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BUSINESS PERSPECTIVE E-BANKING SYSTEMS IN INDIA

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Graduate Research Development

BUSINESS PERSPECTIVE E-BANKING SYSTEMS IN INDIA

by

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PREFACE

The paper seeks to explore how internet or e-banking has improvised the efficiency and adequacy in the banking sector with in a very short span of time, Research Design/Process in Financial Organization, Methods of Data Collection, taking into consideration the trends, challenges of E-banking, the security measures and propound a solution that can root out the fraud in e-banking.

I would like to thank my professor Dr. Stephen Onu for all the guidance he is providing me for the completion of paper. I would also want to thank Professor Prof. John Clark for helping me out with the research with the thesis topic. I would say this paper would never have been possible without them.

I shall also thank my friends and family who for being supportive right from the day I have started my research work. And finally, I would like to thank Harrisburg University for providing me with all the resources and guidelines required for the research.

INTRODUCTION

Online banking which is also known as electronic or internet banking is a payment system which lets consumers of a bank to perform banking transactions through the banking institution's website. Electronic Banking has led to the globalization of the small scale and medium scale, Multinationals industries to perform different commercial transactions via internet, also lets companies to make new business alliances, make market research at affordable costs. It brings together the business and customers from different geographical locations.

Online banking does not provide direct access to the ATM, rather they make provisions for customers of the bank to use ATM at retail stores or any other banks. This lets customers to perform transaction 24 hours a day and letting the transfers to happen in easy way. The online banking system is divergent to branch banking which is the traditional banking where the bank exists physically for serving the needs of customers and has lot of operating costs. The main intention in introducing the e-banking system is to provide easy access to the consumers.

Aims and Objectives of Study

The world is growing rapidly along with the technology. Using computers has become crucial need of financial domain industry because of its wide range of capability and speed to process huge volumes of data. There are several types of banks like Private Sector Banks, Public Sector Banks, Payment Banks, Foreign Banks, Agricultural Banks, Cooperative Banks in India, But the research mainly focuses on using internet for Commercial Banks in India.

Purpose and intention of this research is to state how internet banking has improvised the accuracy and adequacy in the banking sector with in a very short span of time, Research Design/Process in Financial Organization, Architectural Diagram, Methods of Data Collection, taking into consideration the trends, challenges of E-banking, the security measures and propound a solution that can root out the fraud in e-banking.

More analysis was done on quality of service and consumer needs in the traditional e-banking system, because there is personal interaction between the consumers and the bankers (Oppewal, 2000) So, it is very important for e-banking services to understand the customer's perceptions of online banking service quality. Well in addition customers also have more expectations about using the online banking services.

ISEM played an important role helping me with Analyzing the Business, where the **Information Systems** helped me to know the latest technologies and approaches and Business Intelligence.

System Engineering helped me to understand and emphasize the systems or architecture of the enterprise.

Management helped me to know about different Business Strategies, Planning, Security, Risk Analysis Techniques, Assess the Risks, Response Strategies, Software Development Life Cycle, Governances.

Importance of Electronic Banking

- Electronic banking has many advantages making the life easier and banking faster.
- It saves a lot of time lining up in the bank.
- Since every bank is connected there are no geographical limitations letting the operations be performed without any limitations.
- It makes banks to manage the data and the collection of data.
- Integrated banking services lets the clients to compete in the new market, grow their markets by gaining access to new customers.
- It makes the transaction easy there by eliminating the labor time, capital and resources needed during the transaction.
- Banking technological developments provides security and privacy to consumers or customers, utilizing security technologies.

Drawbacks and Challenges faced by Electronic Banking

Drawbacks faced by E-banking:

- Customer must have the knowledge of computer, internet services because e-banking is dependent on the technology for performing any transactions. The people who does not want to know about technology have to use the Traditional e-banking methods.
- Sometimes the government policies across international locations are not efficiently supporting internet banking (Choudhary).

Challenges faced by E-banking:

- To face less challenges by e-banking the internet must be used as the medium to build, maintain and develop good relationship with clients, increasing the products, services at low financial cost.
- Another challenge of e-banking is the transaction security, Transaction risk management and control plays crucial role for promoting customer confidence and have a good place in the market thereby keeping the good reputation of the company.
- E-banking also has operational risks, so banks must ensure they adopt proper security measures to maintain data confidentiality and integrity. Reputational risks of a bank are relying on the belief on e-delivery channels that in return contributes to its potentiality.
- E-banking also faces legal risks, so they must follow the law in order not to subject themselves to loss through lawsuits (Choudhary).

Problem Statement and Justification

In India, manual or traditional banking system was considered as the low-quality banking system customer satisfaction is very low in the traditional way. Money transfer from a bank to bank use to take a very long time like one week to ten days if the amount is high. Sometimes business individual must cancel their trade in due to non-availability of enough cash to transfer provision in the traditional banking system. For satisfying the needs of customers many banks built their way through internet and the website (Wu, 2010) .

The Goal of the research here is to identify how efficiently and effectively Electronic banking reformed the Banking Sector by boosting in speed, accuracy and constraining the chance of internet scams, also focuses on values and bad marks of e-banking in India. The purpose of this study tells how the consumers found the idea of e-banking and services provided by e-banking and to check if e-banking services have been utilized in effective manner. The study also identifies the important aspects that shape the customer's view about e-banking services and outcomes of services on satisfaction of the customers in Indian banking.

Online users have always got the best services from the banks compare to the traditional banking methods, as stated by the banks. The study contributes healthy support, efficiency and effectiveness are crucial elements of customer service and it will contribute to customer's usage of internet services.

The study will also determine the effects of E-banking in some banks. This Study also explains in depth Knowledge of Framework of internet banking, the issues associated with

e-banking quality service, access, and accuracy and how to serve the customers in the best possible ways and give them the easy access to accounts and flexibility in banking services. Phone banking has also been very much used services which was widely accepted by the banking customers which made the banking services at ease. Banking services has gone to a peak level where the services which the banks are providing are satisfying the large group of people.

This study would be detail in nature and information will be obtained from the personnel of the mentioned Banks. This study will also Examine the strengths and weakness of executing the Electronic Banking, Educating the Customers. This Study is designated to gather the accurate information required by conducting meetings from different banking financiers to suggest proper solution to the problems. The proceedings in this research will help the researchers in knowing how to gather the data and how to analyze the data. This will also help the researchers to examine/explore the data. This will also help to analyze the advantages and disadvantages of e-banking in different banks of India.

Customer's Point of View

Consumers have been profited from electronic banking as they are able perform transactions at the house using internet which is avoiding them to stand in the queues at the banks there by saving them lot of time. This is providing relief to the customers since they need not travel to the bank and can perform operations online throughout the day. The major advantages for the customers are reduced price of operating. There is Speedy and amplified access to customers' accounts or data and so this is helping them to access their bank statements and other information via online. Using online and home Banking customers can operate account from any location. Utility bill can be paid right away rather than standing in lines. All these services are generally available at bank website or at ATM. With the invention of credit cards and debit cards life has become very easy rather than carrying cash all the time when you travel anywhere around the world. Banking services are available 24 X7. Improvised cash management services. E-banking services enhance the effectiveness and response of business operations as different kinds of cash management methods are available by electronic banking (Mohammed).

Bank's Point of View

Banks are being more benefited through the evolution of Electronic Banking. It is the most competitive advantage for the banks to attract the consumers or customers by providing them with innovative services. Earlier Banks needed to invest a lot in maintaining Employees and giving them salaries and maintaining the buildings and all, but with the evolution of e-banking they can maintain the bank in effective and less expensive way. The

evolution of E-banking has much supported the banks in reducing their service cost and charges. Most of the services have now been completely computerized and are efficient. The e-banking capacity computer network versus branching has also been discussed in the questionnaire and findings (Mohammed).

