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Impact of demographic variables on consumers' adoption of e-banking services in Ganjam District of Odisha: An empirical investigation

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ABSTRACT

The primary objective of this research is to determine demographic factors that influence the adoption of internet banking services to improve the situation. As banks are spending a lot of money and time on technology to provide easy and better banking services, hence it becomes critical to examine whether technological advances improve the extent of customer satisfaction. An empirical study has been carried out with the help of 372 respondents in the district of Ganjam, Odisha, India who have access to technology-based banking services. The results of the chi-square test show that there are relationships between demographic factors and various technological banking services provided by the banks to the customers. By using factor analysis and multiple regression analysis it is also inferred from the study that the intense use of technology has negative effects on users' openness to technology-based banking services. This study has clarified many demographical factors which affect the acceptance of technological banking services among the customers in the Ganjam district and has suggested the required measures to adopt more customer-friendly e-banking services.

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1. Introduction

Liberalization, Privatization and Globalization (LPG) and the Post – LPG advancements in the Indian financial sector witnessed by technological changes, digitalized services and customized services ultimately increased the competition among the banks and financial institutions in the country. The banking sector is considered the backbone of the economy and important for the well-being of society. The banking industry is considered the base of the financial system, but the information technology revolution has created one of the biggest challenges before this industry. Technology support is critical for the banking sector's successful operation in today's world. The use of improved

information technology in customized services has made banking services much easier and faster.

Kaur (2012), in his research paper, concluded that banking industries can not operate successfully without the development of communication and technology whereas Shu and Strassmann (2005),¹ in their research, found that even though Information Technology is one of the most essential factors for the successful operation of banking and financial services, yet it does not increase the banks' earnings. On May 24, 2010, The Economics Times published an article which mentioned that banks invest capital in information technology for improving the services to customers, but the recital depends upon the nature of the operation, use, and effectiveness of IT. In the last decade, Indian banks invested lots of money in technological development in the banking sector and

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in improving banking services. Today's ATMs, mobile banking, net banking, telebanking etc. are the result of that and it has changed perceptions of customers regarding banking services and accessibility of the services. Modern technologies, like core banking services, high-speed broadband services, etc. have improved banking services, but the initial journey was not so easy (ITU, 2010).^{2,3} Differences in demographic factors like education, income, occupation etc. also influence the acceptance of the services (Burke, 2002).⁴ They also influence the consumer's awareness, perceived risks (Safeena, 2010)⁵ & trusting beliefs. Zhang et al., (2008).⁶ Rahi et al., (2015) explored the implication of technology in banking services and concluded that the competitive advantage of banks resulting in customer services becoming more efficient. The development of information technologies has changed the pattern of business of financial organizations and caused more convenience to the customers. Internet usage, mobile banking, etc., have created more opportunities for financial institutions for future business and reduced the cost of transactions. It has been used in various sectors for improving products and services. Technological innovations have also created comparative advantages for the banks that help in improving their services and cost reduction.

2. Review of Literature

E-Banking is an important part of the financial transaction of global business. It has changed the service pattern of the banking sector. E-banking has opened the business of the banking sector globally and banks are abstracting their strategies and searching for new opportunities. (Malarvizhi, 2011),⁷ mentioned that, the education of the customer is a vital socio-economic factor that influences the perception of the customer on e-banking. Various studies have already concluded that the demographic profile of customers is playing a vital role in their attitudes towards several technologies of banks and acceptance of such technologies (Al-Somali et al 2008).⁸

Sohail and Shanmugham (2004) mentioned that acceptance of e-banking in Malaysia is dependent on education, age, availability of the Internet, and responsiveness of E-banking. Gan et. al. (2006) mentioned that demographic variables are significantly influencing customers in choosing e-banking technologies. Other researchers also posited that the education of customers is a vital factor that influences the customer's satisfaction with e-banking and accepting it (Jain, 2006; Liao and Cheung, 2003). Al-Ashban, Burney (2001),^{9,10} in their study mentions that there are links between demographic factors and acceptance of various banking channels, like internet banking. People having education, computer knowledge, good information and skills are vital for internet banking. According to the Akinci et al. (2004),¹¹ various consumers, like as mid-aged, younger, and older

consumer, the mid-aged consumer generally uses e-banking more. Mirza et al. (2009 a, b) in their report, concluded that demographic features of the account holders of banks are vital for choosing internet banking or mobile banking. Education, technological knowledge, gender, and occupation are playing significant roles in this direction. Mirza et al. (2009b) have stated that e-banking is not affected more by the age of the consumer. Hence, age is not a vital factor considering the e-banking services of banks.

