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# Adoption of online banking in Goa amidst the pandemic

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**Abstract:** Banking transactions are one of the most vital daily services that fulfil the needs of the society. Amidst the ongoing pandemic large portion of the population are shifting to digital channels for meeting their hassle free banking requirements in contactless manner. The study aims to know the adoption of online banking services by the customers in Goa, factors influencing the adoption of online banking and the hitches in adoption of online banking from non-users of online banking. Statistical techniques used are percentage analysis, mode, Chi-square test and factor analysis. Findings of the study show that the adoption of online banking in Goa has increased recently due to the pandemic. The adoption of online banking is significantly associated with the age, gender, occupation and literacy level of the customers. Convenience and service tangibility influences the customers to use online banking. Security of transaction and fear of making mistakes are mainly restricting the use online banking.

**Keywords:** online banking; virtual banking; adoption; digitisation.

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## 1 Introduction

The pandemic due the outbreak of COVID-19 virus since December 2019 has forced the people across the world to protect them from it only through social distancing. But fulfilment of basic needs is important to continue living. Banking transactions are among the most vital day-to-day services that fulfil the needs of the society where one has to visit the branch and hold on a long time in queue to meet their banking requirements. But

thanks to the growth of information technology that has enabled the banks to serve their customers through electronic mode without physically visiting the bank branch and without exchange of any tangible commodity with maintaining social distance. Today online or virtual banking has become an integral part of the banking system in India. Online banking refers to a system of banking where one can access his/her bank account and carry out financial transactions via internet both on desktop versions and mobile application. It enables bank customers to meet their banking requirements eliminating the need for paper work with complete liberty to perform transaction from anywhere at any time. Amidst the ongoing pandemic large number of bank customers are adapting to virtual banking and the banks are also maintaining continuity of their commercial operations in safe and remote manner. Although online banking provides many benefits to the customers still it is observed that online banking adoption and acceptance by customers is confronted with hitches. The study aims to know the adoption of online banking services by the customers in Goa and also to enquiry into the factors influencing the adoption of online banking services. At the same time an attempt is made to know the reasons for hitches in adoption of online banking from the customers who not using online banking.

## **2 Literature review**

According to Sathye (1999) low awareness of online banking is one of the major factors causing people not to adopt online banking. In the opinion of Mattila (2003) perceived difficulty in using computers combined with the lack of personal service in e-banking world were the main barriers of internet banking adoption among mature customers. Lee (2009) found that use of online banking is adversely affected by the security/privacy risk, financial risk and positively affected by perceived benefit, attitude and perceived usefulness. Rahmath et al. (2011) conducted a study to determine the factors influencing the consumers' adoption of internet banking in India and the factor analysis results indicate that the influence of perceived usefulness, perceived ease of use and perceived risk on use of internet banking is positive. Mansumittrchai and Chin (2012) using factor analysis proposed seven important characteristics on adoption of internet banking – compatibility, difficulty, security, trust, third party concern, status, and physical contact. The findings also showed that adopters and non-adopters differ with regards to their attitude towards three factors of adoption – compatibility, trust and physical contact. Singh (2013) in an exploratory study to identify the barriers for the usage of internet banking services in the semi-urban area in India using factor analysis identified nine factors, i.e. cost, reliability, processing barriers, security issues, technological incontinence, lack of infrastructure, conventional approach, risk and resistance which were the barriers in the usage of internet banking services in the semi-urban area. Kalaiarasi and Srividya (2013) attempted to identify the factors influencing adoption of online banking services among students using Roger's innovation diffusion theory. The finding of the research suggests that the young users adopt online banking because it is suitable for their lifestyle and the website is user-friendly. Kesharwani and Gajulapally (2013) conducted a study to identify drivers and inhibitors of internet banking adoption in India using exploratory factor analysis followed by a confirmatory factor analysis found seven factors-perceived benefits, hacking and fraud risk, performance risk, computer self-efficacy, technology complexity, social influence,

and pricing concerns. Malhotra et al. (2014) attempted to find factors affecting adoption of internet banking in India using LPS. The results show that the perceived usefulness, perceived risk, image, result demonstrability, perceived behavioural control and subjective norms have significant effects on intention to use internet banking. Dalvadi (2015) analysed the factors that influence the adoption of internet banking among Indian consumer. The results indicate that security perceived ease of use, support by bank and government and usefulness of internet has higher impact on adoption rate. Yadav (2016) found a significant statistical difference in gender, age, marital status, residential area, type of family, education, annual income of the respondents and the willingness to subscribe the service. In addition the seven factors, i.e., perceived risk, perceived quality of service, perceived usefulness, perceived cost, perceived ease of use, trust and awareness drive customers intention to use internet banking. Kariyawasam and Jayasiri (2016) conducted a study on awareness and usage of internet banking facilities in Sri Lanka It was found that lack of knowledge of accessing internet and lack of facilities for internet access too, contribute to the negative attitude towards e banking.

