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# THE IMPACT OF USE OF ICT FOR BUSINESS PROCESS MANAGEMENT IN e-TOURISM

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**ABSTRACT**

*ICTs stand for information and communication technologies and are defined, for the purposes of this primer, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information. Ict is used at different domain of business process management for tourism business. ICT is used along with Internet, intranet and Extranet. ICT for BPM are used in Pre-travel phase, Travel phase and post travel Phase.*

**KEYWORDS**
extranet, ICT, internet, intranet tourism.

## INTRODUCTION

ICTs stand for information and communication technologies and are defined, for the purposes of this primer, as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information."[1]. Technological tools include computers, the Internet, broadcasting technologies (radio and television), and telephony.Tourism is travel for pleasure also the theory and practice of touring, the business of attracting, accommodating, and entertaining tourists, and the business of operating tours.[2]

## INFORMATION COMMUNICATION TECHNOLOGY

Beginning with the 80s, ICT transformed the domain of tourism globally. The achievements in the ICT domain changed undeniably the practices, the business strategies, but also the industry structurally. Beginning with the year 2000, we could observe in the ICT domain an especial emphasis regarding the development of a large series of instruments and services that facilitate the interaction between the market actors at a global level. The development of the searching engines, the transport capacities and the speed of the networks have influenced the number of tourists from all over the world that use technology for planning and documenting their journeys.[3]

ICT not only offers the customer the possibility to identify, personalize and buy touristic products, but also it offers support for the touristic industry globalization, offering efficient instruments to the tourism agents in order to develop and distribute their offer globally.[3]

## BUSINESS PROCESS MANAGEMENT (BPM)

Business process management (BPM) is a field of knowledge at the intersection between management and information technology, encompassing methods, techniques and tools to design, enact, control, and analyze arrange for necessary transport and accommodation requested by the tourist. In the course of the trip they will keep in touch with the enterprise website and enjoy the personalized services at any time and place instead of the conventional method of tourist guides also it making it unnecessary for the tourist to join the group being organized by an agent and this will reduce cost for the management. With this method the conventional way will fade in the tourism sector. [4]

The term 'operational business processes' refers to repetitive business processes performed by organizations in the context of their day-to-day operations, as opposed to strategic decision-making processes which are performed by the toplevel management of an organization.[5]

## BUSINESS PROCESS MANAGEMENT FOR e-TOURISM

The e-tourism concept includes all business functions such as e-commerce, e-marketing, e-finance, e-HRM, e-procurement, e- R&D, e-production , e-strategy, e-planning and e-management for all sectors of the tourism industry which includes tourism, travel, transport, leisure, hospitality etc.[6]Tourism business can use internet, intranet and extra net for business process management .

## USE OF INTERNET IN BPM FOR e-TOURISM

Internet is network of network interconnecting everybody in the world. Communication and interacting with stakeholder is most imported use of internet. The Internet is used as profitable medium of promotion and sales for tourism. ICT tools like multimedia enabled websites, Mail connection, plays very crucial role in rapid growth of tourism worldwide. By using the Internet, multimedia and databases it can be achieved a rational and fast online communication, direct contact with the market and its business partners, integration and automation of business process, delivery and access of information. [7] Internet can be used at Pre-travel phase for a wide range of tools to facilitate travel-related information search, for instance virtual (3D) representation of the destination may encourage tourist to search information about particular destination and visit it in the real life. For Travel phase Real-time information about the destination should be available during the trip, for instance information about events and places of interest, advices and practical recommendations. For instance, mobile applications may enable tourists to find products or services that match their needs. In Post-travel phase ICT provides tourists variety of solutions to share their travel experience with others, for instance using virtual communities and social media. Tourist travel experience may affect other potential tourist travel decision making. [8]

## USE OF INTRANET IN BPM FOR e-TOURISM

Different ICT tools are designed to use on intranet for tourism business which includes business functions networking & information exchange, human resources management, staff coordination

operational planning, accounting/billing, payroll, supplies management ICT tools are also used for Communication and function with branches, coordination of operations reports and budgeting ,availability/prices/information orders from headquarters/administration share of common resource databases for customer and operational information.

## USE OF EXTRANET IN BPM FOR e-TOURISM

Extranet is private intranet which will provide access to authorized outsiders. Different ICT tools are used for Links between partners, negotiations and bargaining, reservations & confirmations, lists of groups or visitors, receipts of documents, vouchers & tickets production, travelling facilitation, follow up progress, keep partners informed about plans, follow up developments, feedback and clearing commissions, payment & commissions clearance, feedback & suggestions, complaint handling, building loyalty through data mining.

## CONCLUSION

ICT in business process management plays very important role to maintain relationship between tourists, tour operators, travel agents, and environment. People are travelling for different purposes. ICT is beneficial for various activities in tourism and at every level. Tourists, tour operators, travel agents and supplier get tremendous benefit of ICT for different BPM. ICT has become a boon for day to day life of person.

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# A ROLE OF KNOWLEDGE BASED SYSTEM IN INFORMATION SYSTEM AUDIT

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**ABSTRACT**

*Computers have had a profound effect on both the type and way business is done or service is rendered. IT that integrates computer and communication technology has revolutionized the way business is done and created new avenues to deliver services. It is not only a tool for generating business information, but has also become essential for business survival and success. However, implementing IT has its own inherent risks. So security features have to be implemented in accordance with the internal control requirements of the organisation. IT controls when properly implemented provide is more reliable than manual checks. Through this article, researchers are trying to evaluate the usage of Computer Software in Information System Audit.*

**KEYWORDS**
IS audit, GAS, CAAT, snapshot.

## 1. INTRODUCTION

### INTRODUCTION TO IS AUDIT

An IS audit is defined as an audit that encompasses a whole or partial review and evaluation of automated information processing systems, related non-automated processes and the interfaces between them. This definition provides a very broad ambit for an IS audit and covers a review of all or any aspect of the IT environment from development to deployment, from planning to monitoring and from acquisition to delivery. An IS audit is expected to provide reasonable assurance to the management on quality (effectiveness, efficiency and economy), external IT (confidentiality, integrity and availability) and fiduciary (compliance and reliability). IS auditors help their clients to understand and manage IT risks. It enables IT organisations to use leading edge technology and stay ahead in a competitive environment by implementing business and process-oriented controls. The scope of IS audit is defined by the auditee organisation based on their specific needs.

IS auditing involves the evaluation of systems and procedures to ensure that assets are safeguarded, the integrity of computer data is maintained, and the objectives of the organization are achieved. The objective of the IS audit is to determine if all control procedures for computer systems are in place, and to identify any areas where control can be improved. Both these functions will reduce potential losses.

The IS audit is designed to evaluate the adequacy of internal control with regard to both specific computer programs and the data processing environment as a whole. This includes evaluating both the effectiveness and the efficiency. Though both these terms are used interchangeably, they differ. The focus (scope and objective) of the IS audit is not only on security (confidentiality, integrity and availability), but also on effectiveness (result orientation) and efficiency (optimum utilisation).

## 2. IS AUDIT APPROACH

Primarily the audit process involves collecting and evaluating evidence in accordance with the objectives. The general objective of any IS audit is to provide reasonable assurance that IS controls are adequate and appropriate. This would involve evaluation of the existing Internal Control System, identifying the related risks and exposures and reporting them for remedial action. In any IS audit, it is essential to understand critical elements of the business- vision, mission, processes or cycles, structure and information systems. This process involves evaluating the existing information architecture by answering the following questions -What IT is used? How is IT deployed? What are the key business processes? How does the information system work? What are the key controls? What are the benchmarks or yardsticks for measuring performance or results?

Any IS audit assignment begins by defining the scope and objectives Based on this, the auditor should obtain a clear understanding of business operations, compliance requirements, technology deployed, organization structure, related risks of technology deployment and system of internal controls. He could then adapt the standards and benchmark for audit, develop an Information Model for collecting and evaluating evidence and execute the audit. This IS audit process also involves the review of risks, security and controls to identify control weaknesses and suggest corrective measures.

## 3. AUDITING THROUGH THE COMPUTER

With the introduction of computerization, traditional audit trail has disappeared. The entire processing cycle occurs within the computer systems. No corresponding manual documents are generally available. It is thus necessary to examine the internal working of the computer system. The auditor can verify the technical accuracy of the systems, checks, controls, error detection and data security procedures. He can use test-checks or print outs to test the system in operation and improve the quality of his own audit. Thereby using computer he can reduce the time spent on detailed manual verification of transactions.

The system of controls, examination and testing of computer-implemented controls is mandatory for an auditor. This process can be done using computer. In some cases, though the sheer volume and complexity of transactions might necessitate the use of other corresponding powerful tools. Computerised audit refers to the approach of reviewing the internal controls in the computerised environment. An understanding of the IT environment, its components and their operations is thus necessary. The objective is to understand the system and the processes and identify the risks and controls at the system or process level itself. This is essential test weakness at the system or process should percolate to the activities level. Proficiency in computers becomes obligatory here. It is also essential to know the implications of how the controls are set up in the computerised environment at the various levels of hardware, operating system software, database, application software around the computer and access to these by the staff as per authorizations.

## 4. AUDITING IN A COMPUTERIZED ENVIRONMENT

There is no standard software for computerised auditing. The objective and scope of audit differs with the type of audit i e., tax audit, statutory audit, etc. Thus, the methodology of audit may vary depending on the IT environment of the client. The deployment of IT resources for a specific environment consists of different information technology resources such as information technology facilities, technology (hardware, operating system software, telecommunication software, networking software, multimedia software), application software, and business process and organizational structure. So numerous types of information technology

sot-ups are possible depending on the combination of information technology resources deployed. Hence, there cannot be any standard software for auditing all types of computerised environment. This does not however mean that the auditor should be knowledgeable about all types of hardware, software and application packages.

Nevertheless, the auditor must have certain key competency areas of computer:

- A thorough understanding of the fundamental concepts of Information Technology
- lts key components and
- How they function

A CA should be knowledgeable about computer hardware, operating systems, networking,
database, application software, risks and controls of a computerised environment and office automation software. Equipped with these skills, a CA can audit any type of IT environment. If necessary he can obtain technical assistance from internal or external sources.

## 5. COMPUTER PROGRAM APPROACH

This approach involves running the auditor's program on a controlled basis to verity the client's data recorded in a computer. The auditor can potentially perform different kinds of tests and functions with a computer program if the client's data is available on a computer. A major problem in computer testing client data is obtaining a suitable programme at a reasonable cost. Two options are available:

- Writing a programme specifically for the audit
- Using a Generalised Audit Program

The first option requires the auditor to be technically competent in programming and methodology around computer, which may not be his area of expertise. Following Computer audit software are readily available and do not call for much expertise from the auditor can be used.

## 6. GENERALISED AUDIT SOFTWARE (GAS)

Computer audit software may be defined as: "The processing of a client's live files by the auditor's computer programs". Computer audit software may be used either incompliance or substantive tests. The use of Generalised Audit Software is perhaps the most widely known computer assisted audit technique. GAS has standard packages developed by software companies exclusively for auditing data stereo on computers. These are economical and extensively used by auditors world over. Available off the shelf, GAS can be used for a wide range of hardware, operating systems, operating environments and database. Generalised Audit Software (GAS) refers to standard software, which can directly read and access data from various database platforms, flat file systems and ASCII formats. This software has all the features of mathematical computations, stratification, statistical analysis, sequence check, duplicate check, re-computations, etc. Auditors can thus directly access the data stored in a computer and undertake various types of mathematical computations and statistical analysis. GAS cannot perform the audit but can facilitate selection and processing the information as per the auditors' requirements.

## 7. CAATS

Computer Assisted Audit Techniques (CAATs) is a significant tool for auditors to gather evidence independently CAATs provide a means to gain access and analyze data for a predetermined audit objective and to report audit findings with evidence. They help the auditor to obtain evidence directly on the quality of the records produced and maintained in the system. The quality of the evidence collected confirms the quality of the system processing. CAATs could be used for various types of audit, which involve direct access, analysis and interrogation of data. CAATs facilitate auditors to use high-level problem solving software to invoke functions to be performed on data files. The packages are independent of the data they retrieve and analyse. The user merely needs to define the data structures and specify simple selection criteria. But the usage of CAATs will be effective if the areas of weakness are identified after performing compliance tests and evaluating the results. If the results necessitate substantive testing, CAATs is recommended to get evidence. Normally, audit conclusion and recommendation are based on the evidence collected by auditors. Audit conclusion based on incorrect and / or inappropriate evidences will reduce the credibility of the audit itself. Hence manual methods may be used to analyse the conclusions later.

## 8. SNAPSHOT

Most applications follow a standard procedure whereby after taking in the user input they process it to generate the corresponding output. Snapshots are digital pictures of procedures of the console that are saved and stored in the memory. Procedures of the console refer to the application procedures that take input from the console i.e. from the keyboard or the mouse. These procedures serve as references for subsequent output generations in the future. Typically, snapshots are implemented for tracing application software and mapping it. The user provides inputs through the console for processing the data. Snapshots are a means through which each step of data processing (after the user gives the input through) is stored and recalled. Specifically designed snapshot software applications or audit tools (incorporating snapshot software) are used for tracking every step involved in the output generation process. It takes the "digital picture" of the user input and the corresponding output. Subsequently, digital pictures or snapshots taken by the snapshot software are stored in the computer memory to be retrieved later. The digital pictures (stored in the memory) are distributed to selected servers and clients. This implies that these are selectively accessible and cannot be retrieved by every user in the organisation. These are stored once in a day on a regular basis and available in read-only mode, so as to keep track of changes in application programs. One more important point to remember about snapshots is that, they do not take pictures of the system data. In fact they store the digital pictures of the running transactions (or current input/output operations).

## 9. INTRODUCTION TO KNOWLEDGE MANAGEMENT SYSTEM

AI provides not only new paradigms for problem solving but also new representation formalisms which allow the explicit representation and use of the knowledge of the domain, mainly by rule-based
and constraint-based representation of knowledge. A Knowledge-based system is a computer program that uses knowledge to solve complex problems. Knowledge is acquired and represented using various knowledge representation techniques rules, frames and scripts. The basic advantages offered by such system are documentation of knowledge, intelligent decision support, self learning, reasoning and explanation. Knowledge-based systems are systems based on the methods and techniques of Artificial Intelligence. Their core components are:

- knowledge base
- acquisition mechanisms
- inference mechanisms

Knowledge Base Systems (KBS) goes beyond the decision support philosophy to indicate the expert system technology into the decision making framework. Expert Systems (ES) have been the tools and techniques perfected by artificial intelligence (AI) researchers to deduce decision influences based on codification of knowledge. The codification of knowledge uses the principles of knowledge representation. Typically such codification uses rules like IF-THEN rules to represent logical implications.

Now days, knowledge-based systems appear to be more generally recognized technology. This paper identifies the more recent specific applications of knowledge-based system in the field of Information System Audit, technology that have garnered attention of many organizations and professional chartered Accountants.

## 10. AUDITING THROUGH KNOWLEDGE BASED SYSTEM

Computerised audit refers to the approach of reviewing internal controls in the computerised environment. Before using auditing software it is important for the auditors to understand the system, the processes and identify the risks and controls at the system as well as the process level. This requires an understanding of the IT environment and its components. Similarly the auditing softwares discussed above are having their own limitations. The system like GAS, CAAT or Snapshot can be considered MIS or DSS which will support the decision taken by the auditors. Hence as far computerized auditing is concerned, it is very important that system should be based on the expert knowledge of which results can be highly accurate and less human intervention is required in evaluating the results generated by it.

The Information Systems Audit Standards require the course of an audit, the IS auditor should obtain sufficient, reliable and relevant evidence to achieve the audit objectives. The audit findings and conclusions are to be supported by the appropriate analysis and interpretation of this evidence. Computer Assisted Audit Techniques are important tools for the IS auditor in performing audits. They include many types of tools and techniques, such as generalized audit software, utility software, test data, application software tracing and mapping, and audit expert systems. Computer Aided Audit Techniques may be used in performing various audit procedures including: Tests of details of transactions and balances (Substantive Tests)

- Analytical review procedures
- Compliance tests of IS general controls
- Compliance tests of IS application controls

Computer Aided Audit Techniques may produce a large proportion of the audit evidence developed on IS audits and, as a result, the IS auditor should carefully plan for and exhibit due professional care in the use of Computer Aided Audit Techniques. The main difficulty and modelling and formalizing knowledge in the audit field is the complexity of information system audit, which requires performing of some expertise that use knowledge from separate or interrelated field of knowledge. The purpose of this paper is to examine the current state of expert systems and decision support systems in auditing. In so doing we will examine completed or prototype expert systems and decision support systems in both external and internal auditing, including special areas of focus such as EDP auditing and governmental auditing. This paper focuses on those auditing based systems those have appeared in the literature or have been presented at a conference or of which the authors are aware.

## 11. CONCLUSION

Although the above mentioned auditing techniques are still in the early stages of development, most of the researches are based on security measures and applications such as accounting information system. A large proportion of the current research effort is limited to the researchers that are normally associated with professional associations and organizations related to information systems auditing. Computer programs, such as expert systems, can be used to improve the consistency of human responses and mitigate errors. Utilization of the expert system will lend consistency, thoroughness and verifiability to the audit opinion decision process. Certainly there is feasibility and the benefits of applying expert systems methodology to Information system auditing. As the system evolves, it can acquire more knowledge and gradually take over some additional, more judgmental, tasks. Hence researchers propose a system as a start towards a longer-range goal of expert systems for information system audit and administration. The system will be one component in provision for risk assessment, maximizing security, and, its integrity is dependent upon the soundness and completeness of the auditing procedures that it implements. Also system will demonstrates the feasibility and scope of potential automation of the information system

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# XML DATABASE: PAST, PRESENT AND FUTURE

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**ABSTRACT**

*The world of traditional data storage and XML have never been closer together. To better understand how data storage and retrieval works in an XML world, this paper will first discuss the past, present, and future of structuring XML documents. Then we will delve into the languages that add the ability to query an XML document similar to a traditional data store. This will be followed by an exploration of how the most popular RDBMSs have recognized the importance of this new data storage format and have integrated XML into their latest releases. Finally the rise of new data storage and retrieval systems specifically designed for handling XML will be shown.*

**KEYWORDS**
XML, XML/SQL, API, Data storage.

## INTRODUCTION

XML stands for eXtensible Markup Language. XML is a meta-markup language developed by the World Wide Web Consortium(W3C) to deal with a number of the shortcomings of HTML. As more and more functionality was added to HTML to account for the diverse needs of users of the Web, the language began to grow increasingly complex and unwieldy. The need for a way to create domain-specific markup languages that did not contain all the cruft of HTML became increasingly necessary and XML was born.

The main difference between HTML and XML is that whereas in HTML the semantics and syntax of tags is fixed, in XML the author of the document is free to create tags whose syntax and semantics are specific to the target application. Also the semantics of a tag is not tied down but is instead dependent on the context of the application that processes the document. The other significant differences between HTML and XML is that the an XML document must be well-formed.

Although the original purpose of XML was as a way to mark up content, it became clear that XML also provided a way to describe structured data thus making it important as a data storage and interchange format. XML provides many advantages as a data format over others, including:

- Built in support for internationalization due to the fact that it utilizes unicode.
- Platform independence (for instance, no need to worry about endianess).
- Human readable format makes it easier for developers to locate and fix errors than with previous data storage formats.
- Extensibility in a manner that allows developers to add extra information to a format without breaking applications that where based on older versions of the format.
- Large number of off-the-shelf tools for processing XML documents already exist.

## XML AS A DATABASE TOOL

The bulk of the influence of XML on logical and physical database design is based on fundamental properties of XML that make it different from the relational model:

- XML is self-describing. A given document contains not only the data, but also the necessary metadata. As a result, an XML document can be searched or updated without requiring a static definition of the schema. Relational models, on the other hand, require more static schema definitions. All the rows of a table must have the same schema.
- XML is hierarchical. A given document represents not only base information, but also information about the relationship of data items to each other in the form of the hierarchy. Relational models require all relationship information to be expressed either by primary key or foreign key relationships or by representing that information in other relations.
- XML is sequence-oriented—order is important. Relational models are set oriented—order is unimportant. None of these differences indicate that XML is better or worse than purely relational models. In fact, XML and relational models are complementary solutions. Some data is inherently hierarchical while other data is inherently tabular; some data has more rigid schema while other data has less rigid schema; some data needs to follow a specific order while other data does not.

## THE FUTURE OF XML DOCUMENTS

Most of the information in an enterprise lives in documents kept in file systems, not in relational databases. There have always been reasons to move those documents into databases -- centralized administration, full-text search -- but in the absence of a way to relate the data in the documents to the data in the database, those reasons weren't compelling. XML cinches the argument.

As business documents morph from existing formats to XML -- admittedly a long, slow process that has only just begun -- it becomes possible to correlate the two flavors of data. Consider an insurance application that stores claims data in a relational table and claims documents in XML. A hybrid SQL/XML database enables the application to extract fragments of XML from a subset of the documents. And that subset can be created by joining XML elements in the document with column values in relational tables.

These wildly powerful effects are currently achieved using a few different kinds of storage and query strategies. On the storage side, there are two general approaches. You can put whole documents into columns of the database, or you can "shred" the document into a collection of relational tables. The latter approach makes best use of the database's query engine and atomic update capabilities, but mapping from irregular XML data to SQL is much harder than mapping from SQL to XML. It helps if your XML documents are governed by XML Schema descriptions. These provide hints to the XML-to-SQL mapper and can be annotated to more precisely control the mapping. It also helps if your database supports objects that can receive irregularly shaped XML data.

## CONCLUSION

In the past five years, there have been substantial accomplishments in XML. XML has made it possible to manage large quantities of information which don't fit in relational database tables, and to share labeled structured information without sharing a common Application Program Interface (API). XML has also simplified information exchange across language barriers.The future of XML application lies with the Web and Web Publishing. Web applications are no longer traditional. Browsers are now integrating games, word processors and more. XML is based in Web Publishing, so the future of XML is seen

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# CRITICAL CHALLENGES AND TRANSFORMATIONS IN EDUCATION IN NIGERIA: SYNTHESIS AND PROGNOSIS

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**ABSTRACT**

*Education is very vital for the survival of society. It is through education that future generations learn the art of living in their peculiar environment and acquire the necessary skills needed to transform that environment for an enhanced living. In Nigeria, the primary, secondary and tertiary levels of education were put in place by the federal government in order to harness the human capital needed for individual survival and the economic development of the country. Unfortunately, it is claimed that the standard of education in Nigeria has fallen since the late 1970s and graduates from Nigeria universities lack in quality, low in perception, unfit in skills and lamentably unemployable. The education sector is worsening with the dearth of fund and the misapplication of the little provided to run education; lack of adequate infrastructure or the decay of the little available; insecurity of lives and property occasioned by frequent kidnapping and killing of innocent citizens by religious fanatics 'Boko Haram' who claim that education is anathema; and incessant strikes that frequently led to closure of schools. These challenges prompted the federal government of Nigeria to set up Transformation Agenda aimed at reforming the education industry together with other sectors with a view to growing the economy. The Transformation Agenda drew its philosophy from the United Nation's Millennium Development Goals on Education and the Nigeria's Vision 20.2020 aimed at making Nigeria one of the world's 20 economies by the year 2020. A synthesis and prognosis of critical challenges threatening education were revealed and suggestions proffered for overall transformation of education in Nigeria.*

**KEYWORDS**
critical, challenges, transformations, synthesis, prognosis.

## INTRODUCTION

There is no society that can survive without a sound system of education. This is so because it is through education that future generations learn the art of living in their peculiar environment and acquire the necessary skills needed to transform that environment for an enhanced living. In the heart of every democracy, the provision of sound education is central as education is a tool for combating ignorance, poverty and under-development. Education is the method by which a society transmits from one generation to the next, its knowledge, culture and values. For the individuals, it is the process by which a person learns fact, acquires skills, and develops abilities and attitudes necessary in the workplace. Investment in education, therefore, contributes to the accumulation of human capital which is essential for economic and social development and by encouraging responsible citizenship, helps to prepare the way, gradually, for a robust democracy (Ramson, 1994).

According to Ajibade (2001), education is the key to greater heights; education has made it easy to lead and govern but difficult to drive and enslave. It is the greatest companion that cannot be stolen, destroyed, or enslaved; education can bring people out of obscurity into limelight and education is the key to national development.

It is perhaps for these reasons and more that successive governments in Nigeria have taken very seriously the burden of organizing education. In particular, the federal government recognizing that education is globally regarded as a veritable instrument for social and economic reconstruction of societies, embarked on a revolutionary reform in the education sector which would be compliant with emerging global initiatives on education. The remaining part of this work will be focusing on critical challenges and transformations of education in Nigeria.

## SYNTHESIS AND PROGNOSIS OF CRITICAL CHALLENGES IN NIGERIA'S EDUCATION SECTOR

The Federal Ministry of Education (2012) stated very clearly what it perceived as challenges to a sound education sector and which must be resolved for successful transformations in education to happen:

1. Institutional challenges like declining academic standards, low admission capacity (turned effect), legacy examination system, examination malpractices, cultism inadequate facilities and unsustainable cost structure.
2. Policy and communication challenges such as non-implementation of policies, poor relations between federal and state agencies and communication gap between operators within the sector and society.
3. Capacity challenges, e.g., skill gap between Nigeria and other nations, unemployment and brain drain
4. Socio-cultural challenges, youth deviancy, dying reading culture, and moral degradation.
5. Generational challenges e.g., generational gap between parents and children and between teachers and students.

These are not the only challenges bedeviling the system. Other critical challenges need to be mentioned and addressed in order to explain the urgency in transforming education in Nigeria are as per following:

**INSECURITY**

The unprecedented rise of insecurity due to the devastating attacks by the Boko Haram sect in Nigeria particularly in the north east, the frequent kidnapping in the south-east and south-south of Nigeria which is gradually spreading across the nation have proven to be the greatest headache of federal government of Nigeria since the end of Nigeria's civil war in 1970. First because peace which is a precursor to development has been taken away and secondly because these challenges are the reasons schools are shut down, factories abandoned and the future of education in Nigeria is uncertain. Universities in the northern part of the country are now undersubscribed as prospective students prefer safer universities in the central and southern parts of the country thereby putting pressures on the already overstretched and over-subscribed universities. Parents prefer to keep their wards at hole to prevent their being abducted or conscripted into the ranks of the deadly Boko Haram insurgents. Inadvertently, the same youth who have been kept at home for fear of being abducted or those who have been displaced became ready sources of recruit by Boko Haram insurgents. Furthermore, the unprecedented high rate of unemployment in the country worsened the situation as the unemployed youth succumb to these vices and became ready stooges in the hands of Boko Haram, kidnappers and armed robbery surrogates.

**INCESSANT STRIKES AND CLOSURE OF INSTITUTIONS**

Incessant strikes by staff of tertiary institutions in Nigeria as a result of unsatisfactory conditions of the education process contribute very adversely to the growth of the sector. Students stay at home more than they actually study and because of this, parents have resorted to sending their wards to private institutions while well-to-do parents send their children abroad. This confirms the decay in the process and explains the reason for the devalued quality of our products.

**POLITICS IN THE ESTABLISHMENT OF INSTITUTIONS**

Institutions are established by the Federal Government along political and geographical lines. The siting of educational institutions has always been at the whims of people in power meant to please particular ethnic or religious groups, and expand political patronage. However, the effort of this administration in ensuring the involvement of the private sector in establishment and management of institutions has opened-up desirable vista in university administration in Nigeria. This

was long overdue since the existing federal and state universities could not cope with the teeming young Nigerians that crave for university education. With the coming of the National Open University of Nigeria it is hoped that many Nigerians that seek tertiary education will find opportunities.

**POOR FUNDING OF EDUCATION**

Funding is the most intractable task facing mangers of educational institutions in Nigeria. Fund is very import. It is needed for provision of facilities/equipments, payment of salaries as well as allowances. Several other activities such as accreditation, maintenance, etc, depend on fund. There is hardly anything that can be achieved in schools without fund. In emphasizing the important role of funding in goal realization of educational institutions, Suleiman (2011) reiterated that the most serious of all constraints is funding which he considers to be undoubtedly, extremely and dangerously low. According to him, the declining quality of education, characteristic perennial shortage of institutional materials, decaying physical facilities and low morale among teachers and students are often attributed largely to problem of funding.

The Constitution of the Federal Republic of Nigeria (1999) provides for shared responsibility for education at all levels. In practice however, local governments have shown greater prominence in primary education while the state governments are involved in secondary and tertiary education. The federal government operated predominantly at the tertiary level with some inputs to assist the primary and secondary levels. Even though the Nigerian educational system is very large and still expanding, a commensurate funding system is not put in place for meaningful improvement in quality of materials and processes. Unfortunately, with the dwindling resources accruing to the federal government occasioned by fallen oil prices, the realization of allocation of 26% of national annual budgets to education, in line with the United Nation standard, will be distant indeed. For avoidance of doubt, the best budgetary allocation to education in Nigeria's history was 10% of her annual budget witnessed in 2014.

**ACCREDITATION**

Closely related to the problem of funding is accreditation. The supervisory bodies of Nigeria's institutions insist on minimum standard in the area of student quality, programmes, physical facilities, teacher quality, etc. At the receiving end of these inadequacies are the managers of these institutions who struggle to keep the various institutions on course in ensuring that minimum standard is achieved. Accreditation is necessary in the sense that products and processes used in achieving it are not at variance in the same school and between schools.

**AUTONOMY**

The need for autonomy of tertiary institutions and especially in the appointment of chief executives and funding has been made incessantly. True autonomy lies in the various institutions being able to select their leaders themselves through election. The chief executive so elected would be likely to serve the institution better than a leader imposed on the institution and staff by the political leadership. A vice-chancellor appointed single-handedly by the President may only own allegiance to the man who appointed him. This explains the reason some heads of tertiary institutions treat their colleagues with disdain, not caring about managing the institution responsibly; undue interference by the supervisory ministries in the area of student admission, appointments and fund management thwarts the efforts of the institutions managers to manage universities governing councils the responsibility for institutional governance, the appointment of key officers restricting the powers of the National Universities Commission and also, allowing universities to set admission criteria, select students, develop curricula and restore grant funding to universities. Governing Councils should be given the responsibility for institutional governance, the appointment of key officers restricting the powers of the National Universities Commission and also allowing universities to set admission criteria, select students, develop curricula and let the government restore grant funding to universities.

**CULTISM**

Cultism is a cankerworm bedeviling Nigeria's institutions. The youths involved in cultism have distorted view about life. They believe that joining cults is a way of achieving their aim of passing examination and getting their way on every issue that affects them in school. Unfortunately, cultism cannot thrive if parents and society do not encourage it wittingly. Some cultists have the support of the authorities in our tertiary institutions who believe that they could be used to protect them from their bad management. Academic activities are usually disrupted where cultism exists and loss of life and properties becomes the order of the day. Managers of such institutions have their hands full.

**EXAMINATION MALPRACTICE**

Examination malpractice is a social malaise threatening the foundation of our institutions in Nigeria today. The society and parents have share of the blame. A society that encourages wealth acquired by every means is a fertile ground for examination malpractice. The societal values of love, care, respect, honesty, dedication, pride, fairness, humbleness, truthfulness, hard work, etc., are now virtues of the past. Today, our institutions are no longer sure of the type of graduates they produce. The students are products of examination malpractice of miracle centers from various secondary schools across the land. According to Akingbola (2012), it is now commonly accepted that the system has failed because graduates have worthless degrees and it is nearly impossible to find qualified staff to run the universities and teach.

**CORRUPTION**

On top of the list of social ills in our institutions is corruption. While we bemoan the fact that education is under-funded, the little available is misappropriated by the managers of these institutions. Corruption in tertiary institutions has reached all time high in Nigeria. Again, it is the reflection of the larger society. The politicians who appropriate this money, the executive that releases the money and institutions that actually spend the money are all neck deep in this rat-race to cut a share for themselves. It is a vicious circle that must be broken. With economic and Financial Crimes Commission (EFCC) and Independent Corrupt Practices Commission (ICPC) in place, the managers of our institutions should understand that the game must be over so that our educational institutions could grow.

**QUALITY TEACHING AND LEARNING**

Education, properly conceived and applied requires all kinds of resources; human, financial and physical resources. In Nigeria's institutions, the inadequacies of all three are obviously the case. The need to continuously train the teachers so that they would be relevant in view of the changing world is very pressing. Indeed, the need for adequate and appropriate learning resources remains central to the success of education. According to Suleiman (2011), scarcity of these resources is partly responsible for the situation that prevails today where learners are programmed right from the start without the capacity to visualize in concrete terms the concepts learnt and as such are unable to do things practically, describe relationships between various objects accurately or apply themselves to challenging situations to arrest the decay of resources and facilities. The quality of staff and discipline suggests that the system is in a state of crises. While many schools are shut most of the time due to strikes, those who are working are not paid salaries as and when due, or when paid at all are not paid commensurately.

## OVERVIEW OF TRANSFORMATION EFFORTS AND PROGNOSIS OF EDUCATION IN NIGERIA

In order to address challenges mentioned above, some of which are generational, the federal government of Nigeria took several steps, one time or the other, to reform education so that education can effectively play its role as a tool for moral, emotional, physical and intellectual capital for the development of the individual and the society. According to Okafor (2007) educational reforms in Nigeria dates back to 1882 Education Ordinance Act borne out of the British Education Act of 1844.

- The 1887 Education Act laid down rules for annual examination of pupils, methods of granting teacher's certificates and the system of grants-in-aid.
- The 1903 Education Code for the Protectorate of Southern Nigeria laid down rules for the provision of primary and secondary schools and payment of grants-in-aid.
- The 1908 Education Ordinance strengthened the staff and provided for a Director of Education and superintendent of schools.
- The 1916 Education Ordinance and Code proposed by Lugard in 1914 were finally adopted;
- The Phelps Stokes Report of 1923 on Education in Africa gave rise to the 1925 Memorandum on Education in British Colonial Territories.
- The 1926 Education Code was made to curb the mushroom establishment of schools by missions, private individuals and groups in Nigeria.
- Hussey Education Reforms of 1930 gave rise to three levels of education, namely; Eight-year primary education, the intermediate stage of six years, at which pupils would leave to seek employment and a third stage of vocational higher education.

