respondents, Strongly disagree – 12 respondents.

RESEARCH ANALYSIS AND RESULTS

To study the level of penetration of online banking in rural regions of Madurai, Tamil Nadu with the data acquired, the following statistical tests are carried out with the help of a statistical tool SPSS tool. Furthermore, to find the reliability of digital banking with public and private sector banks, the Chi-square test and correlation tests are done from the respective data separately.

Reliability Tests for Public Banks

Cross Tabulations – Chi-Square Test

Firstly, the chi-square test is carried out for public banks with a level of awareness of online banking in the rural region of Madurai, Tamil Nadu.

Above Table 6 represents the chi-square output for the public banks with an awareness level of online banking with the respondents 102. The significant value is 0.159, which shows a good level of significance found between those two variables.

The above Table 7 is representing the chi-square output for the public banks with the Familiarity level of online banking with the respondents of 102. The significant value is 0.132, which shows that there is

Table 5

5-Point Likert Scale Analysis for Private Banks

Likert scale values	Responses	Percentage
Period of using Private banks		
0–12 months	12	12.5
1–5 years	25	25.5
6–10 years	31	31
10–15 years	14	14.5
15 and more years	16	16.5
Awareness of online banking		
Very much	16	16.5
Much	15	15
average	37	38
little	18	18
Very little	12	12.5
Familiarity with banking services online		
Managing accounts	13	13
Fund transfers	28	29
Investment options	17	17.5
New cheque book request	15	15
Online bills payment	25	25.5
User perspective of online banking		
Strongly agree	26	26
Agree	27	28
Neutral	26	26
Dis agree	10	10
Strongly disagree	9	10
Preference over traditional banking for digital banking		
Strongly agree	24	24.5
Agree	23	23.5
Neutral	19	20
Dis agree	20	20
Strongly disagree	12	12

Source: Authors' compilation.

Table 6

Chi-square Test for Public Banks with the Level of Awareness of Online Banking

Parameter	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	26.218a	20	.159
Likelihood Ratio	18.579	20	.549
N of Valid Cases	102		

Source: Authors' compilation.

Table 7

Chi-Square Test for Public Banks with the Level of Familiarity of Online Banking

Parameter	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	67.930 ^a	20	.132
Likelihood Ratio	27.689	20	.117
N of Valid Cases	102		

Source: Authors' compilation.

Table 8

Chi-Square Test for Public Banks with the Level of User Perspective on Online Banking

Parameter	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	66.701 ^a	20	.161
Likelihood Ratio	25.766	20	.174
N of Valid Cases	102		

Source: Authors' compilation.

Table 9

Chi-Square Test for Public Banks with the Level of Preference over Traditional Banking with on Online Banking

Parameter	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	37.856 ^a	20	.149
Likelihood Ratio	21.861	20	.348
N of Valid Cases	102		

Source: Authors' compilation.

Table 10

Correlation of Awareness of Online Banking with Familiarity of Online Services for Public Banks

Parameter		Online banking awareness	Online banking services
online banking awareness	Pearson Correlation	1	.360**
	Sig. (2-tailed)		.106
	N	102	102
online banking services	Pearson Correlation	.360**	1
	Sig. (2-tailed)	.106	
	N	102	102

Source: Authors' compilation.

a good level of significance found between those two variables

The above *Table 8* represents the chi-square output for the public banks with User perspective level of online banking with the respondents of 102. The significant value is 0.161, which shows that there is a good level of significance found between those two variables

The above *Table 9* is representing the chi-square output for the public banks with Preference over traditional banking level with online banking with the respondents of 102. The significant value is 0.149, which shows that there is a good level of significance found between those two variables.

Cross Tabulations – Correlation

The next test performed in the available statistical tool is finding the correlation about the awareness of online banking with Familiarity, User perspective and Preference over traditional banking with online banking for public banks having respondents of 102 in rural regions of Madurai.

Table 10 represents the correlation outcomes of awareness of online banking comparing with the Familiarity of online services of Digital banking in Public Banks. The result shows a significant value of 0.360, which is a good level of significance, found in online banking of Public Banks.

Table 11 represents the correlation outcomes of online banking awareness comparing with the user's perspective on Digital banking in Public Banks. The result shows a significant value of 0.192, which is a good level of significance, found in online banking of Public Banks.

Table 12 represents the correlation outcomes of awareness of online banking compared with the Preference over traditional banking with Digital

banking in Public Banks. The result shows a significant value of 0.119, which is a good level of significance, found in online banking of Public Banks.

