

## **Determinants to improve the quality of E-banking services- Special focus to Eastern-Odisha region.**

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### **Abstract**

*The present study undertaken to assess the determinants factors that enhances the utility of e-banking service based on service quality dimensions in eastern-Odisha region. To know the extent of utility of e-banking service, the service quality dimensions are tested through the demography profile of the response based on primary study. The study concludes e-banking is maintain efficiently the crunch of banking needs and it is responsive by customer but still there is a question mark for reliability, accuracy. Traditional habituated banking practice and illiteracy is also questioning for convenience and tangibility. Assurance and security threat is always a obstacle for e-banking service. However, , customer services provides by e-banking service attract the customers and creates a barrier free mindset to accept the e-banking services widely with precaution and awareness of threats.*

**Keywords:** *E-banking services, service quality dimensions, responsiveness, tangibility*

### **Introduction**

In the era of digitalisation, banking plays a vital role in the growth of economy in emerging countries, like India. Development in economy includes investment in several economic sectors. A robust sector of banking is authoritative for all the countries to motivate progress in economy and to continue financial constancy for the entire financial system (Allen, F., et al 2007). Conferring to the KPMG-CII report, by 2020, the banking industry of India has the capability of becoming the 5<sup>th</sup> major banking industry in the world and the 3<sup>rd</sup> largest by 2025 (Bhasin, M. L. 2016). The financial and banking segment in India is increasing rapidly. The banking industry of India is presently valued Rs. 81 trillion and banks are now manipulating the modern technologies like internet and mobile devices for communication and transaction with people (Bhasin, M. L. 2016).

The information and technology uprising motivated banks spend more on technology for the increase in profit and impress more customers as they prefer to be concerned as a topmost priority. The development of electronic banking (e-Banking) had been initiated by the usage of automatic teller machines (ATMs) and comprises of mobile banking, paying bills directly, electronic fund transfer and online banking, etc. (Lassar, W. M., et al 2005). E-banking provides substantial incomes for banks and customers, mutually. It offers banks with extra networks to convey services and products to patrons at a minimal cost (Anderloni, L., et al 2007). These networks develop the geographical range for banks and could support appeal and possess further customers. E-banking, other than offering customers with suitable and quicker transactions, also benefits from advanced interest ratethat effects

in cost saving by the banks. Then again, e-banking implementation leads to further risks. E-banking procedures improved and adapted many traditional risks related to banking operations and influencing the complete risk of banking.

The prime challenge encountered by the banks is to shelter the dropping margins as a result of competition (Owusu-Antwi, G. 2009). Dropping in return involves increasing the transaction volume that could be enhanced with a deep exploitation in the banking business and enhanced customer oriented services. Hence, up-gradation of the technology is vital not for refining the functionalities of the bank but to have comprehensive customer platform (Sharma, M. 2008).. It has reformed the technique of marketing, promotion, distribution, pricing, financing and cost saving over electronic networks and products. These variations request for a self-motivated, hostile, flexible and shifting work-force to encounter the demands of customers' relationship, product differentiation, values, reputation and supervisory preparations. Moreover, the variations gazing at the bankers' face are experiencing a rapid alteration in reply to the forces of competition, operational efficiency, condensed operating boundaries, improved liability/asset management, risk management, anytime and anywhere banking, etc.

E-banking or internet banking systems are one of the best examples of progressive technologies, which iterates a successful and happy outlook for both customers and businesses (Sharma, M. 2008). Nevertheless, those potentials are recognised only when there is adequate spread of the technology among banking customers that would create an improved economic viability for financial institutions. Hence, effect of e-banking on operational presentation and service worth are important.

### **Literature review**

A study conducted on various features of revolution and its impact on developed banks that performance in other foreign countries but in Indian part of context, the studies partly concludes its transformation process is taking place and related fields like IT is playing a huge role in obtaining this part of transformation. The study also focused mainly on analyses of the service quality provided partially and fully by IT-oriented banks. Particularly on the basis of an empirical analysis, study travels around the wide related problems of banks in specific managing transformation through IT and also suggests certain possible measures that could help manage the problems in a better way. The study ends in particular manner concludes that e-banking is a newly challenging opportunity for the various use of public and all the old private sector banks Chovatiya, M. P. et al 2012.

Investigated on the impact factor that changed by adopting an computerization in the part of working relation to banking institution and the impact are directly related with the nature of particular technological change on an organizational structure, processing of work, motivation and moral of users friendly as well as their growth in productivity. The study positively concludes that particularly with technological change has resulted in growth of increased productivity in users and the change is being accepted by the users because of their own personal enthusiasm rather than relating with well-planned activity of the management Schumacher, M. et al (2013).

Malhotra and Singh (1998) Investigated to provide essential theoretical important aspect of internet-banking and also observe that internet-banking enables the banks to efficiently deliver services at a lower cost with time reduction than any existing mode of delivery the surveyed conducted in US and convenient for customers. The study specifically reports that usage of internet is not always 100% secure as it entails with risk of some operational security, privacy, reputation, legal etc. The study also allowed to analyzes the current state of wide internet-banking in overall India and concludes that only 33 banks, representing 37% of total Indian commercial banks are providing beneficial transactional banking services in one form or the other way that share of new private sector banks is higher with regards to all banks providing internet services and 4 banks are capable of fully transactional where FBs represent only 15%.

Kamesam (2006) The research about “the influence of electronic banking on bank performance; a study of first bank of Nigeria. The application relating e-banking has enhanced the profitability through operating profit, profit before tax and other profit after tax of banks. The study also recommends that there is high need for banks to improve and upgrade their information based

communication technology infrastructural facilities, total cost of installing a full sound ICT should be reduced or get influenced by the government.

Durkin, M. G. et al (2003) Evaluated that the relationship of banker-customer was improved by sort of mobile, phone and internet banking. The authors establish that through new technology it has made the banks very economical and commercial and also internet has played a vital role in it. Opinion of bank employees and customer satisfaction regarding the use of internet was surveyed. They pin pointed out once consumer usage of remote bank were delivered channels got increased, relationship with management will also become more important feature. Further, the combo mixture of its traditional and new deliverable channels, if as followed, can help to progress their productivity and profitability.

Kaleem, A. (2009) conducted a Studied to gather information about bank employee's opinions of the potential benefits and associated risk factors with usage of electronic banking in Pakistan. The study vitally shows that public bank employees who have obtained professional degrees were consider minimizing transaction costs and decline in HR requirements as one of the most and the least important benefits of electronic banking respectively. Masters and/or bachelor degrees were recruited as private bank employees, with a less than 10 years' experience, for the use of time saving and also minimizing inconvenience was the major benefits of establishing electronic banking. The bankers in Pakistan perceive electronic banking as one of its tool for minimizing inconvenience empirical analysis was suggests, also in reducing transaction costs and saving time.