Electronic Banking in India

Electronic Banking is augmenting all over the nation in India. Being 2nd highest populated country, it is becoming tough for banks to cope with needs of increasing population and amount of Business transactions. ATM's, Credit/Debit Cards, Internet Banking, mobile Banking have emerged as common delivery channels for banking.

The e-banking was promoted with the provision of the E-Transaction by the Government of India. In present day situation, Government and Private Banking sectors have their networks and linked ATM and performing the transactions. Over the time commercial institutions in India have grown humongous in terms of online and e-banking.

Banks provide the below e-banking services and products to the consumers.

Payment: Majority of the Bill payments made using debit and credit cards.

Balance Inquiry: A consumer can inquire balance, view his/her account statements, and track his/her transactions.

Request: A request for checkbooks, drafts or can even request to hold a payment.

Download: Customers can download statement of account, customer profile.

RESEARCH QUESTION

To what capability E-banking System is Effective and efficient, brisk and exaggerates the opportunities when compared to Traditional banking system in India? And mainly focusing on reinforcement of security.

Following solutions are found in this hypothesis.

1. Ho: That the initiation of Electronic Banking did not improvise the capability, competency in Bank.

Ha: That the initiation of Electronic Banking has improvised the capability, competency in Bank.

2. Ho: That the introduction of E-Banking has not contributed to the reduction of scam in Banks.

Ha: That the initiation of E-Banking has contributed to the reduction of scam in Banks.

3. Ho: That the uprising of Information technology and Electronic media has not increased beneficiary/profitability of Bank.

Ha: That the uprising of Information technology and Electronic media has increased beneficiary /profitability of Bank.

Here Ho = Null (hypothesis) and Ha = Alternative (hypothesis)

The testing for above hypothesis is done using Chi-square statistical technique. Here an Indian bank – State Bank of India is taken for above case studies as part of research hypothesis.

Security

Financial institutions that does e-banking these days finds customer s security as main issue while doing the business transactions. They feel it its getting more un secure as it involves internet and using the internet as medium one can do identity theft and gain access to other persons bank account.

This article states the banking transfers should be more secure and data should be recorded or captured and none of the parties involved must be able to change or manipulate data. He also described some ways of securing transactions. He mentioned usage of cryptography which is used to encrypt messages cannot be decoded. Customer can have used digital signature to protect their information. And SSL is integrated with all browsers like Chrome, Internet Explorer, Safari letting the connection between server and client more secured. Firewalls acts as a restriction between computer network and the banking. Firewalls helps to block unauthorized access while performing any communication. He stated that issues like security breaching which may lead to huge disasters are to be given high priority. Most importantly security must be imposed among Application level, Consumer Level, Internet protocol level.

In Consumer level authentication, banks have their policies that whenever a consumer or customer open an account, he/she has to provide photo and signature which is stored in the database. Digital certificates are also used these days for customer authentication.

In Application Level Security, Digital Signature are used which function as the real signature which has properties like confidentiality, authenticity.

In IP Security, measures are provided to secure the communications between WAN, LAN and internet. These days many attacks like IP Spoofing, Packet Sniffing which causes the attacker to gain access to the information like a user's ID and passwords (Bagchi, 2003).

LITERATURE REVIEW AND THEORETICAL FRAME OF REFERENCE

REVIEW OF LITERATURE

In this fast-growing transactional world, India is bounding forward as the year 2015, 16 registered a robust growth in utilization of electronic Banking systems. The advance has absolutely looks good for nation's electronic and versatile Banking since they have risen as quickest developing installment diverts in elective Delivery channels (ADCs) regarding volume and esteem (State Bank of India yearly provide details regarding electronic Banking). In addition, as imaginative items and channels are ceaselessly presented by various money related foundations and installment administrators in budgetary markets over the globe. Banks in India started understanding the requirement for market to remain lined up with the worldwide advancements, has been taking various activities to advance effectiveness, security, development, and mass agreeableness while guaranteeing rivalry also, level playing field for all installment participants.

Technology is growing rapidly and undergoing many changes. It indicates the unification of communication technology, information systems, innovative applications to product manufacturing, design and control. With the advancement in the technology world has become global village and ushered in a revolution in the banking sector. (Dangwal..R.C., january 2010)

In the last few years the consumer spending has claimed up to 80% which led to the growth in banking sector and expected to have more growth in future in India.

The terminology online banking, internet banking, mobile banking refers to the ways customer access the bank without being physically present. (Low)

Internet banking is revolutionizing the financial industry and banking now is no longer limited to branch, to deposit or withdraw cash. With the increase in technology computer banking, direct deposits, stored value card are being used. (Servon, 2008)

Banks these days are tending to drift towards the network-based computing, new delivery channels like ATM, Smart cards, other products. The initiation of electronic banking began with usage of ATMs and provided the facility for direct bill payments, fund transfers. (Cristina & Beatrice, 2008)

According to Saleh and Andrea (2002) electronic banking is procuring banking services via e- delivery channels. Though, different scholars defined the term electronic banking in a different ways all greed up on that E-banking is getting/accessing bank services through ATM's, PC's, mobile devices etc. at anytime and anywhere which ensures throughout a day including weekends, even on holidays. There is no necessity for customers to travel to banks location for making transactions like deposits, withdrawal or for any applications.

The use of paper checks has been replaced with e-checks letting banks to have more capacity for storage, decreasing the cost, also lets banks to improvise the customer service (Rose, 2005).

(Damien Hutchinson)in their article stated that with growing financial services e-banking required development and implementation of good security practices. And there is a way to authenticate users without letting their authenticity being cloned. This article also stated Reliability, Easy usage, security and efficiency of service plays a crucial role in banking. Service quality has been measured by using 2 criteria which is the customer expectations of the service provided and the customer experience. If the needs are greater than the experience, then the quality is very low and consumer is dissatisfied.

Online banking is convenient and very suitable, letting people to pay the bills and make transactions any time during the day of week. No matter in which location you are, customers can make transactions anywhere in the world and handle the finances easily. There also some disadvantages sometimes people do not trust the transaction online and sometimes wonder if they did the right thing as they feel it is more relaxed to have transaction receipts. also, people like to meet and talking person to person for any banking difficulties. (Mohammed) in This paper examines the challenges of online marketing, some key advantages and disadvantages of online marketing.

Banking sectors must provide the customers with quality service via different channels like Internet banking, ATM machines, Banked branching with more functionalities. (K, 2012)in his paper discusses some challenges in an emerging economy. Paper concluded that one of the benefits that banks experience while using e-banking is increased satisfaction of consumers.

Even before the popularity of e banking, internet banking security was always a priority and as the technology advanced, it remained so important with easy to use measures to prevent security breaches and protect the customers. Consumers or customers must be also responsible and knowledgeable of what is happening around. They should closely look at the address in the browser, enter the URL by yourself, also have knowledge of how bank is trying to protect the consumers information. (Rajpreet Kaur Jassal, 2013) in their paper aims to provide the reason behind the security breaches. This paper also explains that banks not only solely responsible for happening of security breach but also the customer are even responsible as the customers awareness about security is even equally essential.

(Osarenkhoe A. , 2006)concentrated on problem related to online banking quality of service, focus on the reliability, access, and accuracy. Few recommendations were given to improvise the online banking service quality.

(FFIEC, 2001) Provided the guidelines that a Financial institution should use during the evaluation and employment of authentication practices irrespective of who is providing these practices whether might be a service provide or whether an internal provider. These guidance's are focused on risk management practices associated with the Internet delivery channel and these standards are applicable to several kinds of electronic banking endeavors.