- The Elliot Commission of 1945 strengthened the development of Higher Education in Nigeria including the establishment of College of Arts and Science at Enugu, Ibadan, Zaria and eventually the University College Ibadan.
- The military regime reforms of Gowon-Obasanjo (1976-1979) led to the 6-3-3-4 system of education, UPE, transfer of first generation universities to the Federal Government, and introduction of JAMB.
- The Obasanjo regime introduced Open and Distance Education, UBE, 9-3-4 system, Post UME Exams, Operation Reach all Schools (ORASS), Tracking Assets for Progress (TAP), Public Private Partnerships, and others.

The government of ex-president Obasanjo in 2007 introduced a Reform which, according to Okwuanaso (2007) reported by Umoru (2012) can be summarized as follows:

1. Establishment of Basic and Secondary Education Commission at Federal, State and Local Government Levels. In establishing this Commission and the Federal Inspectorate Service of the Federal Ministry of Education were consolidated. The purpose of the commission was among others, to ensure that Government at all levels in Nigeria provides free compulsory and universal basic education for every child of school age.
2. Establishment of the Tertiary Education Regulatory Commission. The Commission was expected to be a merger of the National Universities Commission (NUC), the National Board for Technical Education (NBTE) and the National Commission for Colleges of Education (NCCE). The Commission was expected to be charged with responsibility of regulating all Federal Government owned tertiary institutions in Nigeria. It was also expected that the 21 Federal Polytechnics (except the Yaba College of Technology and Kaduna Polytechnic which would become "City Universities)" and 21 Federal Colleges of Education would be converted into campuses of neighbouring universities as may be directed by order issued by the minister and published in the gazette.
3. Establishment of National Education Resource Commission. The National Teachers Institute (NTI) Kaduna, the Nigerian Educational Development Council (NERDC) Sheda, Abuja and the National Institute for educational Planning and Administration (NIEPA) Ondo were to be consolidated into this body to take over the functions previously performed by the three agencies.
4. Preservation of four examination bodies National Business and Technical Examination Board (NABTEB), National Examination Council (NECO), West African Examination Council (WAEC) and Joint Admissions and Matriculation Board (JAMB). These bodies shall conduct examinations as specified in the Acts establishing them. The National Library and Information Service Board, National Mathematical Centre, Teachers Council of Nigeria and Education Trust Fund were also preserved.
5. The Special Education Commission was established. The Commission is a consolidation of bodies known as the Nigerian French Language Village (NFLV), the Nigeria Arabic Language Village (NALV). National Commission for Nomadic Education and the National Commission for Adult Education, Mass Literacy and Non-formal Education. The commission was to take over the function previously performed by the above listed bodies and pursue the objective of the Federal Government Goals (MDGs) by addressing perceived gaps in groups that mainstream education system which were ignored.
6. Schools Management Organization (SMO) was established to manage each unity school in Nigeria. The function of the Schools Management Organization included among others, managing the academic and administrative affairs of unity schools. Public Private Partnership (PPP) in the management of the 102 Federal Government Colleges was introduced.

Needless to emphasize that except UBE, other reform proposals were never implemented.

Of recent, the initiatives of the federal government of Nigeria towards reforming education was by adopting the eight Millennium Development Goals (MDGs) which the world leaders under the aegis of the United Nations fashioned in 2000 to fight the root causes of poverty, disease and inequality. The goals which UN (2000) aimed to achieve by the year 2015 are:

- Eradicate extreme poverty and hunger
- Achieve Universal Basis Education
- Promote gender equality and empower women
- Reduce child mortality
- Improve maternal health
- Combat HIV/AIDS, malaria and other diseases
- Ensure environmental sustainability
- Develop a global partnership for development

In order to own these goals, the federal government of Nigeria created its MDGs version in the National Economic Empowerment and Development Strategy (NEEDS) document which state governments in the country adopted and christened State Economic Empowerment Development Strategy (SEEDS). To fast-track progress in this direction, the federal government convened a National Summit on Higher Education in 2002 in realization of the importance of quality education at all levels as a vital transformation tool and a formidable instrument in achieving not only the education aspect but also all the other aspects of the MDGs. The Summit revealed that deep-seated social vices such as cultism, examination irregularities, sexual harassment, rape, drug abuse, corruption, indiscipline, poor work/learning habit, extortion, etc are threatening the very foundation of Nigeria's educational system. It was perceived that transformation of Nigeria's educational system is inevitable if Nigeria must break into the 20 emerging economies of the world by 2020. This was followed by Vision 20:2020 which was crafted as a perspective and economic business plan intended to make Nigeria a fully developed economy by the year 2020.

The late Head of State President Musa Yar'Adua in 2008 refined the vision in his 7-point Agenda revolving around wealth creation, security, land reform, food security, power and energy, transportation and education. This lofty Agenda was still finding its feet when the president died. In 2011 his predecessor President Goodluck Jonathan adopted a Transformation Agenda. The TA anchors on macroeconomics framework and economic direction; governance; real sector; infrastructure; human capital; enablers (private investment, finance mobilization, external economic relations and diplomacy, etc.); monitoring and evaluation.

In order to actualize the Transformation Agenda, the Federal Ministry of Education (2012) drew up a 4-year strategic plan (2011 – 2015) that focused on:

- ✓ Access and equity;
- ✓ Standard and quality assurance;
- ✓ Strengthening the institutional management of education;
- ✓ Teacher education and development;
- ✓ Technical and vocational education and training; and
- ✓ Funding, partnerships, resource mobilization and utilization.

The federal government of Nigeria under the leadership of President Goodluck Ebele Jonathan has implemented the Transformation Agenda for four years now and it seems that things never improved in Nigeria and it is doubtful if the country is even moving in the right direction. Were things to be moving well, the state of education in Nigeria would not have been deplorable as observed by experts. For instance, Ekpo and I'shaq (2014) lamented the consistent denigration of the Nigerian educational system of recent claiming that the status of the system now is unenviable, low in quality and standard, limited in its reach and disturbing in its future. Furthermore, they argued that poor remuneration for teachers triggers a lackadaisical attitude to work, high dropout of students from schools, quantitative rather than qualitative oriented education, campus prostitution, rape and sex abuse. Similarly, the issue of Nigerian students migrating to other countries for studies is an indictment on the Nigerian educational system. A revelation by the Network of Migration Research on Africa (NOMRA) shows that Nigerians migrating in 2009 who were granted visas into United Kingdom for studies numbered about 10,090 and paid not less than N42 billion to the host nation.

## CONCLUSION AND RECOMMENDATIONS

The Federal government, no doubt, has been trying to improve education at all levels in Nigeria. The establishment of twelve new universities in Nigeria, the establishment of Almajiri Education Programme, Nomadic Education Programme, the provision of N36 billion Federal Government Intervention funds, the funding provided by Tertiary Education Trust Fund and other numerous interventions are all laudable steps but a lot still need to be done as suggested here:

1. The Federal Government must first of all meet the minimum education funding requirement of 26% of national budget as advised by the United Nations. Instances have proved that countries that meet this requirement are likely to do well.
2. The Government must ensure that everything necessary is done to avoid strikes in all institutions in Nigeria. If salaries are reviewed as and when due and paid in the same vein, this is possible.
3. The Federal Government should ensure security of life and property throughout Nigeria.
4. Good governance is a precursor to corrupt-free organizations and in fact including the education sector and this will ensure the effective and efficient management of human and material resources and the disappearance of the vices discussed above.

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# IMPACT OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) AMONG EXPORTER: A CRITICAL REVIEW OF LITERATURE

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**ABSTRACT**

*The study finds that there is clear gap in the research of ICT usage in the firm. More number of literature exists in global level. there is only minimum number of research exists in ICT usage in Indian companies especially very least number in Coimbatore concerns also the area covered for study are mostly the contribution to economy, entrepreneurial traits , challenges faced etc. the Coimbatore based concerns are mostly MSMEs were it is in growing stage in technology. Just updation of technology doesn't show an impact on business performance unless it is utilized right manner at accurate time. Hence the following grey area were identified as a gap in the study as the level of awareness on ICT device, the factors demanding the ICT usage, Purpose of using ICT, level of ICT usage and level of satisfaction derived by the usage of ICT devices are analysed.*

**KEYWORDS**
ICT, export.

## INTRODUCTION

ICT is an integration of innovation in technology and infrastructure. The 21st century has marked itself with ICT as one of the major motivating forces for growth of business in the world. According to French (1996), Information technology (IT) is defined as any technology which supports activities involving the creation, storage, manipulation and communication of information; together with their related methods, management and application. ICT is an essential component for operating in global environment.

Based on the definition of Techtarget search engine - ICT (information and communications technology - or technologies) is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning.

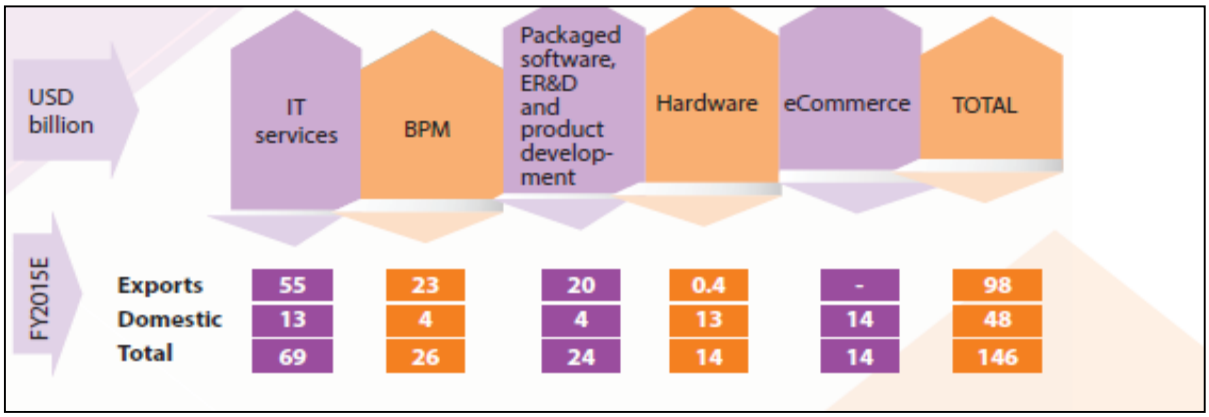
According to Kalakota, technology is the basic need, cause and driver for business strategy. ICT became the unique feature of business; the use of resources in information communication technology in a business supports the business to improve its efficiency and product value chain.

All Indian Organization's India are steadily modernizing their products, processes and business models and strategy to provide improved value chain in the trades. The most dependent areas of education sector, health sector, advertisement sector, tourism and hospitality sector have moved into the most increasingly an innovative driven force, investing and benefitting via technology utilisation.

According to the European Commission, the significance of ICTs lies in creating an environment in accessing the information and communication than understanding the need of technology it need for access. Most developed nations enjoy the economic growth since the know what they have and have not areas to utilize need of current demand by promoting the ICT.

## TRENDS OF INDIAN IT-BUSINESS PROCESS MANAGEMENT (DOMESTIC+EXPORT) REVENUES

**FIG. 1**




Source: **NASSCOM®: The IT-BPM Sector in India:** Strategic Review 2015

According to NASSCOM report, India is continuing its leading position with a market share of 55 percent with a 10 percent growth in global sourcing of services when IT-BPM have spent USD 2.3 trillion, growing at 4.6 per cent over 2013. In FY2015, the Indian IT-BPM industry is estimated to account for revenues of USD 146 billion, growing by 13 per cent over last year. Industry exports are over USD 98 billion growing at 12.3 per cent, while the domestic segment, which has benefited from the inclusion of ecommerce and mobile app industry, is estimated to touch USD 48 billion. The Indian industry has played a major contributor for both diverse private sector employer, with a direct workforce nearing 3.5 million, and effecting over 10 million indirect jobs with a relative share in India's GDP

swelled to 9.5 per cent, it offsets more than 70 per cent of India's oil import bill, attracts a major share of PE/VC investments into the country, has effected balanced regional growth and empowered diverse sections of the society, and is the face of the Indian MNC story.

## PURPOSE OF THE STUDY

The purpose of the study is to understand the impact of Information and Communication Technology among exporter by conducting the review of related literature. While there is enormous number of articles that has been reviewed in the literature reveals the issue based on size of the organization, the barriers and problems faced by the exporters experienced for improving the ICT integration, show that it is essential to develop a better understanding of the problem while improving the firms from domestic to international level expansion. The study is further aimed at focusing the main factors that affect the impact of ICT among exporters in Coimbatore region. The question is frequently asked as to know what factors and variables determine the impact of Information and Communication Technology in exporter. An attempt has been made to know the variables that determine the impact of ICT among exporter by representation on global facts, research and experience.

## REVIEW OF LITERATURE

The reasons for low levels of ICT take-up by businesses is subject to much comment in the body of literature. These can be summarised as comprising the following issues: barriers, barriers on supply side, barriers on demand side, challenges faced in usage of ICT, evidence of the use of ICT in business, Internet adoption and use, Impact of ICT usage, drivers of ICT adoption faced by both supplier and consumer perspective.

## BARRIERS TO ICT ADOPTION IN RURAL AREAS

According to **Taylor, Paul (2015)[1],** businesses are supported with adopting ICTs to support their competitiveness, productivity and profitability which classifies some of the key internal and external factors that influence SMEs' ICT adoption with limited resources and maximum utilization. **Emma Odaba (2014)[2]** identified the factors that many challenges are faced in doing business in Kenya from a Finnish investors perceptive. The possible challenges were corruption, insecurity, counterfeit & substandard of goods, high cost of energy and poor infrastructure trying for success in business with the issue of insecurity.

**Laaria Mingaine (2013)[3]** claim that Implementation of ICT in schools in Kenya has faced many challenges that hamper efficient implementation including cost of infrastructure, electricity, teachers' skills and leadership. The result of study indicated that limited supply of qualified teachers and high cost of infrastructure were impediments to implementation of ICT. **(Domenico Consoli, 2012)[4]** expressed that nowadays for good business performances it is important to align organizational and productive processes with ICT tools, adequate conditions that favor the best ICT implementation.

**Mohammad Farooq Hussain (2011)[5],** This study is done to see the impact of innovation, technology and economic growth on the entrepreneurial activities. Correlation and Regression model has been used for this purpose. The results showed that these variables are highly correlated with the dependent factor "Entrepreneurship". Entrepreneurship refers to taking out new and unique combinations **(Schumpeter, 1934)[6].** (**Knights, 1921)[7]** viewed that entrepreneurship is the skill and capacity to anticipate the successful forthcoming with the characteristics of economic growth, it has an impact on society development with a drastic changes in individual standard of living .**(Block and Macmillan, 1985)[8]** focused on the role and function of entrepreneur and their development in local areas was highly studied.

Large organizations have enough resources to adopt ICT while on the other hand SMEs have limited financial and human resources to adopt ICT. (Duan et al 2002)[9] identified lack of ICT skills and knowledge in SMEs as one of the major challenges faced by all European countries, particularly in the UK, Poland and Portugal, in their study. (Houghton and Winklhofer 2004)[10] have reported a slow response of SMEs relating to adoption of ICT. (Shiels et al 2003)[11] found that characteristics of the firm and industry sector are contributory factors to the adoption and exploitation of ICTs by SMEs. (Kapurubandara et al 2006)[12] have categorized internal and external barriers that impede adoption of ICT by SMEs in a developing country. The internal barriers include owner manager characteristics, firm characteristics, cost and return on investment, and external barriers include: infrastructure, social, cultural, political, legal and regulatory.

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There are a number of studies that discuss adoption of Internet and e-business in SMEs in developed countries **(Lucchetti and Sterlacchini 2004)[13], (Love et al 2004)[14], (Schubert and Leimstoll 2006[15] and 2007a[16], b[17]), (Koellinger 2006)[18], (Stroeken 2001)[19], (Morikawa 2004)[20], (Caldeira and Ward 2002)[21], (Gregor et al 2004)[22], and (Doczi 2002)[23].**

Governments around the globe recognize the importance of adoption of ICT by SMEs and they have created special groups to study various aspects of ICT adoption in SMEs. Despite the importance of ICT and emphasis by various governments to encourage SMEs to adopt ICT, it has been reported that SMEs have been slow in adopting ICT for various reasons **(Houghton and Winklhofer 2004)[24], (Smallbone et al 2001)[25], (Dawn et al 2002)[26],**it is important to find out reasons for the slow adoption of ICT in Oman.

**SUPPLY-SIDE ISSUES**

Availability of ICT expertise is identified as a supply-side barrier to rural ICT business adoption. **Lawson et al. (2003)[27],** when they note that in general, ''SMEs may have difficulties first in meeting the initial costs and then the ongoing expense of maintaining [ICT use]''**. Matlay and Addis (2003)[28]** also note that SMEs are most likely to access expertise only when subsidized. This may comprise a greater problem in rural areas as a result of fewer competing specialists, thus allowing for even higher prices. There are obviously questions generated by supply-side issues that require to be addressed at policy-level. Within the literature, regulation of access to the internet is commonly suggested, based on the idea that without it, ''access is likely to be impeded, or at best, confused''**.** Similarly, the literature tends to suggest a role for policy in terms of raising awareness and skills in ICT **,** and particularly in rural areas **(Grant, 2003)[29].**

**DEMAND-SIDE ISSUES**

Lack of information about, and perceived benefit of ICT amongst SMEs is a well-documented demand-side issue. For example, in terms of internet use, ''SMEs may not understand the ways in which such an information infrastructure could enable them to operate their businesses more efficiently or cost-effectively''.

Similarly, low levels of appropriate ICT skills have been identified as a significant barrier to ICT adoption amongst SMEs**,** and particularly in rural areas **(Thomas et al., 2002)[30], p. 35)** claims that low levels of ICT awareness and skills in rural areas are connected, in part, to the demographic make-up of many rural areas, where populations tend to have ''lower levels of income and educational attainment and higher proportions of the elderly and disabled. All of these factors are known to influence computer access and use''.

Alternatively, since many rural business' trade is, in the main, local, they have a ''lower propensity for ICT awareness'' and that this lack of awareness results in failure ''to take-up formal training associated with opportunities to develop new ICT-related business skills and expertise'' **(Huggins and Izushi, 2002)[31]** however, note conversely that ''there is evidence that small firms recognise the need to upgrade their skills and competence in the field of computing and the use of ICT'', and exemplify this by citing a study of rural English businesses **(Centre for Rural Economy, 2000)[32]** in which it was found that ''IT was the most frequently reported support need'' **.** Adding credibility to this, similar results were obtained from a study of one rural region in Scotland.

**CHALLENGES FACED IN USAGE OF ICT**

**Makau Joseph Kyalo (2014)[33]** Like other public institutions, Nairobi water and sewerage company (NWSC) has not fully adopted e procurement and there for continue to miss the benefits. This study established the challenges facing adoption of e procurement in public sector in Kenya. The public procurement regulations, employee's competence, managerial commitment in information communication technology (ICT) are challenges on adoption of e procurement in public sector.

**(Tan, et al., 2010)[34]** ,Existing literature reveals that SMEs face numerous challenges to the adoption and use of ICTs. Challenges of ICT adoption are common among SMEs in both the developed and developing countries, but developing countries are largely faced with more challenges. In the literature, the most frequently cited challenges are poor telecommunications infrastructure, lack of skilled or limited ICT personnel, ineffective integration ICT into business processes, high costs of ICT equipment, and government regulations for e-commerce.

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**June Lennie(2002)**[35]This paper presents selected findings from the evaluation of a feminist action research project that aimed to enhance Queensland rural women's access to interactive communication technologies (ICTs). Project activities aimed to be empowering and inclusive. However, the analysis also indicated various disempowering effects of participating in the project. Case studies of two participants illustrate these contradictory effects. These results suggest that enhancing rural women's technological empowerment is urgently required, given that use of ICTs is becoming increasingly important to their leadership and participation in community development.

## EVIDENCE OF THE USE OF ICT IN BUSINESSES

**F. Sudweeks(2010)**[36] This paper discusses women's empowerment in terms of perceptual change in rural villages in Bangladesh after ICT intervention has been introduced by Non-Government Organizations (NGOs). The change in women‟s perception after using ICT was compared with changes in women who did not use ICT. The results indicate that ICT intervention changed women's perception in a positive direction in one village but it did not change in the other village. **Chifarai M Dube(2010)**[37]This dissertation focuses on the benefits and challenges of women entrepreneurs in Zimbabwe seeking to take advantage of ICT in their businesses. Adopting several gender-sensitive methodologies, but in particular, the Grounded, Women's Law and Human Rights Approaches, the writer gathers, analyses and presents her research and identified the gap in terms of various international/regional/local policies and human rights instruments and the reality of the actual ICT services that the State and co-operating stakeholders make accessible was identified.

**(Laura Galloway and Robbie Mochrie,2005)**[38] evidenced that information and communication technologies (ICTs) are drivers of economic growth. The rural economy in most countries is regarded as that which requires intervention in order to foster sustainability and development, and there have been many empirical studies of both the value and the use of ICTs in rural areas. These are, however, highly disparate, often being industry-, country- and, indeed, type-of-technology-specific. Aims to draw together the highly eclectic literature on the use of ICTs in rural small to medium-sized enterprises (SMEs) in order to provide an overview of generic issues, relevant to policy. **Mitchell and Clark (1999)**[39] The current tendency, however, is for studies of ICT use by SMEs to focus on internet-based and other networked technologies, and a focus on these tends to lead to an emphasis on e-commerce. **Smallbone et al. (2002)**[40] makes little reference to stand-alone ICTs, that the three most commonly used ICT applications in SMEs are ''typically, word-processing, financial management and producing accounts''.

**Huggins and Izushi (2002)**[41] argue that there are many spillover effects between personal and business use of ICT. A very typical example would be of the micro-business whose owner purchases a PC that is used initially by children within the family, and only subsequently for such business purposes as record keeping. **Buhalis and Main (1998)**[42] note that ''the internet is gaining commercial viability and is particularly suited to small business, where it enables [them] to keep doors open 24 hours a day, at minimal cost to customers all over the world''. With access to increasing markets throughout the world, businesses, including those in rural areas, have a unique opportunity to expand either business-to-business, or business-to-consumer, operations from the traditional and local, to the global.

**Internet adoption and use**

**Nurwahida Fuad (2011)**[43] the purpose of this study is to investigate the relationship between need of achievement and entrepreneurial success among women entrepreneurs in Malaysia who involved in ICT-related business. The finding obtained from this study indicated that there was a significant (2 tailed significant) positive correlation between variables need for achievement and entrepreneurial success. In addition, the results indicated that variable need for achievement contributes high influence to women entrepreneurial success in ICT-related business. **(Tan, et al., 2010)**[44]**,**Existing literature reveals that SMEs face numerous challenges to the adoption and use of ICTs. Challenges of ICT adoption are common among SMEs in both the developed and developing countries, but developing countries are largely faced with more challenges. In the literature, the most frequently cited challenges are poor telecommunications infrastructure, lack of skilled or limited ICT personnel, ineffective integration ICT into business processes, high costs of ICT equipment, and government regulations for e-commerce

**N.P. Singh and A. Sahay (2006)**[45] In this article authors have discussed role of internet for women entrepreneurs treating it as surrogate factor of ICT network availability in a country. In addition, advantages of ICT to women entrepreneurs as well as being an ICT entrepreneur are also discussed. Further, article presents some programs which are based on ICT for women entrepreneurs along with the framework for different actors such as academic institutions, entrepreneurs, government and other organizations. In contrast to PC based ICTs, usage of the internet and the world wide web (WWW) have been studied intensely. With improved trust and use as a transaction medium, increasingly ''the internet is uniquely poised to promote and deliver services, both to individual and business customers'' **(Zinkhan, 2002)**[46]**.** This is evidenced by published figures pertaining to internet access and use for business. For example, **Sparkes and Thomas (2001)**[47] by stating that ''internet users in the home rose by 76 per cent to six million in the UK during 1998, with the use at the office up 54 per cent to 5.3 million in the same period''; and who estimate that ''the proportion of those who purchase on-line rose from 41 per cent in 1999 to 61 per cent in 2000''. Similarly, in the USA, ''approximately 50 million Americans are currently on-line'', and **Granic (2001)**[48] by stating that ''more than half of those . . . also shop there''. The potential

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benefits to business are thus obvious, and indeed, **Cardinali (2001)**[49] observes, ''e-commerce is growing at a meteoric rate of greater than 150 per cent per year'', and **Baourakis et al. (2002)**[50] note ''the internet is now considered as an established channel for commercial transactions''.

The facilitation of networking via internet technology is also subject to much comment in the literature. Notwithstanding ICT use, networking activity, as a ''social communication process which encourages the sharing of knowledge'' **(Swan et al., 1999)**[51]**,** has been shown by several commentators to have a positive influence on business growth **(Chell and Baines, 2000)**[52]**; (Lechner and Dowling, 2003)** [53]**,**assert that, for small firms particularly, limited resources result in the need to access external resources through ''inter-firm networks'' in order to grow. Specifically, businesses can be motivated to networking activity for a variety of reasons, such as to generate innovation **(Swan et al., 1999)**[54]**,** or to improve marketing**.** This latter function could be advantageous, particularly in rural areas, in terms of collaborative activity (such as communal branding), co-operation and complementation.

''International dependencies are numerous and strong'' **(Mitchell and Clark, 1999)**[55]**,** the internet is an obvious and easy means of managing network relationships. Evidence exists, however, which questions the applicability of internet technologies to the creation of networks for business purposes. It is contended that while the internet can provide channels for network communication, it is only effective ''where it is used alongside relevant people management and organisational practices''**.** Essentially, internet networking cannot replace face The role of ICT in networking has been subject to some debate, however. For firms in which to face interactivity because trust, rapport, and tacit knowledge are essential to effective networking practice **(Swan et al., 1999)**[56]**.** That being the case, however, there is increasing discussion of the use of the internet for specific types of networking use. For example, **Reynolds (2000)**[57] notes that online networks have been shown to be effective for collaborative purchasing by larger firms. Additionally, **Tse and Soufani (2003)**[58] refer to ''strategic networks consisting of different players in the market [becoming] an essential form of organisation''. This could have important implications for rural firms in that ''the unique characteristics of the virtual market enable firms, to identify and incorporate valuable complementary products and services offered by different companies into their bundle of offerings in a novel way". This ''product bundling'' is not a new idea. Conventional specialist ''bundling'' (e.g. by mail order), but notes that, with the increased proliferation of the internet, it has become a more efficient way of marketing products and services because ''they are rendered more visible . . . by making use of electronic channels''.

Traders in specialist industries have a unique opportunity, therefore, to access remote markets via the internet. In rural areas it has been shown that the locality itself can be marketed **(McKain, 2003)**[59]**,**so by extension, businesses within a locality can group strategically on-line to exploit this potential. Empirical evidence bears this out. For example, **Sparkes and Thomas (2001)**[60] ,and **Baourakis et al. (2002)**[61]**,** have identified collective presentation of niche products, from Wales and Crete respectively, on the internet; and **Galloway et al. (2004)**[62]**,** have identified similar collective activity amongst rural businesses in Scotland, using the rural locality as the common brand, from which to proffer products and services of a specialist and complementary nature.

**Deakins et al. (2003)**[63] refer to these locality or industry-based collective internet representations as ''internet forums'' and have found that while they tend to be highly disparate in terms of organisation and structure, there seems to be a relationship between membership and business growth. They describe internet forums as ''an online facility that provides local businesses with an internet portal and additional services, using the locale, or an industry peculiar to the locale, as the unique selling point or common brand''. They go on to argue that potential customers of included businesses comprise those with an interest in the ''brand'', namely the locality (or perceptions of it). Again, this blurring of what is being sold is not new. **Reynolds (2000)**[64] notes that successful internet operators have consistently exploited perceptions of the distinctions between goods and services offered. To illustrate his point, uses the example of Amazon.com, which acts as a service provider of reviews, suggestion services, etc., to compliment, support and enhance its core function of selling books.

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## THE RURAL PARADOX

There is considerable evidence that ICT business use can prompt development at both the firm and economic levels **(Colecchia, 2002)[65]; (CEBR, 2003)[66]; (BCC, 2004)[67].** However, it is now well documented **(e.g. Fillis et al., 2003)[68];** (Jones et al., 2003)[69] that SMEs tend to lag behind larger firms ''both in terms of awareness and implementation'' of ICT use **(Hawkins and Prencipe, 2000)[70].** The lag in, specifically internet use, is even more marked.

**Ramsay et al. (2003)[71]** cite statistics from the European Observatory for SMEs which show that ''SMEs are not using . . . the internet . . . for commercial transactions'' to any great extent, and **Anderson and Lee (2003)[72]** note that internet use for business amongst SMEs is, in itself, highly variable as ''progressive SMEs engage in e-commerce, but many [others] are stuck at the web presence point''. For businesses in rural areas, studies have found that ICT use is even less prevalent **(Keeble et al., 1992)[73]; (Buhalis and Main, 1998)[74]; (Smallbone et al., 2002)[75].** These findings are paradoxical given the ''potential [of ICT and the internet] for overcoming the disadvantages of rural and peripheral locations with respect to markets and suppliers''**.**

## IMPACT OF ICT USAGE

**Nirvikar Singh (2014)[76],** Information technology (IT) is an example of a general purpose technology that has the potential to play an important role in economic growth, as well as other dimensions of economic and social development. This paper reviews several interrelated aspects of the role of information technology in the evolution of India's economy. It considers the unexpected success of India's software export sector and the spillovers of this success into various IT enabled services, attempts to make IT and its benefits available to India's rural masses, e-commerce for the country's growing middle class, the use and impacts of IT in India's manufacturing sector, and various forms of e-governance, including internal systems as well as citizen interfaces.

**Vikas Sindhi *et. al* (2011) [77]** Information and Communication Technology (ICT) has emerged as an effective facilitator in the development of any society and is a prime driving force in the growth of rural economies. The Rural Market of India is showing an impressive growth largely due to changing lifestyle patterns, better communication network and rapidly changing demand structure of consumers of rural area. With the changing patterns of Rural Market, the role of ICT has increased from providing only the Networks to set-up the basis of updated technological programs in the rural area. Thus, technological advancement is necessary for every nook and corner of India.

**Rafi Ashrafi and Muhammed Murtaza (2008)[78]** depicts the main driving forces for ICT investment are to provide better and faster customer service and to stay ahead of the competition by providing training facilities in ICT for SMEs, measures to provide ICT products and services at an affordable cost, and availability of free professional advice and consulting at reasonable cost to SMEs at Oman. **L. A. Ogunsola (2005)[79],**The main goal of this paper is to examine the ICT (Information and Communication Technology) revolution and the concept of globalization as they effect developing countries. Globalization as one of the reasons for possible widening of the gap between the poor and the rich nations was examined and the emerging concept of "digital slavery" was carefully evaluated. The wide gap in availability and use of ICTs across the world and the influences ICTs exert on globalization at the expense of developing countries were carefully examined and suggestions and necessary policies were offered for developing countries to leap-frog the industrialization stage and transform their economies into high value-added information economies that can compete with the advanced countries on the global market. This is why it is important for Africa, in general, and Nigeria, in particular, to be aware of the implications, prepare to avoid the most telling consequences and prepare to meet its challenges. As **Faye (2000)[80]** has pointed out, ICTs are offering even less developed countries a window of opportunities to leapfrog the industrialization stage and transform their economics in to high value-added information economies that can compete with the advanced economics on the global market. Technological innovation has contributed to globalization by supplying infrastructure for trans-world connections. According to **Ajayi (2000)[81],** the revolution taking place in information and communication technologies have been the central and driving force for the globalization process. Both developed and less-developed countries cannot afford to miss out on the opportunities these technologies are creating. **Kofi Annan (1999)[82]** has put it, "the Internet holds the greatest promise humanity has known for long- distance learning and universal access to quality education. It offers the best chance yet for developing countries to take their rightful place in the global economy. And so our mission must be to ensure access as widely as possible. If we do not, the gulf between the haves and the have-nots will be the gulf between the technology-rich and the technology-poor".

***1755 – 1850: Classical Theorists***

"The history of entrepreneurship study is multidisciplinary, multinational and rather lengthy and abstruse. The scope of the literature, the number of authors and the multidisciplinary nature of entrepreneurship complicate any comprehensive literature review". Entrepreneurship in practice has been around as long as

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humans have existed**(Falcone & Osborne, 2005)[83].** The United States economic development and current economic power are due to the entrepreneurial nature of the U.S. society **(Penn State University, 1997)[84].** Richard Cantillon, a French economist, first used the term entrepreneur in **1755 (Cassis & Minoglou, 2005[85]; Casson & Godley, 2005)[86].** Cantillon defined entrepreneurs as resource allocation decision makers.

Entrepreneurs are faced with market uncertainty, take risks when purchasing products or raw material at a certain price, then attempt to sell the same product or one modified in the marketplace at any price they can obtain, but optimally higher than the original transaction price (Hebert & Link, 1982[87]; Baumol, 1995[88]).

French theorist, Nicolas Baudeau, agreed with many of Cantillon's theories (as cited in Hebert & Link, 1982), but added a concept suggesting entrepreneurs could and would innovate in order to minimize their perceived risks and increase profits. Baudeau suggested entrepreneurs possessed abilities to improve their own situations, and were not merely skillful in reacting or predicting when market changes occur. Baudeau broadened Cantillon's concept of entrepreneurship, and brought to light the potential benefits of the entrepreneur's own abilities (Hebert & Link, 1982).

## DRIVERS OF ICT ADOPTION

A study by **Akomea-Bonsu and Sampong (2012)[89]** on the impact of ICTs on SMEs in the Kumasi Metropolis in Ghana, found that most of the SMEs in Kumasi reported a positive performance and other benefits of ICT adoption.

A literature survey by **(Barba-Sanchez, et al(2007)** [90]Their study however did not include any reference to ICT adoption in any African country.

## CONCLUSION

There is clear gap in the research of ICT usage in the firm. More number of literature exists in global level. there is only minimum number of research exists in ICT usage in Indian companies especially very least number in Coimbatore concerns also the area covered for study are mostly the contribution to economy, entrepreneurial traits , challenges faced etc. the Coimbatore based concerns are mostly MSMEs were it is in growing stage in technology. Just updation of technology doesn't show an impact on business performance unless it is utilized right manner at accurate time. Hence the following grey area were identified as a gap in the study as the level of awareness on ICT device, the factors demanding the ICT usage, Purpose of using ICT, level of ICT usage and level of satisfaction derived by the usage of ICT devices are analysed.