Janson, N. (2009). Analyse the significant importance of the major instability by introducing internet banking into the bank's with ability to manage its liquidity crisis in Northern Rock Bank. The study performance shows that policy lead to the initial bank run were inconsistent from the Bank of England and that lead to its bank's bankruptcy due to persists in that direction. It concludes that through deposit insurance scheme, markets participants and individual depositors despite their existence of lender of last resort and in particular do not like confusing messages during uncertain times.

Thulani D. et al (2009). The study found that majority of the banks in Zimbabwe have implemented internet banking, yet usage levels have remained relatively low, as there weren't many customers are using this innovation in Zimbabwe. Compatibility with encounters faced by banks in the implementation of IB are existing legacy systems, cost of implementation and also security concerns. Studied Related to Customers:

Taylor and Todd, (2010). Ravels how and why its Individuals choose to opt or to resist against internet banking. This research stream through numerous holistic and quantitative causal models and applicable theories has been studied from aspects of adoption and diffusion literature were explain dependent on variables of interest, that is, behavioural intention to use. Behavioural intention were defined as a person's subjective towards probability that he will help to perform some behaviourally use is generally measured by the aspects of frequency, duration, and intensity usage.

Erol and El-Bdouron (2009). Emphasized out in their research on the attitude of Jordanian people particularly towards the interest of banking. And found that they Ultimately got into that religion was not the chief factor for the choosing of financial institution, but in regarding fact there are some other reasons too which are vitally influencing the decision criteria of its customers and in this regard the chief factor is the profitability growth level, that is, returns on their investment.

Ongkasuwan and Tantichattanon (2009). Have Initiated out his research on "factors which are affecting customer's ability to get subscribe into the Internet-based banking services and found that usage of internet banking helps banks in reducing cost, increase customer base, allowing quantity customization for Business development services, outstretch marketing and communication reliable channel, search for innovative services, and also to explore and development of non-core business. However, it depend on a variety of factors relating such as user friendly interface, significant level of Internet experience, extra types of value added services provided, (for example e-mail, file transfer, news, online financial services, shopping and multimedia services), attitude out looks and opinion, along with access and delivery[62].

Metawa and Almosawi (2010). Conducted a Research on Bahrain customer's perception and satisfaction towards e-banking. They sorted out that most of the Islamic bank customers were satisfied with particular Islamic banks' services. The factor affecting were based on the customers dissatisfaction, found that the high cost of the services has been charged by the Islamic banks. The religion were considered as the most influential factor in the selection of these Islamic banking

system, but not the return on their investment. Most of the customers have no basic knowledge about the complex influenced on Islamic financial system in the e-banking services of Islamic banks.

Sakkthivel A. M Bank net India (2006) initiated. An online based survey on 316 ATM users, survey is primarily limited to within India boundaries to get accurate understanding into user's perceptions. An analysis found in that survey was most users (56%) of ATM services were opt for bill payments and other pre-paid mobile recharge stuffs, where rest 64% respondents feel easy with depositing cash/cheque through ATM. But they made them to wait in long queues and find no money left in the machine when there turn to take.

Provided a specific focus that helped to identify the impact by demographics which influencing Indian Internet users detail in the consumption of different services added through online. The survey was conducted to 570 internet users in Bangalore. The study generally reveals that age and occupation had high significant impact on consumption of different categories within services through online. The study also showed the significance of specific demographics influence that relates in online consumption of services in the growing Indian market. There are wide range of opportunities applicable for online marketers to tap the potential of rapidly increasing through online market space in India.

Reported on one particular thought to user's adoption in e-banking services. The result of this study had shown that perceived usefulness, perceived ease of use, consumer awareness and perceived risk are the prime factors that determines an online banking adoption. Study also suggested that usefulness, ease of use of the system awareness with regards to online banking and risks related are the main perusing that causing factors to accept online based banking system[67].

Qureshi, T.M., Zafar, M.K and Khan, M.B. (2008) "Evaluated consumer point of observations on quality aspect related e-services and Internet banking based adoption in Malaysia. The data was almost collected from 150 retail based banking customers of the Klang Valley area surroundings. Results showed that through Internet banking users and non-users have diverse expectations with related to e-service quality. Not all of the dimensions were preferable by its respondents. The study also have discussed on implications and its recommendations to improve the Internet banking service quality in Malaysia.

Studied Related to Service Quality:

Ramalingam P. (2008). Evaluated the services provided through internet and website. The researcher explored the major services of Swedish banks provided via internet. The results of the study indicated that although internet banking provided more safe, convenient and efficient services to the customers, yet as far as personal contact and direct information was concerned, brick and mortar was more preferable than internet. Internet has reduced number of branches of banks, added value to the customers, attracted new customers and developed more customized services but at the same time it also requires huge investment, infrastructure and trained employees of bank.

Sharma (1993). Examined the factors which enhance satisfaction with e-banking services with the help of factor analysis. The study concludes that customers do not prefer to use internet for many transactions, Therefore least satisfied for foreign exchange requirements, credit card payments but privacy and trust play an important role in usage of internet but satisfaction is very low. Customers are highly satisfied with buying and selling of stocks and the internet is used maximum for applying loans and Indian customers" satisfaction depends on reliability, efficiency.

Agboola, A. (1970). Research on Service quality evaluation in internet banking: an empirical study in India. The aims at evaluating the service quality of internet banking (e-banking) services in India from customer's perspective. A structured questionnaire containing 44 quality items is administered to various target groups. Seven quality dimensions, viz. reliability, accessibility, user friendliness, privacy/security, efficiency, responsiveness and fulfillment, are identified based on principal component factor analysis. Demographic analysis of data reveals that gender is hardly a bias for use and evaluation of service quality of e-banking in most of the cases across various categories of customers.

Studied Related to Technology:

Tiwari, B. And Herstatt, (2007). Studies the need of computerization in Indian banking system. At the end, it concludes that computerization has accelerated the productivity and efficiency of banks. Even when there are some problems, we can convert the defects of such systems by expanding banking and computer education, and then modern 57 computerized banking can be introduced to bring better

quality of life with minimum possible expenditure. Computerization has made the banking activities easy, saving time, cheap and convenient with use of credit cards and ATMs.

Uppal R. K., (2008). Examines Electronic payment systems and tele-banking services in 36 banks of Nigeria. Data is collected through questionnaires from bank workers during 2005. Findings reveal that connectivity via use of Local Area Network (LAN) and wide area network has facilitated electronic transfer of funds. 35 banks have fully networked their system to ease communication of account information. The study concludes that tele-banking is capable of broadening the customer relationship, retain customer loyalty and enable banks to gain commanding height of market share if their attendant problems are taken care of.