(Saluja, 2012) The progression or advancement in internet banking in in India is evaluated by different parameters like ATMs, Transactions via Retail Electronic Payment Methods, Statistical tools, computerization etc. The paper high spots the major challenges faced by banks while adopting the IT and suggestions are provided to handle them. The paper derives that in future electronic or online banking will be only form of preferred banking.

(Choudhary) The paper tries to understand the concepts of online banking, benefits of e-banking from both banks and customers perspective. In addition, this paper also opens the challenges and possibilities related to internet banking in India. This study derives that the theory of e-banking Is gradually attaining wide approval from customers.

THEORETICAL FRAME OF REFERENCE

Electronic/Internet Banking Systems

Computerized banking framework is the utilization of hardware and use of latest computer technology and correspondence advancements for managing an account capacity i.e. accepting, gathering, exchanging, paying, loaning, contributing, managing, trading and overhauling of safe stores, withdrawals, organization, management and protection of cash and claims for cash both locally and globally. Mechanization money keeping is showed, as electronically managing an account and automated saving money also called Backroom Technology (F., 1990).

The internet banking is a procedure which can likewise be clarified as set of hardware called electronic fund exchange framework, that includes use of modern systems and correspondence advancements to the issue of rendering payments. The money related association comprises of Automated Teller Machine (ATM), Automated Deposits of Payroll, Home Banking, Point of Sales, Electronic Checks, Direct Deposit Funds (electronically), Credit Cards, Debit Cards and so on.

Development Systems and Technical Support

The customer information is by all accounts practical for staff members to offer great and improved services that are huge share of inside marketing (Gronroos C. , 2001)). In the event if the client database framework is missing workers may start to give out non-challenging approach towards their employment, which may diminish in great time of internet banking market.

Amazing result has been observed in the advancement of data innovation, which has led to the arrangement of valuable supportive network in e-banking market. In any case, practical framework and data innovation has enabled the treasuries to fulfill their guarantees in providing clients with fast, supportive, precise, improved benefits when contrasted with manual managing banking system.

Moreover, the lack of innovative frameworks bolster additionally pessimistically affects inside showcasing process in the association (Gronroos C. , 2001).

Information technology has turned out to be critical for added service practices. If a composite website is pondered with the goal that client can think that its troublesome or unexciting. Those clients utilizing a website don't find a quick solution to their exchange; they may quickly drop enthusiasm for the firm and its help. It is so easy to go to the following site. In any case, the Internet here is not basic. Information Technology should likewise offer to connect with workers to get effectively fixable and trustworthy data about clients that are being served. Relation between employees and customers are misrepresented and created terrible administrative quality. Diverse sorts of innovation and bodily assets utilized as a part of the administrations systems should likewise be client neighborly and reliable. An innovative determination, or a bodily asset which is automated to the desires and requirements of the clients and that adapts to the conditions in which it is to be utilized, also might improve the administrations. It can upsurge the productivity of techniques and gainfulness as well (Gronroos C. , 2001).

Further, mechanical establishment empowers staff to convey a superior with quick upgraded benefits in short time. Appropriate innovation and physical assets, like computer system tools, hardware, and reports may expand working conditions in the meantime and upgrade the motivation of representatives to give astounding administrations. E-Banking System in India has the innovation which don't get utilized and those workers don't will to utilize has a negative result on both inside associations, outside client affiliation like as in manual or traditional banking systems.

Interactive/Correlative Marketing

The edge between fabrication and application enacts the buyer seller relation that is accuracy of incidence happen. The marketing impact of the merging occurs in collective

process that is called correlative / interactive marketing. It happens at when the seller and the buyer touch base (Gronroos C. , 2001) , Further, customers are just not only users of services but also co-initiators of the services.

However, information systems, functional systems, physical resources and the customers manage interactive marketing delivery. Even though the role of the employees is most often prime, it shouldn't be over-indicated (Gronroos C. , 2001) , The author elucidated interactive marketing as a circumstance where consumers cooperate solely with systems and substantial resource. Utilizing an ATM, sending a message from phone, purchasing on Internet, making telephone call are the examples of the situations.

The marketing impact on the customer, trading, technology, systems, and other non-marketing services determines whether providers or consumers, will carry forward doing trading with a given company (Gronroos C. , 2001) hence All of these consumer transactions are interactive.

RESEARCH DESIGN AND RESEARCH INSTRUMENT

METHODOLOGY

It is described as the study or analysis of rules, fundamentals employed within a subject area or field of study. It includes following concepts or idea, comparison of different approaches, collection of theories, commentary of individual methods.

➤ Quantitative Approach:

Approach where the investigators uses causes and effects, measurements and observations, different theories, hypothesis and questions for developing knowledge and collects data on pre-established instruments, also gathers data using surveys and experiments.

➤ Qualitative Approach:

In this Approach, the investigator makes knowledge claims basing on individual experiences, historical data, political views, issues oriented, social interactions with the intention of developing a pattern or a theory. The Investigator collects open -ended, evolving data.

➤ Mixed Method Approach:

In this Approach, the Investigator makes knowledge claims which are problem centered, consequence oriented. This involves collecting data (numeric data like instruments and text data like interviews) simultaneously or one by one to understand the problem.

There is not any right methodology for the approaches, everything depends on the topic and data to be collected and the duration being spent on it. The most important thing is identifying the methodology that best supports to provide the data that is needed to provide project functionality.

RESEARCH DESIGN PROCESS

A research is very essential to identify the area of problem, exploring any other previous literatures. writing the case studies to research, collecting data, analyzing the data.it requires planning, monitoring, controlling and evaluation. The final derivation of the studies is the main factor that decides the methodology to be used.

The Approach of data collection towards the research here is done basing on two important concepts. They are the primary, secondary forms of data collection. The main target of focusing was on interviewing and a method to gather secondary data from website of the bank. The primary data collection was through the questionnaire Bank Managing or executive Staff in India and unstructured oral interviewing. The secondary data was based on prevailing facts that helps to support research. The Research followed below patterns:

❖ Research problem that is being stated –

Initialization of any research or study is identifying the area of issue. So, for this it is best suggested to develop questions like “What do I want to discover or What do I want to achieve”

For the research to take place. Defining the problem area clearly will reduce any further difficulties in the research process. Here the focus was on the impacts of IT in Third world country like India and problems of electronic banking.

❖ Case Study -

Case Study is defined as a method where Individual cases are studied excessively. Analysis is made, and generalizations might be made if the cases are similar. The main reason behind this study is to collect information from some scenarios which look similar to the issue stated by the investigator. For these 3 elements are to be considered.

1. The definition of the case study.
2. The data that is to be collected.
3. Where to gather the data and how.
4. Making an opinion on how to analyze and represent the data.

❖ Data Collection –

It could be done in several forms. Usually for all the of business and managements that require qualitative research Interviewing is the most preferred method. This interview is subdivided into 2 more types One is structured and the other is unstructured. In Structured interview the same type of questions is to be asked in the same sequence to every responder whereas the unstructured has

no format and is very in-depth. These types of interviews can be in person or over the phone. Generally, Phone interviews are preferred when quick information is required from the responder.

❖ Data Analysis –

Data Analysis is usually simpler because of the usage of integral measurements in quantitative analysis or research. The information is presented in the form of tables, reports, charts and all the reports can be organized in structured format. Whereas in qualitative research this is difficult. In qualitative research, the investigator does in depth research and interprets data subjectively.

FIELD OF STUDY

The area considered in this research/analysis work was a zone of Southern Indian State: Andhra (Vijayawada) customers and management of State Bank in same area. A thorough examination of staffs were done to review how IT has contributed in delivering services to the customers. While in interviewing the executive staff of the Bank of India for gathering the kind of infrastructures used in the sector, security precautions, measure which are being implemented, security flaws and effected of e-banking on consumers.