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# SCOPE OF INFORMATION TECHNOLOGY IN THE BANKING SECTOR

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**ABSTRACT**

*Over the last three decades, there has been a phenomenal increase in the size, spread, and activities undertaken by banks in India. From approximately 8,000 bank branches in 1969, the number has now reached over 64,000. With the entry of new banks, there is intense competition for attracting and retaining the customers. Under these circumstances, the use of computers and allied technologies has become inevitable to achieve a satisfactory level of customer service.*

**KEYWORDS**
information technology, information system, MIS, banking.

## 1. INTRODUCTION

### 1.1 BANKING INDUSTRY IN INDIA

The two decades after Indian Independence laid solid foundations for the Banking Industry. The Banking Regulation Act 1949 was ushered in to regulate commercial banking. In December 1951 there were 566 Banks. By the end of 1968 the number declined to 281. Non-scheduled banks had collapsed in large numbers.

In 1969, fourteen Banks and in 1980 six more were nationalized. Between 1969 and 2012 the number of branches increased from 8262 to 97111. Out of the 97111 branches 61289 were Rural and semi-urban indicating a marked shift towards rural and semi urban priority. The impact of this was that as against one branch for 60000 population in 1969, the ratio came down to one branch for 13000 population. The year 1985 saw some radical policy changes in customer service, credit management , staff productivity and profitability etc.

### 1.2 GLOBAL TRENDS IN BANKING

The IBM Study "Banking 2015: Defining the Future of Banking" has a unique insight into the competitive forces that confront bankers in the next decade. The study predicts a growth rate of 7.6 % in Asia-Pacific region. It also identifies some key trends which will determine success, such as a new brand of tech savvy users of financial services; market consolidation of bigger brands; emergence of community banks, institutions providing specific services; emergence of new skilled work force; high transparency and sharply focused technologies; a customer centric market dominated by global mega banks and highly specialized financial service providers; and most fierce competition attended by global regulation and, not the least, ever increasing technological pressure driving great changes in the nature and talent of work force. "Innovations in products, processes, relationships and business models will be the primary path to sustainable growth."

### 1.3 IMPORTANCE OF INFORMATION TECHNOLOGY

Computers are best suited to a situation in which large volumes of transactions have to be processed within a short period of time. Banking as a service industry exactly fits into this description. It is now widely believed that banks are increasingly dependent on the Information Systems (IS) for their day-to-day operations and IS has helped banks reduce cost and differentiate their products from the competitors' products.

Traditionally, IS has been viewed by its practitioners as playing only a supportive role. Recently, however, due to a significant decline in the cost of information technology (IT) and greatly improved speed and power of computers, IS moved from its traditional role as an application of back office support to one offering opportunities for gaining significant competitive advantage. It is being increasingly viewed as having the capability to alter core organizational directions, reorient corporate strategy, and redefine industry structure. Banks use the information systems to transfer information better their multiple branches. Information systems also help banks in making decisions while giving out loans and credit cards.

Information system refers to the study of complementary networks of hardware and software software that people and organizations use to collect, filter, process, create, and distribute data. In order to utilize information system effectively, managers need to consider three imperative areas of information system. That is organization, management, and technology. An information system creates value for the firm as an organizational and management solution with the help of the technology posed by today's turbulent business environment. In view of the diverse scope of IS roles, it is important to understand the appropriateness of the roles and the contribution accrued by the use of multifaceted applications of IS. Lack of such an understanding can lead to inappropriate use of the technology, inadequate resource allocation, and ineffective use of IS for competitive advantage.

## 2. SCOPE OF INFORMATION TECHNOLOGY

Information system performs the functions of processing of input into output .i.e. collecting of data and processing of the data into information and thereby helping managers in their decision making process. Management information system is a computerized system of providing information to the manager so that they can take long term and short term decisions in an organization. MIS is organized system which consists of people, hardware, and communication networks that collect data and transform that data into information. There are various types of Information systems based on different levels of organization i.e. strategic level dealing with the top most management for their long term decisions. Management level which deals with various managers with their plans and operational level that deals with the day to day activities of business.

There are different types of Management information systems like Transaction processing systems that records huge volume of recurring and routine data like raw materials, inventories, customers and sales. Operations information systems track data from TPS and whose aim objective is to plan and schedule production and assembly functions. Decision support systems deal with making important decisions. Experts systems is a system which helps organization in solving their problems like human beings through their past experience.

MIS helps organization by providing various benefits like MIS compares the performance of an organization which helps managers to identify whether the organization is performing good or not. It helps management in their decision making process by providing useful information to them. It is a tool of communication between top level management and employees. It provides only relevant data to management by compressing huge amount of data. It helps to ensure better co-ordination in an organization. It helps company to identify their competitive advantage and help them to enhance the value of their products.

Besides various benefits there are some limitations of MIS like MIS cannot be independently used in an organization. The expense of installing MIS is very huge. MIS is a technical product which requires organization to provide training to huge number of their employees. Once a MIS is installed it is very costly to change that MIS system. Sometimes it may happen that MIS provides inadequate data which may not prove helpful for an organization.

## 3. CONCLUSION AND RECOMMENDATIONS

Information system is a system which helps management to take effective decisions for an organization. It is a tool which collect, process, store and distribute information to the management. Information systems are useful for providing information rather than raw data to the management. Data only shows number

whereas information provides logical understanding of a figure. Information systems basically consist of data related to people, process and procedures inside the organization as well as it provides information of external business environment affecting the business.

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# PROBLEMS AND CHALLENGES OF COLLECTION DEVELOPMENT IN DIGITAL LIBRARIES

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**ABSTRACT**

*This article is based on a collection development of conditions under which electronic resources are used in libraries. Collection development, organization and management of a collection are essential for satisfying users need in all types of libraries. The basic components of any library are collection, users and staff with the collection being the heart of it. Libraries are changing with time from mere storehouses of collection of documents to dynamic service centers. The present period is a period of digital libraries, electronic libraries and virtual libraries. All these changes demand development of modern skills to both library professionals as well as users. Collection as defined by the Webster Dictionary is a "publication containing a variety of works". However, in the connotations of library science, the term collection refers to book selection, library acquisition, building the collection and developing it (i.e. collection development). All these terms are used to describe the process of building a collection in the library,*

**KEYWORDS**
digital libraries, collection development problems, electronic libraries.

## INTRODUCTION

The library and information centre is a part of any educational institution, which is the hub of the teaching, and learning activities where students, teacher and researchers get their required information according to their need. In the libraries users have to spend much more time for searching a small piece of information and for that they have to depend mainly on the library professionals or library staff. But in the age of information communication technology, computers are being used for day-to-day housekeeping activity of the library, which saves the time of the end users, and library professionals also and at the same time avoid duplication of work and make the library service smooth and effective.

Information Technology has changed the world and has become the important tool for retrieving information. Now days, library collections are not limited to printed documents only but also electronic resources. Collection development represents not just the acquisition of information, but a strategic investment in knowledge. Ideally the guiding principles, goals, and strategies of this process are formally stated in collection development policies. These policies are based upon an understanding of the strengths and weakness of the collection.

## COLLECTION DEVELOPMENT

Collection development and library services are the priority tasks for librarians. The qualitative library services provided only when qualitative collection is available in the library.

Term collection development is defined by many but ALA (1995) defined a very suitable definition as '' A term which encompasses a number of activities related to the development of the library collection, including the determination and coordination of selection policy, assessment of potential user needs and, collection use studies, collection evaluation, identification of collection needs, selection of materials, planning for resource sharing, collection maintenance and weeding.''

The process of collection development consists of:

- Collection development is not a single activity but a group of activities which involve the contribution of librarian, library committee, booksellers, publishers and the users for sole satisfaction of users from the collection.
- Planning for systematic and rational building of collection.
- Finally ALA defines '' All the activities associated with building and shaping library collections, including planning, goal-setting, decision making, budgeting selecting, acquiring and evaluating hem.''

## NEED OF THE COLLECTION DEVELOPMENT

There are many factors which made librarians to consider while acquiring reading or information material for libraries like:

- Information explosion or information Overload.
- Increase in prices of documents.
- Increasing users demands due specialization.
- Limited and shrinking library budgets.
- Shift in demand of users from collection based services to information and access based services.
- More usage of e-documents.

## OBJECTIVES AND PURPOSE OF COLLECTION DEVELOPMENT

- Asses the user needs as well aim and objectives of parent body for collection building.
- Support to teaching, learning and research endeavors.
- Provide relevant information.

## PROBLEMS OF COLLECTION DEVELOPMENT IN DIGITAL ERA

### (1) PROBLEMS OF USER-FRIENDLY ENVIRONMENT

We found that there were several inconveniences, including difficulties to find a terminal in the library (providing some electronic publications can only be accessed on the site), to locate specific database though the library resource portal and to search each individual database. A user-friendly environment (meaning both the

physical settings and the organization of user interface) is of great importance for the users who used to hesitate to try the unfamiliar electronic publications. To set up a wireless local area network (LAN) within the library coupled with proper management is an effective solution to the problem of physical inconvenience and at the same time without excessive investment in hardware by the library. The wireless LAN will make it much easier for users to enter the LAN at any place within the library to explore the e-journals with their own notebook PC, so a win-win situation will be created. With the limitation of location, the scheme may be acceptable to content providers. It is critical for users to feel comfortable with resource organization, both at the front page and at the back of the stage.

**(2) PROBLEMS OF USER TRAINING**

The problem regarding user training is important, henceforth, to upgrade the users' skill to access e-publication is training. The training is designed according to the uncertainty and mobility of readers within the public libraries (Williamson et al., 2003). Most public libraries have user-training programs but these free courses are not enough.

**(3) PROBLEMS OF DIGITAL DIVIDE**

Current day society is marked by a growing need for information skills at all levels, including school, university, workplace and ordinary life. This is in line with the increase in access to the internet and the diversity of people using the internet. Similarly, there is an increase in outcries to bridge the digital divide. Against the background that will be portrayed in the following paragraphs, the authors realized the increased urgency to bridge the digital divide. According to our interpretation the digital divide concerns much more than access to technology infrastructures and information seeking skills. Students often come from very diverse backgrounds in terms of their opportunities to access and use ICT. Students coming from rural areas often, for example, do not have access to ICT. It is generally assumed that such diversity might impact on their ability to function in the changing environment and to prosper. The problem, however, is more complicated.

**(4) PROBLEM OF LIBRARY CLASSIFICATIONS**

A library classification is a system of coding and organizing library materials according to their subjects that simplifies subject browsing. Library classification systems have been used by catalogers to classify books and other materials in physical libraries for over a century. The two major classification systems used today in libraries around the world are the Dewey Decimal Classification system and the Library of Congress Classification (LCC) system.

**(5) PROBLEM OF STAFF DEVELOPMENT APPROACH**

To successfully meet the future, we believe that libraries must change from static resource centers to dynamic centers of instruction, exploration and learning. Achievement of this ideal vision challenges many traditional conceptions of the library as a physical entity as well as a service provider. The relationships with various university constituencies and campus partners must be revisited and reframed, both internally from library staff members' points of view, as well as externally from faculty and students' viewpoints. In order to accomplish needed changes in perception and outcomes, we employ interactive planning to advance library staff members' capacity to make transformative design/redesign decisions. Our dialogue-driven staff development approach is based on systems thinking frameworks that create collaborative learning opportunities in the workplace. This serves to enhance participants' abilities to share information for innovative knowledge generation within work teams, learning communities, and social networks. Doing so will increase the perceived public value of the library in the academic purposes.

## CHALLENGES OF COLLECTION DEVELOPMENT IN DIGITAL ERA

Although a large number of libraries keep some sort of electronic publications (mainly the formal publications on CD-ROM and online), the usage is quite different from one library to another. While the hardcopy business process is mature, the rules and regularities of electronic publications in libraries are under development; many business models are on a trial basis. What and how many of these electronic materials should be bought and brought to the users, and how they are used, are still embarrassing questions for librarians. As a part of the effort to improve the usage of electronic publications in public libraries, the authors made an inquiry into the current status of formal electronic publications, including e-books and e-journals within the two major library groups: public and university libraries. We found that although the e-book (including both the full-text contents and the hand-held readers) is well publicized in India, its development has been left behind by that of the e-journal. The e-books experienced a detour of development; some earlier projects of book imaging were trapped in the intellectual property problem. Currently very few commercial providers of e-books are in the market – even the biggest one can provide only a small portion of the books published every year, while many hardcopy book publishers would rather confine their electronic version service to their own homepages. On the other hand, e-journals have been coming in a comparatively smooth way. The foreign e-journal dealers, for example, Springer, Ebsco, Elsevier Science, etc., have also entered this market successfully. (Feng Bin and Qihao Miao, 2005).

**1) CHALLENGES IN COLLECTION DEVELOPMENT IN LECTRONICALLY**

The major challenges that we face today in this regard are: Complicated procurement and preservation system There are a very few reliable suppliers of digital documents in India. The lack of comprehensive and up to- date selection tools for digital documents further adds to the problems of a librarian. Foreign documents and far off markets are other problems in the way of electronic collection development. Even selective Digital archive will be massive. Who is to ensure that governments, organizations or publishers will maintain these archives for centuries in future? Hardware and software needed to preserve today's documents and use them decades later may not work. The hardware used to gain access to digital information changes radically and quite frequently. This means that preservation programmes must also involve considerations needed for access in future.

**2) CHALLENGES REGARDING TECHNOLOGICAL UP GRADATION**

Periodical transfer of digital material from one hardware/software configuration to another or from one generation of computer technology to a subsequent generation is quite a common trend and a big challenge to e-collection development. The purpose of this migration is to preserve the integrity of digital objects and to retain the ability for clients to retrieve, display and otherwise use them in the face of constantly changing technology (Nagar, 2003). Obsolescence of equipments required to access digital information directly affects the longevity of digital information (Bhatt & Singh, 2004).

To ensure longer life of the digital information a continuous development and up gradation of information storage and access techniques and technology is a must. Non compatibility of organizational culture to digital environment Organizational cultures of most of the libraries due to their following features becomes a great hindrance in the way of e-collection development (Deoghuria, 2004). The others are :(a)Non availability of full time highly skilled computer professional in libraries; (b) Lack of coordination between computer professionals within and outside the organization; (c) Lack of interest to keep track with the ever–changing information seeking behavior of library users;(d) Lack of interest to add values to their services;(e) Lack of interest to interact with users; (f) Lack of interest to utilize physical space of the library; and (g) In developing digital environment electricity/power plays a major role. We cannot think of digital library, which can work off efficiently without power for several hours. The other related problems like poor quality of telecommunication services, lack of technology standards, legal restrictions are also there.

**3) CHALLENGES REGARDING FINANCIAL CONSTRAINTS FOR COLLECTION DEVELOPMENT**

Cost involved in the creation and maintenance of digital library environment is quite high. In this context, financial restraints are much more severe in developing nations like India than the developed ones. Nowhere in the world are library budgets keeping pace with the growth of information, documents and ever-increasing demand for them. The budget allotted to most of the libraries, however remain static year after year. Even if there is no such cut, the purchasing power of the allotted money goes on dwindling due to inflation. Though the problem of shrinking budget is a universal one, it is quite serious in India on many counts.

**4) CHALLENGES REGARDING IT SKILL MANPOWER**

Traditional library science education with less emphasis on IT skills still continues in Indian universities. As a consequence of it, the library personnel in most of the libraries in India are happy with the existing routine procedures and services. In the recent years many libraries have hired computer professionals to handle the purchase and other issues related to digital documents. This gives an assumption that computer professionals are taking precedence over the library professionals. It has happened so because many a time librarians have given responsibilities of selecting and handling electronic resources to computer professionals. Some complications are also there due to the advent of new resources. All these changes have happened quickly, and adapting to them is not always easy or comfortable.

There are no opportunities for continuing professional education for the collection development methods. Gradual shift-over towards digital info high-tech from traditional rudimentary adherence has given rise to certain fears in the minds of the library professionals (Das, 2004).

**5) CHALLENGES OF USER SERVICE**

Librarians need not to teach readers how to browse a hard copy book, but they may have to teach users how to use an internet browser. The status of so-called self-service, where the users themselves grope in the dark of virtual space, will inevitably harm the full exportation of e-journals. The situation will be improved substantially if librarians take a more proactive role to help users, especially newcomers. The accumulated experience of librarians in digging up bits of knowledge out of e-publications opens up a wide area of in-depth user service. Subject reference librarians can make use of advanced tools, from search engine to knowledge mining kit, in order to find an answer to the specific question rather than an article in certain journals (Connaway and Lawrence, 2003).

## CONCLUSION AND SUGGESTIONS

The advent of digital libraries at the turn of the twenty-first century has been mired with several aspects including the development of appropriate technologies, issues related to storage, rights management, and so on. Digital libraries, along with associated technologies and related issues, are still somewhat in infancy with very few fully established digital libraries the world over. The concept of digital libraries itself varies greatly with several known definitions. With digital library technologies maturing, storage capacities increasing and digital access improving, the focus needs to be crystallized on content for digital libraries. This clearly shows that digital library creators as of today focus less on content compared to other aspects. Consequently, it may be appropriate to conclude that copyright issues with regard to content in digital libraries are hardly on the radar of digital library creators. Although, digital library creators presently focus on areas other than content, the creators realize that content is the key for success. It has been reported that for the success of information gateways, the effective selection of high-quality content forms the chief rationale for the gateway approach. The content includes selection criteria, technical and policy issues, management, recommended standards and conventions, creation of metadata, provision of browsing and searching (Heery, 2000). Digital content creation requires strategic leadership, sustainability plans, and cognizance of best practice in the field. During creation of digital content, staff gains valuable skills that can be utilized by taking contract projects. This will also create new audiences for such types of material there by opening up the collections to the world. However, high-quality digital content creation is an expansive undertaking (McMenemy, 2007). It is well known that in a largely print based traditional library setting, acquiring the content is a relatively easy task. But this is not the case with digital libraries. The variability of digital content per se and the variability in the availability of content is increasingly becoming a problem for digital libraries. Variability of digital content per se include the types of content such as text, audio, video, pictures, etc. types of file formats such as DOC, PDF, JPEG, AVI, and so on. Normalizing, these and other varied content in digital libraries may be less challenging today owing to technological developments. But choosing content in light of copyright issues may be a daunting task. Although, the copyright issues with regard to digital content have been a subject of discussion in earlier studies, the same have not been looked at from the content creation point of view.

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# IMPLEMENTATION OF ARTIFICIAL NEURAL NETWORK IN CONCURRENCY CONTROL OF DISTRIBUTED DATABASE SYSTEM

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**ABSTRACT**

*Current Database Management Systems (DBMSs) work in multiuser environment where users access the database concurrently. Therefore the DBMSs must have to control over the concurrent execution of user transactions, so that the overall correction of the database is maintained. A transaction is a user program accessing the database. To control over concurrent execution of transactions is becoming problematic thing in case of Distributed Database System (DDS). Although there are several techniques exists to control over Concurrent execution, some factors like time to lock and release objects, implementation complexity, memory space requirement, etc are not sufficient to avoid or control over concurrent execution of transaction appropriately in case of DDS. So in this paper we have proposed ANN model for Concurrency control of DDS, which may resolve the problems present in earlier techniques.*

**KEYWORDS**
concurrent execution, DBMS, memory space.

## 1. INTRODUCTION

**ABOUT DISTRIBUTED DATABASE**

A distributed database is a database in which portions of the database are stored on multiple computers within a network. Users have access to the portion of the database at their location so that they can access the data relevant to their tasks without interfering with the work of others. A centralized distributed database management system (DDBMS) manages the database as if it were all stored on the same computer. The DDBMS synchronizes all the data periodically and, in cases where multiple users must access the same data, ensures that updates and deletes performed on the data at one location will be automatically reflected in the data stored elsewhere.

## 2. WHAT IS TRANSACTION?

Transaction is series of actions, carried out by user or application, which accesses or changes contents of database. It is a logical unit of work on the database. It transforms database from one consistent state to another, although consistency may be violated during transaction.

## 3. DISTRIBUTED CONCURRENCY CONTROL

In database systems and transaction processing (transaction management) distributed concurrency control refers primarily to the concurrency control of a distributed database. It also refers to the concurrency control in a multi-database (and other multi-transactional object) environment (e.g., federated database, grid computing, and cloud computing environments.

A major goal for distributed concurrency control is distributed serializability (or global serializability for multi-database systems). Distributed concurrency control poses special challenges beyond centralized one, primarily due to communication and computer latency. It often requires special techniques, like distributed lock manager over fast computer networks with low latency, is a general serializability technique that achieves distributed serializability (and global serializability in particular) effectively on a large scale, without concurrency control information distribution (e.g., local precedence relations, locks, timestamps, or tickets), and thus without performance penalties that are typical to other serializability techniques.

Executions of transactions guaranteed to ensure consistency is identified by the concept of serializability with those schedules of reads / write. There are two types of schedule Serial schedule and Non-Serial schedule. Serial schedule: is where operations of each transaction are executed consecutively without any interleaved operations from other transactions. Non serial Schedule: Schedule where operations from set of concurrent transactions are interleaved. Techniques used for concurrency Control are Locking and Timestamping. Both are conservative approaches when delay transactions in case they conflict with other transactions. These techniques are basically divided in two main categories Pessimistic and Optimistic. Optimistic methods assume conflict is rare and only check for conflicts at commit. Transaction uses locks to deny access to other transactions and so prevent incorrect updates. A transaction must claim a shared (read) or exclusive (write) lock on a data item before read or write. Lock prevents another transaction from modifying item or even reading it, in the case of a write lock. Rules of locking are, if transaction has shared lock on item, can read but not update item, and if transaction has exclusive lock on item, can both read and update item, Reads cannot conflict, so more than one transaction can hold shared locks simultaneously on same item, Exclusive lock gives transaction exclusive access to that item. The most common distributed concurrency control technique is strong strict two-phase locking

## 4. PROBLEM DEFINITION

There is inability to provide consistency in the database when long transactions are involved. It will not be able to identify if there is any violation of database consistency during the time of commitment. It is not possible to know, if the transaction is with undefined time limit.

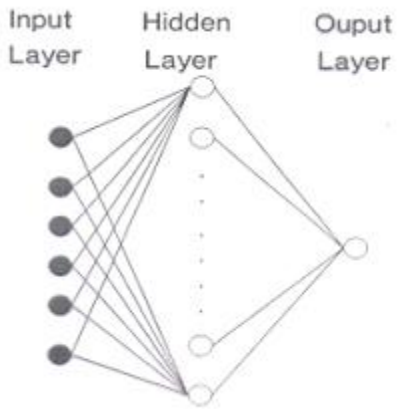
There is no serializability when many users work on shared objects. During long transactions, optimistic transactions and two phase locking will result in deadlock. Two phase locking forces to lock resources for long time even after they have finished using them. Other transactions that need to access the same resources are blocked. The problem in optimistic mechanism with Time Stamping is that it causes repeated rollback of transactions when the rate of conflicts increases significantly.

## 5. ABOUT ANN

An artificial neuron network (ANN) is a computational model based on the structure and functions of biological neural networks. Information that flows through the network affects the structure of the ANN because a neural network changes - or learns, in a sense - based on that input and output. ANNs are considered nonlinear statistical data modeling tools where the complex relationships between inputs and outputs are modeled or patterns are found. ANN is also known as a neural network.

An ANN has several advantages but one of the most recognized of these is the fact that it can actually learn from observing data sets. In this way, ANN is used as a random function approximation tool. These types of tools help estimate the most cost-effective and ideal methods for arriving at solutions while defining computing functions or distributions. ANN takes data samples rather than entire data sets to arrive at solutions, which saves both time and money. ANNs are considered fairly simple mathematical models to enhance existing data analysis technologies. ANNs have three layers that are interconnected. The first layer consists of input neurons. Those neurons send data on to the second layer, which in turn sends the output neurons to the third layer.

**FIG. 1: MULTILAYER PERCEPTION**




## 6. IMPLEMNTING BACKPROPAGATION ALGORITHM OF ANN IN CONCURENCY CONTROL

### 6.1 BACKPROPAGATION ALGORITHM (BPA)

The BPA uses the steepest-descent method to reach a global minimum. The number of layers and number of nodes in the hidden layers are decided. The connections between nodes are
initialized with random weights. As shown in following steps a pattern from the training set is presented in the input layer of the network and the error at the output layer is calculated. The error is propagated backwards towards the input layer and the weights are updated. This procedure is
repeated for all the training patterns. At the end of each iteration, test patterns are presented to
ANN, and the classification performance of ANN is evaluated. Further training of ANN is continued till the desired classification performance is reached.

### 6.2 STEPS INVOLVED

**FORWARD PROPAGATION**

- The weights and thresholds of the network are initialized.
- The inputs and outputs of a pattern are presented to the network.
- The output of each node in the successive layers is calculated.

**o(output of a node) = 1/(1+exp(_wij xi + Θ))**

- The error of a pattern is calculated

**E(p) = (1/2) _(d(p) – o(p))2**

**REVERSE PROPAGATION**

- The error for the nodes in the output layer is calculated

**δ(output layer) = o(1-o)(d-o)**

- The weights between output layer and hidden layer are updated

**W(n+1) = W(n) + ηδ(output layer) o(hidden layer)**

- The error for the nodes in the hidden layer is calculated

**δ(hidden layer) = o(1-o) _δ(output layer) W(updated weights between hidden and output layer)**

- The weights between hidden and input layer are updated.

**W(n+1) = W(n) + ηδ(hidden layer) o(input layer)**

The above steps complete one weight updation.
Second pattern is presented and the above steps are followed for the second weight updation. When all the training patterns are presented, a cycle of iteration or epoch is completed. The errors of all the training patterns are calculated and displayed on the monitor as the mean squared error(MSE).

**E(MSE) = _ E(p)**

**TABLE 1: LOCK MANAGEMENT VARIABLES**

| User | Object | Mode |
|---|---|---|

**Where,**
**User** represents the client
**Object** represents the database/ file/ record
**Mode** represents type of lock assigned to an object.
**exclusive (X) mode:** Data item can be both read as well as written.
**shared (S) mode:** Data item can only be read..
**intention-shared (IS):** Indicates explicit locking at a lower level of the tree but only with shared locks.
**Intention-exclusive (IX):** Indicates explicit locking at a lower level with exclusive or shared locks.
**shared and intention-exclusive (SIX):** The sub tree rooted by that node is locked explicitly in shared mode and explicit locking is being done at a lower level with exclusive-mode locks.
A intention locks allow a higher level node to be locked in S or X mode without having to check all descendent nodes.
In Table 2, column 1 represents the lock type. Column 2 represents the value to be used in the input layer of the ANN in module 1 and module 3. Column 3 gives binary representation of Lock type to be used in the output layer of module 1 and module 3. The values are used as target outputs in the module 1 and module 3 during lock release on a data item.
Table 3 shows two transactions T1 and T2 in the first column. Each transaction requests object a or b with a lock mode S or X. The fourth column indicates if any one of the lock is assigned for the object and otherwise '0' if no lock is assigned to the object.

**TABLE 2: LOCK TYPE AND THEIR BINARY REPRESENTATION**

| Lock type | (Input layer representation numerical value). | Binary representation in target layer of the ANN |
|---|---|---|
| S | 1 | 001 |
| X | 2 | 010 |
| IS | 3 | 011 |
| IX | 4 | 100 |
| Object Not locked | 0 | 000 |

**TABLE 3: SEQUENCE OF OBJECT ACCESS BY TWO USERS**

| User / Intermediate transaction | Object (a) | Object (b) | Mode S,X ,IS,IX | Lock Enabled – (1) Otherwise (0) |
|---|---|---|---|---|
| T1 | a | - | S | 1 |
| T2 | a | - | S | 1 |
| T1 | a | - | X | 1 |
| T1 | - | B | S | 1 |
| T2 | a | - | X | 1 |
| T1 | - | B | X | 1 |

This work uses for modules of algorithm which work using BPA given in Table 1. The modules given in Table 4 gives their usage for learning and finding the lock states. OML(Object, Mode, Lock) and OL (Object Mode).

**TABLE 4: MODULES AND LOCK STATUS OF AN OBJECT**

| Module | Name | Testing / Testing | ANN Topology |
|---|---|---|---|
| 1 | OML | Training(Figure 1) | 2{user number and mode} x {no. of nodes in hidden layer} x 3{Lock value} |
| 2 | OML | Testing (Figure 2) | 2{user number and mode} x (no. of nodes in hidden layer) x 3(Lock value) |
| 3 | OL | Training(Figure 3) | 1{user} x 2 {no. of nodes in hidden layer} x 3{lock value} |
| 4 | OL | Testing (Figure 4) | 1{user} x 2 {no. of nodes in hidden layer} x 3{lock value} |

**FIGURE 2: OML TRAINING**

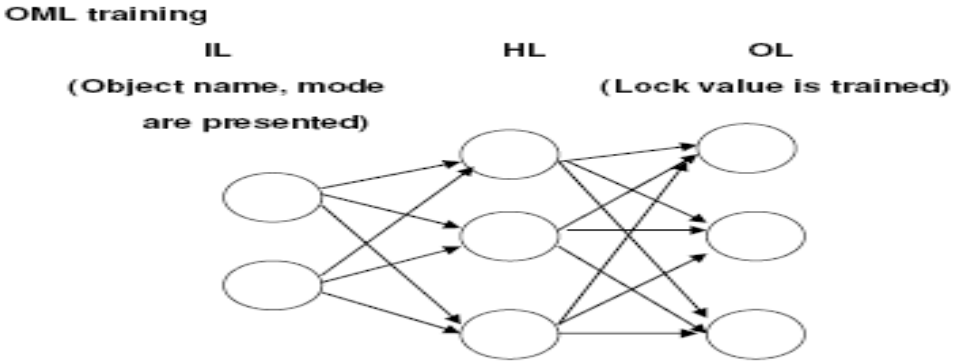



**FIGURE 3: OML TESTING**

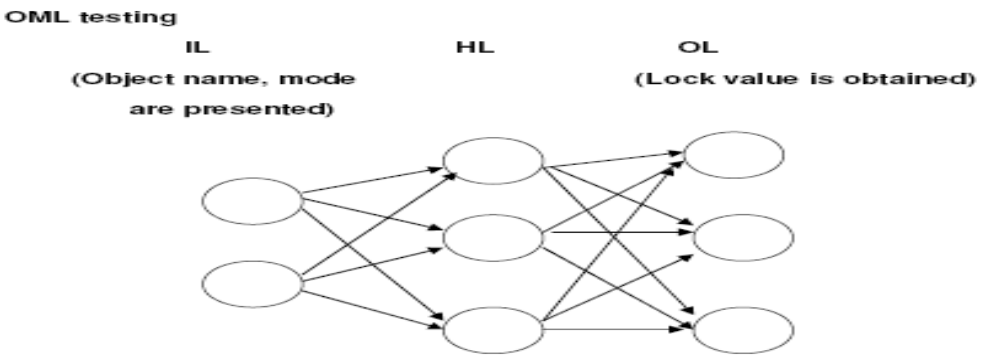



**FIGURE 4: OL TRAINING**

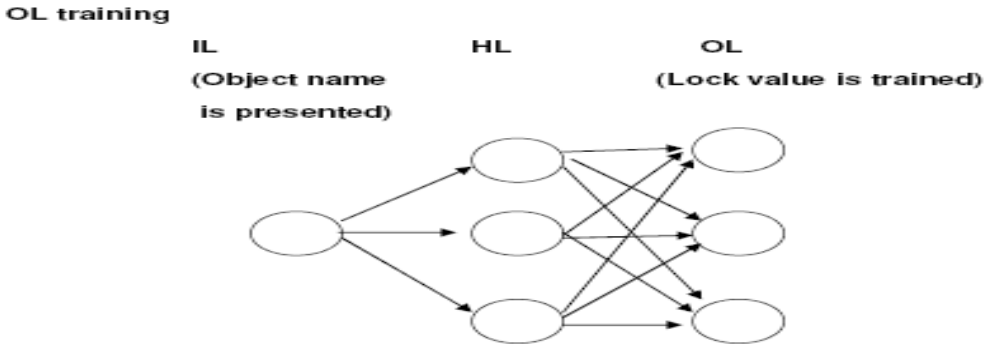
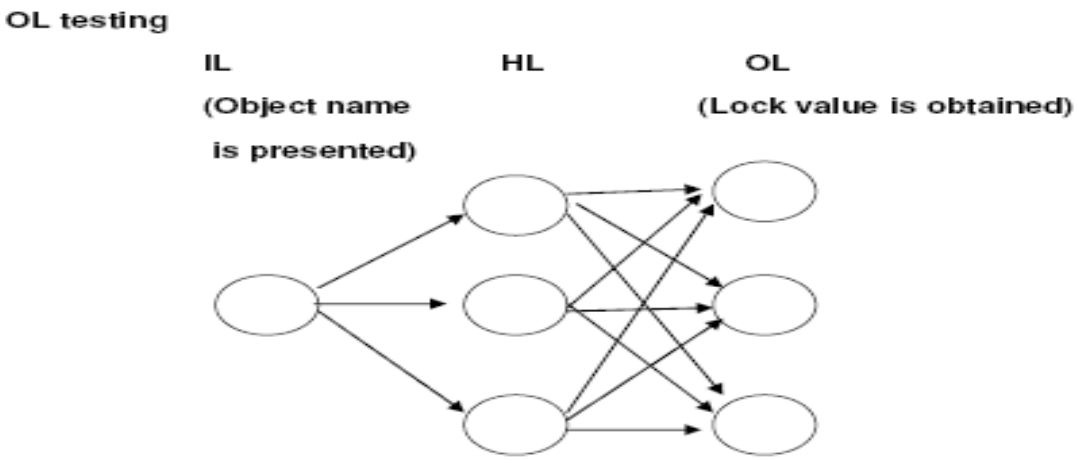


FIGURE 5: OL TESTING




## 7. SEQUENCE OF MODULES EXECUTED WHEN A TRANSACTION REQUESTS LOCK OR RELEASES LOCK

1. Initialize randomly the weights of module 1 and module 3
2. A transaction Ti requests lock on an object (a ,b, )
3. Module 4 is tested with object (a, b,…) requested in step 2 to obtain binary value. If '000' is output in the output layer of module 4, then the object is free to be accessed. If (001, 010, 011, 100 is output then the object is under use. If the output value is 001, then the transaction in step is given access to the requested object
4. In any case , if Ti is given transaction to requested object, then module 1 and module 3 are weight updated using the back propagation algorithm (forward and backward steps)
5. In any case , if the object is under any lock mode other than shared or no lock, then the transactions are kept under queue.