### **3 Literature gap**

Although many studies are conducted in this area prior to the pandemic highlighting number of factors that affect adoption of online banking. But the present pandemic situation has forced many banking customers to go online for their daily banking needs. Thus, this study holds significance in the present situation to know how pandemic has created an impact on customer's adoption to online banking and also the factors influencing such adoption.

### **4 Objectives of the study**

- 1 To find the current state of adoption of online banking by customers of commercial banks in Goa.
- 2 To understand the association between adoption of online banking and the demographic profile of the respondents.
- 3 To identify the factors influencing the customers to adopt online banking.
- 4 To know the hitches in adoption of online banking from the non-users of online banking.

### **5 Research methodology**

This empirical study is based on both primary and secondary data. The primary data is collected from the banking customers in Goa using a well-designed questionnaire through Google form. The secondary data was obtained from books, journals and websites. The questionnaire consisted of four parts. The first part was used for generating the demographic and banking profile of the respondents. Second part was designed to know the respondents adoption of online banking. Third part intended to identify the factors

influencing the customer's adoption of online banking. Part four was purely for the non-users of online banking services to know the reasons for not using online banking. The data collected through the Google forms was analysed through the SPSS 25 software. Apart from percentage analysis, Chi-square test was used to understand the association between the demographic factors and adoption level of online banking services among the respondents. Factor analysis was applied to identify the factors influencing adoption of online banking services.

## 6 Analysis and interpretation

The respondents considered for the study are those who have bank account with any bank and do banking activities irrespective of whether they use online banking or not.

### 6.1 Respondent profile

For better analysis of the data, it is very important to know the respondents used for the study. Table 1 explains the demographic and banking profile of the respondents.

**Table 1** Demographic and banking profile of the respondents

<i>Demographic description of respondent</i>	<i>Percentage</i>
Age	
18–30 years	58%
31–40 years	15%
41–50 years	19%
Above 50 years	8%
Gender	
Male	51%
Female	49%
Marital status	
Single	60%
Married	40%
Annual income	
Less than 1 Lakh	59%
1–3 Lakh	25%
3–5 Lakh	10%
Above 5 Lakh	6%
Literacy level	
Under graduate	20%
Graduate	45%
Post graduate	10%
Professional degree	5%
Others	20%

*Source:* Data collected through primary source

**Table 1** Demographic and banking profile of the respondents (continued)

<i>Demographic description of respondent</i>	<i>Percentage</i>
Occupational status	
Student	40%
Service	36%
Business	8%
Retired	1%
Homemaker	11%
Others	4%
Area of residence	
Rural	63%
Urban	37%
Type of bank dealing with	
Private	33%
Public	65%
Foreign	0%
Others	2%
Type of bank account	
Saving	386
Current	54
Fixed deposit	63
Others	13
Aware of online banking services	
Yes	83%
No	17%
Source of awareness	
Friends and relatives	34%
Bank employees	20%
Advertisement	22%
Personal visit to branch	13%
Not applicable	11%

*Source:* Data collected through primary source

Out of total 410 respondents majority belong to the age group 18–30 years, i.e., 58%, 15% belong to the age group 31–40 years and 19% belong to the age group of 41–50 years. This shows that almost 92% of the respondents are in the working class. The gender wise distribution of respondents is almost equal. 60% of the respondents were unmarried and 40% were married. Majority of the respondents were in the low income group, i.e, below 3 lakhs. Very few are in the income group above 5 lakhs. All the respondents are literate with majority up to graduation. With respect to occupational status majority are in the category of students and service. Around two-third of the

respondents were from rural area having their bank accounts in the Public Banks with 90 % of them respondents holding saving account.

## 6.2 Adoption of online banking in Goa

The purpose of this section of the study is to understand the adoption of online banking in Goa in general and in times of COVID-19 pandemic. The extent of adoption of online banking is studied in the light of period of use, frequency of use, mode of access to online banking, overall satisfaction, opinion on usage of online banking even after the pandemic and specifically which the commonly used banking services through the online mode.