Sulaiman et al. (2007)¹² have highlighted the connection between the income of consumers and the use of e-banking in Malaysia. They have stated that respondents having less income were not generally using mobile banking but consumers with high monthly income were using mobile banking more (Sulaiman et al., 2007). According to Mirza et al. (2009), demographic variables are well-known for influencing the adoption of internet banking in Iran. Sulaiman (2007) conducted research in Malaysia that analysed the acceptance of online banking by male and female consumers. He concluded that male consumers are using online banking more compared to female consumers (Sulaiman et al., 2007). Rashidi & Mansoori (2015)¹³ study stated the substantial role of gender in the gratification of customers in e-banking. Barnes et al. (2003)¹⁴ suggested that telecommunication is important for the innovation of new technologies in e-banking. Mobile banking is an example of such an innovation, where consumers can transfer money by using the mobile apps of the banks. Kozak (2005)¹⁵ explored the cost-effectiveness of information technology in e-banking and its effects on the banking sector's profit and loss. The relationship between information technology and its effects on banking returns has also been determined in this study. Agboola (2006)¹⁶ points out that the payments that are automated in mobile banking make it a more secure and safe transaction.

Sobol and Cron (2006) in their study found an association between computerization and its effects on a firm's performance. They concluded that computerization has a vital role to play in the performance of firms. Ibrahim et al. (2006),¹⁷ reconnoitred the quality of electronic service on the satisfaction of the bank customers of the United Kingdom. Innovative technology and ideas in e-banking are useful for simplifying the banking system. Ganguli and Roy (2011),¹⁸ in their study, found the importance of consumer satisfaction, technology convenience, transaction security, and low cost are vital for the expansion of e-banking facilities. Krishna et al. (2015)¹⁹ in their study found that the benefits of internet banking and the convenience of using them are vital factors for the acceptance of e-banking among various groups of consumers. The study also discussed the adoption of online banking among the customers of the banking sector in India. Walid et al. (2017) in their study, revealed the recognition of mobile banking among the customers of banks. Using mobile banking depends on

the attitude of mobile banking and also on the internet, smartphone, safety and security in fund transfer.

Teka & Sharma (2017)²⁰ in their report concluded that customers of banks are using various services like ATMs, mobile banking and online banking of banks but ATM service is more popular among them. There is a positive correlation between the demographic variables of the customers with the use of ATMs, but no correlation has been found between the demographic variables of customers and online banking. Ighomereho, et al. (2018)²¹ in their study found an association of demographic variables among ATM users. The use of ATMs is influenced by the income, education and age of the users. It also depends on the service quality and the safety measures. Teka (2020)^{20,22} in a study, concluded that e-banking service has been positively affected by the perceived communication control, interactive goal, personal customs, assertiveness concerning uses, accessibility of internet/network, etc., but are negatively impacted by the perceived risk.

3. Statement of the Problem and Objectives of the Study

The literature available in this area is analysed and reviewed and found that the studies conducted by different authors did not cover demographic factors as a variable with specific reference to the Ganjam District of Odisha, which is considered as the gap of the existing studies and considered for research in this paper. First of all the previous studies in the Ganjam District of Odisha failed to establish the demographic profile of clients who utilise modern-day banking services. Similarly, the previous research carried out by the respective authors has failed to find out the influence of different banking factors backed by Information Technology in the banking system, particularly with respect to the Ganjam district of Odisha.²³ Hence, the present research fills the above gap in the literature. Based on the above-mentioned issues, the following objectives are being pursued in this research:

1. To identify the demographic profile of customers who utilise modern banking services.
2. To determine the factors that influence the user-friendliness of financial services as a result of the implementation of an information technology-enabled system.
3. To identify the constructive methods for improving technology-enabled services from the customer's perspective.

3.1. Hypotheses of the study

Based on the statement of the problem and objectives of the study as mentioned above the study intends to test the following hypotheses.

1. H01: There is no relationship between the gender of the customers and the user-friendliness of the technology-enabled banking services.
2. H02: There is no relationship between the age of the customers and the user-friendliness of the technology-enabled banking services.
3. H03: There is no relationship between the income level of the customers and the user-friendliness of the technology-enabled banking services.
4. H04: There is no relationship between the education level of the customers and the user-friendliness of the technology-enabled banking services.
5. H05: There is no relationship between the occupational engagements of the customers and the user-friendliness of the technology-enabled banking services.
6. H06: There is no relationship between the demographic profiles of the customers and the user-friendliness of the technology-enabled banking services.