Boyes, G., Stone, M., (2003). Examined the installation of mobile banking and mobile financial services provided in Germany and other countries. Out of total 50 banks worldwide have been selected, half of them from Germany during May/June, 2005. From Indian banks, Bank of Punjab, HDFC, ICICI are dominating, providing mobile-financial services to their customers. The study concludes that mobile banking applications are gaining popularity amongst banks and suggests mobile banking to take the route of online banking.

Budhwar, P., (2001). Article on “Does information technology provide banks with profit?,” he Studied 12 banks operating in the US for the period of 1989-1997 and found that although IT has been one of the most marginal productive factors among all inputs, it cannot increase banks’ profits. On the other hand, there are some studies agreeing with the positive influence of IT spending to business value.

#### Evolution of the E-banking in India

Arpita K(2010). Banking in India originated in the last decades of the 18th century. The first bank was The General Bank of India which started in 1786, and followed by the establishment of the Bank of Hindustan, both of which are now defunct. The oldest bank in existence in India is the State Bank of India, which originated with the name of the Bank of Calcutta in June 1806, which almost immediately became the Bank of Bengal. This was one of the three presidency banks, the other two being the Bank of Bombay and the Bank of Madras. All three were established under charters from the British East India Company.

Another study Arpita K(2010). Conducted the Reserve Bank of India was nationalized in 1949 and given wide powers in the area of bank supervision through the Banking Companies Act (later renamed Banking Regulations Act). The nationalization of the Imperial Bank through the formation of the State Bank of India and the subsequent acquisition of the state owned banks in eight princely states by the State Bank of India in 1959 made the government the dominant player in the banking industry. In keeping with the increasingly socialistic leanings of the Indian Government, 14 major private banks, each with deposits exceeding Rs. 50 crores, were nationalized in 1969. This raised the proportion of scheduled bank branches in government control from 31% to about 84%. In 1980, six more private banks each with deposits exceeding Rs 200 crores were nationalized further raising the proportion of government controlled bank branches to about 90%. As in other areas of economic policy-making, the emphasis on government control began to weaken and even reverse in the mid-1980s and liberalization set in firmly in the early 1990s.

#### Challenges faced with customers through E-Banking

Gefen, D., & Straub, D. W. (1997). Emphasized that for adoption of a product/service consumers must become aware of the new brand. Hence, an important characteristic for any adoption of innovative service or product is creating awareness among the consumers about the service product. Cooper, R.G. (1997). Technological service innovations differ from other commodities insofar as their adoption may require behavior different from consumers' typical routines. This includes "bricks and mortar" issues such as not having a branch bank to visit, as well as "paper" issues including receiving statements electronically and not in the mail.

Lockett, A. and Litter, D. (1997). While developing the framework of user needs in technological innovations, identify "safety in use" as one of the factors that influences potential users. Internet bank acceptance can be studied by examining the causes behind frequency of use of internet banking. For such a study, a modified form of the technology acceptance model (TAM) is applied, which identifies the perceived usefulness and the perceived ease of use of a technology as determining user behaviour. He found that perceived usefulness has a stronger influence on usage than does ease of use. Davis's study shows that users are driven to adopt a technology primarily because of the functions it provides

them, and secondly because of the easiness of benefiting from those functions. Customers are often willing to overlook some difficulties of usage if the service provides critically needed functions: no amount of ease of use can compensate for a system that does not perform a useful function Mitchell, V. W. (1998)..

Karahanna, E., Straub, D. W., & Chervany, N. L. (1999). Identify eight paradoxes of information technology. Consumers perceive internet technology as leading to control and chaos, freedom and enslavement, new and outmoded practice, increase and decrease in the feeling of competence, increase and decrease in efficiency, fulfilment and creation of needs, promotion and hindrance of social interaction, and engagement and disengagement. These ambiguities make internet technology difficult for consumers to understand.

### **Objectives of study**

To study the nature, growth, and extent of electronic banking services in the Indian banking sector

To assess the important factors that improve the quality of E-banking services in East-Odisha region.

### **Research Methodology**

#### **Universe of the Study**

Universe of the study contains scheduled commercial banks. The scheduled commercial banks are divided into public sector, private sector, foreign banks and regional rural banks (Singh, B., & Malhotra, P. 1970). In data collection, only public and private sector banks are taken into concern. Public sector banks include SBI and Nationalized banks, while private sector banks contain old private sector and new private sector banks.

#### **Sample of the Study**

In this study, the sample consists of 27 public sector banks (State bank of India and its 7 subsidiaries) and 18 private sector banks (7 new private sector banks and 11 old private sector banks). Old private sector banks were in presence before liberalization whereas the new private sector banks came into existence after liberalization reforms.

The sample for our study covers public and private sector banks operating as on 31st March 2015 and having transactional websites. E-banking services primarily contains retail services offered to the customers. Thus, the public and private sector banks are entirely selected based on their transactional websites that are accepted to study the scope of electronic banking services.

However, in order to learn the effect of E-banking on the quality of service 3 banks each from Public and Private sector will be involved on the source of the asset base.

#### **Sources of Data**

The study is based on only with the primary data.

#### **Primary Sources:**

To achieve the goals of the study primary data will be used mainly. The data required for studying the effect of e-banking on quality of service that would be collected through a self-administered questionnaire. Around 500 customers of both public and private sector banks in the state of Odisha will be included. Customers of these banks belonging to the 5 districts of Odisha will be covered Eastern-Odisha region viz. Ganjam, Gajapati, Cuttack, Khordha, Puri.

To learn the effect of e-banking on operational performance of banking sector, a well-structured own developed questionnaire will be used as a tool and bank employees will be asked to fill them. A sample of 500 employees will be drawn from the banking sector, comprising 8 banks, i.e., 5 from the public sector and 3 from the private sector banks situated in five districts of Odisha viz. Ganjam, Gajapati, Cuttack, Khordha, and Puri.

The detailed procedure for finalization of the 49 questions as above has been discussed under.

### **Development of ‘Questionnaire’**

The questionnaire used for the study has been developed in four stages. The first stage was the development of a set of 55 questions on the basis of service quality of E-banking based on service quality dimensions, based on extensive literature review and own perception and understanding. All questions are asked to responses to rate with 5-point Likert scale with values 5,4,3,2,1 representing strongly agree, agree, undecided, disagree and strongly disagree, respectively.

**Content validity:**

The second stage in the development of questionnaire was the content validation, i.e., validation of the relevance of the questions proposed to be asked for the purpose.