## 8. CONCLUSION

An approach has been attempted to implement ANN in concurrency control. The approach has to be verified with different types of files operated by many users in a distributed environment. ANN algorithms can be attempted to achieve concurrency control in distributed database applications which are more beneficial than conventional techniques like two phase locking, timestamp ordering, etc.

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# RESEARCH INFORMATION TECHNOLOGY: BEHAVIORAL ACCOUNTING

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**ABSTRACT**

*Traditionally, accounting is purely based on manual approach. Experience and skillfulness of an individual accountant are critical in accounting processes. Even using the manual approach can be ineffective and inefficient. Accounting information systems (AIS) resolve many of above issues. AISs can support an automation of processing large amount of data and produce timely and accuracy of information. As the need for connectivity and consolidation between other business systems increased, accounting information systems were merged with larger, more centralized systems known as enterprise resource planning (ERP). Before, with separate applications to manage different business functions, organizations had to develop complex interfaces for the systems to communicate with each other. In ERP, a system such as accounting information system is built as a module integrated into a suite of applications that can include manufacturing, supply chain, human resources. These modules are integrated together and are able to access the same data and execute complex business processes. Today, Could-based accounting information systems are increasingly popular for both SMEs and large organizations for lower costs. With adoption of accounting information systems, many businesses have removed low skills, transactional and operational accounting roles.*

**KEYWORDS**
AIS, ERP.

## 1. INTRODUCTION

Traditionally, accounting is purely based on manual approach. Experience and skillfulness of an individual accountant are critical in accounting processes. Even using the manual approach can be ineffective and inefficient. Accounting information systems resolve many of above issues. AISs can support an automation of processing large amount of data and produce timely and accuracy of information.

Early accounting information systems were designed for payroll functions in 1970s. Initially, accounting information systems were predominantly developed "in-house" as legacy systems. Such solutions were expensive to develop and to difficult maintain. Therefore, many accounting practitioners preferred the manual approach rather than computer-based. Today, accounting information systems are more commonly sold as prebuilt software packages from large vendors such as Microsoft, Sage Group, SAP and Oracle where it is configured and customized to match the organization's business processes. Small businesses often use accounting lower costs software packages such as MYOB and QuickBooks. Large organisations would often choose ERP systems. As the need for connectivity and consolidation between other business systems increased, accounting information systems were merged with larger, more centralized systems known as enterprise resource planning (ERP). Before, with separate applications to manage different business functions, organizations had to develop complex interfaces for the systems to communicate with each other. In ERP, a system such as accounting information system is built as a module integrated into a suite of applications that can include manufacturing, supply chain, human resources. These modules are integrated together and are able to access the same data and execute complex business processes. Today, Could-based accounting information systems are increasingly popular for both SMEs and large organizations for lower costs. With adoption of accounting information systems, many businesses have removed low skills, transactional and operational accounting roles.

## 2. OBJECTIVES OF THE STUDIES

1. To study the accounting information system.
2. To study the implementation of accounting information system.
3. To study the function of accounting information system.
4. To study the reliability of accounting information system.
5. To study the terms for the existence of financial accounting information system.

## 3. METHODOLOGY

For the present research paper is based on secondary data. Secondary data was collected from various articles, published in research journals, related books and websites etc.

## 4. DEFINITION OF 'ACCOUNTING INFORMATION SYSTEM - AIS

The collection, storage and processing of financial and accounting data that is used by decision makers. An accounting information system is generally a computer-based method for tracking accounting activity in conjunction with information technology resources. The resulting statistical reports can be used internally by management or externally by other interested parties including investors, creditors and tax authorities.

## 5. WHY STUDY ACCOUNTING - ACCOUNTING INFORMATION SYSTEMS

Accountants provide the information necessary to determine and evaluate the long term and short term financial stability of companies, organization or individuals. Accountants track expenses, provide detailed insight about the expenses and future paths, as well as prepare, analyze and verify financial documents. They look for ways to be more financially efficient, keep public records and make sure taxes are paid properly.

Accounting is a versatile degree. Students who graduate with a major in accounting may find jobs in many areas of business including: sales, production management, client management, product development, procurement, general management, banking and financial planning.

## 6. ACCOUNTING - ACCOUNTING INFORMATION SYSTEMS

The Accounting - Accounting Information Systems sequence is designed to provide students with information systems and technology skills and competencies as recommended by the International Federation of Accountants. Students will learn how to use information technology and evaluate information systems from both an internal auditor and external auditor perspective.

## 7. IMPLEMENTATION OF AN AIS

Many large and SMEs are now adopting cost effective cloud-based accounting information system in recent years. Looking back years ago, most organizations, even larger ones, hire outside consultants, either from the software publisher or consultants who understand the organization and who work to help select and implement the ideal configuration, taking all components into consideration.

## 8. THE STEPS TO IMPLEMENT AN ACCOUNTING INFORMATION SYSTEM ARE AS FOLLOWS

**A. DETAILED REQUIREMENTS ANALYSIS**

Where all individuals involved in the system are interviewed. The current system is thoroughly understood, including problems, and complete documentation of the system—transactions, reports, and questions that need to be answered—are gathered. User needs that are not in the current system are outlined and documented. Users include everyone, from top management to data entry. The requirements analysis not only provides the developer with the specific needs, it also helps users accept the change. Users who have the opportunity to ask questions and provide input are much more confident and receptive of the change, than those who sit back and don't express their concerns.

**B. SYSTEMS DESIGN (SYNTHESIS)**

The analysis is thoroughly reviewed and a new system is created. The system that surrounds the system is often the most important. What data needs to go into the system and how is this going to be handled? What information needs to come out of the system how is it going to be formatted? If we know what needs to come out, we know what we need to put into the system. The program we select will need to appropriately handle the process. The system is built with control files, sample master records, and the ability to perform processes on a test basis. The system is designed to include appropriate internal controls and to provide management with the information needed to make decisions. It is a goal of an accounting information system to provide information that is relevant, meaningful, reliable, useful, and current. To achieve this, the system is designed so that transactions are entered as they occur (either manually or electronically) and information is immediately available online for management.

Once the system is designed, an RFP is created detailing the requirements and fundamental design. Vendors are asked to respond to the proposal, to provide demonstrations of the product, and to specifically respond to the needs of the organization. Ideally, the vendor will input control files, sample master records, and be able to show how transactions are processed that result in the information that management needs to make decisions. An RFP for the information technology infrastructure follows the selection of the software product because the software product generally has specific requirements for infrastructure. Sometimes, the software and the infrastructure is selected from the same vendor. If not, the organization must ensure that vendors will work together without "pointing fingers" when there is an issue with either the software or the infrastructure.

**C. DOCUMENTATION**

As the system is being designed, it is documented. The documentation includes vendor documentation of the system and, more importantly, the procedures or detailed instructions that help users handle each process specific to the organization. Most documentation and procedures are online and it is helpful if organizations can add to the help instructions provided by the software vendor. Documentation and procedures tend to be an afterthought but is the insurance policy and the tool used during testing and training—before launch. The documentation is tested during the training so that when the system is launched, there is no question that it works and that the users are confident with the change.

**D. TESTING**

Before launch, all processes are tested from input through output, using the documentation as a tool to ensure that all processes are thoroughly documented and that users can easily follow the procedures: They know it works and that the procedures will be followed consistently. The reports are reviewed and verified, so that there's no garbage in-garbage out. This is done in a test system not yet fully populated with live data. Unfortunately, most organizations launch systems before thorough testing, adding to end-user frustration when processes don't work. The documentation and procedures may be modified during this process. All identified transactions must be tested during this step. All reports and online information must be verified and traced through the audit trail so that management is ensured that transactions will be handled consistently and that the information can be relied upon to make decisions.

**E. TRAINING**

Before launch, all users need to be trained, with procedures. This means a trainer using the procedures to show each end user how to handle a procedure. The procedures often need to be updated during training as users describe their unique circumstances and the "design" is modified with this additional information. The end user then performs the procedure with the trainer and the documentation. The end user then performs the procedure with the documentation alone. The end user is then on his or her own with the support, either in person or by phone, of the trainer or other support person. This is before data conversion.

**F. DATA CONVERSION**

Tools are developed to convert the data from the current system (which was documented in the requirements analysis) to the new system. The data is mapped from one system to the other and data files are created that will work with the tools that are developed. The conversion is thoroughly tested and verified before final conversion. There's a backup so it can be restarted, if necessary.

**G. LAUNCH**

The system is implemented only after all of the above is completed. The entire organization is aware of the launch date. Ideally, the current system is retained and often run in "parallel" until the new system is in full operation and working properly. With the current mass-market software used by thousands of companies and fundamentally proven to work, the "parallel" run that is mandatory with software tailor-made to a company is generally not done. This is only true, however, when the above process is followed, the system is thoroughly documented and tested, and users are trained before launch.

**H. TOOLS**

Online resources are available to assist with strategic planning of accounting information systems. Information systems and financial forms aid in determining the specific needs of each organization, as well as assigning responsibility to principles involved.

**I. SUPPORT**

The end users and managers have ongoing support available at all times. System upgrades follow a similar process and all users are thoroughly appraised of changes, upgraded in an efficient manner, and trained.

Many organizations chose to limit the time and money spent on the analysis, design, documentation, and training, and move right into software selection and implementation. If a detailed requirements analysis is performed with adequate time being spent on the analysis, the implementation and ongoing support will be minimal. Organizations that skip the steps to ensure the system meets their needs are often left with frustrated end users, costly support, and information that is not current or correct. Worse yet, these organizations build the system three times instead of once.

## 9. WHAT ARE ACCOUNTING INFORMATION SYSTEMS

An information system is a formal process for collecting data, processing the data into information, and distributing that information to users. The purpose of an accounting information system (AIS) is to collect, store, and process financial and accounting data and produce informational reports that managers or other interested parties can use to make business decisions. Although an AIS can be a manual system, today most accounting information systems are computer-based.

## 10. FUNCTIONS OF AN ACCOUNTING INFORMATION SYSTEM

Accounting information systems have three basic functions:

The first function of an AIS is the efficient and effective collection and storage of data concerning an organization's financial activities, including getting the transaction data from source documents, recording the transactions in journals, and posting data from journals to ledgers. The second function of an AIS is to supply information useful for making decisions, including producing managerial reports and financial statements. The third function of an AIS is to make sure controls are in place to accurately record and process data.

## 11. PARTS OF AN ACCOUNTING INFORMATION SYSTEM

An accounting information system typically has six basic parts: People who use the system, including accountants, managers, and business analysts. Procedure and instructions are the ways that data are collected, stored, retrieved, and processed. Data including all the information that goes into an AIS Software consists of

computer programs used for processing data Information technology infrastructure includes all the hardware used to operate the AIS Internal controls are the security measures used to protect data.

## 12. ADVANTAGES AND IMPLICATIONS OF AIS

A big advantage of computer-based accounting information systems is that they automate and streamline reporting, develop advanced modelling and support data mining.

[1] Reporting is major tool for organizations to accurately see summarized, timely information used for decision-making and financial reporting. The accounting information system pulls data from the centralized database, processes and transforms it and ultimately generates a summary of that data as information that can now be easily consumed and analyzed by business analysts, managers or other decision makers. These systems must ensure that the reports are timely so that decision-makers are not acting on old, irrelevant information and, rather, able to act quickly and effectively based on report results. Consolidation is one of the hallmarks of reporting as people do not have to look through an enormous number of transactions. For instance, at the end of the month, a financial accountant consolidates all the paid vouchers by running a report on the system. The system's application layer provides a report with the total amount paid to its vendors for that particular month. With large corporations that generate large volumes of transactional data, running reports with even an AIS can take days or even weeks. After the wave of corporate scandals from large companies such as Tyco International, Enron and WorldCom, major emphasis was put on enforcing public companies to implement strong internal controls into their transaction-based systems. This was made into law with the passage of the Sarbanes–Oxley Act of 2002 which stipulated that companies must generate an internal control report stating who is responsible for an organization's internal control structure and outlines the overall effectiveness of these controls.

[2] Since most of these scandals were rooted in the companies' accounting practices, much of the emphasis of Sarbanes Oxley was put on computer-based accounting information systems. Today, AIS vendors tout their governance, risk management, and compliance features to ensure business processes are robust and protected and the organization's assets (including data) are secured.

## 13. CONCLUSION

The six components of an AIS all work together to help key employees collect, store, manage, process, retrieve, and report their financial data. Having a well-developed and maintained accounting information system that is efficient and accurate is an indispensable component of a successful business.

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# A STUDY ON USERS' PREFERENCE TOWARDS MATRIMONIAL SITES IN COIMBATORE CITY

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**ABSTRACT**

*Online Matrimony is an organized web based Matrimonial/Marriage service facilitating wishful men and women to find their suitable life partners .It caters to people spread across the globe with the help of internet. Matrimonial search is the 13th most popular activity on the Internet among 12 million urban users in India. There are various sites available for providing the online matrimonial services. Matrimonial sites are especially popular in India and among Indians settled overseas. Generally it has shown that young men and women in India do not feel any compulsion to date since dating has not been a part of the culture historically. Matrimonial websites are the online intermediate of selecting suitable bride /groom. Hence a study is undertaken to find out the users preference and satisfaction towards matrimonial sites.*

**KEYWORDS**

matrimonial sites, overseas Indians, organised web service.

## INTRODUCTION

People say "matches are made in heaven" but now this quote changed into "matches are made online". In 1700, a decade after the invention of the modern newspaper the first matrimonial service was created. People register themselves in several matrimonial sites by creating their own profile. Brides and grooms looking for their matches can search the data that usually include nationality, age, gender, availability of photograph location and caste. The internet has enabled accelerated the creation of new forms of human interactions through instant messaging on social networking sites.

## REVIEW OF LITERATURE

D.Anitha Kumari, Volume 2, Number 2, April-June 2013 conducted a study on "Customer Preference and attitude towards Matrimonial sites in Chennai, Tamil Nadu" The study examined how the sites work and how they are satisfying the customers. The findings indicate that customers had an overall more positive attitude towards matrimonial sites with regards to cost, service, schemes and advertisements. Ayesha Ahmed, August 2012 examined "How have muslim matrimonial websites affected traditional Islamic courting method". The study has aimed to achieve an insight into how orthodox and traditional Islamic methods of finding a spouse are being challenged amongst this diversity. Although there is a lack of theoretical and empirical research within this specific area, this study has covered interesting findings into current social and cultural interpretation of marriage in islam. Walter R. Schumm Kansas, State University , 2012 conducted a review on "Marriage preparation programs" . The review tracks developments in programming, theory, and evaluation as a foundation for program improvements. Mr. Tejaswinee N. Ingle, Dr.P.W.Kale ,2008 conducted a review on "Perception of users towards onlne marriage bureau with special reference to shaadi.com" The study reveals the perception of people towards matriomonial sites and the finded that shaadi.com is the most visited and most user friendly online match making brand in India. Mr.Ali Hortacsu, University of Chicago-Department of Economics; Gunter J Histch, University of Chicago-Graduate school of business; Dan Ariely, MIT –Sloan school of Management, January-2005 conducted a study on "Mate preference in online dating". The site users display strong race preferences do not differ across users with different age, income, education level in case of women and differ slightly in case of men.

## NEED FOR THE STUDY

Online matrimonial classifieds are the biggest paid content generators' on the Net. Some of the matrimonial websites have a mix of both free and paid subscriptions. The web interface allows user to create their profiles in order to contact people. This study was conducted to analyses the cost effectiveness in using matrimonial sites. The study also examines the awareness, preference and satisfaction towards matrimonial sites.

## SCOPE OF THE STUDY

A Study has been made on user's preference on matrimonial websites in Coimbatore city to know why users prefer more on online matrimonial arrangement than offline. It also studies about the various sites and services provided by online matrimonial. And to know about the users perception and attitude and their problems faced by using such matrimonial websites.

## OBJECTIVES OF THE STUDY

1. To study about the users preference towards matrimonial websites.
2. To find out the users perception towards matrimonial websites.
3. To analyses the problems faced by the users of matrimonial websites.
4. To study the respondents level of satisfaction towards matrimonial websites.

## RESEARCH METHODOLOGY

**AREA OF RESEARCH**

The area of this study was confined to Coimbatore city alone

**SAMPLE SIZE**

The number of sample selected for this study is 125 in Coimbatore city.

**PERIOD OF THE STUDY**

The study period was from June to September 2015.

**STATISTICAL TOOLS**

Percentage analysis

**RANK ANALYSIS**

**TABLE 1: EDUCATIONAL QUALIFICATION OF THE RESPONDENTS**

| Educational Qualification | No. of respondents | Percentage |
|---|---|---|
| School level | 10 | 8.0 |
| Graduate | 68 | 54.8 |
| Post graduate | 27 | 21.7 |
| Professional course | 14 | 11.2 |
| No formal education | 3 | 1.6 |
| Others | 3 | 2.4 |
| **Total** | **125** | **100** |

The above table reveals that 54.83 % of the respondents are graduates, 21.77% of the respondents are post graduates, 11.29 % of the respondents are having professional educational qualifications, 8.06% of the respondents are having school level education, 2.41 % of the respondents have other educational qualification and 1.61% of the respondents have no formal education. Majority (54.83 %) of respondents are graduates**.**

**TABLE 2: AGE OF THE RESPONDENTS**

| Age | No of respondents | Percentage |
|---|---|---|
| 18-25 | 66 | 53.2 |
| 25-35 | 37 | 29.8 |
| 35-45 | 13 | 10.4 |
| Above 45 | 9 | 6.4 |
| **Total** | **125** | **100** |

From the above table it is inferred that 53.22 % of the respondents' age ranges between 18-25 years, 29.83 % of the respondents' age ranges between 25-35 years, 10.48 % of the respondents' age ranges between 35-45 years and 6.45 % of the respondents' are more than 45 years of age. Majority (53.22%) of the respondents' age ranges between 18-25 years.

**TABLE 3: SOURCE OF AWARENESS TOWARDS MATRIMONIAL SITES**

| Source of awareness towards matrimonial sites | No. of respondents | Percentage |
|---|---|---|
| Advertisements | 40 | 32.2 |
| Friends | 38 | 30.6 |
| Relatives | 36 | 29.0 |
| Neighbors | 8 | 5.6 |
| Others (specify) | 3 | 2.4 |
| **Total** | **125** | **100** |

From the above table it is inferred that 32.25 % of the respondents are aware of matrimonial sites through advertisements, 30.64 % of the respondents are aware through friends, 29.03 % of the respondents are aware through their relatives, 5.645 % of the respondents are aware through their neighbours and 2.419% of the respondents are aware through other sources. Most (32.25%) of the respondents are aware of matrimonial sites through advertisements.

**TABLE 4: LEVEL OF AWARENESS TOWARDS MATRIMONIAL SITES**

| SITES | HIGHLY AWARE | % | AWARE | % | NOT AWARE | % |
|---|---|---|---|---|---|---|
| Kalyana malai | 63 | 50.4 | 56 | 44.8 | 6 | 4.8 |
| Shaadi matrimony | 45 | 36 | 51 | 40.8 | 29 | 23.2 |
| Jeevansathi matrimony | 19 | 15.2 | 43 | 34.4 | 63 | 50.4 |
| Pyar matrimony | 7 | 5.6 | 27 | 21.6 | 91 | 72.8 |
| Bharath matrimony | 66 | 52.8 | 49 | 39.2 | 10 | 8 |
| Saisankar matrimony | 9 | 7.2 | 33 | 26.4 | 83 | 66.4 |
| Simply married matrimony | 9 | 7.2 | 16 | 12.8 | 100 | 80 |
| Life partner matrimony | 9 | 7.2 | 32 | 25.6 | 84 | 67.2 |
| Merasathi matrimony | 6 | 4.8 | 19 | 15.2 | 100 | 80 |
| Indian matrimony | 24 | 19.2 | 43 | 34.4 | 58 | 46.4 |

**Kalyana malai**: 50.4% of the respondents are highly aware, 44.8% of the respondents are aware, 4.8% of the respondents are not aware.
**Shaadi matrimony:** 36% of the respondents are highly aware, 40.8% of the respondents are aware, 23.2% of the respondents are not aware.
**Jeevansathi matrimony:** 15.2% of the respondents are highly aware, 34.4% of the respondents are aware, 50.4% of the respondents are not aware.
**Pyar matrimony:** 5.6% of the respondents are highly aware, 21.6% of the respondents are aware, 72.8% of the respondents are not aware.
**Bharath matrimony:** 52.8% of the respondents are highly aware, 39.2% of the respondents are aware, 8% of the respondents are not aware.
**Saisankar matrimony:** 7.2% of the respondents are highly aware, 26.4% of the respondents are aware, 66.4% of the respondents are not aware.
**Simply married matrimony:** 7.2% of the respondents are highly aware, 12.8% of the respondents are aware,80% of the respondents are not aware.
**Life Partner matrimony:** 7.2% of the respondents are highly aware, 25.6% of the respondents are aware,67.2% of the respondents are not aware.
**Merasathi matrimony:** 4.8% of the respondents are highly aware, 15.2% of the respondents are aware,80% of the respondents are not aware.
**Indian matrimony:**19.2% of the respondents are highly aware,34.4% of the respondents are aware,46.4% of the respondents are not aware.
It is inferred that majority (52.8%) of the respondents are highly aware of Bharath Matrimony.

**TABLE 5: FREQUENCY OF VISITING MATRIMONIAL SITES**

| Frequency of visits | No. of respondents | Percentage |
|---|---|---|
| Daily once | 31 | 25 |
| Two days once | 29 | 23.3 |
| Weekly once | 53 | 42.7 |
| Others (specify) | 12 | 8.8 |
| **Total** | **125** | **100** |

From the above table it is inferred that 42.74% of the respondents visit matrimonial sites weekly once, 25% of the respondents visit daily once, 23.38 % of the respondents visit 2days once and 8.87 % of the respondents visit randomly. Most (42.74 %) of the respondents visit matrimonial sites weekly once.

**TABLE 6: OPINION TOWARDS MATRIMONIAL SITES REGARDING MATCHING**

| opinion towards matrimonial sites | No. of respondents | Percentage |
|---|---|---|
| Faster mode of matching | 60 | 48.3 |
| Safer mode of matching | 39 | 31.4 |
| Slower mode of matching | 20 | 16.1 |
| Others (specify) | 6 | 4.03 |
| **Total** | **125** | **100** |

The table states that 48.38 %of the respondents feel that matrimonial sites are the faster mode of matching, 29.03 % respondents feel that it is the safer mode of matching and 16.12 % of the respondents feel that it is the slower mode of matching and 4.03 % of respondents specified other reasons. Most (48.38%) of the respondents feel that matrimonialsites are the faster mode of matching.

**TABLE 7: FACTORS INFLUENCING THE RESPONDENTS TO REGISTER IN MATRIMONIAL WEBSITES**

| Source | Mean Rank | Rank |
|---|---|---|
| Time taken for matching | 5.62 | 4 |
| Quick response | 4.81 | 1 |
| Better contact option | 5.81 | 5 |
| Content of matrimonial site profile | 6.27 | 6 |
| Availability of information | 5.17 | 3 |
| Convenience | 5.4 | 2 |
| Trust worthy | 6.59 | 10 |
| Flexibility | 6.53 | 8 |
| Community | 6.48 | 7 |
| Religion | 6.56 | 9 |
| Language | 6.99 | 11 |

From the above mean rank table it is understood that the respondents have given first rank to “Quick response” (mean 4.81) which says that respondents have given prior importance to quick response of matrimonial sites while choosing a particular matrimonial site, second rank have been assigned to “convenience” (mean 5.4) and “Availability of Information” have been assigned the third rank (mean 5.17).
“Time taken for matching” is considered to be a reason that influence a person to choose a particular site which is given fourth rank (mean 5.62) followed by “Better contact option”(mean 5.81) with fifth rank, “Content of matrimonial site profile”(mean6.27) have assigned sixth rank, “Community” (mean 6.48) with seventh rank which is followed by “Flexibility”(mean6.53) with eighth rank , Thus, language is not considered as an important factor by the respondents in choosing a particular matrimonial site.
Most of the respondents have given first rank to “Quick response” with mean 4.59.

## SUGGESTIONS

- Matrimonial sites providers can reduce membership fees which will attract many people to join and after getting a good number of members they can make a steady and slow increase in prices for the fees.
- Matrimonial sites can include additional features like personal chatting, email which will increase the interest of the matrimonial site visitors.
- Continuous advertisements for matrimonial sites in different forms can be increased for consumer awareness, consumer recall, personalized relationship building, etc.
- Matrimonial sites can concentrate on post marriage arrangements also.
- Since most of the rural people are not aware of matrimonial sites, the matrimonial sites providers can create awareness in rural areas.

## CONCLUSION

In this fast moving world, people are leading a high mechanical life. People don’t have enough time to go in search of brides and grooms for their marriage life through offline marriage arrangement, so they started registering themselves in matrimonial sites. They feel it saves their valuable time and money. In order to that, now-a-days many matrimonial sites started for the people to make them feel user- friendly rather going to marriage brokers. The study reveals that female are registering more as compared to male and it is concluded that the respondents are satisfied with online matrimonial sites.

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# FEDENA: EFFECTIVE ICT TOOL FOR EDUCATION MANAGEMENT SYSTEM

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*SANGLI*

**ABSTRACT**

*Today ICT plays an important role in education system. There are several ICT tools are available in the market for improving quality of educational system. ICT offers new challenges in teaching and learning process, by providing practical approach to teachers and learners. World moving rapidly into digital media and information, the role of ERP software is becoming more important in the 21st century. This research paper describes one of the ICT tool for effective education management system called Fedena. It is one of the best ERP software in educational ERP market. Fedena is open source software which implements Model View Control (MVC) framework. Objective of this paper is to explain brief introduction of Fedena, evolution, technology behind it, modules, features and advantages of Fedena software to different end users.*

**KEYWORDS**

ERP (Enterprise Resource Planning), Fedena, ICT tools, MVC framework, modules.

## INTRODUCTION

ICTs stands for information and communication technologies and are defined as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information." These technologies include computers, the Internet, broadcasting technologies (radio and television), and telephony. ICT plays important role in teaching and learning process. Now a day's Internet and telecommunication technologies are widely used by teachers and learners. ICT tools useful for open and distance learning.[8] Implementation of ICT adds value and demand for education system. It provides flexible communication, data transfer and recoding document. ICT keep teachers and learner always update. It help to achieve academic accuracy, consistency and confidentiality.[5] ICT tools can be widely available to access knowledge from LAN, MAN or WAN for providing course details, objective, interaction with subject, evaluation of performance and facilitation. E-learning has highest demand in higher education and corporate training also allows formal and informal learning at any place and any time.[7] ICTs that are the most important determinants of the effectiveness of such tools in education, the choices of tools are quite varied and each has its own advantages and disadvantages. Fedena is one of the ultimate ICT tools for education systems.

## FEDENA SOFTWARE

Fedena is open source software for schools and college management. Fedena is cloud ERP software that having very essential and effective modules for education management system. It is web based application developed using Ruby on Rail framework.[15] Due to wide scope and user friendly modules, it is used for more than 50,000 institutions around the world. The open source version of Fedena is downloaded more than 200 times every day from more than 150 countries. Fedena covers all basic modules that are require for student information system. It provides user-friendly dashboards with login access for teachers, non-teaching staff, students, parents and management personnel of your institution. The various modules available in the Fedena which facilitate all the processes of your institution, from admission of new students to generating transfer certificates when students complete their studies. Fedena has modules to manage Timetable, Attendance, Examinations, Gradebooks, Campus News, Hostel, Library, Transportation, School Calendar, Events and many more.[14] It has a fully-fledged Human Resource module to manage the payroll and employee pay slips. The Finance module helps you to plan and allot different fee structures to students. Fedena is also an excellent collaboration tool using its Task, Discussion, Poll, Blog and Video conference plugins. There is an internal messaging system within Fedena but you can also integrate it with external communication tools like email and texting.

## LITERATURE REVIEW

According to literature review different ICT software's are available in the market for educational system such as Fedena, One Campus, Odoo, Campus ERP etc. Among these several software'sfedena is at the highest position in the market.[1]

### 1. INDIRA GROUP OF INSTITUTES (IGI), PUNE[4]

IGI has 14 full-fledged institutes, having 8000 students pursuing multi-disciplinary, graduate and post graduate programs. The objective of IGI is to provide 'Management education in a corporate environment' which provides dedicated efforts in various fields like industry, academics, service and social-world. IGI implement Fedena Pro- multischool application which provides following benefits:

- Customization according to the needs and requirements of the institutes with varied courses and programs.
- Faster and accurate attendance management.
- Single timetable can be created for combining multiple batches, conducted by single faculty.
- Allow to create student group and study group for all those special classes and sessions.
- An authorized leave management system.

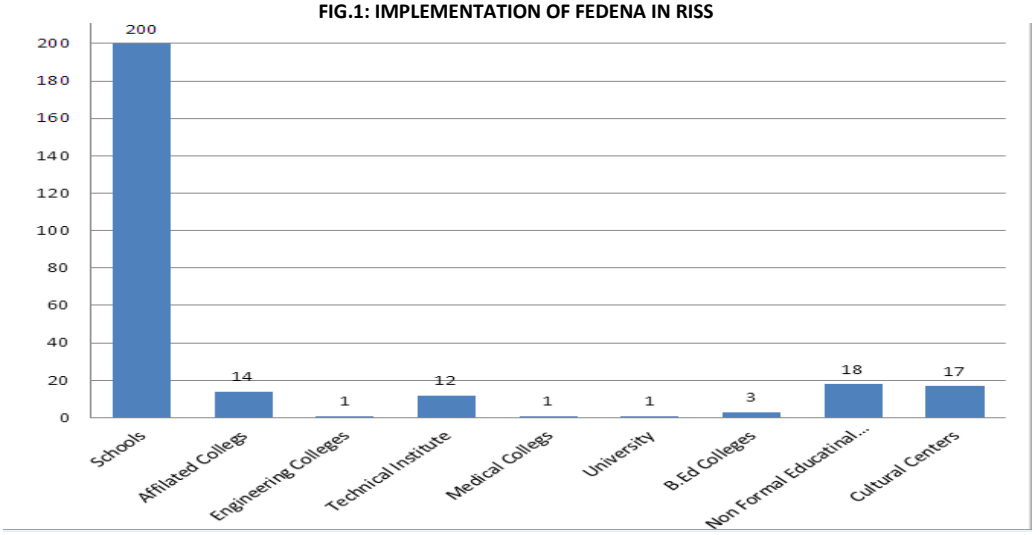
### 2. RAJAGIRI INSTITUTES OF SOCIAL SCIENCE, NEW DELHI (RISS)[3]

RISS implements Fedena software for integrated data management and flexible communication among different institutes.

**TABLE 1: IMPLEMENTATION OF FEDENA IN DIFFERENT INSTITUTES RISS**

| Sr.No | Types of Institutions | Total Number |
|---|---|---|
| 1. | Schools | 200 |
| 2. | Affiliated colleges | 14 |
| 3. | Engineering colleges | 1 |
| 4. | Technical Institutions | 12 |
| 5. | Medical colleges | 1 |
| 6. | University | 1 |
| 7. | B.Ed colleges | 3 |
| 8. | Non-formal educational institutions | 18 |
| 9. | Cultural centers | 17 |

FIG.1: IMPLEMENTATION OF FEDENA IN RISS




## 3. YUVA PARIVARTAN (YP)[2]:

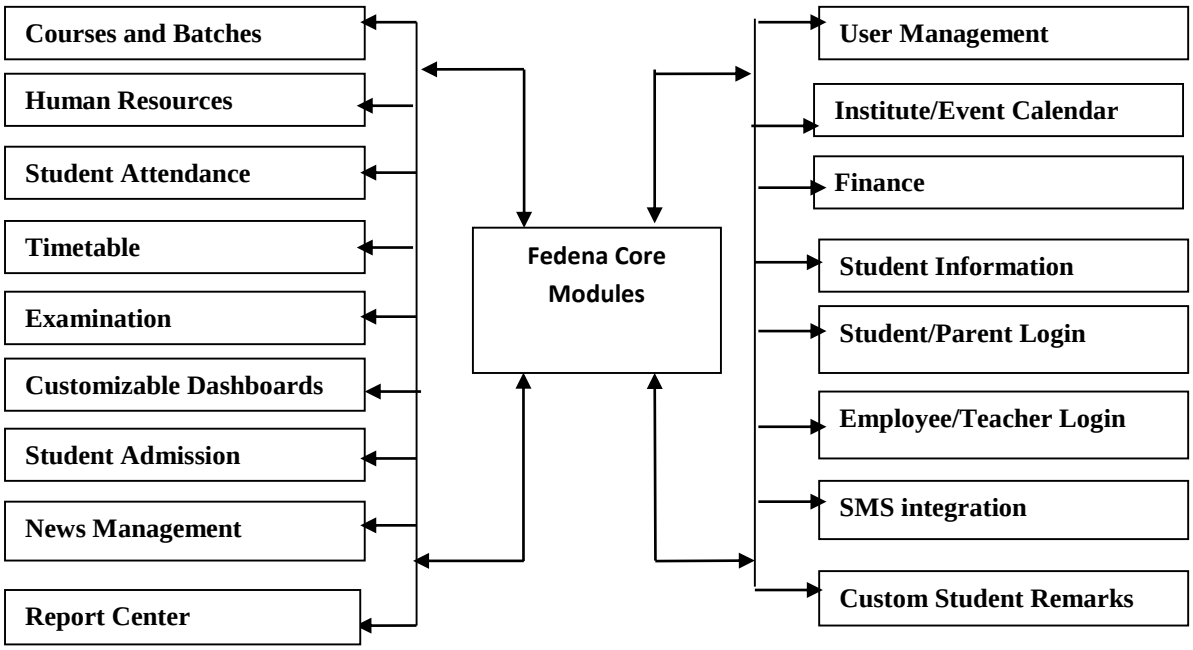
- YP implement fedena pro-multischool suit to manage any courses offered by any institute.
- Courses and batches management module help YP to optimize courses without any customization.
- Fedena software helps to manage different centers from single application.
- Provides flexible communication between different centers.
- Fedena offers smooth eco system by providing facility of plugines which help for business growth.
- Fedena also integrate third-party plugines for fullfill need and requirement of company.