Reliability Tests for Private Banks

Cross Tabulations – Chi-Square Test

Firstly, the chi-square test is carried out for Private Banks with a Level of awareness of online banking in the rural region of Madurai, Tamil Nadu.

The above *Table 13* represents the chi-square output for the Private Banks with an awareness level of online banking with the respondents 98. The significant value is 0.355, which shows a High level of significance found between those two variables.

The above *Table 14* represents the chi-square output for the Private Banks with the Familiarity level of various online banking services with the respondents of 98. The significant value is 0.300, which shows that there is a High level of significance found between those two variables.

The above *Table 15* represents the chi-square output for the Private Banks with the user perspective of online banking with the respondents of 98. The significant value is 0.195, which shows that there is a Moderate level of significance found between those two variables.

The above *Table 16* represents the chi-square output for the Private Banks with the Preference of online banking over traditional banking with the respondents of 98. The significant value is 0.189, which shows that there is a Moderate level of significance found between those two variables.

Cross Tabulations – Correlation

The next test performed in the available statistical tool is finding the correlation about the awareness of online banking with Familiarity, User perspective and Preference over traditional banking with online

Table 11

Correlation of Awareness of Online Banking with User Perspective of Online Services for Public Banks

Parameter		Online banking awareness	Online banking user
online banking awareness	Pearson Correlation	1	.192
	Sig. (2-tailed)		.359
	N	102	102
online banking user	Pearson Correlation	.192	1
	Sig. (2-tailed)	.359	
	N	102	102

Source: Authors' compilation.

Table 12

Correlation of Awareness of Online Banking with Preference over Traditional Banking with of Online Services for Public Banks

Parameter		Online banking awareness	Traditional banking vs digital banking
Online banking awareness	Pearson Correlation	1	.119
	Sig. (2-tailed)		.234
	N	102	102
Banking vs digital Banking	Pearson Correlation	.119	1
	Sig. (2-tailed)	.234	
	N	102	102

Source: Authors' compilation.

Table 13

Chi-Square Test for Private Banks with the Level of Awareness of Online Banking

Parameter	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	21.745 ^a	20	.355
Likelihood Ratio	15.820	20	.728
N of Valid Cases	98		

Source: Authors' compilation.

Table 14

Chi-Square Test for Private Banks with Familiarity Level of Various Services of Online Banking

Parameter	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	22.778 ^a	20	.300
Likelihood Ratio	16.978	20	.654
N of Valid Cases	98		

Source: Authors' compilation.

Table 15

Chi-Square Test for Private Banks with User Perspective of Online Banking

Parameter	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	28.650 ^a	20	.195
Likelihood Ratio	18.095	20	.581
N of Valid Cases	98		

Source: Authors' compilation.

Table 16

Chi-Square Test for Private Banks with Preference of Online Banking Over Traditional Banking

Parameter	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	25.334 ^a	20	.189
Likelihood Ratio	17.806	20	.600
N of Valid Cases	98		

Source: Authors' compilation.

Table 17

Correlation of Awareness of Online Banking with Familiarity of Online Services for Private Banks

Parameter		Awareness of online banking	Familiarity with online banking services
Awareness of online banking	Pearson Correlation	1	.158
	Sig. (2-tailed)		.569
	N	98	98
Familiarity with online Banking services	Pearson Correlation	.158	1
	Sig. (2-tailed)	.569	
	N	98	98

Source: Authors' compilation.

Table 18

Correlation of Awareness of Online Banking with Perspective of User of Online Services for Private Banks

Parameter		Awareness of online banking	User perspective on online banking
Awareness of online banking	Pearson Correlation	1	.185
	Sig. (2-tailed)		.068
	N	98	98
User perspective on online banking	Pearson Correlation	.185	1
	Sig. (2-tailed)	.068	
	N	98	98

Source: Authors' compilation.

Table 19

Correlation of Awareness of Online Banking with Preference for Private Banks over Traditional Banking

Parameter		Awareness of online banking	Preference over traditional banking and digital banking
awareness of online banking	Pearson Correlation	1	0.247
	Sig. (2-tailed)		.645
	N	98	98
preference over traditional banking and digital banking	Pearson Correlation	0.247	1
	Sig. (2-tailed)	.645	
	N	98	98

Source: Authors' compilation.

banking for Private Banks, having respondents of 98 in rural regions of Madurai.