This was done by observing the guidelines given by Lawshe (1975) and Lynn (1986). Lynn (1986) has observed that a minimum of 5 and not more than 10 experts would provide a good level of control for effective assessment of the validity of the statements. In the present study therefore, 5 experts consisting of senior executives were asked to review each of the 55 statements (questions) included in the questionnaire. These 5 experts were chosen at random from 6 public and private organizations included in the study. The 6 organizations from where opinion of the experts were taken are State Bank of India, UCO Bank, Canara Bank, ICICI Bank, Axis Bank, HDFC Bank. The experts were asked to give their opinion about each of the 55 statements in a 3-point scale such as ‘essential’, ‘useful but not essential’, and ‘not useful’. Having got the opinion, the Content Validity Ratio (CVR) for each of the questions was calculated by using the following formula:

$$\text{Content validity ratio (CVR)} = \frac{(ne - N/2)}{N/2}$$

where, ne = number of subject matter experts indicating ‘essential’

N= total number of subject matter experts

The calculated values of CVR and Cronbach’s Alpha value for each of the 55 statements have been reflected in Table 1.

**Table 1 CVR and Cronbach’s Alpha value of 55 statements on service quality of E-banking based on service quality dimensions development**

Sl. No.	Statements	CVR value	Cronbach’s Alpha value
1.	The bank website does not freeze after customer put in all the information	0.60	0.753
2.	Information provided on website	1.00	0.784
3.	Up to date content	1.00	0.746
4.	Process of transactions	0.60	0.854
5.	Wide range of products and services provided	0.60	0.744
6.	Bank has up - to - date equipment & technology	0.60	0.714
7.	Location of the Bank	0.60	0.825
8.	Sufficient number of ATM machines	1.00	0.764
9.	Design of debit card	0.20	0.756
10.	Cash counting machines	0.60	0.478
11.	Counter partitions in bank and its branches	0.60	0.656
12.	Materials associated with the banks office(Pamphlets, brochures)are visually appealing at the banks office	1.00	0.784
13.	The employees approach	0.60	0.796
14.	Guest treatment to customer	0.20	0.423
15.	Guide signs indicating as to which counters are offering which services	0.75	0.798
16.	Customer service representative.	1.00	0.787
17.	Bank performs the services right the first time	0.60	0.888
18.	Quick confirmation	0.60	0.795
19.	Our requests are handled	1	0.747
20.	Employees of bank have the knowledge to answer customer questions	0.60	0.756
21.	Politeness and friendly staff	0.60	0.985
22.	Employees are always willing to help you.	1	0.758
23.	Experienced	0.60	0.859

24.	Faster log in facility	0.75	0.877
25.	Performance of Plastic cards(ATM, Debit/Credit)	0.60	0.778
26.	Transfer of Funds(NEFT, RTGS)	0.75	0.888
27.	Clearing Services(ECS-Credit/Debit)	0.60	0.789
28.	Problem solving through instant information	0.60	0.853
29.	Bank insists on error-free transaction records	0.75	0.721
30.	Electronic Bills payments	1.00	0.734
31.	Home delivery financial services	0.60	<b>0.455</b>
32.	Service charges	1.00	0.745
33.	Security for ATMs	0.60	0.768
34.	Online filling	0.60	0.785
35.	Protection of banking transactions	0.60	0.796
36.	Care in collection of personal information	0.75	0.788
37.	Privacy / Confidentiality of the bank.	1.00	0.977
38.	Insurance for banking late process	0.25	0.423
39.	Customer friendly environment at Bank	0.60	0.732
40.	customer feedback services	1	0.756
41.	capable of solving complaints adequately	0.75	0.782
42.	brochures to educate new users	1	0.766
43.	Free credit card distributions	0.25	0.433
44.	Special services for the elders and disabled	1.00	0.777
45.	Relevant and detailed information in seconds	0.60	0.711
46.	Convenient way to manage services and finance	0.60	0.925
47.	Less risk and greater security	1.00	0.721
48.	Bring down the cost of banking	0.60	0.722
49.	Fastest mode of banking transaction	0.75	0.973
50.	Quick movement of funds	0.75	0.963
51.	Fastest Internet access speed	0.60	0.744
52.	Helping hand for ATM service	0.75	<b>0.445</b>
53.	Improved service, reduced wasting cost, increased flexibility	0.60	0.824
54.	Anywhere, anytime banking	0.60	0.876
55.	Easy to transact from office, house or while travelling	0.75	0.824

Out of the 55 statements whose validity was checked with the CVR score displayed in Table 2.2, 51 statements with CVR of above 0.50 have been retained for being considered as valid while dropping 4 statements having  $CVR \leq 0.50$ .

#### Pilot study

The third stage in the questionnaire development process was the conduct of pilot study with 51 questions retained after the validity test. These questions were administered on 155 respondents chosen at random from 10 different organisations, as a pilot study out of which 118 responses were received complete in all respect. On receipt of these responses through the pilot study, the reliability test was conducted by calculating Cronbach's alpha value for each of the 51 questions. The result of this calculation has been displayed in Table 1.

#### Final selection of questions

The fourth and final stage in the development of questionnaire was to drop all the questions having Cronbach's alpha value  $\leq 0.700$ . Thus, 2 questions out of the 51 questions which had Cronbach's alpha value of  $\leq 0.700$  were dropped. Therefore, the final list of questionnaire had (i) 49 questions.

#### Tools and techniques

The identified 49 questions are further analysed followed by descriptive statistics through data minimisation technique, i.e., factor analysis to identify the most relevant service quality dimensions that influence the service quality of E-banking services in Eastern-Odisha region. Further mean difference, i.e., ANOVA has been executed to test the hypothesis.



**Hypothesis**

The study proposes to test the following hypothesis with the context of the objective.

H<sub>01</sub> there is no significance difference of service quality dimensions on demographic profile.

**Analysis and interpretation**

The analysis of the study is begins with the factors analysis by minimising the identified 49 statements with 9 factors based on service quality dimensions of E-banking service. The details of factor analysis is discussed latter on. Then descriptive statistics of all the factors with the demographic variables have been calculated. The descriptive statistics contains the mean and the standard deviation of all factors with the demographic profile, i.e., types of bank, age, education, income, and occupation.