## EVOLUTION OF FEDENA SOFTWARE

- Version 1.0 (March 19, 2010.) of Fedena released to public as open source. Started a new revolution in education technology software. Fedena was released under the business friendly license of Apache License 2.0
- Version 2.0 (August 15, 2010) of Fedena code named "Magic" is released after one long year of non-stop coding and optimizations. Human Resource and Finance modules are now available in the open source version.
- Fedena 2.1 (August 18, 2011) released with extensive new functionality. A new icon set was designed. Major enhancements implemented in the Finance and Human Resource Module
- Fedena 2.2 (January 4, 2012) released with i18n/RTL support. Introduced the innovative auto suggest tool for easy navigation. Fedena was adapted to be plugin friendly. Add-on modules can now be developed as plugins.
- Fedena 2.3 (September 5, 2012 ) is released to the public on Teachers day of India. Fedena started supported global grading standards of CWA, GPA and CCE. With this version Fedena supported 8 languages. English, Spanish, Portuguese, German, Japanese, Marathi, Hindi and Arabic.[12]
- Fedena 3.0 launched with a whole new user experience and consolidated dashboard.

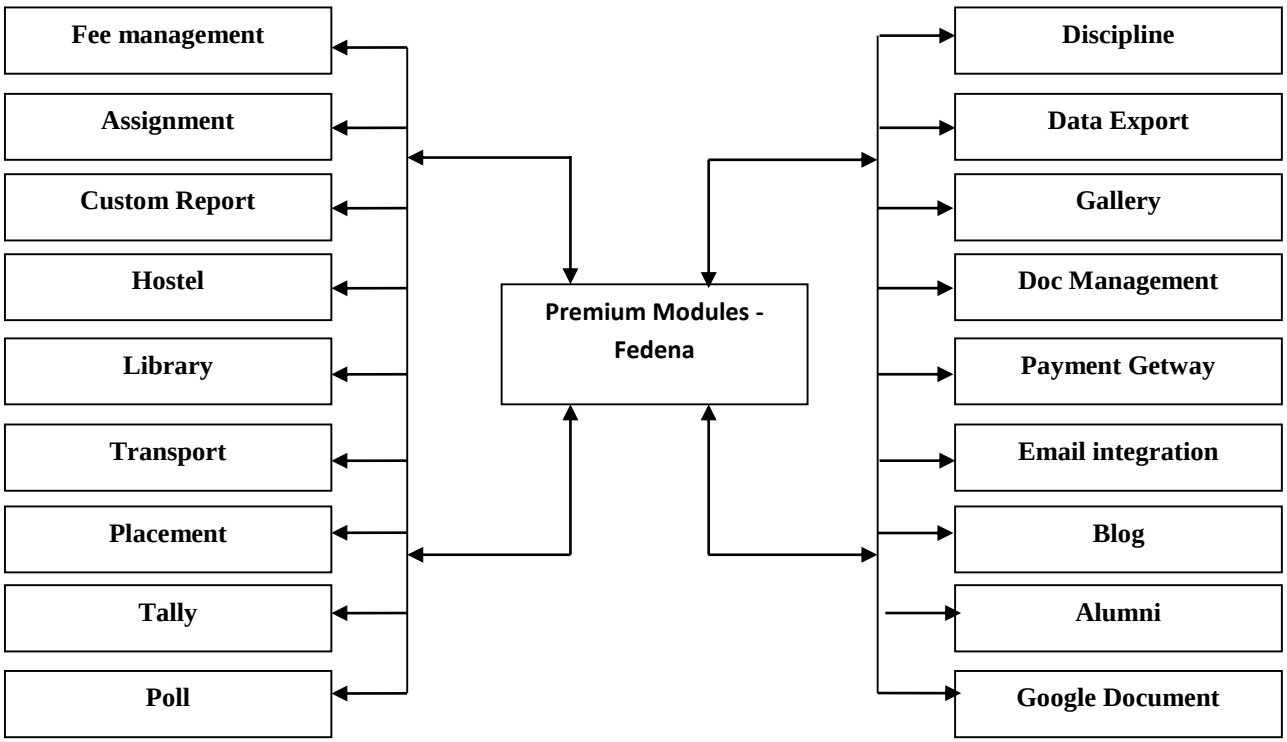
## CORE MODULES OF FEDENA

FIG. 2



## OTHER PREMIUM MODULES OF FEDENA

FIG. 3




## FEATURES OF FEDENA

1. **USER FRIENDLY:** User having basic computer knowledge can easily use Fedena software. Users love to use Fedena for their daily college activities
2. **OPEN SOURCE:** Fedena is open source ERP software where core modules of Fedena are free.
3. **LANGUAGE SUPPORT:** Fedena software support to 8 different languages like English, Spanish, Portuguese, German, Japanese, Marathi, Hindi and Arabic.
4. **SECURITY:** Separate login and privileges provided to each user according to their needs.
5. **GRAPHICAL SUPPORT:** Fedena provides iconic interface. Reports are display using charts and dashboards.
6. **INTEGRATED WITH MOODLE:** Fedena software can be integrate with e-learning tool moodle .
7. **MULTISERVICE:** Support for multipal services like customization, installation, support, hosting training and implementation.
8. **GROUP EXAM:** Various exams can be group together to create final mark sheet of batch of students.
9. **TIMETABLE MANAGEMENT:** Class wise timetable help students for getting lecture details. It helps faculties for lecture adjustment and workload management.
10. **LEAVE MANAGEMENT:** This modules help employee to publish leave at any time with work adjustment.
11. **ANALYSE STUDENTS PERFORMANCE:** Faculty and parents view attendance report, mark sheet and feedback to identify student performance.
12. **TRANSPARENCY:** Provide transparency in different college activities through SMS and Email facility.
13. **EXCLUSIVE VIDEO TUTORIALS:** Video tutorials helps learning and working with Fedena.
14. **STUDENT BLOG:** Provide blogging feature for social communication.
15. **UNIQUE IDENTIFICATION:** Each user identify uniquely on Fedena.[13]

## TECHNOLOGY BEHIND FEDENA

Fedena software is developed using Ruby on Rail (ROR) technology. It integrate concepts of smalltalk, python and perl. ROR is higher level programming language.[12] It follows object oriented concepts for development environment. Fedena software implements MVC framework as follows:

**MODEL (Active Record):** Maintains the relationship between Object and Database and handles validation, association, transactions, and more.

**VIEW (Action View):** A presentation of data in a particular format, triggered by a controller's decision to present the data. They are script based template systems like JSP, ASP, PHP and very easy to integrate with AJAX technology.

**CONTROLLER (Action Controller**): The facility within the application that directs traffic, on the one hand querying the models for specific data, and on the other hand organizing that data (searching, sorting, massaging it) into a form that fits the needs of a given view.[9]

**BENIFITS OF FEDENA TO** [16]**:**

**MANAGEMENT**

1. Multiple campus management
2. Global identification of institution and standardization
3. Automation of all management activities.
4. Centralize and secure storage of information in cloud.
5. Best possible resource utilization.
6. Collaboration of all users via text, audio and video at any time.
7. Organization cost and time savvy system.

**ADMINISTRATIVE OFFICE**

1. Online registration and admission.
2. Automatically create class and teacher schedule.
3. Maintain record of absence and attendance.
4. Maintaining discipline of records.
5. Automated on demand reports.
6. Analysis through charts, dashboards and statistical reports.

7. Create separate login for teachers, parents and students.
8. Custom report generation.
9. Human resource management service
10. Events and news management.

**TEACHERS**

1. Recording and publishing student attendance.
2. Computerized management of mark and grade.
3. Timetable creation
4. Upload download assignments notes for students.
5. Conduct online tests.
6. Better organization of school activities.
7. Communicate with parents about educational progress.

**STUDENTS**

1. Interaction with teacher
2. Online submission of assignments and tests.
3. Access timetable, notes and examination schedule.
4. Brows library books catalogue and reserve book online.
5. Prior information of news, events and holidays details.
6. Distance education facility.
7. Student blog facility.

**PARENTS**

1. Access college updates regularly.
2. View student progress details.
3. Prior information of news, events and holidays details
4. Communicate with teachers and management.

## CONCLUSION

ICT tool-Fedena provides flexibility in teaching and learning process. It helps to maintain transparency and smooth communication between all users of college management system. Fedena is cloud based ERP system provides security and consistency in data access. Through fedena we can provide global knowledge and focus to student's progress. It helps to build confidence, discipline and standard in the educational Institutes. By using Fedena software institute can create global and unique identification for all users. Also customization in Fedena software helps to implement required modules. Through Fedena software we can integrate, communicate, control, manage and provide standard education in different heterogeneous institutes by implementing customizable modules.

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# SYSTEMATIC AND SCIENTIFIC APPROACH OF WEB DESIGNING

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**ABSTRACT**

*The web-technology is going through major changes years to years and day by day, with respect to types of systems based on web-technology and systematic scientific approach. The challenge of developing more usable Web applications has motivated the appearance of a number of techniques, methods and tools to address Web usability issues. A polarity found in most work is the balance between organizations and most systematic, artistic and logic-driven. This paper reports on a systematic scientific way of the usability of evaluation methods, characterize web-application development and discuss some major challenges to cope with and to find proper support for in the future in Web development.*

**KEYWORDS**
design Science, organizational usability, systematic approach, web designing.

## INTRODUCTION

Today the challenge of developing applied & usable Web applications has promoted theappearance of a variety of techniques, methods and tools to address Web usability concerns[Insfran and Fernandez, 2008]. Applicability& usability in simple manner is a crucial factor in Web application development. The ease or difficultythat users experience with systems of this kind will determine their success or failure.As Web applications supports have become the backbone of any business and informationexchange, the need for usability interface evaluation methods systematically crafted for the Web and technologies that support the usability design process – has become critical [Neuwirth and Regil, 2002]. The web designing framework is need for more ever systematization and more scientific way to mold in scientific way it also defined as "Generic design of possible Web application architectures, including conceptual, navigational and interface aspects, in a given domain". Web design frameworks must be environment and languageindependent [Schwabe, et al., 2001].

The tools involves in we development need of expertise. We found that web-development is characterized by involvement of many expertise groups with little training and experience in information systems design, that some of the existing modeling and communication tools introduce severe problems, and that the pace of the introduction of new tools and features causes development and management problems

The web designing is also base organization of the development work, required approaches and competencies, etc. We must rethink the organization of the development work. This requires a deeper and coherent understanding of the nature of web-development. Although there are many proposals for supporting the development of usable Web applications, many developers are not aware of them and many organizations do not properly apply them.Web dynamics were examined more than a decade ago, but the combination of (i) the exponential growth in the amount of Web content, (ii) the change in the number, power, and diversity of Web servers and applications, and (iii) the increasing number of diverse users from everywhere in the world makes a similar analysis impossible today without creating and validating new models of the Web's dynamics.

Scientific knowledge for professional work is necessary to perform specific targeted task and selection of specific techniques that apply to different tasks. Tasks should well define and categorized scientifically (Schön 1983, p. 21-26). The starting point for any task is a set of given objectives. The participants choose the optimal means to realize the objectives. Software development activities are more often carried out in heterogeneous networks of large and small organizations, universities and other knowledge institutes (Huff 2000; Rip and Groen 2001). Therefore, co-operation between participants of the software project has become an increasingly important aspect of management and is playing a major role when ensuring the success of software development. Systematic reviews are useful forsummarizing all existing information about a phenomenon of interest in an unbiased manner [Kitchenham B.].

In this paper, we present a systematic scientific approach and assessing what usabilityevaluation methods for web designing.

## METHODOLOGY

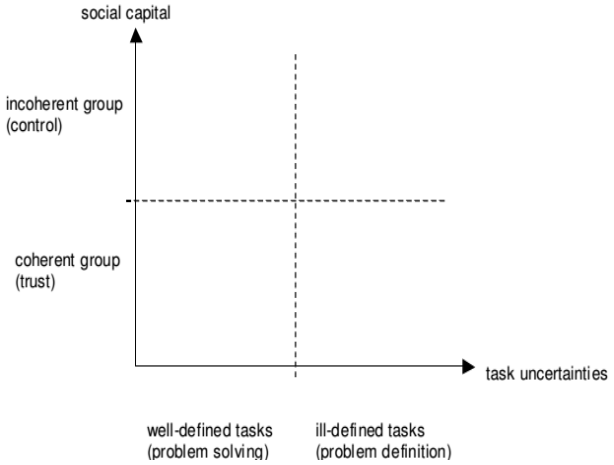
An effective website design plays a critical role in attracting and maintaining customers interest. Web application is a structured set of objects that may be navigated, and processed, in order to achieve one or more tasks in framework in systematic manner. Web environments are not fully object-oriented. In the WWW we will have to define HTML pages, scripts in some language (such as JavaScript or Perl), queries to a relational database, etc. Conceptual and Navigation objects may have to be mapped onto a relational store, and behaviors defined during design may have to be programmed by mixing a scripting language, stored procedures, and so on.

## SYSTEMATIC FRAMEWORK

A systematic approach is a means of evaluation and interpretation all available research that is relevant to a particular research question, topic area, or phenomenon of interest [Kitchenham B]. It aims at presenting a fair evaluation of a research topic by using a trustworthy, rigorous, and auditable methodology. A systematic review involves several stages and activities. In the planning thereview stage, the need for the review is identified, the research questions arespecified, and the review protocol is defined [Insfran and Fernandez, 2008]. In the evaluation method conducting the primary studies selection, the quality assessment, the data extraction and monitoring, and the obtained data is synthesized.

The framework comprises two dimensions. In one dimension the framework is based on the concept of task uncertainty to distinguish between well-defined tasks that call for problem solving and on the other hand ill-defined tasks that call for problem definition (Schön 1983). In the other dimension the framework is based on the relational view (Dyer and Singh 1998; Lane and Lubatkin 1998) and on the theory of social capital (Larson 1992; Nahapiet and Ghoshal 1998). Social capital is used to distinguish between the coherent group of co-workers with a well established community-ofpractice where trust prevails and on the other hand the incoherent group and new relationship where formal control replaces trust and where network ties between co-workers are weak or absent.

**FIGURE 1: ILLUSTRATES THE TWO DIMENSIONS [**Jeenicke, et al., 2003**]**




## SYSTEMATIC DATA EVALUATION

Web design is scientific application of systematic and quantifiable approaches to cost-effective requirements analysis, design, implementation, testing, operation, and maintenance of high quality web applications.Systematic & scientific way to develop website is dependent on tasks involved like examine available methods, try out this methods scientific way and within scheduled duration. Participate to share ideas, views, collect data and to decide which method to use and find strategy to integrate and share it in web system.Challenge and solution have to define and conduct experimental undertaken the solutions required to asses it. Systematic data collection technique though observation, document analysis and interviews.The methodology still requires validation and testing for a wide spectrum of Web applications.The presented design steps are the part of a development process (Koch, 2000) based on the Unified Process (Jacobson et al., 1999) that covers the whole specific approach of Web applications.

## CONCLUSION

This paper has presented our approach a systematic structure & scientific way to develop and usability for Web development. The advantage of this method is that we can reuse relevant, established method components of existing methods. It guides web designer in the design of his/her web application at different levels of abstraction in a systematic manner. We have focused, in describing how the approach guides during selection of the most appropriate components through fixed criteria. Also focused on Usability evaluation at each phase of the Web application development is critical for ensuring that the product will actually be used and be effective for its intended purpose(s).

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# PROMINENCE OF LISTENING EXPERTISE IN COMMUNICATION

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**ABSTRACT**

*The present paper emphasizes on the significance of listening as one of the important resource of communication. The writer intends to make realize the readers the difference between hearing and listening. Listening is the first step to communication. It needs lots of patience and effective listening in order to comprehend the message received and give an effective response. The writer accentuates the listening skill as a vibrant skill in the corporate sector, where everyone should play the role of an active listener. In addition, the writer has attempted to bring forth the things that hamper one's listening as well as guidelines for effective listening.*

**KEYWORDS**
corporate sector, hearing, listening, response.

## 1. INTRODUCTION

In today's information age communication is a vital means for efficacious business. Communication is considered as the lifeline of every business. Mastering communication is very essential to run an organization or a business successfully. When we speak of communication, it is about mastering the four skills i.e., reading, writing, speaking, and listening. No skill can be avoided or neglected. Every skill is important in its own way. A good communicator should have proficiency in all the four skills. It is said that members in an organization spend 63% of their time in listening, 22% for speaking, 11% for writing, and 4% for reading.

## 2. PROMINENCE OF LISTENING IN COMMUNICATION

We undertake courses to improve our speaking; we undergo reading exercises and writing exercises at our academic level but do we undergo any course or exercises to develop our listening activity? The answer would be negative. We forget to realize that every communication begins with a listening activity and that having good listening skills plays a significant role in making any communication successful.

Listening is nothing but an art of hearing and understanding the message of the speaker. When an infant is born it first comes in contact with listening skill. He/she starts to communicate through listening. He/she first plays the role of a listener. He hears to the surrounding voice, interprets, and executes his feelings through nonverbal communication. Thus listening is the first step to communication. Without listening communication becomes a failure. An example may be cited from the *The Jungle Book* a fiction written by Rudyard Kipling. As in the story depictedthe character Mogli, though a human being was unable to speak the language of humans because since his infanthood he grew in the midst of the animals in the jungle. He was unable to speak the language spoken by the humans as he was unfamiliar to the speech sounds. But he was able to speak the language of the animals as he was familiar to the language of animals.

So it is proved that listening becomes a vital skill for communication. If you are a good listener, then definitely you can become a good communicator. Listening is a process that involves hearing with attention, comprehending the message, and giving a response. It is the initiative step to learning. Listening needs serious efforts. It is one of the most imperative communication skills which need strenuous efforts to acquire it and have proficiency in it.

## 3. VARIANCE BETWEEN LISTENING AND HEARING

To go more in deeper with the listening skill, listening should not be confused with hearing. Hearing is a physical activity whereas listening is an intellectual activity. In the process of hearing we hear the speech sounds produced by the speaker whereas in listening the listener pays attention to the words of the speaker comprehends and tries to recall the message of the speaker. Thus hearing to gossips are just to be heard and forgotten whereas hearing to a lecture at academic level, hearing to the superiors by the subordinates in relation to your professional world requires active listening, because here you are really interested in understanding the message transmitted and then you give your response. Thus listening is a careful activity, where we tend to listen, to obtain information, to share our ideas, to convince others with our views, experiences as well as to solve problems.

## 4. VITAL FEATURES FOR A GOOD LISTENER

Keeping in view the professional world, the writer wishes to put forth some essential features for a good listener. Good listening skills should be developed on the part of the employers as well as the employees.

1. To develop human relations: Employers should listen to their employees talk. They should pay attention to what their subordinates are saying which may improve the company's productivity or custom relations.
2. To develop interpersonal relation: Subordinates' decisions should be listened to and given a careful thought. Employee relations may be affected due to inefficient listening. The superiors ought to listen to the grievances of their subordinate which have to be listened with sympathy.
3. To keep an open door policy: The employers should have a positive attitude toward his employee as well as his message. The employers are supposed to keep an open mind where they will first try to understand what is being said and then evaluate the message.
4. To have a calm mind: Having patience in listening on the part of the employer or employees is one of the most vital features in effective listening. Employees should listen to their superiors and pay attention to the instructions given regarding work, organizational policy and job duties, assignment of responsibilities in order to achieve a higher level of success.

Thus listening skills prove to be beneficial that makes the employees learn more, get more knowledge, understand their role and responsibilities. Good listening skills enable a better working environment and builds up a good rapport between the employees and the employers. It helps to improve the relations among its people which is a strong base for any organization to make it successful. It also helps in raising the morale of the employers and the employees, solving problems, acquiring suggestions and ideas as well as it enhances one's thinking.

Keeping in mind the vital role of listening skills, the writer intends to bring to the scene the factors that hamper listening as well as guidelines for effective listening.

## 5. FACTORS THAT HAMPER GOOD LISTENING

1. Diversion in your mind: This can be considered as the greatest hurdle in listening. Such barrier occurs when the listener's mind goes on a joy ride during the act of listening. The listener becomes busy thinking on something else and loses his concentration towards the speaker's message.
2. Being self-centered: People like to be heard and dislike listening. They wish other to listen to what they speak, but do not wish to listen to what others want to say. They listen only selective message that is only that part of the message which interests them and ignore the rest of the message.
3. Lack of interest in the subject:This also causes a barrier in listening. Sometimes people act as poor listeners and show their rejection to the speaker as well as the subject. But such attitude represents the listener's narrow mindedness. It is said that mostly uninteresting speakers communicate vital information whereas interesting speakers communicate very little information.

4. Tendency to criticize: Some people have the habit of criticizing the speaker with respect to his appearance, subject knowledge, paralanguage or style of communicating. No speaker should be evaluated on his style on communicating as there are such speakers who no matter may not well with presentation skills but they might be having good message to the listeners which would prove beneficial.
5. Planning a reply: Most of the listeners become busy involved in planning a reply to the speaker's message. During this process the listener's mind gets engaged in preparing a reply in the form of question or argument and thus misses the speaker's rest of the speech.

Concentrating on the barriers to effective listening, one should take efforts to identify with which of the above mentioned barriers they suffer from. Efforts should be taken to identify the barriers and try to cultivate good listening habits. In order to develop good skills the listener should concentrate on the following guidelines for effective listening which acts as a profile for an effective listener.

## 6. STRATEGIES FOR EFFECTIVE LISTENING

1. Put the speaker at ease: A speaker's responsibility is to transmit his message effectively. Similarly it the responsibility of the listener to listen to speaker's words by creating a positive atmosphere while listening. This can be done through listener's nonverbal communication. The listener's body language should depict that you are really interested in the speaker's message. Effective body language can be through keeping eye contact, showing your agreement to speaker's message by nodding your head, etc.
2. Have patience: Every speaker needs some time to get acquainted with his/her listeners. Allow the speaker to speak by listening and paying attention to his/her message. Interrupting or distracting the speaker makes him/her feel nervous and feels that you are not interested in the message.
3. Present yourself that you are listening: A speaker should be convinced that he is being listened to. This can be done through the use on non-committal expressions that is the use of the expressions- "I see," "oh,"; by nodding the head: appropriate facial expressions; making eye contact.
4. Avoid distractions: While the speaker is speaking-
   a. Do not interrupt while he is communicating his message.
   b. Do not ask question during his speech.
   c. Do not criticize with respect to his message.
5. Keep an open mind: Do not come to any conclusions or judgment until and unless the speaker completes his speaking. Proper conclusion can be made only when you listen carefully the speaker's message, understand his point of view and then only you can come up to a proper evaluation of the speaker's message.

Thus keeping in mind the above mentioned guidelines for effective listening, one has to cultivate good listening habits which would help them to maintain good interpersonal relations.

## 7. CONCLUSION

Listening should not be taken for granted. Serious efforts should be made to develop this sensitive skill which will definitely help one to enrich his/her personality. It is a skill which we use throughout our life for various purposes. Listeners should be aware of their roles and follow the profile of an effective listener. There is an intense need to improve the listening skills through conscious efforts.

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# A REVIEW ON THE ROLE OF MOBILE BANKING IN SELECTED AREAS OF KARAD

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**ABSTRACT**

*The mobile banking is a provision of banking services to customers on their mobile devices. Mobile phones and handheld devices should have been firmly established as an alternative form of payment in most technologically advanced societies. Mobile banking allows customers to conduct financial transactions on a secure mobile app operated by their retail or virtual bank. Mobile banking solutions have many features and capabilities. The Key intention of the study is to evaluate those factors that manipulate the nature of the customers towards mobile banking and on growing tendency towards the online financial institutions. This paper focuses on problems and study and solutions to banking industry to get a benefit from rural areas bank customers to explore banking industry. It provides recommendation for better role of Mobile Banking in rural area customers.*

**KEYWORDS**
mobile banking, mobile app, rural area virtual bank.

## I. INTRODUCTION

Today we are in the era of globalization. Multinational organizations worldwide have adopted globalization as their first strategic choice. Advancement in technology has facilitated globalization too. The world has literally shrunk become a "global village". Internet banking arrived in India in the late 1990s. ICICI was the first bank to champion its usage and introduced internet banking to its customers in 1996. With lower internet costs and increased awareness about electronic media, online banking established itself only in 1999. Other banks followed suit, including HDFC, Citibank, IndusInd and the now redundant Times Bank. Internet banking changed both the banking industry as well as banks' services to its customers. 'Anywhere banking' came to be recognized as an opportunity also for differentiated and competitive services. E-Banking in remote rural areas of India is encouraging. It will become one of the most convenient ways of delivering financial services in the future. Over the last few years online banks have started to become more and more popular. There are plenty of reasons for this but there are still quite a few people who are not sure if an online account is a good idea for them.

In short, the objective of this study is to examine the illiteracy and concerns of rural areas bank customer to use mobile banking. The model is proposed here to create customers' awareness, perception, and the level of satisfaction with regard to mobile banking system. It leads to a solution for banking industry as well as rural areas bank customers in many perspectives.

Generally internet mobile is widely used in urbanized area. But in case of rural region mobile banking is not used or it is used in very low scale. The rural area bank customers are not using net banking facility due to some reasons which are mentioned further ahead.

## II. RELATED WORK

1. "Obstacles Towards Adoption of Mobile Banking in Tanzania: A Review ", Joel D.Rumanyika [1],Work focuses on the obstacles towards the adoption of m-banking in Tanzania It has been observed poor network coverage, lack of knowledge of mobile banking users , lack of enough floats, ATMs breakdown and theft, poor security of mobile network are critical obstacles towards the adoption of mobile banking in Tanzania.
2. "A Study on Customer Perception towards mobile banking in Indian overseas bank", Palani A; Yashodha, P [2] The study revealed that education, gender, income plays an important role in the usage of mobile banking. Inhibitory factors like trust, gender, culture, religion, security and price has an impact on customer mindset towards mobile banking to a little extent.
3. "Acceptance of E-banking among adult customers: an empirical investigation in India", Dixit Neha, Dr Saroj Datta [3] The research paper has tried to examine the factors affecting the acceptance of e-banking services among adult customers. The findings show that security, privacy, trust, innovativeness, familiarity etc could increase the acceptance of E-banking service among customers.
4. "A survey of critical success factors in e-Banking: an organisational perspective", Shah Hussain Mahmood, Braganza Ashley and Morabito Vincenzo [4] The research showed that organisations need to manage their Ebanking initiative at a strategic level and treat it as business critical rather than simply a technical or operational issue. They need to pay attention to internal integration, which includes channels, technology and business process integration, and improving the overall services to their customers.
5. "Microfinance interventions and customer perceptions: a study of rural poor in Punjab" Meenu, Arora Sangeeta [5] This paper is an empirical study carried out in the rural areas of Punjab to find out how far the micro financing services have been successful to meet the financial needs of the rural poor and its impact on the ultimate borrowers
6. "Bank on Rural India- way to economic development", NSN Reddy, Chief Manager, Andhra Bank HO, Hyderabad [6] With various data base on Indian GDP sectoral contribution, rural income patterns etc, the author has emphasized that India's growth is driven by its service sector and economic development so far has been limited only to urban population and yet to penetrate the rural areas. Studying the income, expenditure, literacy rates and various other factors, the author has supported his views saying that the banking I rural area needs a relook as their needs are beyond traditional products.
7. "A Study on the Banking Habits of People in Rural area of India ",J Mujhesh, Dr Raman G.P Rajasthan [7] This study was undertaken to find out the level of awareness and to identify the problems prevailing in the banking services among the customers in rural areas. A thorough study of the profile of the customers and the banking environment of Thiruvalluvar Dist of Tamil Nadu was studied. Various factors motivating the use of banking services were analysed. The study revealed that though many of the customers use ATMs frequently, there are many customers who lack awareness in terms of agency services, investment advice, mutual funds, demat etc. the poor usage of banking services is attributed to lack of awareness on modus operandi of the services. Poor availability, accessibility of products and services, myth of cost and safety issues and low level of interest towards financial products are few other reasons.
8. "Structural Modeling and Mapping of M-Banking Influncers in India", S. P. Ketkar, Ravi Shankar ,D. K. Banwet [8]In this study, positive and negative influencers were identified from literature survey and expert opinion was used to define contextual relationships between each pair of drivers and between every pair of barriers. ISM framework was then applied to generate two independent hierarchies of drivers and barriers. 'Model of drivers' put performance factors like 'facility for quick updates' along with 'time and cost savings' at the bottom of hierarchy and 'consumer trust', 'government policy' and 'marketing' in the strategic levels at the top. Barriers' model on the other hand, marked 'need for banking', 'reliability of telecom network' and 'interoperability' as factors with high driving powers and categorized 'conservative regulation' and 'business model issues' as most dependent hurdles.
9. "Extending the Technology Acceptance Model to Mobile Banking Adoption in Rural Zimbabwe", Shallone K. Chitungo , Simon Munongo [9] this research has provided valuable knowledge and information to banks, MNOs, service developers, and software engineers to enhance consumers‟ intention to use mobile banking services in future. Mobile banking is indeed a very powerful tool to deliver the much needed financial services to the unbanked masses in the rural areas as service providers can leverage on the high mobile penetration in the rural communities for rapid financial inclusion of the unbanked Zimbabwean rural communities.

10. "The Role of Rural Banks in Providing Mobile Money Services to Rural Poor Communities: An effective integration approach of Rural Banks and existing mobile communications infrastructure", Quist-Aphetsi Kester[10] works will be based on how detailed implementation of the project can be done at the rural bank level for transactions to be done via an SMS gateway. This will help the banks to provide an avenue for the rural folks do business using money from their accounts at the rural banks at anytime. International and national transfer of money can easily take place for any form of mobile money transaction services. Payment can be done effectively using mobile money and withdrawals can be done from banks and any mobile money agent.
11. "Technology Adoption and the Banking Agency in Rural Kenya", Nganga, Stephen Irura, Mwachofi, Magdalene Munjiru[11] Despite introduction to mobile banking such as Mpesa and agency banking, most Kenyans in rural areas find full technology adoption anathema. Despite the wide array of mobile and agency banking services available, the main services offered are cash deposits and withdrawals. The main challenges to adoption of mobile and agency banking technology in Karatina and Likuyani are cost related, compatibility, lack of institutional pressure, competition between adopters, culture related, inadequate resource, inadequate relevant training, skills, knowledge and attitudinal which are categorized as internal and external factors to the SME. To facilitate and improve mobile and agency banking technology adoption in rural Kenya and other developing countries,
12. "A Study of Adoption Behaviour of Mobile Banking Services by Indian Consumers", Nitin Nayak, Vikas Nath, Nancy Goel [12] In the backdrop of above reviewed literature, it can be seen that the adoption of mobile banking services in India is just 2%. So it becomes important for the service providers to increase the rate of adoption of mobile banking users. The above review shows that to fulfil the expectations of the consumers and to increase the mobile banking users, mobile banking service provider needs to increase the awareness about the mobile banking services. Banks and the mobile service providers need to come together to bring a revolution in the field of mobile banking.
13. "Mobile Banking in India-Issues & Challenges", V. Devadevan[13] Based on the online survey, it is found that most of the respondents are using online banking facility from their respective banks. However around 25% of customers are using mobile banking and remaining 75% are not. The majority of the online banking users are comfortable without using the mobile banking facility and they are also interested to test the facility. It is depicted from the study that the evolution of different technology in communication system and mobile device is a major challenge to frequently change the mobile banking solutions. Few banks are offering mobile banking in the form of SMS banking
14. "Problems and Prospects of Mobile Banking in Bangaladesh", S.M. Sohel Ahmed, Shah Johir Rayhan, Md. Ariful Islam, Samina Mahjabin, [14]The purpose of study is Identify prospect of mobile banking in Bangladesh, Detect problems of mobile banking in Bangladesh, Make suggestions on the basis of findings
15. "Exploring Branchless Banking Alternatives in Rural Areas as a Part of Financial Inclusion", Krishna Kishore S.V., Dr. Aloysius Sequeira[15] From the above literature, we can understand that there are opportunities and barriers to implement mobile banking service but the key lies in perfectly understanding of how the factors behave in relation with adopting of mobile banking services. Despite large presence of self-service technologies there has been a lack of research on consumer attitudes and adoption of SSTs

## III. CONCLUSION

Many researcher find out that poor network coverage, lack of knowledge of mobile banking users, theft, poor security of mobile network, price, privacy are critical obstacles towards the adoption of mobile banking. Some of the researcher finds that there are many customers who lack awareness in terms of agency services, investment advice, mutual funds, demat etc. We can understand that there are opportunities and barriers to implement mobile banking service but there is need to research on consumer attitudes and adoption of mobile banking.

It is observed that to increase the rate of adoption of mobile banking users. The service providers should fulfil the expectations of the consumers and to increase the mobile banking users, mobile banking service provider needs to increase the awareness about the mobile banking services. Banks and the mobile service providers need to come together to bring a revolution in the field of mobile banking.

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# CHALLENGES IN WIRELESS NETWORK

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**ABSTRACT**

*Today's world is an electronic or digital world and Wireless technology play an important role in digital world .It reduces the human efforts for accessing data at various locations by replacing wired devices with wireless devices and also providing access to devices having mobility. Since wireless devices need to be small and bandwidth constrained, some of the challenges in wireless networks are mobility, data rate , Power management, security and Quality of service.*

**KEYWORDS**

Wireless Local Area Networks (WLANs), IEEE 802.11, Wireless Personal Area Networks (WPAN), Wireless Wide Area Networks (WWAN).

## 1. INTRODUCTION

Wireless networks take the rapid growth of the internet within the few years**.** It is the transport mechanism between devices and the traditional wired networks. Wireless networks are categorized into three groups based on their coverage range:

1. Wireless Wide Area Networks (WWAN) such as 2G cellular, Global system for mobile communication(GSM) etc,
2. Wireless local area networks (WLAN) such as IEEE 802.11, HiperLAN etc.
3. Wireless Personal Area Networks (WPAN) such as Bluetooth, InfraRed (IR) etc.

All of these technologies are "Wireless"—they receive information and transmit information using electromagnetic waves. Wireless technologies use wavelengths ranging from the radio frequency (RF) band up to and above the IR band. The frequencies in the RF band cover a significant portion of the EM radiation spectrum, extending from 9 KHz, the lowest allocated wireless communications frequency, to thousands of GHz.