Table 17 represents the correlation outcomes of awareness of online banking compared with Familiarity of online services of Digital banking in Private Banks. The result shows a significant value of 0.158, which is a satisfactory level of significance, found in online banking of Private Banks.

Table 18 represents the correlation outcomes of online banking awareness compared with users' perspective for online services of Digital banking in Private Banks. The result shows a significant value of 0.185, which is a satisfactory level of significance, found in online banking of Private Banks.

Table 19 represents the correlation outcomes of awareness of online banking comparing with Preference users of online services of Digital banking with traditional banking in Private Banks. The result shows a significant value of 0.247, which is

a satisfactory level of significance, found in online banking of Private Banks.

FINDINGS AND DISCUSSIONS

The sample of the study confines the rural regions of various parts of Madurai city, Tamil Nadu. Secondary data was collected from multiple published sources like papers, journals, articles published from 2020–2021. The data analysis and statistical analysis was done with the help of the SPSS tool. An empirical model would be suggested to increase the reach and more usage of digital banking in rural regions of Madurai city, Tamil Nadu. Suitable suggestions, recommendations and appropriate conclusions would be provided for the research work.

The reach out of positive impacts of digitisation in rural banks is very low in the regions of Madurai. The male members of the family have more awareness when compared to female members of the family.

Therefore, the government must focus on providing more awareness schemes and programs in rural regions. Problems of poverty, Social inequality, income, and literacy rate influence the reach and extent of digital banking adoption in the rural areas of Madurai and India overall. Smartphones are a must for improving Digitalisation in rural banks. The research work suggests the banks provide loans for nominal smartphones for rural regions. Regionally based loan schemes and mechanisms and procedures must be encouraged by banks. Income assessment, repayable capacity in the rural areas of Madurai has to be initiated.

CONCLUSION AND SUGGESTIONS

The research work and analysis is clearly showing that the rural regions in many parts of India are still not having clear knowledge about the impacts and

advantages of digital banking. This is mainly because of the lack of knowledge, literacy rate, and inequality found abundantly in income distribution. People who are aware of digital banking, are very minimum in count. To overcome this situation, the study suggests some ideas such as the level of awareness is very poor in rural regions of Madurai, so that some government policies can consider. Next, the male users are predominant in all families, so to attain female customers, women based programs are needed and encouraged. Since the income level is also having an impact on families of rural regions, new methods should be considered. Lastly, it was found that there is a need for digital establishments and digital banking in most rural areas all over India. So that, the awareness of banking-related applications increasing and that are accessible on smartphones.

REFERENCES

1. Badam D., Gochhait S. Digitalization and its impact on Indian economy. *International Journal of Advanced Research in Engineering and Technology*. 2020;11(10):1559–1568. DOI: 10.34218/IJARET.11.10.2020.149
2. Vally K. S., Divya K. H. A study on digital payments in India with perspective of consumer's adoption. *International Journal of Pure and Applied Mathematics*. 2018;118(24):1–9. URL: <https://www.acadpubl.eu/hub/2018-118-24/2/378.pdf>
3. Mancini-Griffoli T. et al. Casting light on central bank digital currency. IMF Staff Discussion Note. 2018;(8). URL: https://www.researchgate.net/publication/332576968_Casting_Light_on_Central_Bank_Digital_Currencies
4. Das L. T., Das K. Digitization of Indian economy: Hopes and hypes. *AAYAM: AKGIM Journal of Management*. 2019;9(1):54–63.
5. Sowmiya G., Selvam V. Drive to digitalization in insurance: A study on policyholders' attitude towards using mobile banking. *Journal of Critical Reviews*. 2020;7(9):134–136. DOI: <http://dx.doi.org/10.31838/jcr.07.09.25>
6. Noja G., Pânzaru C. Five possible impacts of digitalisation in Romania. *European Review of Applied Sociology*. 2021;14(22):1–10. DOI: 10.1515/eras-2021-0001
7. Kanungo R. P., Gupta S. Financial inclusion through digitalisation of services for well-being. *Technological Forecasting and Social Change*. 2021;167:120721. DOI: 10.1016/j.techfore.2021.120721
8. Maiti D., Castellacci F., Melchior A. Digitalisation and development: Issues for India and beyond. In: Maiti D., Castellacci F., Melchior A., eds. *Digitalisation and development*. Singapore: Springer-Verlag; 2020:3–29. DOI: 10.1007/978-981-13-9996-1_1
9. Veeresh Kumar Sharma. Impact of digitalization in finance & accounting. *International Journal of Business and Management Invention (IJBMI)*. 2021;10(7-Ser. 3):51–56. DOI: 10.35629/8028-1007035156
10. Kalsan R. Impact of digital banking in India: Trends & challenges. *International Journal for Research in Engineering Application & Management (IJREAM)*. 2020;5(10):69–73. DOI: 10.35291/2454-9150.2020.0013
11. Kulkarni L., Ghosh A. Gender disparity in the digitalization of financial services: Challenges and promises for women's financial inclusion in India. *Gender, Technology and Development*. 2021;25(2):233–250. DOI: 10.1080/09718524.2021.1911022
12. Aarti Sharma. Digital banking in India: A review of trends, opportunities and challenges. *International Research Journal of Management Science & Technology (IRJMST)*. 2017;8(1):168–180. DOI: 10.32804/IRJMST
13. Regi S. B., Golden S. A. R. Customer preference towards innovative banking practices available in state bank of India at Palayamkottai. *Sankhya International Journal of Management and Technology*. 2014;3(11A):31–33.
14. Singh R., Malik G. Impact of digitalization on Indian rural banking customer: With reference to payment systems. *Emerging Economy Studies*. 2019;5(1):31–41. DOI: 10.1177/2394901519825912
15. Harchekar J. S. Digitalization in banking sector. *International Journal of Trend in Scientific Research and Development*. 2018;(1):103–109. DOI: 10.31142/ijtsrd18681