4. Research Methodology

Considering the above objectives and hypotheses, the study uses Chi-Square Test followed by Factor Analysis and Multiple Regression Analysis. As the study focuses on the responses of the banking customers of Ganjam District, situated in the Southern part of Odisha. The sample size of the study is 372 which have been collected from various places in the District through a convenient sampling method. The entire research has been divided into two sections. The first section looks at the demographic profile of the respondents, while the second section focuses on the elements that influence customer service user-friendliness as a result of the adoption of information technology. The data has been examined by using Chi-square analysis, factor analysis, and multiple linear regression analysis. To determine whether the association of the demographic variables are statistically significant, the Chi-square test is used (Krishnaswami and Ranganatham, 2005).^{24,25} Factor analysis has been utilised to investigate the elements that contribute to the improvement of IT-enabled banking services. By using multiple regression analysis, it has been determined which attribute contributes the most to customers' acceptance of such banking services.

5. Results and Discussions

In Table 1, the demographic profile of bank customers has been examined and presented. The demographic features of the respondents have been analysed using a simple percentage analysis.

The table displays the demographic profile of the respondent's gender, age, qualifications, monthly income and occupational status. Out of the total respondents,

Table 1: Demographic profiles of respondents

Profile	Distribution	Frequency	Percentage
Gender	Male	243	65.32
	Female	129	34.68
Age	20-29	79	21.24
	30-39	55	23.92
	40-49	71	19.09
	50-59	78	20.97
	> 60	89	14.78
	Illiterate	64	17.20
Qualification	up to 10th	87	23.39
	Diploma/UG	83	22.31
	Post Graduate	69	18.55
	Professional	69	18.55
Monthly Income	< 10,000/- P.M	66	17.74
	10,000/- to 15,000/-	58	15.59
	15,001/- to 20,000/-	48	12.90
	20,001/- to 25,000/-	74	19.89
	25,001/- to 30,000/-	68	18.28
	> 30,000/- P.M	58	15.59
	Retired	67	18.01
Occupational Status	Housewife	54	14.52
	Employed	79	21.24
	Business/Profession	49	13.17
	Agriculture	69	18.55
	Student	54	14.52

Source: Primary Data

Table 2: Chi-square test (Significant at 5% level)

No relationship between	DF	Table value	Calculated Value	Result
Gender and type of service	2	5.991	6.639	Rejected
Age and type of service	6	12.592	14.453	Rejected
Income and frequency of use	9	16.919	18.424	Rejected
Education and frequency of use	9	16.919	18.156	Rejected
Occupation and frequency of use	12	21.026	23.281	Rejected

Source: Researcher's findings

65.32% are male while the rest 34.68% are female. As far as the age of the respondents is concerned 14.78% of respondents are senior citizens while others are ordinary citizens. Similarly, in the category of qualification 37.1% of the respondents have post-graduation or above qualifications. Looking at the monthly income of the respondents 15.59% of the respondents earn Rs.30, 000/- and above per month and the rest are below it. As regards to occupational status of the respondents, 21.24% are salaried employees followed by 18.55% engaged in the agricultural sector and 8.01% are retired employees.

5.1. Hypotheses testing relating to demographic profile

The chi-square test has been used to assess the study of hypotheses relating to demographic profile and type, as well as the frequency of banking services. The test results are shown in Table 2.

From the above table, it has been inferred that none of the null hypotheses is acceptable in terms of relationship which implies that there is a link between the demographic profiles of the respondents and the types and frequency with which they use banking services. At the 5% significant level, the estimated chi-square value is greater than the table value.

5.2. Factors influencing user-friendliness of technology-enabled banking services

This research work has emphasized how banking services, due to the use of Technology become user-friendly. It can be stated that the adoption of technology in different banking operations has made the banking service user-friendly. In this case, the proxy variables of different banking services have been used and grouped further under various factors that greatly influence the user-friendliness of different banking operations. The present study considers