Wireless communication continuous to enjoy growth in the cellular telephony, wireless internet. Now these devices allowed users access to stored data even when they travel. Users can carry their laptops anywhere and they can access all networking resources anywhere & anytime& this is the main aim of wireless networks. Currently, wireless access points give larger security than the early wired internet connections. As more wireless technology is wireless technology, this will be a good stepping-stone for providing a good secure solution to any wireless solution.

## 2. WIRELESS STANDARDS

Wireless technologies confirm to a variety of standards and offer varying levels of security features. The wireless standard follows the IEEE 802.11 standards and Ad hoc networks (Bluetooth), which was developed by a consortium of commercial companies making up the Bluetooth Special Interest Group (SIG). These standards are:

**1. IEEE 802.11**

IEEE 802.11 is a basic standard for Wireless Local Area Network (WLAN) communication. IEEE 802.11 standard was first introduced in 1997. It was envisioned for home and office environments for wireless local area connectivity and supports three types of transmission technologies namely

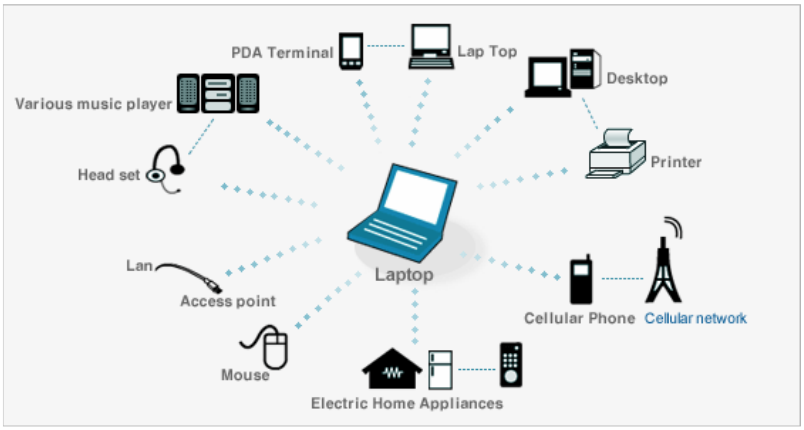
i) Infrared (IR)
ii) Frequency Hopping Spread Spectrum (FHSS)
iii) Direct Sequence Spread Spectrum (DSSS).

802.11 is the original WLAN standard, designed for 1 Mbps to 2 Mbps wireless transmissions. In 1999 two other transmission technologies were included Orthogonal Frequency Division Multiplexing (OFDM) and High Rate Direct Sequence Spread Spectrum (HR-DSSS). The second OFDM modulation scheme was introduced in 2001 for high data rates.

**2. AD HOC NETWORKS**

Ad hoc networks such as Bluetooth are networks designed to dynamically connect remote devices such as cell phones, laptops. These networks are termed "ad hoc" because of their shifting network topologies. Whereas WLANs use a fixed network infrastructure, ad hoc networks maintain random network configurations, relying on a master-slave system connected by wireless links to enable devices to communicate. In a Bluetooth network, the master of the piconet controls the changing network topologies of these networks. It also controls the flow of data between devices that are capable of supporting direct links to each other. As devices move about in an unpredictable fashion, these networks must be reconfigured on the fly to handle the dynamic topology. The routing that protocol Bluetooth employs allows the master to establish and maintain these shifting networks.

**FIG. 1: AD HOC WIRELESS NETWORK**




## 3. CHALLENGES OF WIRELESS NETWORK

Wireless devices need to be small and wireless networks are bandwidth limited, some of the key challenges in wireless networks are data rate, power Management, Security, Mobility ,Quality of Service (QoS) and Health Concern.

**A. DATA RATE**

Improving the current data rates to support future high speed applications is essential, especially, if multimedia service are to be provided. Data rate is a function of various factors such as the data compression algorithm, interference mitigation through error-resilient coding, power control, and the data transfer protocol. Therefore, it is imperative that manufacturers implement a well thought out design that considers these factors in order to achieve higher data rates. Data compression plays a major role when multimedia applications are to be supported by a wireless network. Currently, compression standards such as MPEG-4 produce compression ratios of the order of 75 to 100. The challenge now is to improve these data compression algorithms to produce high quality audio and video even at these compression rates. A way to enhance the data rates would be to employ intelligent data transfer protocols that adapt to the time-varying network and traffic characteristics.

**B. POWER MANAGEMENT**

A mobile device is small in size and use to perform a certain set of functions; its power source may not be able to deliver power as much as the one installed in a fixed device. When a device is allowed to move freely, it would generally be hard to receive a continuous supply of power. To conserve energy, a mobile device should be able to operate in an effective and efficient manner. It should be able to transmit and receive in an intelligent manner so as to minimize the number of transmissions and receptions for certain communication operations.

**C. SECURITY**

Security is a big concern in wireless networking, especially in M-Commerce and E-Commerce applications. Current wireless networks contain authentication and data encryption techniques on the air interface to provide security to its users. The IEEE 801.11 standard describes wired equivalent privacy (WEP) that defines a method to authenticate users and encrypt data between the PC card and the wireless LAN access point. In large Business enterprises, an IP network level security solution could ensure that the corporate network and proprietary data are safe. Virtual private network (VPN) is an option to make access to fixed access networks reliable. Since hackers are getting smarter, it is imperative that wireless security features must be updated constantly.

**D. MOBILITY**

One of the primary advantages of wireless terminals is freedom of mobility. Therefore, system designs must accommodate handoff between transmission, boundaries and route traffic to mobile users. All devices in a wireless network are free to move. To support mobility, an ongoing connection should be kept alive as a user roams around. A mobile host moves from the coverage of a base station to that of another one. In an ad hoc network, the topology changes when a mobile host moves, means an ongoing data communication, the transmission route may need to be recomputed to, provide for the topological changes. Since an ad hoc network may consist of a large number of mobile hosts, this imposes a significant challenge on the design of an effective and efficient routing protocol that can work well in an environment with frequent topological changes.

**E. QUALITY OF SERVICE (QoS)**

Quality of Service is a measure of network performance that reflects the network's transmission quality and service availability. For each flow of network traffic, QoS can be characterized by four parameters: Reliability, Delay, Jitter, and Bandwidth.

There are several important and it arise because of wireless networks are inherently different from wireline networks. The characteristics of Wireless network include handoff, dynamic connections, and actuating transport QoS. In a wireline environment, the application layer can normally be assured that once a connection is established it will continue to exist until it is closed whereas, in a wireless environment, connections may temporarily break during a process termed handoff. It is unlikely that handoff can take place without at least a short connection interruption. Some applications may request a low interruption frequency so that the QoS perceived by the user remains satisfactory.

For example, an application may wish to guarantee that a voice connection will not be broken more than once per minute. A low interruption frequency implies that handoffs do not occur too often. It may be more desirable to have infrequent long breaks in a video connection, rather than frequent smaller breaks.

**F. HEALTH CONCERN**

The increasing popularity of wireless networks has raised a lot of concern regarding their impact on human health. The transmission power of cellular phone is typically higher than that of wireless system such as WLANs and PANs. A cellular phone is operated at close proximity to the human brain. When used for voice calls they emit radiation for entire duration of the call. A lot of time will have to pass before we possess such knowledge on health concerns regarding wireless network. Networks should be designed to minimize the power transmitted by network devices. For infrared (IR) WLAN systems, optical transmitters must be designed to prevent vision impairment.

## 4. CONCLUSION

In this paper describes the various challenges available in the wireless Network. We first presented an overview groups wireless network based on coverage range. Then We presented an overview of a challenges of the wireless network like Data rates, mobility, power management, security and the quality of service and health Concern of wireless networks .The popularity of wireless networks growing at a exponential rate, the data rate enhancements, minimizing size, cost, low power networking, user security and the best requirement to obtain the required QoS problems becomes more challenging. Wireless networks are rapidly becoming popular, and user demand for useful wireless applications is increasing.

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# RURAL INVESTORS' PERCEPTION TOWARDS MUTUAL FUND DISTRIBUTION

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**ABSTRACT**

*Mutual fund industry has become the primary source of economic growth. But the industry still lacks growth far behind in terms of total assets with respect to other developed nations. One of the main reasons for lack of growth is that its failure to tap the semi-urban and rural areas. The Mutual fund industry in India is slowly shifting from top 15 cities to beyond top 15 locations to expand their market base and to tap the untapped B15 potential market avenues (Indian mutual fund industry: Challenging the status quo, setting the growth path, CII (Confederation of Indian Industry) and PwC (PricewaterhouseCoopers), Mutual fund Summit, 2013). Various modes of distribution channels were followed by the investment advisory firms to penetrate into semi-urban and rural areas. This study determines the perception of rural investors (from B15 locations) towards the various mutual fund distribution channels adopted by the investment advisory firms. This study recommends the mutual fund agencies to reach the prospective investors in rural areas of Madurai city through modern forms of electronic communication (mobiles) and expand their distribution network through banking technologies, India post office and Fair price shops in order to make the campaign more personalized and reach the targeted in the untapped rural market.*

**KEYWORDS**
investor, investment advisory firm, mutual funds.

## INTRODUCTION

The mutual fund is a type of professionally-managed collective investment scheme which pools money from many investors. The profit gained from investments is shared to unit holders in proportion to the number of units owned by them. Thus, a Mutual Fund is the most suitable investment for the common man as it offers an opportunity to invest in a diversified, professionally managed basket of securities at a relatively low cost. The story of mutual fund industry in India started in 1963 with the formation of Unit Trust of India at the initiative of the Government of India and Reserve Bank. The launching of innovative schemes in India has been rather slow due to prevailing investment psychology and infrastructural inadequacies. Mutual funds have evolved over the years keeping in view the changes in the economic and financial systems, as well as the legal environment of the country. According to the requirements and changes in the investors' perceptions and expectations, new products are launched. Past studies revealed that mutual fund in India is growing but the industry is still struggling to win the investors' confidence and to reach the beyond top 15 cities in India. One of the main reasons for lack of growth is that the lack of investors' confidence especially from the semi-urban and rural areas. The Mutual fund industry in India is slowly shifting from top 15 cities to beyond top 15 locations to expand their market base and to tap the untapped B15 potential market avenues (Indian mutual fund industry: Challenging the status quo, setting the growth path, CII and PwC, Mutual fund Summit, 2013). Various strategies were devised by the AMFI (Association of Mutual funds of India), SEBI (Securities and Exchange Board of India) & investment advisory firms to penetrate into semi-urban and rural areas. This study determines the investors' perception towards the various distribution channels of investment advisory firms.

Marketing is very important issue now a days and service marketing is accepted and necessary for all the service industry participants. Mutual funds are not away from this truth. Mutual Fund Marketing is different from marketing of other goods because the past performance of the Mutual fund and general expectations can be told, no performance guarantee can be given in case of Mutual fund. According to Trivedi Akhil various channels adopted by Mutual Funds can be divided into three main headings:

**1. DIRECT MARKETING:** This constitutes 20 percent of the total sales of mutual funds. Some of the important tools used in this type of selling are: Personal Selling, Telemarketing, Direct mail, Advertisements in newspapers and magazines & Hoardings and Banners

**2. SELLING THROUGH INTERMEDIARIES**: Intermediaries contribute towards 80% of the total sales of mutual funds. These are the distributors who are in direct touch with the investors. They perform an important role in attracting new customers. Most of these intermediaries are also involved in selling shares and other investment instruments. They do a commendable job in convincing investors to invest in mutual funds. A lot depends on the after sale services offered by the intermediary to the customer.

**3. JOINT CALLS**: This is generally done when the prospect seems to be a high net worth (HNI) investor. The agent (who is located close to the HNIs residence or area of operation) visits the prospect and briefs him about the fund. The conversion rate is very high in this situation, generally, around 60%. Both the fund and the agent provide even after sale services in this particular case. 'Meetings with HNI' is a special feature of all the funds. Whenever a top official visits a particular branch office, he devotes at least one to two hours in meeting with the HNIs of that particular area. This generally develops a faith among the HNIs towards the fund.

## REVIEW OF LITERATURE

**Ippolito (1989)** stated that investor is ready to invest in those fund or schemes which have resulted good rewards and most investors' is attracted by those funds or schemes that are performing better over the worst. **Rajeswari and Ramamoorthy (2001)** have conducted a study to understand the factors influencing the fund selection behaviour of 350 MF (Mutual fund) investors in order to provide some meaningful inferences for Asset Management Companies (AMC) to innovatively design the products. **Sankaran (2004)** proposed the future direction for investors to invest in pension funds, as government is envisaging a policy to cover all kinds of investors. He further opined that MF industry will continue to grow in spite of competition and will be propelled in the right direction because of the investor friendly financial markets. **H. Desigan et al. (2006)** conducted a study on women investor's perception towards investment and found that women investor's basically are indecisive in investing in MF's due to various reasons like lack of knowledge about the investment protection and their various investment procedures, market fluctuations, various risks associated with investment, assessment of investment and redressal of grievances regarding their various investment related problems. **K. Lashmana Rao (2011)** made analysis of perception of Investor towards mutual fund schemes, he made conclusion SEBI, AMFI, and IRDA (Insurance Regulatory Authority of India) should take appropriate steps to enhance Investors knowledge for making more prudent decisions.

## NEED FOR THE STUDY

In order to expand the market base of the mutual fund industry, appropriate distribution network need to be devised. Though the industry is widespread, still as per ICI (Investment Institute Company) Fact book 2013, AUM (Asset Under Management) to GDP (Gross Domestic Product) ratio of our country stands at 7% only compared to a global average of 37%. Thus there is a need to determine the investors' perception towards the present distribution channels in order to redesign the same. Although many studies were conducted in mutual fund awareness, performance evaluation and preference towards various schemes, no study exists in finding out the perception of investors towards the distribution channels especially in the rural and semi-urban areas, which is called as B15 (Beyond top 15 cities in India) and requires mutual fund penetration.

## STATEMENT OF THE PROBLEM

As per the CII – PwC report on "Indian Mutual Fund industry, 2013", increasing mutual fund penetration will largely depend on increasing investor awareness at grass-roots level. However, AUMs have so far been largely concentrated in the top 15 cities in the country, with smaller cities and rural areas having minimal contribution to the industry. The Mutual fund industry in India is slowly shifting from T15 (Top 15 cities) to B15 (beyond top 15 cities) locations to expand their market base and to tap the untapped B15 potential market avenues (Indian mutual fund industry: Challenging the status quo, setting the growth path, CII and PwC, Mutual fund Summit, 2013). Thus the present study is an attempt to determine the perception of investors towards the existing distribution channels of the investment advisory firms.

## OBJECTIVES OF THE STUDY

In light of this background this study tries to achieve the following objectives:

1. To identify the existing distribution channels followed by the investment advisory firms in the semi-urban and rural areas of Madurai city.
2. To analyze rural investors' perception towards the various distribution channels
3. To offer valuable suggestions to the investment advisory firms, regulatory authorities & the government to redesign the distribution network and to penetrate the untapped semi-urban and rural areas

## SCOPE OF THE STUDY

The study assessed the perception of investors in the three rural areas around Madurai city (Chellampatti, Karumathur & Pappapatti) towards the three distribution channels viz. direct selling, selling through intermediaries & joint calls of mutual fund investment firms. Madurai is one of the B15 cities in India. So the study chose Madurai as the area of study. The study was conducted for a period of three months from June – August 2015.

## HYPOTHESES TESTED

Based on the above objectives, the following hypotheses were framed and tested using appropriate statistical tools in this study:

(i) There is no significant relationship between the demographic variables and the perception of rural investors towards direct selling channel of mutual fund investment firms

(ii) There is no significant association between the gender of the respondents with investors' perception towards selling through intermediaries

## RESEARCH METHODOLOGY

The study adopted both primary as well as secondary data. The primary data was collected through questionnaire, which consisted of two parts. Part one pertains to the general information about the respondents seeking their demographic characteristics and part two attempted to draw responses on the perception of rural investors towards the various marketing strategies. A pilot study was conducted among 25 respondents. The researcher also circulated the questionnaire among various industry experts and academicians. The comments and suggestions received were incorporated into the questionnaire and refined.

The list of investors from the three rural areas was obtained from the financial intermediaries, those who were ready to share the investor database. A sample of 200 was selected through simple random sampling adopting lottery technique. Secondary data was obtained from the official websites of AMFI & SEBI. Appropriate statistical tools like percentage analysis, chi-square analysis and Analysis of Variance (ANOVA) were applied to analyse the collected data.

## RESULTS & DISCUSSION

**TABLE 1: DEMOGRAPHIC CLASSIFICATION OF RESPONDENTS**

| Demographic variables | Classification | | | | | |
|---|---|---|---|---|---|---|
| Gender | Male | | | Female | | |
| | 147 (73.5%) | | | 53 (26.5%) | | |
| Age (in years) | Less than 25 | 25 – 35 | 35 – 45 | 45 – 55 | Above 55 | |
| | 8 (4%) | 38 (19%) | 82 (41%) | 22 (11%) | 50 (25%) | |
| Marital status | Married | Unmarried | Divorced | | Widowed | |
| | 58 (29%) | 48 (24%) | 8 (4%) | | 86 (43%) | |
| Education | Schooling | Under graduation | Post graduation | Professional | others | |
| | 84 (42%) | 63 (31.5%) | 22 (11%) | 11 (5.5%) | 20 (10%) | |
| Employment status | Salaried | Business | Professional | Agriculturist | Retired | Unemployed |
| | 62 (31%) | 23 (11.5%) | 4 (2%) | 85 (42.5%) | 3 (1.5%) | 23 (11.5%) |
| Monthly income (in Rs.) | Below 10000 | 10000 – 20000 | 20000 – 30000 | 30000 – 40000 | Above 40000 | |
| | 93 (46.5%) | 67 (33.5%) | 22 (11%) | 12 (6%) | 6 (3%) | |

Source: Primary data

Table 1 depicts that majority of the respondents were male (73.5%). Most of the respondents belong to the category of 35 to 45 years, 86% of the respondents were widowed, and majority (84%) come under schooling category. 85% of the respondents were agriculturists and 93% receive monthly income less than Rs.10000.

**TABLE 2: INVESTORS' PERCEPTION TOWARDS DISTRIBUTION CHANNELS**

| Distribution channel | Poor | Bad | Fair | Good | Excellent |
|---|---|---|---|---|---|
| Direct selling | 96 (48%) | 12 (6%) | 8 (4%) | 52 (26%) | 32 (16%) |
| Selling through intermediaries | 38 (19%) | 18 (9%) | 1 (0.5%) | 44 (22%) | 99 (49.5%) |
| Joint calls | 99 (49.5%) | 72 (36%) | 4 (2%) | 12 (6%) | 13 (6.5%) |

Source: Primary data

**TABLE 3: CROSS TABULATION BETWEEN GENDER AND INVESTORS' PERCEPTION TOWARDS DIRECT SELLING STRATEGY**

| Gender | Direct selling | | | | | Total |
|---|---|---|---|---|---|---|
| | Poor | Bad | Good | Fair | Excellent | |
| Male | 65 | 11 | 8 | 33 | 30 | 147 |
| Female | 31 | 1 | 0 | 19 | 2 | 53 |
| Total | 96 | 12 | 8 | 52 | 32 | 200 |

Source: Primary data

The table above shows that among 147 male respondents, 65 perceived direct selling strategies to be poor, 33 as fair, 30 as excellent, 11 as bad and only 8 as good. It could also be inferred that among 53 female respondents, 31 perceived it as poor, 19 as fair, 2 as excellent and 1 as bad.

**INVESTORS' PERCEPTION TOWARDS DIRECT SELLING**

In order to examine the formulated null hypothesis, chi-square test was employed. The computed results are given in Table 4.

Hypothesis 1: There is no significant relationship between the demographic profile of the respondents and their perception towards direct selling

**TABLE 4: CHI-SQUARE TEST BETWEEN GENDER AND INVESTORS' PERCEPTION TOWARDS DIRECT SELLING**

| Demographic factors | *d.f* | *Chi-square value* | *P value* | *Inference (5% significance level)* |
|---|---|---|---|---|
| Gender | 4 | 6.668 | 0.155 | Insignificant |
| Age | 16 | 47.388 | 0.000 | Significant |
| Marital status | 12 | 48.073 | 0.000 | Significant |
| Education | 16 | 77.307 | 0.000 | Significant |
| Employment status | 20 | 100.942 | 0.000 | Significant |
| Monthly income | 16 | 41.252 | 0.001 | Significant |

It could be inferred from the table 4 from above that other than gender, all the other demographic variables have insignificant relationship with investors' perception towards direct selling channel of mutual fund investment firms.

**ANALYSIS OF VARIANCE (ANOVA)**

Analysis of Variance is conducted to understand whether the differences are significant or not with respect to the demographic variable gender with their perception towards selling through intermediaries.

Hypothesis 2: The perception of investors towards selling through intermediaries does not vary with gender

**TABLE 5: ONE WAY ANOVA BETWEEN GENDER OF THE RESPONDENTS AND INVESTORS' PERCEPTION TOWARDS SELLING THROUGH INTERMEDIARIES**

| | Source of variation | Sum of Squares | df | Mean Square | F | Sig |
|---|---|---|---|---|---|---|
| I hold good perception towards selling of mutual funds through intermediaries | Between groups | 0.867 | 4 | 217 | 1.359 | 0.248 |
| | Within groups | 59.173 | 371 | 159 | | |
| | Total | 60.040 | 375 | | | |

It is obvious from the table above that there is no significant difference (sig = 0.248) in perception of respondents towards selling through intermediaries among different gender of the respondents at 5% level. This finding indicates that the perception among the rural investors towards selling through intermediaries do not vary with their gender at 5%.

## FINDINGS OF THE STUDY

The study is conducted to analyze the perception of investors towards the three distribution channel viz. direct selling, selling through intermediaries & joint calls. It is found that most of the rural investors perceive selling through intermediaries as excellent. The study also found that other than gender, all the other demographic variables have insignificant relationship with investors' perception towards direct selling channel of mutual fund investment firms. From ANOVA, the present study determined that rural investors' perception towards selling through intermediaries not varies between different genders of the respondents.

## RECOMMENDATIONS

On the basis of the findings of the study, the following recommendations are put forth to the investment advisory firms, regulatory authorities & the government:

1. Since the investors hold very poor perception towards the direct selling channel of the investment advisory firms, measures need to be taken to redesign the same. At present the mutual fund companies those sell through online and through their company personnel, may have to think of rebuilding a new team of personnel trained with suitable selling techniques
2. Although selling through intermediaries is found to have welcomed by the investors, there are chance for misguiding the investors by those intermediaries, who work for incentives. In order to build investor confidence in the semi-urban and rural areas, the regulatory authorities AMFI & SEBI, need to tighten rules of the code of conduct of the brokers, agents and other intermediaries. This may protect investors misguided by intermediaries interested in pure incentives
3. Appropriate education programmes need to be organized by the regulatory authorities and investment advisory firms, in the reachable areas for the rural investors, to create awareness towards mutual funds and to boost up their confidence and morale. The education programmes so organized need to be conducted with good attendance. The attendance for the programmes can be achieved through proper advance communication and interest kindling among the rural investors
4. The government and the regulatory authorities need to rethink and redesign the existing distribution network, by including new forms of electronic communication i.e. mobiles, selling through India post offices, nationalized banks & fair price shops. Since these mode have greatest reach in the semi-urban and rural areas, and also the rural people have higher confidence in the words of the post office, banks and fair price shops, these channels can be used for selling mutual funds

## CONCLUSION

The present study is an attempt to determine the perception of rural investors towards the various distribution channels at present followed by the mutual fund investment firms. Mutual funds are a greatest source of economic development by way of channelizing the savings of numerable investors towards productive investment avenues. If this industry is redesigned with newer and better modes of distribution channels, the industry can wear a new face among the public which paves way for the expansion of the industry in the rural segment.

## LIMITATIONS

The study is conducted among only three rural areas in Madurai. The results of the study are applicable only to B15 cities in India and cannot be generalized to T15 cities. The researcher found difficult to collect rural investor database from the financial intermediaries, since many were not willing to supply the same for the research purpose.

## DIRECTIONS FOR FURTHER RESEARCH

Further research can be conducted on the reach of mutual funds through new forms of electronic communication. It is also needed to undertake researches specifically focusing on the investor education programmes and its effectiveness to identify new ways of programme conduction. Researches may also be carried out on the ways of confidence building among the present and prospective investors.

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# IMPACT OF GENETIC ALGORITHM IN CODE COVERAGE FOR TEST SUIT BY JUNIT IN DYNAMIC CONVERSION

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**ABSTRACT**

*The aim of test coverage suit is to test data which is required for software testing to improving the quality of developed software automatically. Here the automatic testing is essentially needed because the manual operation of test data takes a lot of efforts. That's why automated test data generation is most essentially required. Therefore, to find the suitable optimization technique like Genetic Algorithm (GA) which can be resolved the problem of code coverage for test suit. The genetic algorithm (GA) is generating optimized test suit with the help of Junit tool in different mode of dynamic conversion in test cases. This experiment analyzes the impact of Genetic Algorithm presents how the optimization tool (Junit) generate the optimized test data and minimize the test coverage in dynamic conversion.*

**KEYWORDS**
genetic algorithm, software testing, code coverage, test suit, junit tool.

## I. INTRODUCTION

Software testing is a main method for improving the quality and increasing the reliability of software now and thereafter the long-term period future. It is a kind of complex, labor-intensive, and time consuming work; it accounts for approximately 50% of the cost of a software system development. Increasing the degree of automation and the efficiency of software testing certainly can reduce the cost of software design, decrease the time period of software development, and increase the quality of software significantly. Therefore, automatic generation of test data is one of the key research topics in software testing. Today, researchers as well as practitioners use more common methods such as notion to perform, random method and heuristic approaches for test data generation. These methods have some pitfalls in generating test data for larger and complicated programs. So other intelligence techniques have been used very much. The critical point of the problem involved in automation of software testing is of particular relevance of automated software test data generation. Test data generation in software testing is the process of identifying a set of program input data, which satisfies a given testing criterion. For solving this difficult problem, random, symbolic, and dynamic test data generation techniques have been used in the past Software testing is significant because failure in computer software may have severe aftermaths. Software testing is an investigation conducted to provide stakeholders with information about the quality of the product or software under test. Software testing can be stated as the process of validating and verifying that a computer program/application/product:

- meets the requirements that guided its design and development,
- works as expected,
- can be implemented with the same characteristics,
- and satisfies the needs of stakeholders.

Program testing and fault detection can be assisted significantly by testing tools. Testing tools can be put in two classes, static & dynamic.

Static testing involves verification. Static Analyzers probes programs thoroughly and automatically. These are employed on particular language, i.e., these are language dependent. Code Inspectors scrutinizes program to vouch that it hold on minimum quality criteria. Code Inspection activity is found in some COBOL tools (like AORIS librarian system).

Dynamic testing tools involve validation. These are performing analysis of programs on executing them. Coverage Analyzers finds degree of coverage. One of its e.g. Code Coverage tool. Code Coverage Tool is a well-known Eclipse plug-in, employed as white box coverage tool. This tool is very opposite to assure weather TS is giving full code coverage or not. Output Comparators checks weather anticipated and obtained outputs are same or not. JUnit is such a tool. JUnit Tool is Unit Testing framework for Java. It is applied for testing of single component, IT and ST.

**Features of Junit are**:

- test fixtures for sharing regular test data
- affirmations for testing expected results
- for running tests provides test runners

Static Analyzers and Code Inspectors are static testing tools while Coverage Analyzers and Output Comparators are dynamic testing tools.

## II. REQUIREMENT ANALYSIS FOR TEST DATA AUTOMATION

Software testing is a principal technique which is employed for bettering quality attributes of software under test, particularly reliability and correctness.Testing is defined as the process of executing a program with the intent of finding errors. Software should be predictable and consistent, offering no surprises to users. Thus, the problem of test data generation is treated entirely as an optimization problem. The Genetic Algorithms gives most improvements over random testing when these sub domains are small. Experiments show that Genetic Algorithms required less central processing unit (CPU) time in general reaching a global solution than random testing. There are two components to this objective. The first component is to prove that the requirements specification from which the software was designed is correct. The second component is to prove that the design and coding correctly respond to the requirements. Automatic generation of test data helps in reduction of execution time and discovering errors. Automating the process of test data generation reduces the cost in developing test cases.

## III. ANALYSIS ON PROBLEM STATEMENT

The furtherance of basic knowledge required to develop new techniques for automatic testing. The main objective is to automate generation of test suit (TS) for each module of SUT by applying GA that could give 100% code coverage.

The performance of Genetic Algorithms in automatically generating test data for small procedures will be assessed and analyzed. A library of Genetic Algorithms will be to apply to large systems. The efficiency of Genetic Algorithms in generating test data will be compared to random testing with regard to the number of test data sets generated and the CPU time required. Coverage analysis is a structural testing technique that helps eliminate gaps in a test suite. It helps most in the absence of a detailed, up-to-date requirements specification. Condition/decision coverage is the best general-purpose metric for C, C++, and Java. Setting an intermediate goal of 100% coverage (of any type) can impede testing productivity. Before releasing, strive for 80%-90% or more coverage of statements, branches, or conditions.

*Code coverage analysis* is the process of: Finding areas of a program not exercised by a set of test cases,

- Creating additional test cases to increase coverage
- Determining a quantitative measure of code coverage, which is an indirect measure of quality.

An optional aspect of code coverage analysis is:

- Identifying redundant test cases that do not increase coverage.

Test suite use coverage analysis to assure quality of your set of tests, not the quality of the actual product. You do not generally use a coverage analyzer when running your set of tests through your release candidate. Coverage analysis requires access to test program source code and often requires recompiling it with a special command. This paper discusses the details you should consider when planning to add coverage analysis to your test plan. Coverage analysis has certain strengths and weaknesses. You must choose from a range of measurement methods. You should establish a minimum percentage of coverage, to determine when to stop analyzing coverage. Coverage analysis is one of many testing techniques; you should not rely on it alone. Code coverage analysis is sometimes called *test coverage analysis*. The two terms are synonymous. The academic world more often uses the term "test coverage" while practitioners more often use "code coverage". Likewise, a coverage analyzer is sometimes called a *coverage monitor*.

## IV. APPROACH OF BASIS PATHS

Our intent is to optimize TS which could give 100 % code coverage. This optimization which is grounded on total code coverage needs that inner composition of program is well-known. Inner composition of program can be discovered by path testing in which a set of test-paths are selected in a program. The different independent paths in the program could be determined through control flow graph (CFG). An independent path is that path in CFG that has one novel set of processing statements or novel conditions. Test cases carrying the information of the path covered by them are grouped together to form initial population of chromosomes and GA is applied. In the end, TS is obtained for each module that gives hundred percent code coverage. The main objective is to develop a test system to exercise all the branches of the software under test. In order to generate the required test data for branch testing genetic algorithms and random testing are used. These two testing techniques will be compared by means of the percentage of coverage which each of them can achieve and by the number of test data.

## V. IMPACT OF GENETIC ALGORITHM

GA is an optimization and machine learning algorithm based loosely on the processes of biological evolution. John Holland created the GA field and it is the first major GA publication. GA provides a general-purpose search methodology, which uses the principles of natural evolution. Genetic algorithm as an effective global smart search method, reveals its own strength and efficiency to solve the large space, optimized for high complicated problems, and thus provides a new method to solve the problems of generating test data.

GA solves optimization problems by manipulating initial population (individual chromosomes sampled randomly). Each chromosome is evaluated based on a fitness function which is related to its success in solving a given problem. Given an initial population of chromosomes, GA proceeds by choosing chromosomes to serve as parents and then replacing members of the current population with new chromosomes that are (possibly modified) copies of the parents. The process of selection and population replacement goes on until a stopping criterion (achieving effective test data) has been met. Thus, GA has been successfully used to automate the generation of test data. GA begins with a set of initial population which is randomly sampled for a particular problem domain. Then GA is applied, by performing a set of operations iteratively to get a new and fitter generation.

Generating test data automatically reduces the time and effort of the tester. The two common operations that are performed to produce efficient solution for a target problem after selection operation are Crossover and Mutation. The main idea behind GA is to evolve a population of individuals (candidate solutions for the problem) through competition, mating and mutation, so that the average quality of the population is systematically increased in the direction of the solution of the problem at hand.

The most common operations of a Genetic Algorithm include:

*(a) Reproduction:* this operation assigns the reproduction probability to each individual based on the output of the fitness function. The individual with a higher ranking is given a greater probability for reproduction. As a result, the fitter individuals are allowed a better survival chance from generation to the next. The selection requires that the solution be evaluated for their fitness as parents: solution that is closer to an optimal solution is judged higher, or fit, than others. After solutions have been evaluated, several are selected in a manner that is biased towards the solutions with higher fitness values. The reason for the bias is that a good solution is assumed to be composed of good component (*genes*). Selecting such solutions as parents increases the chance that their offspring will inherit theses genes and will be at least as fit. Although the selection is biased towards the better solutions, the worst members of the population still have chance of being selected as parents- even a poor solution may have a few good genes that may benefit the population.

(b) *Crossover*: this operation is used to produce the descendants that make up the next generation. This operation involves the following procedures:

(i) select two individuals as a couple from the parent generation.

(ii) randomly select a position of the genes, corresponding to his couple, as a crossover point, thus each individual is divided into two parts.

(iii) exchange the first part of both genes corresponding to the couple.

(iv) add the two resulted individuals to the next generation.

(c) *Mutation*: this operation picks a gene at random and changing its state according to the mutation probability. The purpose of the mutation operation is to maintain the diversity in a generation to prevent premature convergence to local optimal solution. The mutation probability is given intuitively since there is no definite way to determine the mutation probability. Upon completion of the above procedures, a fitness function should be devised to determine which of these parents and offspring's can survive into the next generation. These operations are iterated until the goal is achieved.

## VI. METHODOLOGY OF PROPOSED SYSTEM

The concept of GA has been applied to the problem of automated test data generation process. Here the test data is referred to as population in GA. In initial population, each individual bit string (chromosome) is a test data. This set of chromosomes is used to generate test data for feasible basis paths.

The system for generating automated test data for feasible basis paths using GA has been coded in MATLAB. It randomly generates the initial population, evaluates the individual chromosome based on the fitness function value and applies the GA operations such as selection, crossover and mutation to produce next generation. This iterative process stops when the GA finds optimal test data.