16. Hazarika S. Impact of digitalization on employment of personnel in banking sector: A case study of India. *International Journal of Management*. 2020;11(9):982–989. DOI: 10.34218/IJM.11.9.2020.092
17. Gurram U.R., Velagapudi A. Impact of digitalization on traditional banking. *International Journal of Research in Engineering, Science and Management*. 2020;3(12):29–33. DOI: 10.47607/ijresm.2020.400
18. Kaur S.J., Ali L., Hassan M.K., Al-Emran M. Adoption of digital banking channels in an emerging economy: Exploring the role of in-branch efforts. *Journal of Financial Services Marketing*. 2021;26(2):107–121. DOI: 10.1057/s41264-020-00082-w
19. Chinni N., Mohini P.V., Srinadh S. Impact of digitalization of banks. *EPRA International Journal of Multidisciplinary Research*. 2021;7(3):187–190. DOI: 10.36713/EPRA6556
20. Selvaraj N. Banking service in rural areas – demographic profile of Tamilnadu. *Journal of Accounting & Marketing*. 2021;10(6). URL: <https://www.hilarispublisher.com/open-access/banking-service-in-rural-areas – demographic-profile-of-tamilnadu.pdf>
21. Narayanan S.M., Chandrasekaran S. A study on customer’s knowledge about the green banking initiatives of selected public sector banks in Madurai district. *Journal of Xi’an Shiyu University, Natural Science Edition*. 2021;17(11):275–285. URL: <https://www.xisdxjxsu.asia/V17I11-28.pdf>
22. Andy R., Sujatha A. A study on customers attitude towards the problems of Internet banking services in Madurai city. *ComFin Research*. 2021;9(1):17–21. DOI: 10.34293/commerce.v9i1.3503

ABOUT THE AUTHORS / ИНФОРМАЦИЯ ОБ АВТОРАХ



Sandhya Karunakaran — Research Scholar, VIT Business School, Vellore Institute of Technology, Chennai, India

Сандхия Карунакаран — научный сотрудник, VIT Business School, Веллорский технологический институт, Ченнаи, Индия

<https://orcid.org/0000-0003-1314-3185>

Corresponding author / Автор для корреспонденции:

Sandhya.karunakaran2020@vitstudent.ac.in



Nandagopal Gopinathan — PhD, Assoc. Prof., VIT Business School, Vellore Institute of Technology, Chennai, India

Нандагопал Гопинатан — PhD, доцент, бизнес-школа ВИТ, Веллорский технологический институт, Ченнаи, Индия

<https://orcid.org/0000-0001-8786-305X>

Gopinathan.n@vit.ac.in

Conflicts of Interest Statement: The authors have no conflicts of interest to declare.

Конфликт интересов: авторы заявляют об отсутствии конфликта интересов.

The article was submitted on 12.12.2021; revised on 14.01.2022 and accepted for publication on 27.06.2022.

The authors read and approved the final version of the manuscript.

Статья поступила в редакцию 12.12.2021; после рецензирования 14.01.2022; принята к публикации 27.06.2022.

Авторы прочитали и одобрили окончательный вариант рукописи.