**Descriptive statistics**

**Table 2 Descriptive with Bank Type group**

		N	Mean	Std. Deviation
Reliability	Public bank	248	-.0528996	1.01126307
	Private bank	252	.0520599	.98803144
	Total	500	.0000000	1.00000000
Efficiency	Public bank	248	-.0206171	.98232396
	Private bank	252	.0202898	1.01864223
	Total	500	.0000000	1.00000000
Accuracy	Public bank	248	.1869416	.98112852
	Private bank	252	-.1839742	.98603461
	Total	500	.0000000	1.00000000
Convenience	Public bank	248	-.0926598	.89175511
	Private bank	252	.0911890	1.09025767
	Total	500	.0000000	1.00000000
Tangibility	Public bank	248	-.2319232	1.13518109
	Private bank	252	.2282419	.78390074
	Total	500	.0000000	1.00000000
Assurance	Public bank	248	.1345441	1.10289282
	Private bank	252	-.1324084	.86923649
	Total	500	.0000000	1.00000000
Customer service	Public bank	248	.0524771	.99516934
	Private bank	252	-.0516441	1.00402679
	Total	500	.0000000	1.00000000
Security	Public bank	248	.1391755	.95320722
	Private bank	252	-.1369663	1.02759464
	Total	500	.0000000	1.00000000
Responsiveness	Public bank	248	-.0340210	1.01750355
	Private bank	252	.0334810	.98334344
	Total	500	.0000000	1.00000000

Source: Out put from SPSS

From Table 2 it is observed that 49.6% of responses comes from the public bank and remaining responses, i.e., 50.4% from employees private bank. It can observed from the Table 2 that the standard deviation of the factors', i.e., efficiency, accuracy, Convenience, Tangibility, customer service and security have the shown more for private banks as comparison to public banks. However, reliability, Assurance, and responsiveness shown relatively high for standard deviation for public banks.

**Descriptive with Age group**

**Table 3 Descriptive with Age group**

		N	Mean	Std. Deviation
Reliability	Below 25	88	-.2815104	.86041700
	26-35	130	.1441800	1.02545397
	36-45	153	.0937230	1.05993971
	45 above	129	-.0644194	.95450561
	Total	500	.0000000	1.00000000
Efficiency	Below 25	88	-.1275365	1.07576800
	26-35	130	.0676701	.90519813
	36-45	153	.1127439	.75372729
	45 above	129	-.1149126	1.25184107
	Total	500	.0000000	1.00000000
Accuracy	Below 25	88	.1525049	.91731946
	26-35	130	-.1659120	.87288535
	36-45	153	.1122537	1.07382425
	45 above	129	-.0699743	1.06083379
	Total	500	.0000000	1.00000000
Convenience	Below 25	88	-.2049036	1.00655313
	26-35	130	.1968038	1.12534399
	36-45	153	-.0694280	.84247003
	45 above	129	.0237946	1.00804298
	Tangibility	Total	500	.0000000
Below 25		88	-.2848403	1.04034328
26-35		130	.1218337	.84778898
36-45		153	.0392496	1.13324616
45 above		129	.0249796	.91655461
Assurance	Total	500	.0000000	1.00000000
	Below 25	88	.3317876	.81991338
	26-35	130	-.0661891	.79716589
	36-45	153	-.0182200	1.27029491
	45 above	129	-.1380238	.88608014
Customer service	Total	500	.0000000	1.00000000
	Below 25	88	.1107810	.91001272
	26-35	130	.1817798	.95960487
	36-45	153	.0079845	1.08816881
	45 above	129	-.2682305	.94171193
Security	Total	500	.0000000	1.00000000
	Below 25	88	-.0480507	.90088979
	26-35	130	-.0450633	1.05658767
	36-45	153	.2789270	.97058259
	45 above	129	-.2526290	.97060579
Responsiveness	Total	500	.0000000	1.00000000
	Below 25	88	-.1020628	1.02190624

ess	26-35	130	-.0106757	.98549078
	36-45	153	.0255665	.97895798

	45 above	129	.0500597	1.03016036
	Total	500	.0000000	1.00000000

Table 3 depicted the response of the four age group, i.e., below 25 (17.6%), 26-35 (26.00%), 36-45 (30.60%), 45 and above (25.8%). It can be observed from the standard deviation that for reliability factor the age group 26-35 and 36-45, for efficiency factor below 25 and 45 above, for accuracy 36-45 and 45 above, for Convenience factor below 25 and 26-35, for responsiveness factor below 25, for tangibility factor below 25 and 36-45, for assurance and the customer service factors only the age group 36-45, and for the security factor the age group 26-35 have the high SD. Which indicate the value of such age group for the concerned factor spreads out over a wide range.

**Table 4 Descriptive with occupation group**

		N	Mean	Std. Deviation
Reliability	Farmer	50	.1105874	.94251670
	Business Man	132	-.1465124	.97464787
	Private Employee	122	.0649786	1.00753340
	Govt Employee	104	-.0626953	.92966923
	Other	92	.1348173	1.11501823
	Total	500	.0000000	1.00000000
Efficiency	Farmer	50	-.0356562	.92953627
	Business Man	132	-.0933193	1.14718934
	Private Employee	122	.0688571	.84378109
	Govt Employee	104	.1255389	1.11371563
	Other	92	-.0799528	.85379892
	Total	500	.0000000	1.00000000
Accuracy	Farmer	50	-.3114903	.87488919
	Business Man	132	-.0117429	1.03555191
	Private Employee	122	.0331050	1.06935698
	Govt Employee	104	-.1709989	.85846415
	Other	92	.3355397	.98526543
	Total	500	.0000000	1.00000000
Convenience	Farmer	50	.4058508	1.41880989
	Business Man	132	-.0581913	1.01893148
	Private Employee	122	.0478440	.89209670
	Govt Employee	104	-.1019308	.69142404
	Other	92	-.0852985	1.08994351
	Total	500	.0000000	1.00000000
Tangibility	Farmer	50	.2484078	.73771347
	Business Man	132	-.0100518	.95122495

	Private Employee	122	.1170530	.95971849	
	Govt Employee	104	-.0420283	.91997623	
	Other	92	-.2282942	1.26416745	
	Total	500	.0000000	1.00000000	
Assurance	Farmer	50	.0095988	.14599903	
	Business Man	132	-.1215186	.87920455	
	Private Employee	122	.0467779	1.07789363	
	Govt Employee	104	.2032575	.87829410	
	Other	92	-.1226649	1.36177036	
	Total	500	.0000000	1.00000000	
	Customer service	Farmer	50	.4412965	.96492349
		Business Man	132	-.2165436	.96482680
Private Employee		122	-.0158763	1.05307929	
Govt Employee		104	.1313650	.91687888	
	Other	92	-.0565884	1.00880147	
	Total	500	.0000000	1.00000000	
	Security	Farmer	50	-.4829068	1.17091749
		Business Man	132	-.1312092	.90516327
Private Employee		122	.2315237	.90421165	
Govt Employee		104	.1303220	.85402476	
	Other	92	-.0036351	1.18690080	
	Total	500	.0000000	1.00000000	
	Responsiveness	Farmer	50	-.2428955	1.01939369
		Business Man	132	.0594034	.97713403
Private Employee		122	.1523097	1.03475039	
Govt Employee		104	-.0222556	1.01745516	
	Other	92	-.1300400	.93154343	
	Total	500	.0000000	1.00000000	

Table 4 depicted the response of the five-occupation group, i.e., farmer (10%), businessman (26.40%), private employees (24.40%), government employees (20.80%) and other (18.40%). It is observed from the standard deviation, for reliability factor the private employees occupational group, for efficiency factor business man and government employees, for accuracy factor business man and private employees, for Convenience factor farmer and business man, for responsiveness factor farmer, private employees and government employees, for tangibility factor other, for assurance private

employees and other, for customer service factor private employees and other, and for the security factor the occupation group farmer and other have the high SD. Which indicate the value of such age group for the concerned factor spreads out over a wide range.