METHOD OF DATA ANALYSIS

Here the formulae of statistics “The Pearson’s Chi-square” (χ^2) is being used for analyzing and for interpreting feedbacks related to hypothesis variables.

At 5% level of significance, χ^2 was used in deducing the validity or in some cases to check the relation among the variables and reliability.

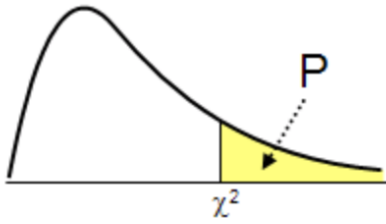
By defining, the “Chi-square”, $\chi^2 = \sum \frac{(o-e)^2}{e}$

Where o = Observed Frequency

And E = Expected Frequency, The degree of freedom = (r-1) (c-1), here No. of rows= r, No. of columns= e.

H_0 = Hypothesis for Null, and H_A = Hypothesis for Alternative (G.D.Raynery, 2002).

Values of the Chi-squared distribution



| DF | P | | | | | | | | | | |
|----|-----------|----------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| | 0.995 | 0.975 | 0.20 | 0.10 | 0.05 | 0.025 | 0.02 | 0.01 | 0.005 | 0.002 | 0.001 |
| 1 | 0.0000393 | 0.000982 | 1.642 | 2.706 | 3.841 | 5.024 | 5.412 | 6.635 | 7.879 | 9.550 | 10.828 |
| 2 | 0.0100 | 0.0506 | 3.219 | 4.605 | 5.991 | 7.378 | 7.824 | 9.210 | 10.597 | 12.429 | 13.816 |
| 3 | 0.0717 | 0.216 | 4.642 | 6.251 | 7.815 | 9.348 | 9.837 | 11.345 | 12.838 | 14.796 | 16.266 |
| 4 | 0.207 | 0.484 | 5.989 | 7.779 | 9.488 | 11.143 | 11.668 | 13.277 | 14.860 | 16.924 | 18.467 |
| 5 | 0.412 | 0.831 | 7.289 | 9.236 | 11.070 | 12.833 | 13.388 | 15.086 | 16.750 | 18.907 | 20.515 |
| 6 | 0.676 | 1.237 | 8.558 | 10.645 | 12.592 | 14.449 | 15.033 | 16.812 | 18.548 | 20.791 | 22.458 |
| 7 | 0.989 | 1.690 | 9.803 | 12.017 | 14.067 | 16.013 | 16.622 | 18.475 | 20.278 | 22.601 | 24.322 |
| 8 | 1.344 | 2.180 | 11.030 | 13.362 | 15.507 | 17.535 | 18.168 | 20.090 | 21.955 | 24.352 | 26.124 |
| 9 | 1.735 | 2.700 | 12.242 | 14.684 | 16.919 | 19.023 | 19.679 | 21.666 | 23.589 | 26.056 | 27.877 |
| 10 | 2.156 | 3.247 | 13.442 | 15.987 | 18.307 | 20.483 | 21.161 | 23.209 | 25.188 | 27.722 | 29.588 |
| 11 | 2.603 | 3.816 | 14.631 | 17.275 | 19.675 | 21.920 | 22.618 | 24.725 | 26.757 | 29.354 | 31.264 |
| 12 | 3.074 | 4.404 | 15.812 | 18.549 | 21.026 | 23.337 | 24.054 | 26.217 | 28.300 | 30.957 | 32.909 |
| 13 | 3.565 | 5.009 | 16.985 | 19.812 | 22.362 | 24.736 | 25.472 | 27.688 | 29.819 | 32.535 | 34.528 |
| 14 | 4.075 | 5.629 | 18.151 | 21.064 | 23.685 | 26.119 | 26.873 | 29.141 | 31.319 | 34.091 | 36.123 |
| 15 | 4.601 | 6.262 | 19.311 | 22.307 | 24.996 | 27.488 | 28.259 | 30.578 | 32.801 | 35.628 | 37.697 |
| 16 | 5.142 | 6.908 | 20.465 | 23.542 | 26.296 | 28.845 | 29.633 | 32.000 | 34.267 | 37.146 | 39.252 |
| 17 | 5.697 | 7.564 | 21.615 | 24.769 | 27.587 | 30.191 | 30.995 | 33.409 | 35.718 | 38.648 | 40.790 |
| 18 | 6.265 | 8.231 | 22.760 | 25.989 | 28.869 | 31.526 | 32.346 | 34.805 | 37.156 | 40.136 | 42.312 |
| 19 | 6.844 | 8.907 | 23.900 | 27.204 | 30.144 | 32.852 | 33.687 | 36.191 | 38.582 | 41.610 | 43.820 |
| 20 | 7.434 | 9.591 | 25.038 | 28.412 | 31.410 | 34.170 | 35.020 | 37.566 | 39.997 | 43.072 | 45.315 |
| 21 | 8.034 | 10.283 | 26.171 | 29.615 | 32.671 | 35.479 | 36.343 | 38.932 | 41.401 | 44.522 | 46.797 |
| 22 | 8.643 | 10.982 | 27.301 | 30.813 | 33.924 | 36.781 | 37.659 | 40.289 | 42.796 | 45.962 | 48.268 |
| 23 | 9.260 | 11.689 | 28.429 | 32.007 | 35.172 | 38.076 | 38.968 | 41.638 | 44.181 | 47.391 | 49.728 |
| 24 | 9.886 | 12.401 | 29.553 | 33.196 | 36.415 | 39.364 | 40.270 | 42.980 | 45.559 | 48.812 | 51.179 |
| 25 | 10.520 | 13.120 | 30.675 | 34.382 | 37.652 | 40.646 | 41.566 | 44.314 | 46.928 | 50.223 | 52.620 |