The aim of the work is to improve the fitness function as well as to generate the optimal test data. For improving the fitness function of branch predicates, Korel's Distance Function is used. In Korel's distance function, branch predicates are used in the form of relational expression. Using this function, branch predicates are evaluated, as basis path testing includes both statement testing and branch testing. The system for generating automated test data for feasible basis paths using GA has been coded. The basic outline for both algorithms is:

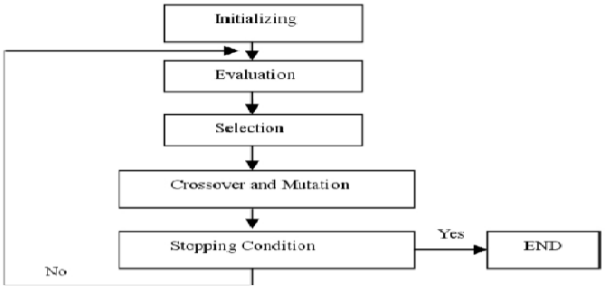
a) Test Data Generation using GA:

Input: Randomly generated numbers (initial population act as test data) based on the target path to be covered.

Output: Test data for the target path.

i. Gen = 0
ii. While Gen < 100
iii. Do
iv. Evaluate the fitness value of each chromosome based on the objective function.
v. Use roulette wheel as selection operator, to select the individuals to enter into the mating pool.
vi. Perform two-point cross over on the individuals in the mating pool, to generate the new population.
vii. Perform bitwise Mutation on chromosomes of the new population
viii. Gen = Gen +1
ix. go to Step iii.
x. End
xi. Select the chromosome having the best fitness value as the desired result (test data for target path).
b) Test Data Generation using CSA:
i. Gen = 0
ii. Initialize random population A0.
iii. Evaluate Affinity Function An
iv. if Gen > 100 then
v. output= test data
vi. Exit
vii. Else
viii. Clone An to An'
ix. Hyper-mutate An' to An"
x. Evaluate and Select An"
xi. Destroy and renew to construct a new population An
xii. Gen++
xiii. end if
xiv. goto Step iii.

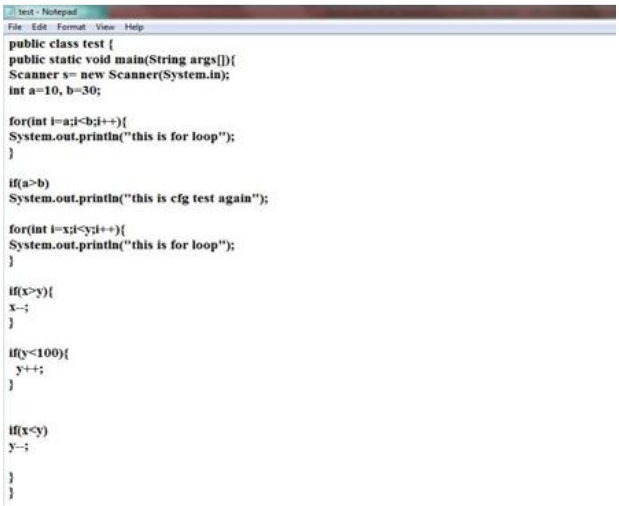
**FIGURE 1: STEPS IN GENETIC ALGORITHM**




## VII. CONVERSION RESULTS

Some Sample problems are taken which are java program. In this module is doing simple task of displaying some statements for analysis of dynamic coverage technique.

**FIGURE 2: SAMPLE PROBLEM 1**



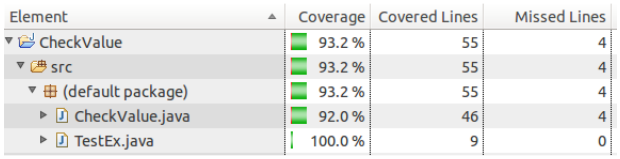
```
public class test {
public static void main(String args[]){
Scanner s= new Scanner(System.in);
int a=10, b=30;

for(int i=a;i<b;i++){
System.out.println("this is for loop");
}

if(a>b)
System.out.println("this is cfg test again");

for(int i=x;i<y;i++){
System.out.println("this is for loop");
}

if(x>y){
x--;
}

if(y<100){
 y++;
}


if(x<y)
y--;

}
}
```

For the same reason, running the original and the instrumented versions of the Check Value program with JUnit resulted in different code coverage rates, as it can be observed in Figures 3 and 4.

**FIG. 3. CHECKVALUE PROGRAM - JUNIT CODE COVERAGE**

| Element | Coverage | Covered Lines | Missed Lines |
|---|---|---|---|
| CheckValue | 75.5 % | 37 | 12 |
| src | 75.5 % | 37 | 12 |
| (default package) | 75.5 % | 37 | 12 |
| CheckValue.java | 70.0 % | 28 | 12 |
| TestEx.java | 100.0 % | 9 | 0 |

**FIG. 4: INSTRUMENTED CHECKVALUE PROGRAM - JUNIT CODE COVERAGE**



| Element | Coverage | Covered Lines | Missed Lines |
|---|---|---|---|
| CheckValue | 93.2 % | 55 | 4 |
| src | 93.2 % | 55 | 4 |
| (default package) | 93.2 % | 55 | 4 |
| CheckValue.java | 92.0 % | 46 | 4 |
| TestEx.java | 100.0 % | 9 | 0 |

Since the Junit test cases invoke the program methods directly, running the instrumented CheckValue program with JUnit reached higher coverage rates than running a single test case with JVM. The most important aspect to be noted here is the difference of code coverage for the instrumented and the non-instrumented codes.

## VIII. CONCLUSION AND FUTURE WORK

In software testing, the generation of testing data is one of the key steps, which have a great effect on the automation of software testing. Since manual generation of test data consumes much of the computational time, the process of Test Data Generation has been automated. Software Testing is also an optimization problem with the objective that the efforts consumed should be minimized. In this work, optimization of software testing is achieved by employing GA and the process is automated. It results in formulation of test suite for a module that gives 100 % code coverage. The process of code analysis is to find all modules in a program, generation of test suit by junit, determination of all independent paths and GA steps are automated. GA is employed on a set of different software programs and analyses are done on results obtained which decide performance of GA.

Other selection operators and crossover operator can be applied and comparison can be drawn between performances of different operators. In this work very basic fitness function is used. In future, fitness function can be formulated based on *Average Percentage of Condition Coverage* (APCC).

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# A STUDY ON CUSTOMER SERVICES OF NATIONALISED BANKS IN BANGALORE CITY

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**ABSTRACT**

*'Consumer is the real king in India.' This statement clearly depicts that customer satisfaction is the key driven factor behind the growth of any industry and banking is not an exception to it. And due to the increasing fierce competition it is becoming very essential for nationalised banks to know about the level of awareness and satisfaction among its customers to sustain the significant market share. The present paper is based on survey conducted to know the customer services towards nationalised banks, has been carried out to find out the awareness of banking services, customer satisfaction level on various services provided by the banks. The survey was carried out among account holders of nationalised banks in Bangalore city. Percentage analysis, Mean score has been used in this study to analyse the primary data collected via structured questionnaire. Conclusions of paper reveal that Majority of the customers are having savings account. Mean score indicates that "Rate of return and working place compulsion" are the main reasons persuading the customers for having an account in nationalised banks Whereas Loan services got first rank followed by the other services provided by nationalised banks. This study will help the nationalised banks in the Bangalore city in improving the customer service, in accordance with the expectations of its customers.*

**KEYWORDS**

customer awareness; customer satisfaction; customer services; nationalised Banks.

## INTRODUCTION

Banks play a role of considerable economic significance as intermediaries in mobilizing public savings and channelising the flow of funds for productive purposes, keeping on the process of the economic growth of the country. Realizing the importance of the role of the banks in economic development, Government of India/Reserve Bank of India took several major initiatives after the country attained independence to gear the banking system to serve the national objective.

Indian Banking Industry originated in the last decades of the 18th century and since its inception public banks had monopoly in the market. But after liberalization with the entrance of private banks, upper bar of competition has increased a lot which forced public banks to enhance the level of customer services. Nowadays banks provide variety of services ranging from savings account to internet banking, granting loan services to insurance, locker facility to transfer money to abroad. Banks provide a variety of products and services to the customers. The various services offered by the banks can be utilized by the customers only when they are made aware of these services. The banker and customer have to know about one another. The banker has to understand the customers' needs and in the same way, the customer has to know about the various services offered by the banks. Based on the importance of customer services of nationalised banks, this study has been conducted in Bangalore city.

## REVIEW OF LITERATURE

M.Kailash (2012) have done a study in the same area and The findings show that Private sector banks performed significantly by satisfying its customers with good services and they have been successful in retaining its customers by providing better facilities than Public sector banks.

Nigel Hill (2007) determines if the product matches expectations, the customer is satisfied: if it exceeds them, the customer is highly satisfied; if it falls short, the customer is dissatisfied this is called as customer satisfaction.

Prabhakaran and Satya (2003) mentioned that the customer is the king.

Sasikala (2013) found association between demographic factors and Customer satisfaction and most of the customers not satisfied enough in tangible aspects of the banks.

Santhiyavalli, G. (2011) determined the customer's perception of service quality of the selected branches and study the major factors responsible for their satisfaction.

Surbhi Singh and Renu Arora (2011) presented a paper on a comparative study of banking services and customer satisfaction in public banks, private banks and foreign banks of Delhi and this study shows that the customers of nationalized banks were not satisfied with the employee behavior and infrastructure, while respondents of private banks and foreign banks were not satisfied with high charges, accessibility and communication.

## SCOPE OF STUDY

- The study has been conducted on behalf of nationalised banks
- The study is confined to the Bangalore city.
- The study covers the service providers and users of nationalised banks.
- The study has put forward the Customers as well as acceptability behaviour for the services.
- The scope of the study is to find out the Customer Satisfaction and Customer Services.
- The study covers respondent who are the customers of nationalised banks. These customers belong to various professions, places, of both genders, with varied income groups and varied age groups.

## OBJECTIVES OF THE STUDY

- To study the awareness of customers regarding banking services of nationalised banks in Bangalore city.
- To analyze the customer satisfaction of banking facilities and services provided by the nationalised banks in Bangalore city.
- Identify the reasons for having account in Nationalised Bank.

## RESEARCH METHODOLOGY

Research methodology is a way to systematically solve the research problem. It may be understood as a science of studying how research is done scientifically.

**a) SAMPLING AREA:** The study was carried out among the account holders of Nationalised banks in Bangalore city.

**b) SAMPLE SIZE:** 100 customers were selected after considering time and cost.

**c) SAMPLING METHOD:** Convenience method of sampling is used to collect the data from the respondents.

**d) DATA COLLECTION:** The data was collected from both primary and secondary sources.

**i) PRIMARY DATA**

Primary data is collected from customers of the nationalised banks. The well structured questionnaire is formulated and by interview method the data is collected.

**ii) SECONDARY DATA**

This data is second hand which is collected from some publication, journals, books magazines, periodicals and websites. Etc. Since the objectives were focused on primary data, the study relied more on the primary data.

**e) STATISTICAL TOOLS USED:** The collected data has been analyzed by using Percentage analysis and Mean score.

Analyzed & interpreted data have been presented in the form of tables, charts and figures.

## DATA ANALYSIS & INTERPRETATIONS

**TABLE - 1: LIST OF BANKS SELECTED FOR STUDY**

| SERIAL. NO. | NAME OF BANKS | NO. OF RESPONDENTS | % OF RESPONDENTS |
|---|---|---|---|
| 1. | Allahabad Bank | 2 | 2% |
| 2. | Andhra Bank | 4 | 4% |
| 3. | Bank of Baroda | 3 | 3% |
| 4. | Bank of India | 1 | 1% |
| 5. | Bank of Maharashtra | 8 | 8% |
| 6. | Canara Bank | 15 | 15% |
| 7. | Central Bank of India | 10 | 10% |
| 8. | Corporation Bank | 10 | 10% |
| 9. | Dena Bank | 5 | 5% |
| 10. | Indian Bank | 10 | 10% |
| 11. | Indian Overseas Bank | 5 | 5% |
| 12. | Oriental Bank of Commerce | 3 | 3% |
| 13. | Punjab and Sind Bank | 3 | 3% |
| 14. | Punjab National Bank | 1 | 1% |
| 15. | Syndicate Bank | 6 | 6% |
| 16. | UCO Bank | 1 | 1% |
| 17. | Union Bank of India | 4 | 4% |
| 18. | United Bank of India | 3 | 3% |
| 19. | Vijaya Bank | 6 | 6% |
| **TOTAL** | | **100** | **100%** |

Source: www.allbankingsoultions.com

Table 1 reveals that in the case of nationalised banks, out of 100 customers, 2 (2 %) respondents are having account in Allahabad Bank, 4 (4%) respondents are having account in Andhra Bank, 3 (3%) respondents are having account in Bank of Baroda, 1 (1%) respondents have account in Bank of India, 8(8%) respondents have account in Bank of Maharashtra, 15 (15%) respondents have account in Canara Bank, 10 (10%) respondents have account in Central Bank of India, 10 (10%) respondents have account in Corporation Bank, 5(5%) respondents have account in Dena Bank, 10 (10%) of respondents have account in Indian Bank, 5 (5%) respondents have account in Indian Overseas Bank, 3(3%) respondents have account in Oriental Bank of Commerce, 3 (3%) respondents have account in Punjab and Sind Bank, 1(1%) respondents have account in Punjab National Bank, 6(6%) respondents have Syndicate Bank, 1 (1%) respondents have account in UCO Bank, 4 (4%) respondents have account in Union Bank of India, 3 (3%) respondents have account in United Bank of India, 6 (6%) of respondents have account in Vijaya Bank. It reveals that majority of the respondents have account in Canara Bank in the case of nationalised banks.

**FIG. 1**

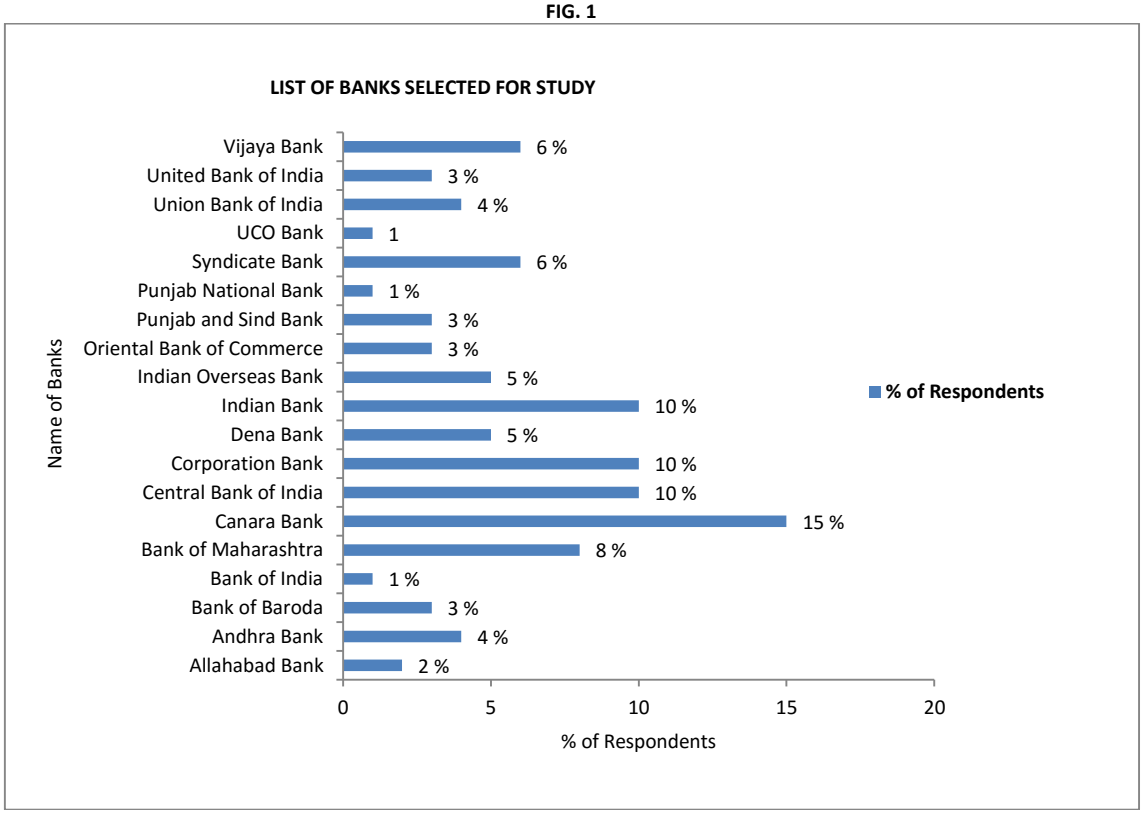

**TABLE - 2: CLASSIFICATION OF RESPONDENTS ACCORDING TO GENDER**

| SERIAL. NO. | GENDER | NO. OF RESPONDENTS | % OF RESPONDENTS |
|---|---|---|---|
| 1. | Male | 54 | 54% |
| 2. | Female | 46 | 46% |
| **TOTAL** | | **100** | **100%** |

Source: Primary Data.

Table 2 reveals that in the case of nationalised banks, out of 100 customers, 54 (54%) respondents are men and remaining 46 (46%) respondents are women. A majority of the sample respondents are men in nationalised banks.

**FIG. 2**

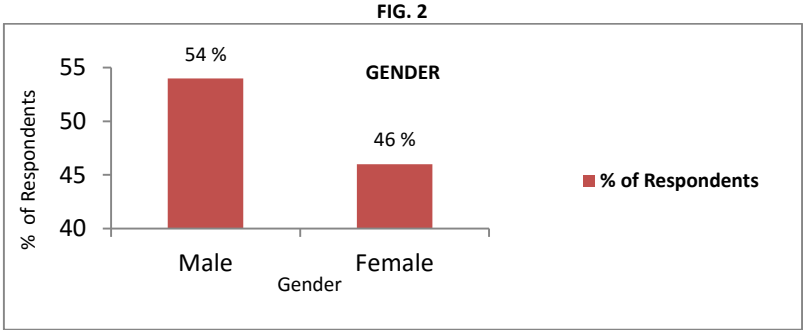


**TABLE - 3: CLASSIFICATION OF RESPONDENTS ACCORDING TO EDUCATIONAL QUALIFICATION**

| SERIAL. NO. | EDUCATIONAL QUALIFICATION | NO. OF RESPONDENTS | % OF RESPONDENTS |
|---|---|---|---|
| 1. | SSLC | 2 | 2% |
| 2. | PUC | 10 | 10% |
| 3. | Under Graduate | 50 | 50% |
| 4. | Post Graduate | 27 | 27% |
| 5. | Others | 11 | 11% |
| **TOTAL** | | **100** | **100%** |

Source: Primary Data.

Table 3 reveals that in the case of nationalised banks, out of 100 customers, 2 (2%) respondents had their education up to sslc, 10 (10%) respondents are puc, 50 (50%) respondents are undergraduates, 27 (27%) respondents are postgraduates, 11 (11%) respondents are others.

The educational profile of the customers has an impact on getting services from the commercial banks. It is a known fact that the educated people have more awareness about the customer services of nationalised banks. It reveals that majority of the respondents have completed postgraduates in the case of nationalised banks.

**FIG. 3**

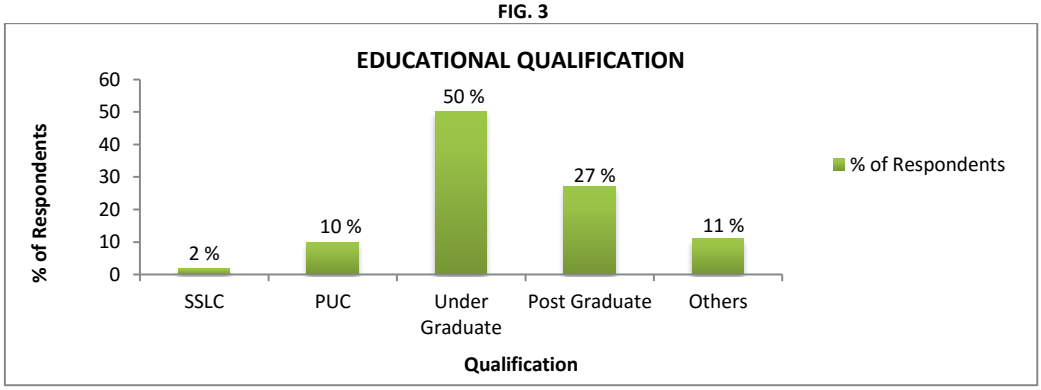


**TABLE - 4: CLASSIFICATION OF RESPONDENTS ACCORDING TO AGE GROUP**

| SERIAL. NO. | AGE GROUP | NO. OF RESPONDENTS | % OF RESPONDENTS |
|---|---|---|---|
| 1 | 18 - 25 years | 44 | 44% |
| 2 | 26 - 40 years | 33 | 33% |
| 3 | 41 - 55 years | 14 | 14% |
| 4 | Above 56 years | 9 | 9% |
| **TOTAL** | | **100** | **100%** |

Source: Primary Data.

Table 4 reveals that in the case of nationalised banks, out of 100 customers, 44 (44%) respondents are between the age group of 18 – 25 years, 33 (33%) respondents are between the age group of 26 – 40 years, 14 (14%) respondents are between the age of 41 – 55 years, 9 (9%) respondents are above 56 years. It reveals that majority of the respondents are between the age group of 18 – 25 years in nationalised banks.

**FIG. 4**

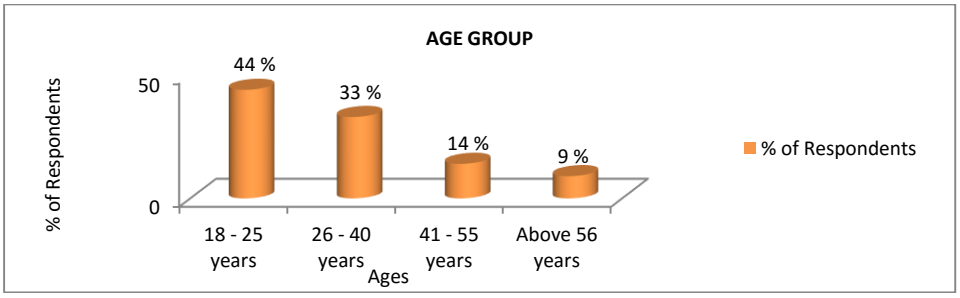

**TABLE - 5: CLASSIFICATION OF RESPONDENTS ACCORDING TO EMPLOYMENT STATUS**

| SERIAL. NO. | OCCUPATION | NO. OF RESPONDENTS | % OF RESPONDENTS |
|---|---|---|---|
| 1. | Corporate employees | 16 | 16% |
| 2. | Professional employees | 22 | 22% |
| 3. | Students | 43 | 43% |
| 4. | Others | 19 | 19% |
| **TOTAL** | | **100** | **100%** |

Source: Primary Data.

Table 5 exhibits that in the case of nationalised banks, out of 100 customers, 16 (16%) respondents are corporate employees, 22 (22%) respondents are Professionals employees, 43 (43%) respondents are students and 19 (19%) respondents are others. It reveals that majority of the respondents are students in the case of nationalised banks.

**FIG. 5**

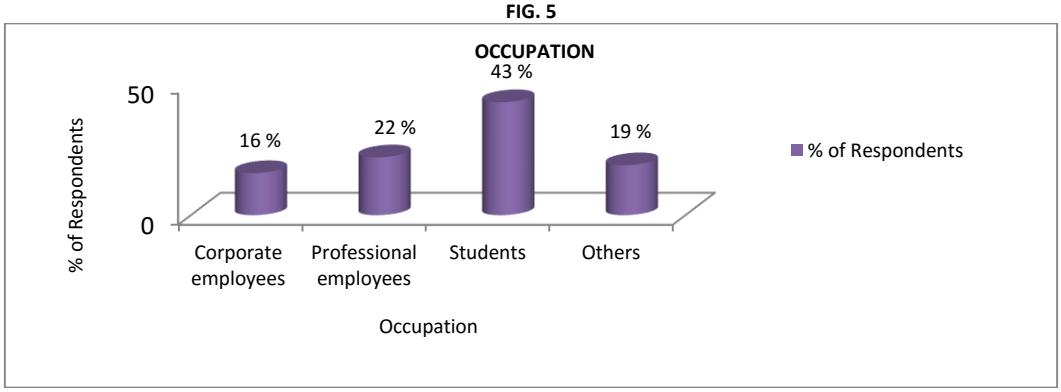


**TABLE-6: CLASSIFICATION OF RESPONDENTS ACCORDING TO MONTHLY INCOME OF RESPONDENTS**

| SERIAL. NO. | MONTHLY INCOME | NO. OF RESPONDENTS | % OF RESPONDENTS |
|---|---|---|---|
| 1. | Less than Rs.10,000 | 27 | 27% |
| 2. | Rs.10,001 - Rs.20,000 | 19 | 19% |
| 3. | Rs.20,001 - Rs.30,000 | 16 | 16% |
| 4. | Rs. 30,001 - Rs.40,000 | 19 | 19% |
| 5. | Above Rs.40,001 | 19 | 19% |
| **TOTAL** | | **100** | **100%** |

Source: Primary Data.

Table 6 reveals that in the case of nationalised banks, out of 100 customers, 27 (27%) respondents belong to the income group of less than Rs.10,000 , 19(19%) respondents are in the income group of Rs.10,001 to Rs.20,000, 16 (16%) respondents are in income group of Rs.20,001 to Rs.30,000, 19 (19%) respondents are in the income group of Rs.30,001 to Rs.40,000, 19 (19%) respondents earn an income of Rs.40,001 and above. Income plays an important role in bank customers getting services. So the classification of the respondents has been done on the basis of their monthly income. It reveals that majority of the respondents are in the income group of less than Rs.10, 000 in case of nationalised banks.

**FIG. 6**

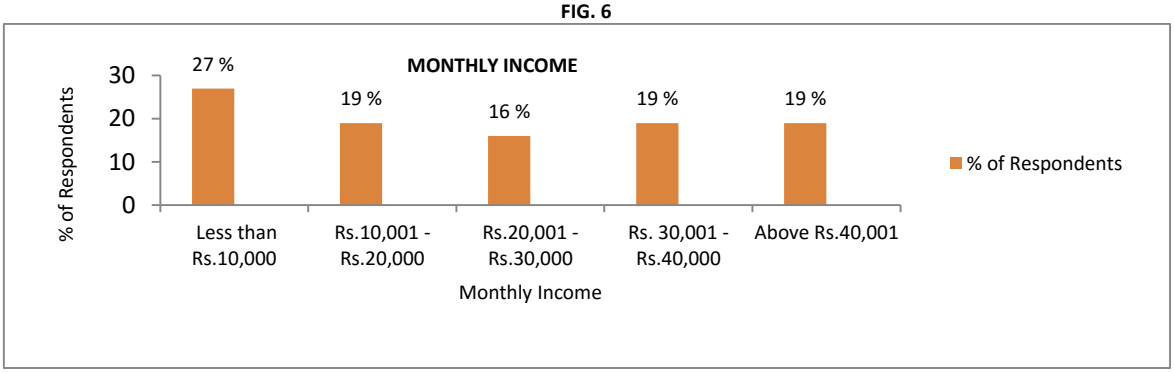


**TABLE - 7: TYPES OF ACCOUNTS**

| SERIAL. NO. | TYPES OF ACCOUNTS | NO. OF RESPONDENTS | % OF RESPONDENTS |
|---|---|---|---|
| 1. | Savings Account | 75 | 75% |
| 2. | Current Account | 8 | 8% |
| 3. | Recurring Deposit Account | 9 | 9% |
| 4. | Fixed Deposit Account | 8 | 8% |
| **TOTAL** | | **100** | **100%** |

Source: Primary Data.

Table 7 reveals that in the case of nationalised banks, 75 (75%) respondents have savings account, 8 (8%) respondents have current account, 9 (9%) respondents have recurring deposit account and 8 (8%) respondents have fixed deposit account.

Thus, it is revealed that majority of the respondents have savings account in nationalised banks.

FIG. 7

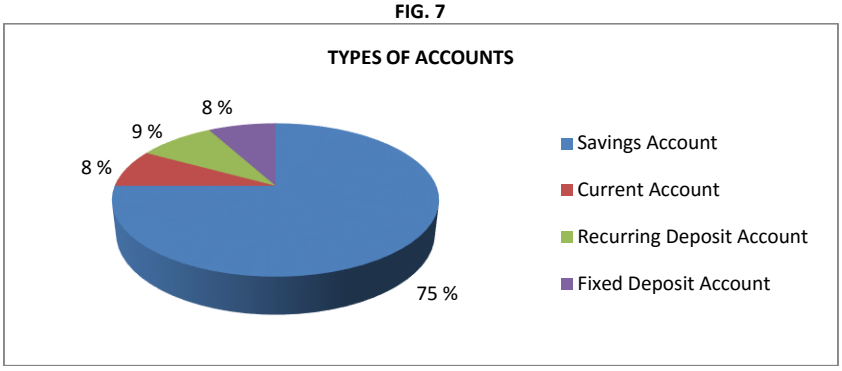


TABLE - 8: DURATION OF ACCOUNT OF CUSTOMERS WITH BANK

| SERIAL. NO. | NO OF YEARS DEALING IN BANKS | NO. OF RESPONDENTS | % OF RESPONDENTS |
|---|---|---|---|
| 1. | Less than 3 years | 32 | 32% |
| 2. | 3 - 6 years | 29 | 29% |
| 3. | Above 6 years | 39 | 39% |
| **TOTAL** | | **100** | **100%** |

Source: Primary Data.

Table 8 reveals that in the case nationalised banks, out of 100 customers, 32 (32%) respondents have accounts with the banks for less than 3 years, 29 (29%) respondents have accounts for 3 year to 6 years and 39 (39%) respondents have accounts for more than 6 years. It can be concluded that majority of the respondents have accounts for more than 6 years in the nationalised banks.

FIG. 8

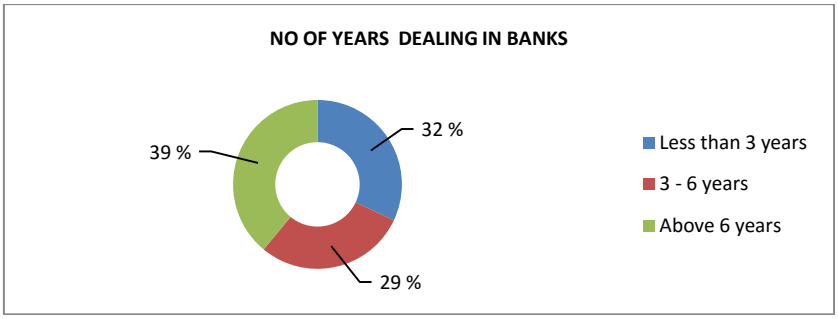


TABLE – 9: PURPOSE OF OPENING ACCOUNTS WITH BANKS

| SERIAL. NO. | PURPOSE OF ACCOUNT | NO. OF RESPONDENTS | % OF RESPONDENTS |
|---|---|---|---|
| 1. | Savings | 74 | 74% |
| 2. | Security | 16 | 16% |
| 3. | High Interest Rate | 4 | 4% |
| 4. | Status | 4 | 4% |
| 5. | Investment | 2 | 2% |
| **TOTAL** | | **100** | **100%** |

**Source:** Primary Data.

Table 9 reveals that in the case of nationalised banks, out of 100 customers, 74 (74%) respondents have opened an account for savings purpose, 16 (16%) respondents have opened an account for security purpose, 4 (4%) respondents have opened an account for high interest rate, 4 (4%) respondents have opened an account for Status and 2 (2%) respondents have opened an account for investment purpose. It reveals that a majority of the respondents have opened an account for savings purpose in the nationalised banks.

FIG. 9

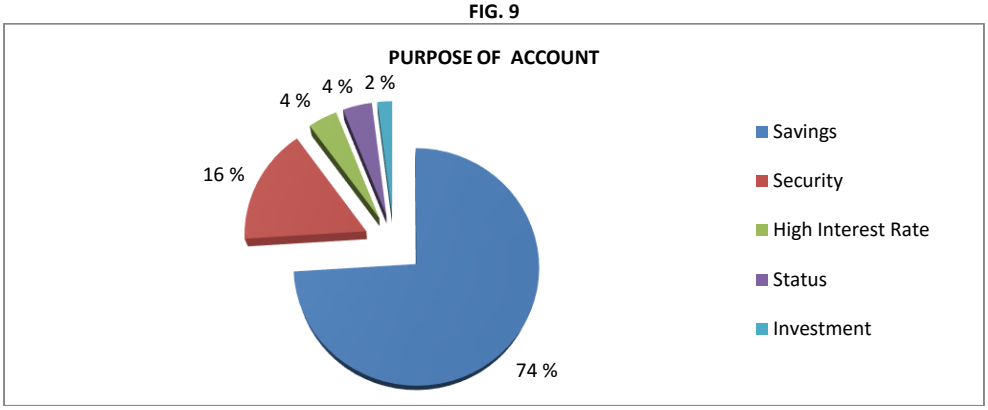

**TABLE - 10: FREQUENCY OF VISITS TO BANK**

| SERIAL. NO. | FREQUENCY OF VISIT | NO. OF RESPONDENTS | % OF RESPONDENTS |
|---|---|---|---|
| 1. | Daily | 7 | 7% |
| 2. | Weekly once | 13 | 13% |
| 3. | Fortnightly (15 days once) | 15 | 15% |
| 4. | Monthly once | 18 | 18% |
| 5. | Occasinally | 47 | 47% |
| **TOTAL** | | **100** | **100%** |

Source: Primary Data.

Table 10 reveals that in the case of nationalised banks out of 100 customers, 7 (7%) respondents visit the bank daily, 13 (13%) respondents visit the bank weekly once, 15 (15%) respondents visit the bank fortnightly, 18 (18%) respondents visit the bank once in a month and 47 (47%) respondents visit the bank occasionally. It is concluded that majority of respondents visit the bank occasionally in the nationalised banks.