**Table 2** Adoption/use of online banking

<i>Do you use online banking services</i>	<i>No. of respondents</i>	<i>Percentage</i>
Yes	214	52%
No	196	48%
<i>Total</i>	<i>410</i>	<i>100%</i>

**Table 3** Period of use of online banking

<i>Period of use</i>	<i>No. of respondents</i>	<i>Percentage</i>
Less than 1 year	81	38%
1–3 years	83	39%
More than 3 years	50	23%
<i>Total</i>	<i>214</i>	<i>100%</i>

**Table 4** Frequency of use online banking

<i>Frequency of use</i>	<i>No. of respondents</i>	<i>Percentage</i>
Daily	40	19%
Once or twice a week	64	30%
Once or twice a month	37	17%
Occasionally	51	24%
Rarely	22	10%
<i>Total</i>	<i>214</i>	<i>100%</i>

**Table 5** Mode of access of online banking

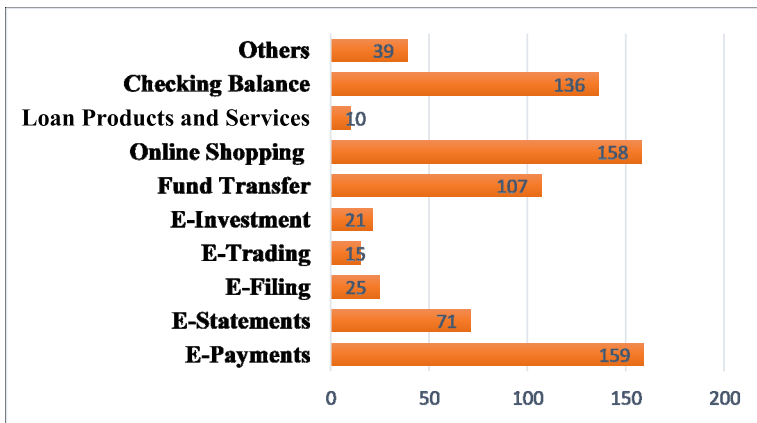
<i>Mode of access</i>	<i>No. of respondents</i>	<i>Percentage</i>
Through smart phones	158	74%
Through PC/laptop	5	2%
Both	51	24%
<i>Total</i>	<i>214</i>	<i>100%</i>

**Table 6** Overall satisfaction about usage of online banking

<i>Overall satisfaction level</i>	<i>No. of respondents</i>	<i>Percentage</i>
Highly dissatisfied	4	2%
Dissatisfied	4	2%
Neutral	40	19%
Satisfied	131	61%
Highly satisfied	35	16%
<i>Total</i>	<i>214</i>	<i>100%</i>

**Table 7** Opinion on usage of online banking services after pandemic

<i>Opinion</i>	<i>No. of respondents</i>	<i>Percentage</i>
Would like to use branch banking as frequently as before	88	41%
Would like to make less use of branch banking than before	47	22%
Would like to continue using online banking even after pandemic	79	37%
<i>Total</i>	<i>214</i>	<i>100%</i>

**Figure 1** Online banking services used by the respondents (see online version for colours)

Out of 410 respondents only 214 i.e., 52% of the respondents are using online banking services. Majority of the respondents are using online banking services for less than three years. This shows that the usage of online banking in Goa has increased recently. It reflects that amidst ongoing pandemic large number of people has shifted to virtual banking to meet their banking requirements in safe and distant manner. Around 49% are using online banking daily or once or twice a week most conveniently through their smartphones. The usage of online banking is seen for regular banking requirements such as e-payments, online shopping, checking balances and for fund transfer. Majority of them have expressed satisfaction with the use of online banking services. Among the users 37% would like continue using online banking even after pandemic, 22% state their

use of branch banking will be less than before whereas still 41% would like to shift bank to branch banking after the pandemic.

### 6.3 Association between demographic profile of the respondents and the adoption of online banking services

Association between adoption of online banking and demographic profile of the respondent was assessed using Chi-square test. The results of Chi-square test are interpreted based on the p-value. If p-value is less than 0.05 it signifies that the factor has significant association with the adoption of online banking. For the purpose of analysis following hypothesis were framed:

#### *Hypothesis:*

- H1 Age of the respondent has significant association with adoption of online banking services.
- H2 Gender of the respondent has significant association with adoption of online banking services.
- H3 Annual income of the respondent has significant association with adoption of online banking services.
- H4 Level of education of the respondent has significant association with adoption of online banking services.
- H5 Occupational status of the respondent has significant association with adoption of online banking services.
- H6 Area of residence of the respondent has significant association with adoption of online banking services.