| | | | | | | | | | | | |
|----|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| 26 | 11.160 | 13.844 | 31.795 | 35.563 | 38.885 | 41.923 | 42.856 | 45.642 | 48.290 | 51.627 | 54.052 |
| 27 | 11.808 | 14.573 | 32.912 | 36.741 | 40.113 | 43.195 | 44.140 | 46.963 | 49.645 | 53.023 | 55.476 |
| 28 | 12.461 | 15.308 | 34.027 | 37.916 | 41.337 | 44.461 | 45.419 | 48.278 | 50.993 | 54.411 | 56.892 |
| 29 | 13.121 | 16.047 | 35.139 | 39.087 | 42.557 | 45.722 | 46.693 | 49.588 | 52.336 | 55.792 | 58.301 |
| 30 | 13.787 | 16.791 | 36.250 | 40.256 | 43.773 | 46.979 | 47.962 | 50.892 | 53.672 | 57.167 | 59.703 |
| 31 | 14.458 | 17.539 | 37.359 | 41.422 | 44.985 | 48.232 | 49.226 | 52.191 | 55.003 | 58.536 | 61.098 |
| 32 | 15.134 | 18.291 | 38.466 | 42.585 | 46.194 | 49.480 | 50.487 | 53.486 | 56.328 | 59.899 | 62.487 |
| 33 | 15.815 | 19.047 | 39.572 | 43.745 | 47.400 | 50.725 | 51.743 | 54.776 | 57.648 | 61.256 | 63.870 |
| 34 | 16.501 | 19.806 | 40.676 | 44.903 | 48.602 | 51.966 | 52.995 | 56.061 | 58.964 | 62.608 | 65.247 |
| 35 | 17.192 | 20.569 | 41.778 | 46.059 | 49.802 | 53.203 | 54.244 | 57.342 | 60.275 | 63.955 | 66.619 |
| 36 | 17.887 | 21.336 | 42.879 | 47.212 | 50.998 | 54.437 | 55.489 | 58.619 | 61.581 | 65.296 | 67.985 |
| 37 | 18.586 | 22.106 | 43.978 | 48.363 | 52.192 | 55.668 | 56.730 | 59.893 | 62.883 | 66.633 | 69.346 |
| 38 | 19.289 | 22.878 | 45.076 | 49.513 | 53.384 | 56.896 | 57.969 | 61.162 | 64.181 | 67.966 | 70.703 |
| 39 | 19.996 | 23.654 | 46.173 | 50.660 | 54.572 | 58.120 | 59.204 | 62.428 | 65.476 | 69.294 | 72.055 |
| 40 | 20.707 | 24.433 | 47.269 | 51.805 | 55.758 | 59.342 | 60.436 | 63.691 | 66.766 | 70.618 | 73.402 |
| 41 | 21.421 | 25.215 | 48.363 | 52.949 | 56.942 | 60.561 | 61.665 | 64.950 | 68.053 | 71.938 | 74.745 |
| 42 | 22.138 | 25.999 | 49.456 | 54.090 | 58.124 | 61.777 | 62.892 | 66.206 | 69.336 | 73.254 | 76.084 |
| 43 | 22.859 | 26.785 | 50.548 | 55.230 | 59.304 | 62.990 | 64.116 | 67.459 | 70.616 | 74.566 | 77.419 |
| 44 | 23.584 | 27.575 | 51.639 | 56.369 | 60.481 | 64.201 | 65.337 | 68.710 | 71.893 | 75.874 | 78.750 |
| 45 | 24.311 | 28.366 | 52.729 | 57.505 | 61.656 | 65.410 | 66.555 | 69.957 | 73.166 | 77.179 | 80.077 |
| 46 | 25.041 | 29.160 | 53.818 | 58.641 | 62.830 | 66.617 | 67.771 | 71.201 | 74.437 | 78.481 | 81.400 |
| 47 | 25.775 | 29.956 | 54.906 | 59.774 | 64.001 | 67.821 | 68.985 | 72.443 | 75.704 | 79.780 | 82.720 |
| 48 | 26.511 | 30.755 | 55.993 | 60.907 | 65.171 | 69.023 | 70.197 | 73.683 | 76.969 | 81.075 | 84.037 |
| 49 | 27.249 | 31.555 | 57.079 | 62.038 | 66.339 | 70.222 | 71.406 | 74.919 | 78.231 | 82.367 | 85.351 |
| 50 | 27.991 | 32.357 | 58.164 | 63.167 | 67.505 | 71.420 | 72.613 | 76.154 | 79.490 | 83.657 | 86.661 |
| 51 | 28.735 | 33.162 | 59.248 | 64.295 | 68.669 | 72.616 | 73.818 | 77.386 | 80.747 | 84.943 | 87.968 |
| 52 | 29.481 | 33.968 | 60.332 | 65.422 | 69.832 | 73.810 | 75.021 | 78.616 | 82.001 | 86.227 | 89.272 |
| 53 | 30.230 | 34.776 | 61.414 | 66.548 | 70.993 | 75.002 | 76.223 | 79.843 | 83.253 | 87.507 | 90.573 |
| 54 | 30.981 | 35.586 | 62.496 | 67.673 | 72.153 | 76.192 | 77.422 | 81.069 | 84.502 | 88.786 | 91.872 |
| 55 | 31.735 | 36.398 | 63.577 | 68.796 | 73.311 | 77.380 | 78.619 | 82.292 | 85.749 | 90.061 | 93.168 |
| 56 | 32.490 | 37.212 | 64.658 | 69.919 | 74.468 | 78.567 | 79.815 | 83.513 | 86.994 | 91.335 | 94.461 |
| 57 | 33.248 | 38.027 | 65.737 | 71.040 | 75.624 | 79.752 | 81.009 | 84.733 | 88.236 | 92.605 | 95.751 |
| 58 | 34.008 | 38.844 | 66.816 | 72.160 | 76.778 | 80.936 | 82.201 | 85.950 | 89.477 | 93.874 | 97.039 |
| 59 | 34.770 | 39.662 | 67.894 | 73.279 | 77.931 | 82.117 | 83.391 | 87.166 | 90.715 | 95.140 | 98.324 |
| 60 | 35.534 | 40.482 | 68.972 | 74.397 | 79.082 | 83.298 | 84.580 | 88.379 | 91.952 | 96.404 | 99.607 |

Note: The Degree of Freedom (DF) values I needed here for this calculation is until 60 which is enough to refer to the chart but DF values can still go beyond like in below.

| DF | P | | | | | | | | | | | |
|------|---------|---------|----------|----------|----------|----------|----------|----------|----------|----------|----------|--|
| | 0.995 | 0.975 | 0.20 | 0.10 | 0.05 | 0.025 | 0.02 | 0.01 | 0.005 | 0.002 | 0.001 | |
| 300 | 240.663 | 253.912 | 320.397 | 331.789 | 341.395 | 349.874 | 352.425 | 359.906 | 366.844 | 375.369 | 381.425 | |
| 350 | 285.608 | 300.064 | 372.051 | 384.306 | 394.626 | 403.723 | 406.457 | 414.474 | 421.900 | 431.017 | 437.488 | |
| 400 | 330.903 | 346.482 | 423.590 | 436.649 | 447.632 | 457.305 | 460.211 | 468.724 | 476.606 | 486.274 | 493.132 | |
| 450 | 376.483 | 393.118 | 475.035 | 488.849 | 500.456 | 510.670 | 513.736 | 522.717 | 531.026 | 541.212 | 548.432 | |
| 500 | 422.303 | 439.936 | 526.401 | 540.930 | 553.127 | 563.852 | 567.070 | 576.493 | 585.207 | 595.882 | 603.446 | |
| 550 | 468.328 | 486.910 | 577.701 | 592.909 | 605.667 | 616.878 | 620.241 | 630.084 | 639.183 | 650.324 | 658.215 | |
| 600 | 514.529 | 534.019 | 628.943 | 644.800 | 658.094 | 669.769 | 673.270 | 683.516 | 692.982 | 704.568 | 712.771 | |
| 650 | 560.885 | 581.245 | 680.134 | 696.614 | 710.421 | 722.542 | 726.176 | 736.807 | 746.625 | 758.639 | 767.141 | |
| 700 | 607.380 | 628.577 | 731.280 | 748.359 | 762.661 | 775.211 | 778.972 | 789.974 | 800.131 | 812.556 | 821.347 | |
| 750 | 653.997 | 676.003 | 782.386 | 800.043 | 814.822 | 827.785 | 831.670 | 843.029 | 853.514 | 866.336 | 875.404 | |
| 800 | 700.725 | 723.513 | 833.456 | 851.671 | 866.911 | 880.275 | 884.279 | 895.984 | 906.786 | 919.991 | 929.329 | |
| 850 | 747.554 | 771.099 | 884.492 | 903.249 | 918.937 | 932.689 | 936.808 | 948.848 | 959.957 | 973.534 | 983.133 | |
| 900 | 794.475 | 818.756 | 935.499 | 954.782 | 970.904 | 985.032 | 989.263 | 1001.630 | 1013.036 | 1026.974 | 1036.826 | |
| 950 | 841.480 | 866.477 | 986.478 | 1006.272 | 1022.816 | 1037.311 | 1041.651 | 1054.334 | 1066.031 | 1080.320 | 1090.418 | |
| 1000 | 888.564 | 914.257 | 1037.431 | 1057.724 | 1074.679 | 1089.531 | 1093.977 | 1106.969 | 1118.948 | 1133.579 | 1143.917 | |

CHOICE OF INTERVIEW THAT WILL BE USING:

Interview can be described as:

There are different kinds of interviews like Job, analysis/investigation, examination etc. with the aim of data collection in various scenarios. The information gathered might be credible / actual in producing quantitative input during research analysis. We are scheduling interviews with bank within reach where open-ended questions serve as icebreakers. Here I am choosing the unstructured interview. This will provide me a chance to investigate some aspects which might not be covered in the questionnaire. The instrument of interviews that are being created to measure will be tested administering the questions to similar pool of responders several times to check if the results remain same.