Table 3: Factor analysis

Factors	Variables	Factor Loadings	Eigen Value	% of Variance		
Banking Services (2.27)	Internet banking	0.732	14.85	27.35		
	Mobile banking	0.771				
	Core banking	0.802				
	ATM facility	0.725				
	NEFT facility	0.843				
	ECS facility	0.773				
	RTGS facility	0.691				
	24x7 Service access	0.822				
Add-on Services & Delivery (2.23)	Competitive charges	0.809	11.57	18.86		
	Service quality improvement	0.831				
	Balance/Statement enquiry	0.818				
	Online shopping provision	0.833				
	Standing instructions fulfilment	0.775				
	Demat services	0.691				
	Loan applications	0.724				
	Speedy service	0.811				
Back Office Services (2.26)	Short waiting time	0.725	8.47	14.27		
	Secured transactions	0.747				
	Guidance on service access	0.616				
	Cash withdrawal	0.779				
	Retail banking	0.725				
	Convenient ATM Location	0.728				
	Balance enquiry and maintenance	0.714				
	Transparency in account handling	0.753				
Transparency in Service (2.38)	Advanced Technology	0.736	6.38	11.65		
	Better control over cash transactions	0.773				
	Convenient and time-saving	0.714				
	Cheque/cash deposit	0.686				
	Friendly technology to adapt	0.729				
	Less cost	0.731				
	Adequate voice prompts	0.770				
	Back office support	0.782				
Safety of Services (2.36)	Error-free service	0.885	5.87	9.19		
	Familiar with service	0.739				
	Fast data transmission	0.645				
	Comfortable transaction	0.752				
	Technology-Enabled Services (2.25)				3.46	5.62
	Reliability of Service (2.24)				2.82	4.92

Source: Primary Data

the following factors to ascertain the influencing power on the use of IT-enabled banking services i.e.²⁶ Banking Services (BS), Add-on Services and Delivery (ASD), Back Office Services (FOS), Transparency in Service (TOS), Safety of Services (SS), Technology-Enabled Services (TES) and Reliability of Services (ROS). The method of principal component analysis has been used to identify the above-mentioned factors. However, the reliability of the factors has been checked by using Cronbach alpha which is found to be within the acceptable range.

Factor analysis includes 36 variables, which have been categorized into seven factors Banking Services, Add-On Services and Delivery, Back Office Services, Transparency in Service, Service Safety, Technology-Enabled Services, and Service Reliability.¹⁷

Out of the seven factors identified through factor analysis, banking services explain 27.35% of the variance in the data with an Eigenvalue of 14.85 followed by add-on services and delivery which explain 18.86% of the variance having an Eigenvalue of 11.57. Information technology helps to avail 24x7 service accesses; balance

enquiry through mobile app often helpful to the customers to get service even at remote places where the internet facility is available. As regards Back Office Services, it explains a 14.27% variance in data with an Eigenvalue of 8.47. The adoption of IT helps the banks to provide various internet applications to their customers so that they can conveniently access the ATM location, balance enquiry, mini-statement of account, etc. Similarly, the safety of services, technology-enabled services and reliability of services explain 19.19%, 5.62% and 4.92% of the variance respectively. From this analysis, it is revealed that banking services occupy the highest explanatory power whereas reliability of service occupies the least. To find out the influencing power of the above-explored factors, multiple regression analysis methods have been used whereas the user-friendliness of banking services has been used as the dependent variable while the above-explored variables have been used as independent variables. Based on this fact, the multiple linear regression analysis has been used, and the model is as follows:

$$IUBS = f (BS, ASD, FOS, TS, SS, TES, RS)$$

Where,

IUBS= Influence on the user-friendliness of banking service

BS=Banking Service

ASD= Add-on Service and Delivery

FOS= Front-Office Service

TS=Transparency in Service

SS= Safety Service

TES=Technology-Enabled Services

ROS= Reliability of Services

The Econometric Model for this is;

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \epsilon_i \text{ —————(Eq.-1)}$$

This above equation can be further expressed as;

$$Y = \beta_0 + \beta_1 BS + \beta_2 ASD + \beta_3 FOS + \beta_4 TS + \beta_5 SS + \beta_6 TES + \beta_7 ROS + \epsilon_i$$

The result obtained with the help of the above model has been presented in the following Table.

The independent variables categorized in Table 4 show that all the independent variables such as Banking Service, Add-on Service and Delivery, Back Office Services, Transparency in Service, the Safety of Services, Technology-Enabled Services and Reliability of Services are correlated to service user-friendliness.²⁷ The values of R² and adjusted R² are found at 0.113 and 0.096 respectively. From the above Table 3, it is observed that the adoption of IT in different banking operations and services has greatly influenced the urban middle class, and this influence in this research, has been elaborated with the help of the user-friendliness of different banking services. The unstandardized coefficients of the Table 4

indicate the variation in the dependent variables due to the variation with an independent variable when all other independent variables are held constant. The positive Beta coefficient indicates the positive variation and the negative Beta coefficient indicates the negative variation. In the above table, the Beta coefficient of Technology-Enabled Services is -1.773 which indicates that in every 1% increase in the adoption of IT in different banking services there is a decline of 1.773% in service user-friendliness among the banking customers of Ganjam district.