**Table 8** Results of Chi-square test

<i>Association between adoption of online banking and demographic profile of respondent</i>	
<i>Demographic factors</i>	<i>Chi-square value</i>
Age	.000*
Gender	.024*
Annual income	.001*
Literacy level	.000*
Occupation	.000*
Area of residence	.977

Note: \*Significant

Table 8 shows that the p-value is significant for all the demographic factors except area of residence. Thus there exist significant association between the adoption of online banking and age, gender, income, occupational status and literacy level of the respondent whereas area of residence does not have impact on the adoption of online banking services in Goa. The adoption of online banking is seen more among the younger age groups, among males as compared to females, among low income groups i.e. less than 3 lakhs per annum, among highly educated respondents and among students and service



class respondents. Area of residence does not have significant influence on the adoption of online banking services.

#### 6.4 Factors influencing adoption of online banking services among the commercial bank customers in Goa

Factor analysis was used to identify the factors influencing the customers to use online banking services. Seventeen variables were considered for the factor analysis and the data was then subjected to principal component analysis.

**Table 9** KMO and Bartlett's test

Kaiser-Meyer-Olkin measure of sampling adequacy.		.960
Bartlett's test of sphericity	Approx. Chi-square	3,755.617
	Df	136
	Sig.	.000

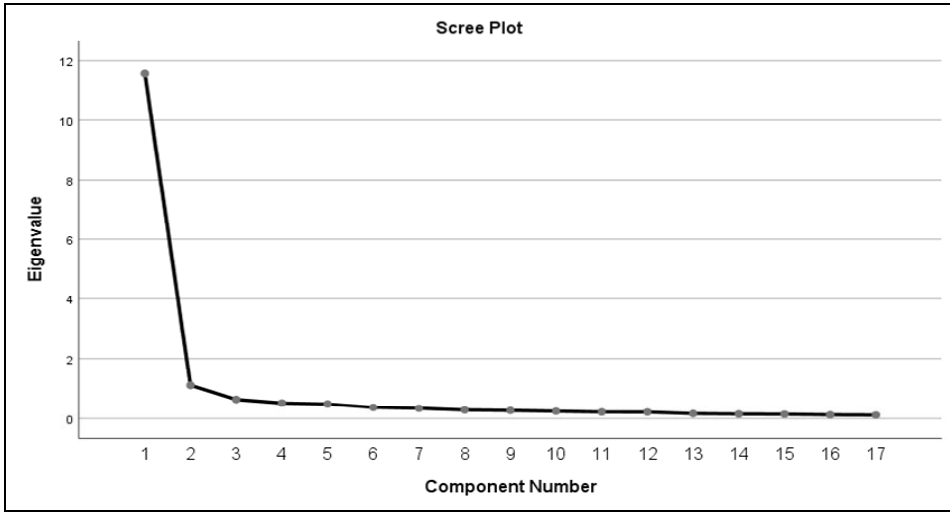
KMO and Bartlett's test measures the adequacy of the sample. The KMO measure is 0.96 which is close to 1 thus the data is found adequate for factor analysis. Bartlett's sphericity test indicates Chi-square value of 3,755.617 and the df is 136. The test results are significant as it is less than 0.05.

**Table 10** Total variance explained

Component	Initial Eigenvalues			Rotation sums of squared loadings		
	Total	% of variance	Cumulative %	Total	% of variance	Cumulative %
1	11.589	68.168	68.168	6.498	38.225	38.225
2	1.106	6.504	74.673	6.196	36.448	74.673
3	.638	3.755	78.427			
4	.520	3.059	81.487			
5	.488	2.869	84.356			
6	.375	2.203	86.559			
7	.345	2.028	88.587			
8	.288	1.692	90.279			
9	.270	1.589	91.867			
10	.246	1.445	93.312			
11	.219	1.287	94.599			
12	.217	1.274	95.874			
13	.165	.969	96.843			
14	.151	.890	97.733			
15	.145	.856	98.589			
16	.123	.726	99.315			
17	.116	.685	100.000			

Note: Extraction method: principal component analysis

**Figure 2** Scree plot of eigen value



**Table 11** Rotated component matrix

	<i>Component</i>	
	<i>Convenience</i>	<i>Service tangibility</i>
No paper work involved	.848	
Faster mode of banking	.845	
Saves time and energy	.842	
Ease of use	.773	
No need to carry cash	.769	
Quick transactions of payment and fund transfer	.680	
Availability anywhere anytime	.676	
Low transaction cost	.627	
Secured transactions	.575	.573
Unrestricted access		.825
Keeps abreast of latest banking services		.807
Well organised system		.799
Availability of 24x7 technical support		.764
Trust in online banking sites		.764
Availability of variety of information in a single window		.735
Easy control of finances		.643
Better service quality		.640

Notes: Extraction method: principal component analysis.  
 Rotation method: Varimax with Kaiser normalisation.  
 Rotation converged in 3 iterations.