**Table 5 Descriptive with Income group**

		N	Mean	Std. Deviation
Reliability	Below 10K	166	.0203418	1.03598609
	10K - 20K	75	-.1027472	.94309866
	20K - 30K	38	.0863840	.98935786
	30K - 40K	143	-.0880450	.93215969
	40K above	78	.1748353	1.09219403
	Total	500	.0000000	1.00000000
Efficiency	Below 10K	166	.0188470	.92842380
	10K - 20K	75	-.1171259	1.12634551
	20K - 30K	38	-.1086078	.88929711
	30K - 40K	143	.1455014	1.02357324
	40K above	78	-.1413303	1.01122143
	Total	500	.0000000	1.00000000
Accuracy	Below 10K	166	.1584152	1.02045151
	10K - 20K	75	-.2001008	1.03923829
	20K - 30K	38	-.1742246	1.06088908
	30K - 40K	143	-.1845624	.87597900
	40K above	78	.2785076	1.00267242
	Total	500	.0000000	1.00000000
Convenience	Below 10K	166	.1715269	1.05902259
	10K - 20K	75	-.0341272	1.13328119
	20K - 30K	38	-.0942326	1.20891881
	30K - 40K	143	-.1016138	.64331889
	40K above	78	-.1000296	1.13102024
	Total	500	.0000000	1.00000000
Tangibility	Below 10K	166	-.0765357	1.06603998
	10K - 20K	75	.1526444	.84088380
	20K - 30K	38	.2445642	.86590735
Assurance	30K - 40K	143	.0732612	.85579567
	40K above	78	-.2373487	1.23407911
	Total	500	.0000000	1.00000000
Customer service	Below 10K	166	-.0124196	.97356881
	10K - 20K	75	-.0850170	.66818970
	20K - 30K	38	-.1659154	.85099487
	30K - 40K	143	.2150375	.98396937
	40K above	78	-.2052263	1.31809263
	Total	500	.0000000	1.00000000
Security	Below 10K	166	-.0098893	1.08619517
	10K - 20K	75	-.2583065	.86553543
	20K - 30K	38	.1493094	.92985030
	30K - 40K	143	.1237203	.96277328
	40K above	78	-.0301429	1.00097235
	Total	500	.0000000	1.00000000
Responsiveness	Below 10K	166	-.1905	1.08564559
	10K - 20K	75	-.1153	.86618178
	20K - 30K	38	-.0893	.54792743
	30K - 40K	143	.2629173	.82672827
	40K above	78	.0780223	1.26467243
	Total	500	.0000000	1.00000000
Assurance	Below 10K	166	-.0631	.95023365
	10K - 20K	75	.0426528	1.03309988
	20K - 30K	38	.1417538	.99120639
	30K - 40K	143	.0884854	1.03606192
	40K above	78	-.1379184	1.00705858
	Total	500	.0000000	1.00000000

Table 5 depicted the response of the five-income group, i.e., below 10K (33.20%), 10K-20K (15.00%), 20K-30K (7.6%), 30K-40K (28.6%) and 40K above (15.6%). It is observed from the standard deviation, for reliability factor below 10K and 40K-50K income group, for efficiency and Convenience factors 10K-20K, 30K-40K and 40K above; for accuracy factor below 10K, 10K-20K and 20K-30K; for responsiveness factor 10K-20K, 30K-40K and 40 above; for tangibility factor below 10K and 40K above; for assurance 40K above, for customer service and security factors below 10K and 40K above income group have the highest SD. Which indicate the value of such age group for the concerned factor spreads out over a wide range.

**Table 6 Descriptive with Gender group**

		N	Mean	Std. Deviation
Reliability	Male	320	-.0048097	1.02226102
	Female	180	.0085507	.96189648
	Total	500	.0000000	1.00000000
Efficiency	Male	320	.0521075	.92659989
	Female	180	-.0926355	1.11540041
	Total	500	.0000000	1.00000000
Accuracy	Male	320	.1326774	.98903913
	Female	180	-.2358710	.97827614
	Total	500	.0000000	1.00000000
Convenience	Male	320	-.0744730	.86842151
	Female	180	.1323964	1.19002907
	Total	500	.0000000	1.00000000
Tangibility	Male	320	-.0947892	1.08924798
	Female	180	.1685141	.79288820
	Total	500	.0000000	1.00000000
Assurance	Male	320	.0595666	1.11146385
	Female	180	-.1058962	.75401645
	Total	500	.0000000	1.00000000
Customer service	Male	320	.0356835	1.01022583
	Female	180	-.0634373	.98113698
	Total	500	.0000000	1.00000000
Security	Male	320	.1675229	.93632513
	Female	180	-.2978186	1.04209035
	Total	500	.0000000	1.00000000
Responsiveness	Male	320	.0059952	.99927096
	Female	180	-.0106582	1.00399484
	Total	500	.0000000	1.00000000

Table 6 depicted the response of gender group, i.e., male (64.00%) and female (36.00%). It is observed from the standard deviation that the response of male individuals have higher standard deviation for the factor reliability, tangibility, assurance, and customer service and for the factor efficiency, connivance, responsiveness, and security female have higher standard deviation. Which indicate the value of such age group for the concerned factor spreads out over a wide range. Before conducting the factor analysis, however, the sample adequacy has been checked by using KMO and Bartlett’s test. The KMO statistics is considered as a suitable measure of test of sample adequacy. (Kaiser 1970; Dziuban and Shirkey, 1974; Cerny and Kaiser, 1977).

Table 7 displays the results of the sample adequacy test. It can be seen from the table that the KMO value has come out to be 0.731 which is considered suitable as it is higher than 0.50. The Chi Square value of 12543.138 as seen in the table is also statistically significant at 95% confidence level. The homogeneity of variances has also been determined through Bartlett’s test of Sphericity. With the Sig. value (or p-value) of 0.000, which is less than 0.50 indicates that the variances are homogeneous.