From Table 4 the equation that can be derived is;

$$IUMC = 23.276 + 1.824 X BS + 2.132 X ASD + 1.758 X FOS + 1.373 X TS + 1.639 X SS - 1.773 X TES + 1.744 X RS + \epsilon_i \text{ —————(Eq-1.2)}$$

Since the Beta coefficient value is negative it has been kept out of the equation. Now the above equation will be;

$$Y = \beta_0 + \beta_1 BS + \beta_2 ASD + \beta_3 FOS + \beta_4 TS + \beta_5 SS - \beta_6 TES + \beta_7 ROS + \epsilon_i$$

The new equation is;

$$Y = \beta_0 + \beta_1 BS + \beta_2 ASD + \beta_3 FOS + \beta_4 TS + \beta_5 SS + \beta_7 ROS + \epsilon_i \text{ —————(Eq-2)}$$

$$IUMC = 23.276 + 1.824 X BS + 2.132 X ASD + 1.758 X FOS + 1.373 X TS + 1.639 X SS + 1.744 X RS + \epsilon_i$$

It is widely recognized that the adoption of technology in different banking services has a considerable influence on the service user-friendliness among the people of the Ganjam district. Hence, it is to be concluded that Banking Services, Add-on Service and Delivery, Back Office Services, Transparency in Service, the Safety of Services and Reliability of Services are significantly related to service user-friendliness in banks and statistically significant at a 5% level. Based on the findings, it can also be concluded that all six parameters, except for Technology-Enabled Services, have a substantial impact on the user-friendliness of banking services among the Ganjam district banking customers.

6. Conclusion and Managerial Implications

The purpose of this study was to emphasise the impact of demographic characteristics and user interface on banking services. All demographic variables, such as age, gender, income, educational level, and job status have a substantial impact on customers' technological banking services, as shown in the results and discussion section. One of the main factors for the rise of e-banking services in Odisha's Ganjam district is the growing use of electronic banking services by customers. The purpose of the study is to gain a better knowledge of the factors that influence the adoption of technology in banking services, particularly in the Ganjam district of Odisha. The study concludes that banks should focus primarily on the quality of banking services, followed by add-on services, and finally front office services. The development of effective measures to improve the acceptance of technology banking services

Table 4: Multiplelinear regression analysis

Independent Variable	Dependent Variable	Un-standardised coefficients		Beta Co-efficient	t-value	Sign.
		B	SE			
Constant		23.276	6.435		3.629	.000
Banking Service		1.824	0.578	.191	3.262	.004
Add-on service and delivery	Influence on user-friendliness	2.132	.546	.177	3.581	.000
Front-office service		1.758	.634	.152	2.876	.000
Transparency in Service		1.373	.529	.142	2.725	.002
Safety Service		1.639	.628	.124	2.747	.006
Technology-Enabled Services		-1.773	.589	-.134	-2.726	.007
Reliability of Services		1.744	.655	.142	2.352	.002
R		0.738				
R ²		0.583				
Adjusted R ²		0.524				
F value		17.672***				

Note: *** significant at 1%, ** significant at 5% and * significant at 10%.
Source: Researcher's findings

requires a thorough understanding of these aspects (Koenig-Lewis et al., 2010).

This research would help bank executives in concentrating on initial trust-building to facilitate and accelerate the use of banking services. The study's findings suggest that while building new technological banking services for its consumers, banks should pay special attention to perceived usefulness, perceived self-reliance, trust, and perceived simplicity of use. Banks can expand their awareness of banking technology among customers by uploading online demonstrations to increase client confidence in the usage of digital banking.

7. Limitations of the Study and Future Directions

The study only looked at bank customers' in the Ganjam district of Odisha, but it has been suggested that it be expanded to include other important cities in the state. Another flaw in this study is that it relied on convenience sampling, which may not accurately reflect the full population. As a result, the findings must be regarded with caution, particularly, when generalising. However, future studies can be conducted in different other contexts applying similar variables while some other relevant variables are also suggested differently. Moreover, future researchers can also conduct quality studies to explore the problem in a deeper process.

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None

9. Conflict of Interest


None.


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