**Table 12** Component transformation matrix

Component	1	2
Convenience	.717	.697
Service tangibility	-.697	.717

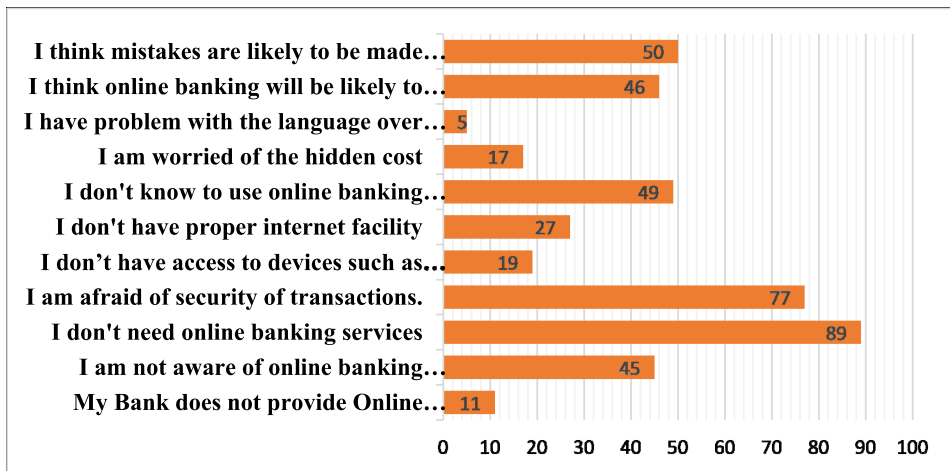
Notes: Extraction method: principal component analysis.

Rotation method: Varimax with Kaiser normalisation.

The 17 variables subjected to principal component analysis are summarised to only two principal components through varimax rotation. Items with factor loading of 0.575 or higher are clustered together to form a separate construct. The derived constructs are different elements of online banking that influences the customers to use online banking. The first factor being 'convenience of banking', the elements of online banking that makes its usage easy and convenient for the customers influence them to adopt online banking services. The second factor being 'service tangibility' influences the customers to use online banking services.

### 6.5 Reasons for not using online banking services

As seen in Figure 3, most of the respondents who are not using online banking services feel they do not need it, while some are concerned over the security of online transaction. Quite a many are afraid of the mistakes that are likely to be made through online transactions while some of them are not using because they are not aware of online banking and its usage. Few respondents have issue with language, access to devices and internet connectivity.

**Figure 3** Reasons for not using online banking services (see online version for colours)

## 7 Conclusions

Banking transactions are one of the most vital daily services that fulfil the needs of the society. The growing technology has supported the banking institutions to serve their customers not only without the constraint of location and time but also fulfilling their banking needs in the difficult times of ongoing pandemic in hassle free and distant manner. Amidst the pandemic large portion of the population has shifted to the digital channels for meeting their basic requirements including the banking. The usage of online banking in Goa has also increased recently. The pandemic has accelerated the adoption of online banking among customers and most of them are satisfied with online banking. The adoption of online banking is significantly associated with the age, gender, occupation and literacy level of the customers. This is consistent with the findings of Yadav (2016) except for the demographic factor area of residence which does not have significant influence on adoption of online banking as per findings of the study. It is the convenience of online banking and service tangibility that influences the customers to use online banking services which meets the findings of extant literature. Among the non-users the major concern for not using online banking was security of transactions and fear of making mistakes while transacting along with lack of knowledge to use online banking. This confirms the findings of Lee (2009) and Singh (2013).

## 8 Suggestion

As the customer's priorities are changing banks can play a significant role by assisting the customers to make better and safe use of online banking. Greater emphasis should be made on educating the customers about safe and efficient use of their digital services. Banks should set up more online portals to create awareness about their digital services and prepare tutorials to train the customers to use these digital services. Efforts should be made to convince the customers about the ease of carrying out their banking transactions and access to their financial information on a real time basis. The pandemic has given a boost to virtual banking across the world with large number of customers shifting to online banking and more can be encouraged to shift through the active involvement of banks. Increased digitisation of banking will enable banks to provide refined and improved services to customers and increase customer satisfaction. Goa being the smallest and wealthiest state located in the western India with highest per capita income in India and high literacy level provides scope for high rate of digitisation in banking.

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