INSTRUMENT FOR DATA COLLECTION

A questionnaire was designed for data collection and will be given to the responders to fill it in. The research design was mainly based on primary, as well secondary sources for gathering data that was made using unstructured interviews within the instruments of research and Inquiry Questions. For the primary source INQUIRY QUESTIONS and personal interviews will be done for gathering the data.

The questions will be designed in a way to gather the responder’s answers. The questionnaire will be having two sections. Section A hunts for biodata of responders like age, sex, marital status, working experiences. Section B sought to gather information from responders basing on research

topic focusing on objectives of research area. The Inquiry Questions mainly tailored towards spotting an individual's awareness in IT and prevailing security problems. This will also create awareness among the users.

Reliability and validity of instrument are the factors that supports data collection. Reliability means plan or scheme, that another investigator would procure the same findings if the research work is recapitulated. Reliability can be described as extent to which the determinations free of errors and thus return stable output. Being more let know about the responders would be a method to increase trustworthiness thereby inspiring responders to be friendly, disclosed and comprehensive about the interview or the questions asked.

Validity means how accurately the work or study has been conducted or the aptness of the instrument to measure and work per the designed functionality. The INQUIRY QUESTIONS that will be designed will be Inquiry Questions will be tested conducting them to similar or same groups of responders many times possibly to check if the results will remain alike.

INQUIRY QUESTIONS:

INQUIRY QUESTIONS SUPERVISED TO THE STAFFING MEMBERS OF STATE BANK OF INDIA.

A: PERSONAL INFORMATION

GUIDANCE: PLEASE CHECKOR FILL THE SUITABLE FIELD BELOW.

1. EMPLOYER NAME:
2. Sexuality: Male Female
3. Age: 20-25yrs 26-30yrs 36-40yrs
31-35yrs 41-45yrs 46-50yrs 51yrs and above
4. Designation: Executive Senior Junior
5. Job Experience: under 5yrs 6-10yrs 11-15yrs 16-20yrs

B: GUIDANCE

Please check the suitable column according to your opinion about the questions mentioned.

- 1: Vigorously Agree
- 2: Agree
- 3: Disagree
- 4: Vigorously Disagree

| S/N | Questionnaire | 1 | 2 | 3 | 4 |
|-----|---|---|---|---|---|
| | E-Banking has no remarkable effect on capability and competency of the bank. | | | | |
| 1 | Electronic banking promotes productiveness in Banking services | | | | |
| 2 | Electronic banking has contributed to competency and accuracy in Banking services. | | | | |
| 3 | Customer needs are being taken care by various electronic products in e-banking. | | | | |
| 4 | Due to the evolution of electronic banking service, the complaints made by customers have been lowered. | | | | |
| 5 | The Customer and staff participation in delivery of service has been reduced due to evolution of e-banking. | | | | |

| | | | | | |
|----|--|--|--|--|--|
| | E-Banking did not contribute to the reduction of fraud or scams in the Banks. | | | | |
| 6 | There is a reduction in frauds or scams in the banks due to the adoption of e-banking. | | | | |
| 7 | Through E-Banking the Fraud can be easily identified. | | | | |
| 8 | Bank fraud is very easy with E-Banking. | | | | |
| 9 | After the takeover of e-banking, the frauds or scams have stopped to large extent. | | | | |
| | Electronic Banking has not increased profitability of bank. | | | | |
| 10 | E-Banking helps to maintain openness, liability in Banks. | | | | |
| 11 | The evolution of e- banking has no remark extent of sales in banks. | | | | |
| 12 | The extent of banks financial success depends on the extent of E-Banking facilities provided to the consumers. | | | | |
| 13 | E-Banking has contributed to growth of customers in the Bank. | | | | |

14. Please feel free to comment below on which ever details of E-Banking that has not been mentioned above from your experiences.

Appreciate it for taking time and participating in this survey.

INQUIRY QUESTIONS SUPERVISED TO THE STAFF OF STATE BANK OF INDIA

1. Is your bank offering you internet banking services?
2. When was the year your bank started using electronic banking?
3. Through online banking what are the activities your bank is offering?
4. Do you feel electronic banking has contributed to expansion of services to other fields where the bank was not offering this service initially?
5. What are these expanded services?
6. How did the customer react when e-banking was evolved?
7. What was the percentage of consumers that were using e-banking services?
8. What are the Regulatory and rules influencing E-banking?
9. Would you say about electronic banking with respect to transactional and operation cost? Have they increased or decreased?
10. Does internet banking helps in Management of the Customers Information?

11. What are the infrastructures used?

12. Have you come across any internet fraud or scam? If so please detail

13. Can you give quick notes on the benefits the bank achieved by offering e-banking services?

14. Please feel free to comment below on which ever details of E-Banking that has not been mentioned above from your experiences.

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Appreciate it for taking time and participating in this survey.

HYPOTHESIS TESTING

Table no.1: Questions Distribution, Data Collection

| SN | Branch of the Bank | Number Questions Distributed | of | Number Returned |
|----------|----------------------|------------------------------|----|-----------------|
| 1 | State Bank of | 15 | | 10 |

| | | | |
|--|--------------------------|-----------|-----------|
| | India, Vijayawada | | |
| | Total | 15 | 10 |

Table 2: Sex of Responders

| Sex | Number | (Percentage)% |
|---------------|-----------|---------------|
| Male | 5 | 50 |
| Female | 5 | 50 |
| Total | 10 | |

Table 3: Age of Responders

| Age | Number | (Percentage)% |
|---------------------|-----------|---------------|
| 0-25 | 2 | 20 |
| 26-30 | 5 | 50 |
| 36-45 | 3 | 30 |
| 46 and Above | 0 | 0 |
| Total | 10 | 100 |

Table 4: Responders Designation

| Designation | Number | (Percentage)% |
|-----------------------------|----------|---------------|
| Executive Management | 3 | 30 |
| Senior | 5 | 50 |

| | | |
|---------------|---|----|
| Junior | 2 | 20 |
|---------------|---|----|

Table 5: Responders service years

| Service Period | Number | (Percentage)% |
|----------------|-----------|---------------|
| 1 – 5 | 2 | 20 |
| 6 - 10 | 5 | 50 |
| 11 - 15 | 3 | 30 |
| Total | 10 | 100 |

Table 6: Do Responder thinks that E-Banking leads to accuracy in Banking.

| Response | Number | (Percentage)% |
|----------------------------|-----------|---------------|
| Vigorously agrees | 4 | 40 |
| Agree | 3 | 30 |
| Disagree | 2 | 20 |
| Vigorously Disagree | 1 | 10 |
| Total | 10 | 100 |

Table 7: If Responder thinks that E-Banking provides effectiveness in Banking services.

| Response | Number | (Percentage)% |
|----------|--------|---------------|
|----------|--------|---------------|

| | | |
|----------------------------|-----------|------------|
| Vigorously agrees | 7 | 70 |
| Agree | 3 | 30 |
| Disagree | - | 0 |
| Vigorously Disagree | - | 0 |
| Total | 10 | 100 |