**Table 7 Test of sample adequacy and homogeneity through KMO and Bartlett's Test**

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.731
Bartlett's Test of Sphericity	Approx. Chi-Square	12543.138
	df	1176
	Sig.	.000

**Test of variances**

It is evident from Table 8 that nine factors have been identified through the **Total Variance Explained table**. These six factors are the same which the factor analysis has found to be prominent. Further, as seen from the table, the cumulative percentage of the extracted sum of squared loadings with these six factors has been 55.407%.

**Table 8: Total Variance explained for factors influencing service quality of e-banking**

Total Variance Explained									
Component	Initial Eigenvalues			Extraction Sums of Squared Loadings			Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4.182	8.534	8.534	4.182	8.534	8.534	3.947	8.054	8.054
2	3.803	7.760	16.295	3.803	7.760	16.295	3.457	7.055	15.109
3	3.581	7.308	23.603	3.581	7.308	23.603	3.440	7.019	22.128
4	3.155	6.438	30.041	3.155	6.438	30.041	3.406	6.952	29.080
5	3.004	6.131	36.172	3.004	6.131	36.172	2.944	6.009	35.089
6	2.697	5.503	41.675	2.697	5.503	41.675	2.803	5.720	40.809
7	2.541	5.186	46.861	2.541	5.186	46.861	2.775	5.664	46.472
8	2.140	4.367	51.228	2.140	4.367	51.228	2.252	4.595	51.067
9	2.047	4.178	55.407	2.047	4.178	55.407	2.126	4.340	55.407
10	1.767	3.607	59.014						
11	1.433	2.925	61.939						
12	1.264	2.580	64.519						
13	1.236	2.522	67.041						
14	1.028	2.099	69.140						
15	.958	1.955	71.095						
16	.878	1.792	72.887						
17	.853	1.741	74.628						
18	.838	1.711	76.339						
19	.809	1.650	77.989						
20	.763	1.558	79.547						

21	.702	1.433	80.980						
22	.672	1.371	82.352						
23	.649	1.325	83.677						
24	.630	1.287	84.963						
25	.582	1.188	86.152						
26	.563	1.148	87.300						
27	.556	1.134	88.434						
28	.483	.985	89.419						
29	.454	.926	90.345						
30	.444	.905	91.251						
31	.425	.867	92.118						
32	.375	.766	92.885						
33	.366	.747	93.632						
34	.341	.695	94.327						
35	.319	.652	94.979						
36	.291	.594	95.573						
37	.264	.539	96.112						
38	.256	.523	96.635						
39	.223	.456	97.091						
40	.204	.417	97.508						
41	.196	.401	97.909						
42	.174	.355	98.264						
43	.159	.325	98.589						
44	.151	.309	98.897						
45	.140	.286	99.183						
46	.127	.260	99.443						
47	.116	.237	99.680						
48	.088	.179	99.859						
49	.069	.141	100.000						

Extraction Method: Principal Component Analysis.

### Rotated Component Matrix

The factor loadings of the forty nine variables has been done through Rotated Component Matrix as displayed in Table 9 It indicates that the matrix consists of nine factors out of which the first factor reliability comprises of five variables. Similarly, the second factor efficiency includes four variables. Also, the third factor accuracy consists of four variables. Likewise, the fourth factor convenience, fifth factor tangibility, sixth factor assurance, seventh factor customer service, eighth factor security, ninth factor responsiveness includes ten, eight, four, five, five, four variables respectively for analysing the service quality of e-banking based on service quality dimensions.

**Table 9: Rotated Component Matrix of service quality dimensions and variables**

		Component								
		1	2	3	4	5	6	7	8	9
Reliability	Wide range of products and services provided	<b>.908</b>								
	Up to date content	<b>.872</b>								
	Process of transactions	<b>.865</b>								
	Information provided on website	<b>.863</b>								
	The bank website does not freeze after customer put in all the information	<b>.823</b>								
Efficiency	Faster log in facility		<b>.923</b>							
	Performance of Plastic cards(ATM, Debit/Credit)		<b>.921</b>							
	Clearing Services(ECS-Credit/Debit)		<b>.914</b>							

	Transfer of Funds(NEFT, RTGS)			<b>.912</b>					
Accuracy	Bank insists on error-free transaction records			<b>.924</b>					
	Electronic Bills payments			<b>.905</b>					
	Service charges			<b>.894</b>					
	Problem solving through instant information			<b>.865</b>					
Convenience	Easy to transact from office, house or while travelling			<b>.782</b>					
	Relevant and detailed information in seconds			<b>.751</b>					
	Convenient way to manage services and finance			<b>.724</b>					
	Improved service, reduced wasting cost, increased flexibility			<b>.556</b>					
	Anywhere, anytime banking			<b>.543</b>					
	Bring down the cost of banking			<b>.497</b>					
	Fastest Internet access speed			<b>.491</b>					
	Fastest mode of banking transaction			<b>.441</b>					
	Quick movement of funds			<b>.428</b>					
	Less risk and greater security			<b>.419</b>					
Tangibility	The employees approach				<b>.671</b>				
	Guide signs indicating as to which counters are offering which services				<b>.658</b>				
	Materials associated with the banks office(Pamphlets, brochures)are visually appealing at the banks office				<b>.627</b>				
	Cash counting machines				<b>.626</b>				
	Bank has up - to - date equipment & technology				<b>.591</b>				
	Counter partitions in bank and its branches				<b>.586</b>				
	Sufficient number of ATM machines				<b>.528</b>				
	Location of the Bank				<b>.447</b>				
Assurance	Employees are always willing to help you.				<b>.890</b>				
	Politeness and friendly staff				<b>.888</b>				
	Employees of bank have the knowledge to answer customer questions				<b>.757</b>				
	Experienced				<b>.735</b>				
Customer service	capable of solving complaints adequately					<b>.952</b>			
	Special services for the elders and disabled					<b>.932</b>			
	Customer friendly environment at Bank					<b>.204</b>			
	customer feedback services					<b>.227</b>			
	brochures to educate new users					<b>.913</b>			
Security	Protection of banking transactions						<b>.681</b>		
	Privacy / Confidentiality of the bank.						<b>.650</b>		

	Care in collection of personal information																	<b>.639</b>
	Online filling																	<b>.574</b>
	Security for ATMs																	<b>.461</b>
Responsiveness	Bank performs the services right the first time																	<b>.755</b>
	Customer service representative.																	<b>.752</b>
	Our requests are handled																	<b>.663</b>
	Quick confirmation																	<b>.642</b>
Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization. a. Rotation converged in 6 iterations.																		