Table 8: Does Responder supports that Due to the evolution of electronic banking service, the complaints made by customers have been lowered.

| Response | Number | (Percentage)% |
|----------------------------|-----------|---------------|
| Vigorously agrees | 1 | 10 |
| Agree | 3 | 30 |
| Disagree | 5 | 50 |
| Vigorously Disagree | 1 | 10 |
| Total | 10 | 100 |

Table 9: Does Responder supports that Customer needs are being taken care by various electronic products in e-banking.

| Response | Number | (Percentage)% |
|----------------------------|-----------|---------------|
| Vigorously agrees | 3 | 30 |
| Agree | 5 | 50 |
| Disagree | 1 | 10 |
| Vigorously Disagree | 1 | 10 |
| Total | 10 | 100 |

Table 10: Does Responder agrees that the Customer and staff participation in delivery of service has been reduced due to evolution of e-banking.

| Response | Number | (Percentage)% |
|----------------------------|--------|---------------|
| Vigorously agrees | 1 | 10 |
| Agree | 3 | 30 |
| Disagree | 4 | 40 |
| Vigorously Disagree | 2 | 20 |
| Total | 10 | 100 |

Table 11: Does Responder agrees that Bank Fraud is simple with E- Banking

| Response | Number | (Percentage)% |
|----------------------------|--------|---------------|
| Vigorously agrees | 6 | 60 |
| Agree | 3 | 30 |
| Disagree | 1 | 10 |
| Vigorously Disagree | - | 0 |
| Total | 10 | 100 |

Table 12: Whether the responder agrees There is a reduction in frauds or scams in the banks due to the adoption of e-banking.

| Response | Number | (Percentage)% |
|--------------------------|--------|---------------|
| Vigorously agrees | - | |

| | | |
|----------------------------|-----------|------------|
| Agree | 1 | 10 |
| Disagree | 5 | 50 |
| Vigorously Disagree | 4 | 40 |
| Total | 10 | 100 |

Table 13: Does the responder agrees Through E-Banking the Fraud can be easily identified.

| Response | Number | (Percentage)% |
|----------------------------|-----------|---------------|
| Vigorously agrees | 1 | 10 |
| Agree | 2 | 20 |
| Disagree | 4 | 40 |
| Vigorously Disagree | 3 | 30 |
| Total | 10 | 100 |

Table 14: Does the responder agree that After the takeover of e-banking, the frauds or scams have stopped to large extent.

| Response | Number | (Percentage)% |
|----------------------------|----------|---------------|
| Vigorously agrees | - | 0 |
| Agree | - | 0 |
| Disagree | 6 | 60 |
| Vigorously Disagree | 4 | 40 |

| | | |
|--------------|--|------------|
| Total | | 100 |
|--------------|--|------------|

Table 15: Does the responder agree that E-Banking helps to maintain openness, liability in Banks.

| Response | Number | (Percentage)% |
|----------------------------|-----------|---------------|
| Vigorously agrees | 3 | 30 |
| Agree | 4 | 40 |
| Disagree | 2 | 20 |
| Vigorously Disagree | 1 | 10 |
| Total | 10 | 100 |

Table 16: Does the responder agree that the evolution of e- banking has no remark on banks extent of sales.

| Response | Number | (Percentage)% |
|----------------------------|-----------|---------------|
| Vigorously agrees | - | |
| Agree | 2 | 20 |
| Disagree | 5 | 50 |
| Vigorously Disagree | 3 | 30 |
| Total | 10 | 100 |

Table 17: If E-Banking has helped to increase and preserve customers in the bank.

| Response | Number | (Percentage)% |
|--------------------------|----------|---------------|
| Vigorously agrees | 6 | 60 |

| | | |
|----------------------------|----------|------------|
| Agree | 2 | 20 |
| Disagree | 1 | 10 |
| Vigorously Disagree | 1 | 10 |
| Total | | 100 |

Table 18: If Banks that are technologically advanced have preserved customers relish

| Response | Number | (Percentage)% |
|----------------------------|-----------|---------------|
| Vigorously agrees | 3 | 30 |
| Agree | 5 | 50 |
| Disagree | 2 | 20 |
| Vigorously Disagree | - | 0 |
| Total | 10 | 100 |

Table 19: Does Banks that initiated E-Banking have enjoyed the advocacy of consumers

| Response | Number | (Percentage)% |
|----------------------------|-----------|---------------|
| Vigorously agrees | 3 | 30 |
| Agree | 4 | 40 |
| Disagree | 2 | 20 |
| Vigorously Disagree | 1 | 10 |
| Total | 10 | 100 |

Table 20: If The extent of banks financial success based on the extent of E-Banking facilities provided to the consumers.

| Response | Number | (Percentage)% |
|----------------------------|--------|---------------|
| Vigorously agrees | 2 | 20 |
| Agree | 1 | 10 |
| Disagree | 3 | 30 |
| Vigorously Disagree | 4 | 40 |
| Total | 10 | 100 |

Hypothesis Testing 1

Data from Table 6 – Table 10

| SN | Frequency(o) Observed | Frequency(e) Expected | (o-e) ² | (o-e) ² /e |
|----------|--------------------------|--------------------------|--------------------|-----------------------|
| 1 | 4 | 15 | 121 | 8.0 |
| 2 | 3 | 15 | 144 | 9.6 |
| 3 | 2 | 15 | 169 | 11.2 |
| 4 | 1 | 15 | 196 | 13.0 |
| 5 | 7 | 15 | 64 | 4.2 |
| 6 | 3 | 15 | 144 | 9.6 |
| 7 | 0 | 15 | 225 | 15 |
| 8 | 0 | 15 | 225 | 15 |

| | | | | |
|--------------|----------|-----------|------------|--------------|
| 9 | 1 | 15 | 196 | 13.0 |
| 10 | 3 | 15 | 144 | 9.6 |
| 11 | 5 | 15 | 100 | 6.6 |
| 12 | 1 | 15 | 196 | 13.0 |
| 13 | 3 | 15 | 144 | 9.6 |
| 14 | 5 | 15 | 100 | 6.6 |
| 15 | 1 | 15 | 196 | 13.0 |
| 16 | 1 | 15 | 196 | 13.0 |
| 17 | 1 | 15 | 196 | 13.0 |
| 18 | 3 | 15 | 144 | 9.6 |
| 19 | 4 | 15 | 121 | 8.0 |
| 20 | 2 | 15 | 169 | 11.2 |
| Total | | | | 211.8 |

Hypothesis Testing 2

Data from Table 11 – Table 15

| SN | Frequency(o) Observed | Frequency(e) Expected | (o-e) ² | (o-e) ² /e |
|----|--------------------------|--------------------------|--------------------|-----------------------|
| 1 | 6 | 15 | 81 | 5.4 |
| 2 | 3 | 15 | 144 | 9.6 |

| | | | | |
|-------|---|----|-----|-------|
| 3 | 1 | 15 | 196 | 13.0 |
| 4 | 0 | 15 | 225 | 15 |
| 5 | 0 | 15 | 225 | 15 |
| 6 | 1 | 15 | 196 | 13.0 |
| 7 | 5 | 15 | 100 | 6.6 |
| 8 | 4 | 15 | 121 | 8.0 |
| 9 | 1 | 15 | 196 | 13.0 |
| 10 | 2 | 15 | 169 | 11.2 |
| 11 | 4 | 15 | 121 | 8.0 |
| 12 | 3 | 15 | 144 | 9.6 |
| 13 | 0 | 15 | 225 | 15 |
| 14 | 0 | 15 | 225 | 15 |
| 15 | 6 | 15 | 81 | 5.4 |
| 16 | 4 | 15 | 121 | 8.0 |
| 17 | 3 | 15 | 144 | 9.6 |
| 18 | 4 | 15 | 121 | 8.0 |
| 19 | 2 | 15 | 169 | 11.2 |
| 20 | 1 | 15 | 196 | 13.0 |
| Total | | | | 212.6 |