### Hypothesis testing

The broad hypothesis proposed earlier, i.e., H<sub>0</sub>1 there is no significance difference of service quality dimensions on demographic profile have been tested through ANOVA. Identified nine service quality dimensions, i.e., reliability, efficiency, accuracy, convenience, tangibility, assurance, customer service, security and responsiveness have been tested with five demography, i.e., Age, education, bank type, income, and occupation if there any difference of opinion within and between the group of the demography. Further, the sub hypothesis have been formed by demography with the service quality dimensions. The sub hypotheses are:

1. H<sub>0</sub>1.1: there is no significance difference of service quality dimensions on age group
2. H<sub>0</sub>1.2: there is no significance difference of service quality dimensions on education group
3. H<sub>0</sub>1.3: there is no significance difference of service quality dimensions on bank type group
4. H<sub>0</sub>1.4: there is no significance difference of service quality dimensions on income group
5. H<sub>0</sub>1.5: there is no significance difference of service quality dimensions on occupation group

Table 10 ANOVA for service quality dimensions with demographic profile

Service quality dimensions		Age group			Education group			Occupation group			Income group			Bank type group			Gender group		
		F	Sig.	Mean Square	F	Sig.	Mean Square	F	Sig.	Mean Square	F	Sig.	Mean Square	F	Sig.	Mean Square	F	Sig.	Mean Square
Reliability	Between Groups	3.919	.009	3.852	1.463	.224	1.459	1.517	.196	1.510	1.161	.327	1.159	1.378	.241	1.377	.021	.886	.021
	Within Groups			.983			.997			.996			.999			.999			1.002
Efficiency	Between Groups	1.902	.128	1.892	1.654	.176	1.648	1.005	.405	1.005	1.537	.190	1.530	.209	.648	2.209	2.420	.120	2.413
	Within Groups			.995			.996			1.000			.996			1.002			.997
Accuracy	Between Groups	2.757	.042	2.728	5.671	.001	5.516	4.738	.001	4.601	4.964	.001	4.811	17.774	.000	17.196	16.122	.000	15.647
	Within Groups			.990			.973			.971			.969			.967			.971
Convenience	Between Groups	3.223	.022	3.180	4.935	.002	4.821	2.715	.029	2.678	1.905	.108	1.891	4.252	.040	4.225	4.969	.026	4.930
	Within Groups			.987			.977			.986			.993			.994			.992
Tangibility	Between Groups	3.169	.024	3.129	1.465	.223	1.461	2.466	.044	2.437	2.571	.037	2.539	27.894	.000	26.467	8.100	.005	7.987
	Within Groups			.987			.997			.988			.988			.949			.986
Assurance	Between Groups	4.341	.005	4.255	1.232	.298	1.230	1.991	.095	1.975	2.922	.021	2.878	9.051	.003	8.907	3.168	.076	3.154
	Within Groups			.980			.999			.992			.985			.984			.996
Customer service	Between Groups	5.007	.002	4.889	4.056	.007	3.983	4.643	.001	4.512	2.049	.086	2.032	1.356	.245	1.355	1.132	.288	1.132

	Within Groups			.976			.982			.972			.992			.999			1.000
<b>Security</b>	Between Groups	7.121	.000	6.868	11.663	.000	10.961	5.773	.000	5.560	4.548	.001	4.423	9.697	.002	9.531	26.206	.000	24.946
	Within Groups			.965			.940			.963			.972			.983			.952
<b>Responsiveness</b>	Between Groups	.450	.717	.452	1.986	.115	1.974	1.97	.097	1.963	1.042	.385	1.041	.569	.451	.570	.032	.858	.032
	Within Groups			1.003			.994			.992			1.000			1.001			1.002

Source: compiled from SPSS output

The first sub hypothesis, i.e., there is no significance difference of service quality dimensions on age group has been rejected for reliability, accuracy, convenience, tangibility, assurance, customer service as the Sig value is less than 0.05. It indicates that there is difference in the opinion within and between the age group of service quality dimensions. Again for the demography of education only the accuracy, convenience, customer service, security factors rejected the second sub hypothesis. The occupation demography the factors accuracy, convenience, tangibility, customer service and security rejected the hypothesis. Further as per the income demography variables related to factors tangibility, and security have the difference opinion within and between the income group as the sub hypothesis rejected. Almost similar finding observed for the demographic gender and bank type as the factor accuracy, convenience, tangibility and security rejected the fourth and fifth hypothesis. The factors responsiveness and efficiency has been accepted by all five-sub hypotheses. It indicates that opinion related to responsiveness and efficiency is same across all demography. The survey reveals that E-banking services- in Eastern-Odisha region is quite not so effective in terms of reliability, accuracy, convenience, tangibility, assurance, customer service, and security. But as per the opinion e-banking service is efficient potential to perform banking needs and it is quite responsive.

### Conclusion

The contrived domain states that there are many factors may clout the adoption of E-Banking services. The paper discussed the Service Quality of E-Banking, Reliability, Responsiveness, Assurance, Efficiency, Accuracy, Security, Customer Service. E-Banking system is in need of improvisation to give better aid to patrons in several countries both developed and emerging countries. After Modi's introduction of the modern technologies in banking services, majority of men graduated businessmen aged between 36-45 years are using E-Banking services from 6 months to 2 years because it is accessible and induces trust on banks. The ANOVA method has been applied to show the detailed attributes of the activities which are acquired from the questionnaire and interest in the adoption of E-Banking services (both public and private banks) is accruing among the patrons which reduce the physical appearance with the banks.

The expectations from the patrons are taken, and the bank manager (by targeting different groups of consumers also liaising to the technical team of the e-banking services) should identify the queries on patrons to modify accordingly to rectify their expectation to abide the smooth relationship amid the banks and patrons. Technical problems can decrease the errors and faults regarding services and to upsurge the capability which is accessible even to the illiterate patrons of the bank. The adaption of E-Banking services (use of ATM cards, Credit cards, etc.) also acquiring the security and privacy (like firewall protection, Two-factor or multifactor authentication., etc.) may accompanied to reduce the manual paper works within banks.

The enhancement in the architecture of bank websites, incorporating the NRI services, showing the rate of interest for the fixed deposits, computing the eligibility report of loan and EMI as like the credit score may increase the usage of E-Banking services. The transaction can be made more accessible and safe among patrons to avoid in pursuit of mobiles with them for checking the OTP's.

Accessing the foreign bank accounts from India can increase the use of E-Banking services among NRI patrons as well as the tourists from different countries to India. Online queries can be solved then and thereby using the chat applications which is most useful for the patrons to communicate with banking professionals regarding banking issues.



Public awareness should be given among the patrons by arranging the team of banking professionals to train the patrons, to reduce the inconvenience in using the services also the customer calls can provide the better solutions regarding the customer based issues.

The fingerprint identification system for Senior Citizens and Minor patrons can be introduced because most of them are feeling inflexible to adapt for new technologies. The banking services should be equal to all sort of people so that the financially backward people can get more benefits than the rich people.

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