Hypothesis Testing 3

Data from Table 16 – Table 20

| SN | Frequency(o) Observed | Frequency(e) Expected | (o-e) ² | (o-e) ² /e |
|----|--------------------------|--------------------------|--------------------|-----------------------|
| 1 | 0 | 15 | 225 | 15 |
| 2 | 2 | 15 | 169 | 11.2 |
| 3 | 5 | 15 | 100 | 6.6 |
| 4 | 3 | 15 | 144 | 9.6 |
| 5 | 6 | 15 | 81 | 5.4 |
| 6 | 2 | 15 | 169 | 11.2 |
| 7 | 1 | 15 | 196 | 13.0 |
| 8 | 1 | 15 | 196 | 13.0 |
| 9 | 3 | 15 | 144 | 9.6 |
| 10 | 5 | 15 | 100 | 6.6 |
| 11 | 2 | 15 | 169 | 11.2 |
| 12 | 0 | 15 | 225 | 15 |
| 13 | 3 | 15 | 144 | 9.6 |
| 14 | 4 | 15 | 121 | 8.0 |
| 15 | 2 | 15 | 169 | 11.2 |

| | | | | |
|-------|---|----|-----|------|
| 16 | 1 | 15 | 196 | 13.0 |
| 17 | 2 | 15 | 169 | 11.2 |
| 18 | 1 | 15 | 196 | 13.0 |
| 19 | 3 | 15 | 144 | 9.6 |
| 20 | 4 | 15 | 121 | 8.0 |
| Total | | | | 211 |

ANALYSIS OF DATA

For the analysis of data, we choose the Chi square method. The chi-square test is a statistical test that can be used to determine whether observed frequencies are statistically significantly different from expected frequencies. As in other statistical tests, we begin by stating a null hypothesis (H₀: there is no significant difference between observed and expected frequencies) and an alternative hypothesis (H_A: there is a significant difference). Based on the outcome of the chi-square test we will either reject or fail to reject the null hypothesis.

Decision Rule:

Accept the hypothesis if when calculated χ^2 is greater than tabulated χ^2 (Chi-square) And Reject the hypothesis when calculated χ^2 is less than tabulated χ^2

The tabulated χ^2 was gotten by using the formulae $\Sigma ((o-e)^2 / e)$ **Significance level** = 0.05
Degree of freedom = (c - 1) (r - 1) = (4 - 1) (20 - 1) = (3) (19) = 57

Note: Please refer to Method of data analysis for Value of Chi- Square Distribution(Table).
For **Degree of freedom** = 57 and **Significance level** = 0.05

Where c, r is number of columns and rows not counting the total for columns and rows.
From the Chi-square table in Appendix B, we found out that χ^2 (degree of freedom- 57 under the significance level-0.05) is 75.62 for All the Hypothesis 1 ,2 and 3

Calculated χ^2 for Hypothesis 1, Hypothesis 2 and Hypothesis 3 are **211.8, 212.6** and **211** respectively.

Hypothesis1:

HO: That the introduction of Electronic Banking has not improved the efficiency and effectiveness in State Bank of India.

HA: That the introduction of Electronic Banking has improved the efficiency in State Bank of India.

Therefore, the hypothesis that the introduction of Electronic Banking has improved the efficiency and effectiveness in State Bank of India is accepted.

Hypothesis2:

•**HO:** That the introduction of E-Banking has not helped the curtailment of E- Banking of fraud in State Bank of India.

•**HA:** That the introduction of E-Banking has helped the curtailment of fraud in State Bank of India.

Since calculated Chi-square is greater than the tabulated value, we accept HO and reject HA. This means that the introduction of E-Banking has not helped the curtailment of fraud in State Bank of India.

Hypothesis3:

•**HO:** That they revolution of electronic communication and information technology has not increased State Bank of India's profitability.

•**HA:** That the revolution of electronic communication and information technology has increase State Bank of India's profitability.

Since calculated Chi-square is greater than the tabulated value, we accept Ho and reject HA. This means that the revolution of electronic communication and information technology has not increased State Bank of India's profitability.

Summary of the Findings:

Result of finding from the testing of the hypotheses 1 revealed that the Electronic Banking has significant effect on bank Efficiency. Through Electronic Banking, banks and corporate bodies can provide technical assistance online 24/7. With the introduction of electronic banking customers and business can order and receive product and services online very

securely. Additionally, E-banking creates a medium where information and data can be received within the shortest period.

Presently, in most third world countries like India, many banks have established an advertising presence on the internet, primarily in the term of informational or Interactive websites. They have created transactional websites. But there are few banks that do not provide internet banking have indicated on their websites that they will be providing the services in future.

In the Analysis, even though electronic banking provides services like traditional banking system, but then Internet banking as a means of retaining increasingly sophisticated customers, of developing a new customer base, and of capturing a greater share of depositor assets. A typical Internet bank site specifies the type of transactions offered and provides information about account security, because Internet banks generally have lower operational and transactional cost than the traditional banking system, they are often able to offer low-cost checking and high yield certificates of deposit. According to industry analysts electronic banking provides a variety of attractive possibilities for remote account access, including: Transactional services and inquiries. Easy access to transaction data, both recent and historical; and direct customer control of international movement of funds without intermediation of financial institutions in customers' jurisdiction. Consequently, banking is a term that attempts to broadly describe current alternate delivery channels.

The testing of Hypothesis 2 shows that electronic banking has helped the reduction of fraud in banks. In the physical world, merchants use to validate the account by comparing the signatures on both the credit card and the sales slip. But in a virtual world, where the customer is not present, the merchant does not know if that person is authorized to use the account number provided for the transaction. So, there is more exponential risk

The result of findings from the testing of hypothesis 3 revealed that electronic banking has not increased bank profitability. Electronic banking today has become the bed rock of growth in the financial sector of India's economy.

Since today's customers want to transact business at their own convenience possibly through the comfort of their homes, hence, the need to continue to develop the platform that will continually ensure that the customer is left satisfied with whole lot of electronic product varieties to choose from.

CONCLUSION

The following conclusions are reached based on the result of findings from the study:

Electronic banking has a significant effect on bank efficiency and effectiveness. This means that the banks are now able to give better services to their customers and timely response. The also contributed for the reduction of complaints from the customers. Before the introduction of Electronic Banking the customer, experience has been poor both in terms of servicing time as well as operational service like transfers, drafts and managing check.

Transaction security has also been effective since the introduction of e-banking, immediate notification for all kinds of transaction and having the ability to any unauthorized transaction. Also, customers can easily get information of their Bank details online without going physically to Bank. However, electronic banking has not helped the curtailment of fraud in banks. People now find various means of getting pin numbers to smart cards and are also able to access peoples bank detail online.

Also, electronic banking has not increase bank profitability. The Banks are not making more profit due to the advent of Electronic Banking for now, rather have spent more money to put everything place.

RECOMENDATIONS:

The following recommendations are offered

The banks should continue to stay abreast of technological developments especially in the area of application, so as to consistently develop e-products that will meet the needs of the customer market.

For a better and secured electronic banking environment, a three-factor authentication should be practiced. The third authentication is the use of biometrics. A three-factor authentication can be implemented which is more secured.

FUTURE WORK:

Due to time constraint, I have only shared the guide lines to be taken to enable resilient transactions such as the curtailment of internet fraud in Electronic Banking.

For further research, the implementation of it and making a resilience system (the ability to bounce back when an error occurs) is very much welcomed.

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