**FIG. 10**

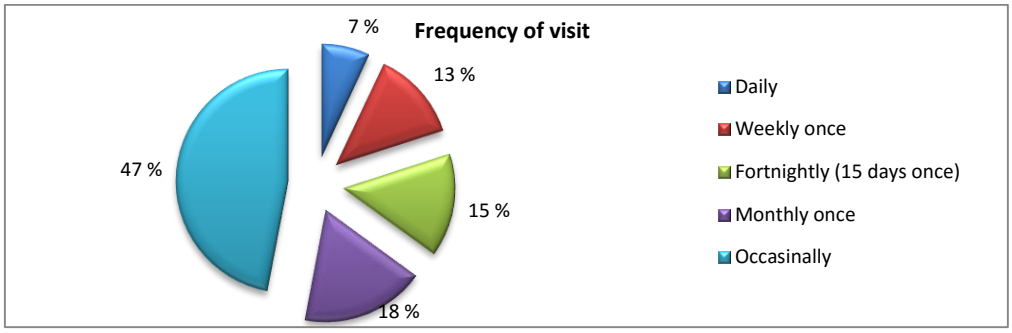


**TABLE - 11: MEAN SCORES OF REASONS FOR HAVING OPENED AN ACCOUNT IN NATIONALISED BANKS**

| SERIAL. NO. | WEIGHTS / RANK / REASONS | 6 / 1st | 5 / 2nd | 4 / 3rd | 3 / 4th | 2 / 5th | 1 / 6th | TOTAL | WEIGHTED TOTAL | WEIGHTED AVERAGE | RANK |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. | Nearness to residence/office | 18 | 13 | 21 | 13 | 12 | 23 | 100 | 343 | 16.33 | V |
| 2. | Friendliness of bank personnel | 18 | 15 | 19 | 7 | 25 | 16 | 100 | 346 | 16.47 | IV |
| 3. | Working place compulsion | 15 | 23 | 14 | 22 | 16 | 10 | 100 | 369 | 17.57 | II |
| 4. | Convenience | 16 | 14 | 18 | 24 | 10 | 18 | 100 | 348 | 16.57 | III |
| 5. | Necessity | 9 | 10 | 10 | 19 | 24 | 28 | 100 | 277 | 13.19 | VI |
| 6. | Rate of return | 24 | 25 | 18 | 15 | 13 | 5 | 100 | 417 | 19.85 | I |

Source: Primary Data.

In order to calculate weighted average, the number of the respondents whose opinions "Nearness to residence/office " is multiplied by 6, the number of respondents whose opinions "Friendliness of bank personnel" is multiplied by 5, the number of respondents whose opinions "Working place compulsion" is multiplied 4, the number of respondents whose opinions "Convenience" is multiplied 3, the number of respondents whose opinions "Necessity" is multiplied 2 and the number of respondents whose opinions "Rate of return" is multiplied 1.

The mean score is calculated by dividing the weighted total by the total number of weights (21).

Table 11 reveals that among six reasons, rate of return have got the highest weighted average score in the reasons of nationalised banks followed by Nearness to residence/office, Friendliness of bank personnel, Working place compulsion, Convenience, Necessity.

**FIG. 11**

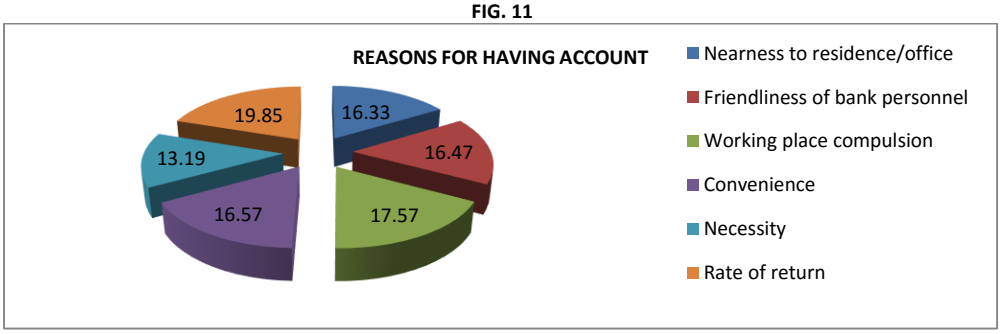


**TABLE - 12: MEAN SCORES FOR AWARENESS ON VARIOUS SERVICES IN THE NATIONALISED BANKS**

| SERIAL. NO. | SERVICES | AWARENESS LEVEL | | | TOTAL SCORE | MEAN SCORE | RANK |
|---|---|---|---|---|---|---|---|
| | | FULLY AWARE | PARTLY AWARE | NOT AWARE | | | |
| 1. | LOAN SERVICES | 37 | 43 | 20 | 217 | 36.16 | I |
| 2. | DEPOSIT SERVICES | 33 | 48 | 19 | 214 | 35.66 | II |
| 3. | TECHNOLOGY SERVICES | 22 | 50 | 28 | 194 | 32.33 | III |
| 4. | AGENCY SERVICES | 13 | 39 | 48 | 165 | 27.5 | IV |
| 5. | MISCELLANEOUS SERVICES | 13 | 36 | 51 | 162 | 27 | V |

Source: Primary data.

In order to calculate the total awareness score, the number of the respondents whose opinions "fully aware" is multiplied by 3 and the number of respondents whose opinions "partly aware" is multiplied by 2 and the number of respondents whose opinions "not aware" is multiplied 1. The mean score is calculated by dividing the total score by the total number of weights (6).

Table 12 reveals that among five services, loan services have got the highest weighted average score in the services of nationalised banks followed by deposit services, technology services, miscellaneous services and agency services.

FIG. 12

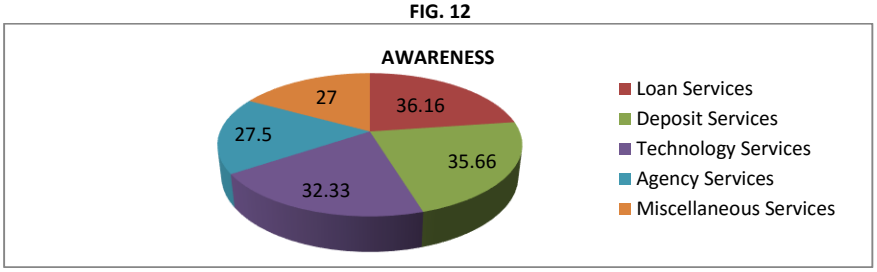


TABLE - 13: OPINION OF CUSTOMERS ABOUT THE LEVEL OF SATISFACTION OF SERVICES IN THE NATIONALISED BANKS

| SERIAL NO. | SERVICES | SATISFACTION LEVEL TOWARDS BANKING SERVICES | | | | | TOTAL |
|---|---|---|---|---|---|---|---|
| | | HIGHLY SATISFIED | SATISFIED | NEITHER SATISFIED NOR DISSATISFIED | DISSATISFIED | HIGHLY DISSATISFIED | |
| 1. | Loan Services | 11 | 37 | 37 | 6 | 9 | 100 |
| 2. | Deposit Services | 11 | 57 | 23 | 3 | 6 | 100 |
| 3. | Technology Services | 10 | 31 | 43 | 8 | 8 | 100 |
| 4. | Agency Services | 5 | 21 | 55 | 10 | 9 | 100 |
| 5. | Miscellaneous Services | 4 | 18 | 61 | 5 | 12 | 100 |

Source: Primary Data.

It is inferred from Table 13, out of 100 respondents, 37 respondents are satisfied with the loan services, 57 respondents are highly satisfied with the deposit services, 43 respondents are satisfied with the technology services, 55 respondents are highly dissatisfied with the agency services and 61 respondents are satisfied with the miscellaneous services in the nationalised banks in the district.

FIG. 13


## CONCLUSIONS

The implication of the research is to design a service delivery system that promotes positive “moments of truth”. Of the survey made by the researcher, the customers are classified based on gender, education status, employment status. A majority of the customers have savings account and the main purpose to open an account is for the purpose of savings. Mean score indicates that “Rate of return and working place compulsion” are the main reasons persuading the customers for having an account in a particular branch of nationalised banks. On the basis of the mean score calculated for the awareness of customer services of the nationalised banks, the loan services got first rank followed by the deposit services, technology services, agency services and miscellaneous services in the nationalised banks.This study will help the nationalised banks in the Bangalore city in improving the customer service, in accordance with the expectations of its customers.

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# A CRITICAL APPRAISAL OF RISK MANAGEMENT STRATEGIES OF MICROFINANCE INSTITUTIONS IN GHANA

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**ABSTRACT**

*This research seeks to subject the risk management strategies employed by Microfinance Institutions (MFIs) in Ghana to critical appraisal. The researchers consequently focused on ten (10) MFIs as a representative sample of MFIs from various regions in Ghana. They include: Greater Accra, Eastern, Central, Western, Ashanti, Northern and Brong Ahafo Regions. The researchers used questionnaire constituted by open and close ended questions. Original data collection was facilitated by targeting the clients, staff and management of MFIs in the country. The STEPWISE method of Regression Analysis was used establish the inter-relationship between Microfinance Risk Management and independent variables such as Need for Standard Procedure for Delinquency Follow-up, Sanctions against Defaulters, Need for Better Loan Collection & Disbursement Strategies, Provision of credit advice and Demand for collateral as factors contributing to microfinance risk management. The study revealed that* ***Demand for collateral*** *and* ***Provision of credit advice*** *are the significant contributors to* ***Microfinance Risk Management*** *at 0.05 level of significance. The study additionally established that the upsurge in loan repayment default poses a considerable threat to operational excellence and organizational prosperity. These challenges notwithstanding, the micro finance business climate in Ghana is favourable with most MFIs posting high returns on investments.*

**KEYWORDS**
micro finance, risks, strategies, loans, default.

## 1. INTRODUCTION

Microfinance organisations are fast becoming a dominant force in the Ghanaian economy. The microfinance concept in Ghana originates from the practice of what is termed as "susu". The "Susu", was aimed at mitigating the widespread poverty that has engulfed low income earners in Ghana. This was to provide those within the low income bracket a window of opportunity to access credit because; such low income earners are unattractive when Commercial Banks are considering loan provision [1]. The industry, over the years has evolved greatly, thanks to the enactment of a plethora of favourable financial sector policies such as:

- Provision of subsidized credits in the 1950s;
- Establishment of the Agricultural Development Bank in 1965 specifically to address the financial requirements of the fisheries and agricultural sector;
- Establishment of Rural and Community Banks (RCBs), and the introduction of regulations such as commercial banks being required to set aside 20% of total funds portfolio, to promote lending to agriculture and small scale industries in the 1970s and early 1980s.
- Paradigm shift from a restrictive financial sector regime to a liberalized regime in 1986;
- Promulgation of PNDC Law 328 in 1991 to facilitate the establishment of various categories of non-bank financial firms, including savings and loans companies, and credit unions [2].

These favourable financial policies have sparked the emergence of three main types of micro finance organisations:-

- Formal finance providers such as savings and loans companies, rural and community banks, as well as some development and commercial banks;
- Semi-formal finance suppliers such as credit unions, financial non-governmental organizations (FNGOs), and co-operatives;
- Informal suppliers such as "susu" collectors and clubs, rotating and accumulating savings and credit associations (ROSCAs and ASCAs), traders, moneylenders and other individuals.

Formal finance providers such as savings and loans companies and rural community banks are institutions authorized and permitted under Bank of Ghana's regulations to accept deposits and provide credit facilities to the public [2]; Semi-formal suppliers such as credit unions, financial non-governmental organizations (FNGOs), and co-operatives also have approval to collect contributions and provide micro credit [3]; Informal suppliers are those in the category of credit unions, financial non-governmental organizations (FNGOs), and cooperatives, susu collectors and clubs, rotating and accumulating Savings and Credit Associations (ROSCAs), traders, moneylenders and other individuals who are not allowed under Bank of Ghana's Regulations to offer or receive deposits and loans facilities to the general public [2].

The underlying significance of these regulatory frameworks is to safeguard existing and emerging MFIs in the country from operational hazards [4]. In contemplating strategies to minimize operational risks and enhance productivity, risk management has become pivotal in most organization's strategic thinking and management. Risk management is the process whereby organisations systematically and consciously address the risks inherent in their activities with the goal of achieving sustained benefit within each activity and across the portfolio of all activities [6]. As a cardinal function, it is imperative that every organization, particularly Microfinance Industries have some plausible strategies to manage their risks. Indeed, the opportunity for success in Microfinance firms is largely contingent on the risk management strategies employed. According to [4], the rate at which Microfinance Institutions are folding up in Ghana is assuming alarming proportions. It is against this background that this work sets its sights on critically appraising risk management strategies of Microfinance Institutions in Ghana.

## 2. LITERATURE REVIEW

### 2.1 MEANING OF RISK MANAGEMENT

Risk management is a systematic process that comprises identifying, analyzing, and responding to the risks associated with a project [7]. Techniques such as scrutiny of documentation and information gathering through brainstorming and expert discussions are used to identify risks associated with a project [8]. At this juncture the identified risks and their potential ramifications are recorded in a risk register [7]. The risk register is then analysed to determine the degree of priority that should be given to different risks and design appropriate response mechanisms and actions needed to cushion shocks in the wake of the risks occuring [7].

**2.2 MICROFINANCE AND RISK MANAGEMENT**

The Consultative Group to Assist the Poorest (CGAP), in the World Development Report 2000/1(WDR) on poverty posits that microfinance organizations should focus on the poor in modeling their risk management strategies. The CGAP further suggests that microfinance organizations should segment their targeted clients into those whose financial standing is weak due to poverty and those whose financial pedigree is relatively strong because they can be described as moderately rich. The CGAP consequently developed the ***focus argument*** that the poor who have pressing financial needs have the propensity to put to productive use the loans contracted from microfinance organizations and save to facilitate loan payments in order to ensure continuous access to credit facilities. Not everyone agrees with this line of argument though. According to [9], the marginal propensity of the poor to save lags behind their marginal propensity to consume. This erodes their ability to make savings.

**2.3 RISK MANAGEMENT STRATEGIES FOR MICROFINANCE INSTITUTIONS**

Designs a framework that deals with general risk management strategies of Microfinance Institutions (MFIs) [10]. She underlines the need to treat risk once it is uncovered. The risk treatment options she identified include: Avoidance, Transfer, Retention and Reduction. Avoidance means eschewing activities that could carry risk. Risk transfer according to [10] is to pass on risk and/or liability from one party who frowns on the risk to another party who embraces and takes over the risk at a fee or premium. [10] Asserts that all risks that are not avoided or transferred are retained by the MFIs. Lopez referred to this practice as retention. [10] Also regards the situation where appropriate schemes and techniques are used to diminish the possibility of the occurrence of risks and their inherent consequences as reduction. Risk avoidance, transfer and reduction are the most effectual forms of risk management. They are preferable mechanisms of risk management because the liability for default is not retained by the MFIs. At any rate, it has been established in the risk reward tradeoff theory that transactions in microfinance institutions in particular and financial markets in general are largely prone to risk. In other words the risk reward tradeoff theory postulates that risk with high level of uncertainties is commensurate with high returns. Consequently, businesses should endeavor to avoid risk aversion in order to rake in maximum returns [11]. By implication, avoidance of risk in certain circumstances is to avoid returns. In spite of this, safety nets need to be instituted in certain circumstances to mitigate, control or prevent some unexpected, avoidable or unreasonable risks. It is not every risk that are avoidable and in this case unavoidable risks must be mitigated or controlled in order to ensure some sustainable level of inflows into the organization [12]. Therefore risk mitigation measures remain a formidable strategy for keeping at bay the occurrence of risks and their adverse consequences.

**2.4 RISK PROFILE OF MFIs**

The growth in MFIs has gradually compounded the risk portfolios of the industry. The industry risks profile pervades a firm's financial, operational and strategic spectrum. Over the years the traditional focus of MFIs has been on the financial risk. This is understandable because of the high rate of loan default by borrowers or clients. Consequently, MFIs pay more attention to liquidity risk or their ability to meet their short term financial obligations due to the expansion in the size of borrowings or loans demands of customers [11].

**2.5 THE NATURE OF CLIENTS RISK**

Most borrowers from MFIs in the business to customer sector are dabbling in poverty, a situation made worse by their peripheral insights in financial management. MFIs therefore need to embark on the lofty scheme of training their clients in microfinance business related managerial and technical skills such as financial management [13]. If clients who run small and medium scale enterprises are given additional technical training, they will be in good stead to judiciously utilize resources and also boost their ability to access credits and subsequently enlarge their businesses [11]. The provision of enhanced capacity to microfinance beneficiaries who are engulfed in poverty will open the channels to savings [14]. To this end, [14] suggests that MFIs should not place poor borrowers to the back burner in view of the fact that they constitute the majority bloc of their client base adding that capacity building can be used to transform convert poor customers from perennial consumers into habitual and regular savers.

[14] Emphasizes that the poor indeed can save and have capacity to save and therefore they should not be left in the margins of credit provision adding that, on account of their numerical strength in the micro finance market, they are worth doing business with. In doing business with vulnerable individuals and groups, MFIs can institute adequate and efficacious risk management strategies to manage their clients' risks since this are the bedrock of micro finance industry success.

**2.6 REASONS FOR RISK MANAGEMENT**

Risk management is important because "risk pervades finance as gravity pervades physics" and to "survive and prosper in financial markets, participants must manage risk in ways that increase their wealth" [15].

An MFI may adopt certain elements of risk management although it may not have installed a comprehensive risk management system. According to the Federal Reserve Bank [16] comprehensive risk management includes systematically and quantitatively identifying, monitoring and controlling aggregate risks the activities and products of a financial institution. It also includes the institution of mechanisms to limit risk associated with individual product lines. For risk management to be comprehensive, it needs to have the attributes that will address both the risks associated with the Microfinance businesses in general and those specific to the clients in particular including their capacity development needs. If the risk management approach takes these two dimensions of MFIs into consideration, it will reduce the risk of loss, build credibility in the marketplace, facilitate the expansion of the MFI, enrich beneficiaries and create new opportunities for growth [16]. A comprehensive risk management approach is therefore effective in the sense that it ensures institutional sustainability and facilitates wealth creation for MFI beneficiaries. Despite this realization, MFIs have regrettably not always incorporated a comprehensive risk management system in their operations.

**2.7 MICROFINANCE IN GHANA TO RE-ENGINEER RISK MANAGEMENT STRATEGIES**

John Gibling, the Managing Director of Financial Institutions Ratings of Standard and Poor presenting a paper at the 2nd annual conference for African Banking & Non Banking Financial Institutions, urges the financial sector, particularly the Microfinance organizations in Ghana to re-appraise their risk management strategies. He opines that some microfinance and banking institutions are suffering from dwindling financial fortunes because they have the penchant for levying high levels of interest rates on their customers and requesting for collateral security before loans are approved. Research has shown that the demand for collateral as security for loans inhibit growth of business enterprises and development [17]. Further, [18] admonishes financial service sectors to downsize the rate of interest to facilitate loan repayment

According to the 2010 reports on Savings and Loans Association of Ghana the rate of loan default accounts in part for the high interest rate in Ghana. This position puts the blame at the doorstep of clients but [18] disagrees with this standpoint. He argues that MFIs are pre occupied with self-preservation and profit maximization instead of assisting the poor. This in his view is a disturbing deviation from the reasons that anchor the formation of MFIs. In essence the MFIs pursue excessive profit and fail to offer prudent financial advice and training to clients.

**2.8 FINANCIAL MANAGEMENT RISKS AND CONTROLS**

The risks associated with financial management represent a strong area of vulnerability for microfinance institutions. Distinct from institutional and operational risks, financial management risks are inherent in the range of strategies and procedures used by microfinance managers to optimize financial performance (Churchill, C., & Coster, D. 2001). Key risk areas that emerge from these strategies include:

1) Asset and Liability Management Risks
2) Inefficiency Risks
3) System Vulnerability Risks

**2.9 ASSET AND LIABILITY MANAGEMENT**

In banking parlance, asset/liability management (ALM) refers to the management of the spread, or the positive difference between the interest rate on earning assets and the cost of funds (Churchill, C., & Coster, D. 2001). Successful management of this spread requires control over: a) interest rate risk, b) foreign exchange gap, c) liquidity, and d) credit risk.

A microfinance institution is vulnerable and susceptible to these three risks if it exudes the following characteristics:

- It borrows money from commercial sources to fund its portfolio;
- It funds its portfolio from client savings;
- It operates in a high inflation environment; or

- It has liabilities denominated in a foreign currency.

These elements of asset and liability management need to be subjected to careful consideration. In formal financial institutions, a management committee is tasked with carrying ALM, as it involves both operations and treasury activities (CGAP, 2009). Because most MFIs are bereft of this kind of management depth, however, the Executive Director and Financial Manager will most likely carry out ALM within an MFI, with perhaps some support from a board member who has expertise in this area (CGAP, 2009).

**2.10 INTEREST RATE RISK**

Interest rate risk arises when assets and liabilities are mismatched, in terms of interest rates. Interest rate risk is particularly problematic for MFIs operating in high inflationary environments (Churchill, C., & Coster, D. 2001). If inflation rises, the interest rate on loans may not be sufficient to compensate for the effects of inflation (Lopez, 2009). An MFI's ability to adjust interest rates on its loans is determined by the degree to which short-term liabilities are used to fund longer-term assets within the portfolio. If the rates on short-term liabilities rise before an MFI can adjust its lending rates, the spread between interest earnings and interest payments will narrow, seriously affecting the MFI's profit margin (Churchill, C., & Coster, D. 2001).

MFIs should monitor interest rate risk by (1) assessing the amount of funds at risk for a given shift in interest rates, and (2) evaluating the timing of the cash flow changes given a particular interest rate shift (Churchill, C., & Coster, D. 2001).

All types of assets and liabilities do not respond to a change in interest rates in the same manner. Some are more sensitive to interest rate changes than others, a characteristic known as **interest rate sensitivity (**Chua, R. T., & Mosley, P.,. 2000).. For instance, small scale savings accounts tend not to be very interest rate sensitive, as low income clients typically maintain savings accounts more for reasons of liquidity and safety, than for rate of return. In this connection, if the interest rate falls, such clients will not necessarily withdraw their savings (Churchill, C., & Coster, D. 2001).

For MFIs that serve primarily low-income clients, interest rate sensitivity may be less important than responding to the timing of any cash flow shifts. Determining the gap between rate-sensitive assets and rate-sensitive liabilities, or **gap analysis**, provides a mechanism for identifying the timing of cash flow shifts ( Deutsche Gesellschaft für Technische Zusammenarbeit (GTZ), 2000). Rate-sensitive assets or liabilities are those that are amenable to an upward mobility in price or can be reviewed downwards within the next couple of months. A useful indicator for monitoring interest rate risk is the **net interest margin**, commonly called the spread. This ratio calculates the income remaining to the institution after interest is paid on all liabilities, and compares the result with either the total assets or the performing assets of the institution. A variation of this ratio is ((interest revenue – financial expenses) / average assets), where financial expenses include interest expense, inflation adjustment, exchange rate depreciation expense, and a subsidized cost of funds adjustment (Churchill & Coster, 2001).

**2.11 INEFFICIENCY RISK**

One of the enormous challenges confronting microfinance firms is how to minimize the credit risk associated with providing unsecured loans. Many MFIs have emerged tops in overcoming this obstacle and have now set their sights on the next major challenge; improving efficiency (Churchill & Coster, 2001). Efficiency improvements involve an organization's dexterity at managing costs per unit of output, and thus are directly influenced by both cost control and level of outreach. Inefficient microfinance institutions waste resources which culminate into provision of subpar services and products, as the costs of these inefficiencies are passed on to clients in the form higher interest rates and transaction costs (Churchill, C., & Coster, D. 2001).

MFIs can improve efficiency in three ways: (1) upscale the number of clients to achieve greater economies of scale, (2) streamline systems to improve productivity, and (3) cut costs across their value chain (Churchill, C., & Coster, D. 2001).

The first two goals are closely related; both seek to increase the number of clients, or units of output. MFIs post better performances when their staff work harder or, preferably, smarter. In microfinance organizations that are not managed in a business-oriented manner, employees often have excess capacity. And yet, as is common with human nature, the employees find ways of engaging in activities that are at best peripheral to creating shareholder value and the provision of exceptional value to clients. A critical appraisal of time allocation and **time management** will often reveal an astonishing and disturbing level of waste.

There is another side to the cost equation. There exists evidence to the effect that administrative costs, including salaries and other operating expenses, represent the greatest component of the cost structure of an MFI. Reducing the delivery costs associated with providing financial services improves operating efficiency. If these costs are cranked downwards, cost savings can be passed to customers in the form of added value through price cuts which can lead to repeat purchases and boost customer loyalty.

## 3. RESEARCH DESIGN AND METHODOLOGY

This section describes the procedures and research instruments used in this study in order to achieve the research objective. The study uses a sample of microfinance companies in seven regions in Ghana namely: Ashanti, Central, Greater Accra, Western, Northern, Brong Ahafo and Eastern Region. In spite of the researchers inability to cover the entire ten (10) regions of Ghana; the seven (7) regions selected can be described as representative and portrays the true complexion of the Microfinance industry in Ghana. The researchers picked one or sometimes two microfinance institutions from the capital cities of these regions. The reason underpinning the selection of these regions is the fact that Microfinance activities are quite buoyant in these territories.

Questions were modeled around some basic risk management strategies MFIs in Ghana. In the quest for answers to the research questions, this work employed quantitative research approach where a descriptive analysis or survey was employed for the study. The main informants of this research were drawn from clients and employees of MFIs that have been in operational existence for over two years. Data was solicited from these two set of respondents. Questionnaires were used to capture responses from the targeted respondents across the selected regions of Ghana. The study used both primary and secondary data. The primary data was gathered mainly through questionnaire. The choice of questionnaire allowed for efficiency and speed in collection of original data.

The secondary data which anchored the literature review of this study is derived mainly from magazines, brochures, articles, catalogues and other publications from microfinance institutions.

**3.1 THE SAMPLING TECHNIQUES**

Purposive sampling technique was used to select the samples for the study. The clients that deal directly with the organizations were sampled based on purposive sampling. By purposive sampling, the selections of the respondents were based on: 'clients who have transacted with the organization for two years or more' and 'clients who have secured the organization's loan before'.

**3.2 SAMPLE SIZE**

The total sample size for the study was two hundred (200). One hundred represented the sample from the formal sector (Management staff of MFIs). The other hundred represented the sample from the informal sector (clients or customers of these institutions). The large sample size is necessary to ensure representation and replication of research findings and conclusions. The following table is a graphic illustration of the sample size and population for the study.

**TABLE 1.0: MFIs AND CLIENTS POPULATION/SAMPLE SIZE**

| Name of MFI | Total Population | | Sample Size | |
|---|---|---|---|---|
| | Staff | Client | Staff | Clients |
| 1. Opportunity International. S &L Ltd (Accra) | 20 | 22 | 10 | 15 |
| 2. Procredit S &L Ltd (Accra) | 10 | 19 | 5 | 12 |
| 3. Express Savings & Loans (Koforidua) | 14 | 21 | 7 | 12 |
| 4. EZI Savings & Loans Ltd (Kumasi) | 10 | 16 | 5 | 10 |
| 5. First National S & L Ltd (Takoradi) | 40 | 29 | 20 | 18 |
| 6. First Ghana Building Society (Tamale) | 12 | 17 | 6 | 10 |
| 7. Opportunity Inter. S &L Ltd (Techiman) | 24 | 13 | 12 | 6 |
| 8. First National S & L Ltd (Cape Coast) | 16 | 9 | 8 | 7 |
| 9. Procredit S &L Ltd (Kumasi) | 30 | 12 | 15 | 5 |
| 10. Women's World Bank (Takoradi) | 24 | 15 | 12 | 5 |
| **Total** | **200** | **173** | **100** | **100** |

Sample Interval is 2; Sample fraction is ½

NB: The client's population was based on the number of clients available at the time of data collection at the premises of the MFIs. Clients' selection was based on purposive sampling.

## 4. ANALYSIS OF RELEVANT DATA

In an attempt to achieve the objectives of the study, relevant data collected was analysed using SPSS version 19.0. The following show cases the quantitative analysis of the data starting from the demographic analysis.

**TABLE 2: GENDER OF MFI STAFF**

| | | Male | Female | Total |
|---|---|---|---|---|
| Microfinance Institutions | Opportunity Inter. Savings & Loans Ltd (Accra) | 60.0% | 40.0% | 100.0% |
| | Procredit Savings & Loans Ltd (Accra) | 60.0% | 40.0% | 100.0% |
| | Express Savings & Loans Ltd (Koforidua) | 57.1% | 42.9% | 100.0% |
| | Ezi Savings & Loans Ltd (Kumasi) | 20.0% | 80.0% | 100.0% |
| | First National Savings & Loans Ltd (Takoradi) | 55.0% | 45.0% | 100.0% |
| | First Ghana Building Society (Tamale) | 66.7% | 33.3% | 100.0% |
| | Opportunity Inter. Savings & Loans Ltd (Techiman) | 58.3% | 41.7% | 100.0% |
| | First National Savings & Loans Ltd (Cape Coast) | 62.5% | 37.5% | 100.0% |
| | Procredit Savings & Loans Ltd (Kumasi) | 53.3% | 46.7% | 100.0% |
| | Women's World Bank (Takoradi) | 58.3% | 41.7% | 100.0% |
| Total | | 56.0% | 44.0% | 100.0% |

Table 2 shows the demographic features of 10 MFIs in the country. The total count of male to female ratio is 56/44 as evident in the table above. The male population in each MFI is greater than the female population except that of EZI Savings and Loans Ltd.

**TABLE 3: NEED FOR STANDARD PROCEDURE FOR DELINQUENCY FOLLOW-UP**

| | | Yes | No | No Idea | Total |
|---|---|---|---|---|---|
| Microfinance Institutions | Opportunity Inter. Savings & Loans Ltd (Accra) | 80.0% | 20.0% | | 100.0% |
| | Procredit Savings & Loans Ltd (Accra) | 80.0% | | 20.0% | 100.0% |
| | Express Savings & Loans Ltd (Koforidua) | 42.9% | 42.9% | 14.3% | 100.0% |
| | Ezi Savings & Loans Ltd (Kumasi) | 80.0% | | 20.0% | 100.0% |
| | First National Savings & Loans Ltd (Takoradi) | 30.0% | 30.0% | 40.0% | 100.0% |
| | First Ghana Building Society (Tamale) | 66.7% | 16.7% | 16.7% | 100.0% |
| | Opportunity Inter. Savings & Loans Ltd (Techiman) | 58.3% | 25.0% | 16.7% | 100.0% |
| | First National Savings & Loans Ltd (Cape Coast) | 25.0% | 12.5% | 62.5% | 100.0% |
| | Procredit Savings & Loans Ltd (Kumasi) | 53.3% | 26.7% | 20.0% | 100.0% |
| | Women's World Bank (Takoradi) | 50.0% | 25.0% | 25.0% | 100.0% |
| Total | | 52.0% | 23.0% | 25.0% | 100.0% |

In response to the question of whether the MFI has standard procedure for delinquency follow-up, the response rate for "Yes" were more than "No"; 52% representing 52 staff from seven (7) MFIs responded "Yes". 23 staff representing 23% responded "No" and 25 representing 25% have no idea. At first sight, the 53% of those who appreciate the presence of mechanisms for delinquency follow ups appear impressive. However, those respondents who had no idea or who responded in the negative when put under one umbrella constitutes 47% which makes it worthy of attention.

**TABLE 4: SANCTIONS AGAINST DEFAULTERS**

| | | Yes | No | No Idea | Total |
|---|---|---|---|---|---|
| Microfinance Institutions | Opportunity Inter. Savings & Loans Ltd (Accra) | 70.0% | 20.0% | 10.0% | 100.0% |
| | Procredit Savings & Loans Ltd (Accra) | 100.0% | | | 100.0% |
| | Express Savings & Loans Ltd (Koforidua) | 57.1% | | 42.9% | 100.0% |
| | Ezi Savings & Loans Ltd (Kumasi) | 100.0% | | | 100.0% |
| | First National Savings & Loans Ltd (Takoradi) | 60.0% | 15.0% | 25.0% | 100.0% |
| | First Ghana Building Society (Tamale) | 50.0% | 33.3% | 16.7% | 100.0% |
| | Opportunity Inter. Savings & Loans Ltd (Techiman) | 66.7% | 16.7% | 16.7% | 100.0% |
| | First National Savings & Loans Ltd (Cape Coast) | 37.5% | 37.5% | 25.0% | 100.0% |
| | Procredit Savings & Loans Ltd (Kumasi) | 60.0% | 13.3% | 26.7% | 100.0% |
| | Women's World Bank (Takoradi) | 66.7% | 8.3% | 25.0% | 100.0% |
| Total | | 64.0% | 15.0% | 21.0% | 100.0% |

The outcome of this question painted a positive picture about adequate sanction regimes to deter loan default. Across all the ten (10) MFIs, almost all respondents, majority of respondents answered in the affirmative with the notable exception of National Savings and Loans Ltd (Techiman Branch) which recorded less than 50%. Procredit (Accra) recorded 100% responses for "Yes". Express Savings and Loans had 51.7% "Yes" and 42.9% for "No Idea".

**TABLE 5: NEED FOR BETTER LOAN COLLECTION & DISBURSEMENT STRATEGIES**

| | | Yes | No | No Idea | Total |
|---|---|---|---|---|---|
| Microfinance Institutions | Opportunity Inter. Savings & Loans Ltd (Accra) | 60.0% | 20.0% | 20.0% | 100.0% |
| | Procredit Savings & Loans Ltd (Accra) | 100.0% | | | 100.0% |
| | Express Savings & Loans Ltd (Koforidua) | 57.1% | | 42.9% | 100.0% |
| | Ezi Savings & Loans Ltd (Kumasi) | 80.0% | 20.0% | | 100.0% |
| | First National Savings & Loans Ltd (Takoradi) | 60.0% | 20.0% | 20.0% | 100.0% |
| | First Ghana Building Society (Tamale) | 83.3% | | 16.7% | 100.0% |
| | Opportunity Inter. Savings & Loans Ltd (Techiman) | 66.7% | 25.0% | 8.3% | 100.0% |
| | First National Savings & Loans Ltd (Cape Coast) | 87.5% | | 12.5% | 100.0% |
| | Procredit Savings & Loans Ltd (Kumasi) | 60.0% | 20.0% | 20.0% | 100.0% |
| | Women's World Bank (Takoradi) | 58.3% | 8.3% | 33.3% | 100.0% |
| Total | | 67.0% | 14.0% | 19.0% | 100.0% |

On the question about the imperatives of better loan collection and disbursement strategies, sixty seven (67) respondents representing 67% responded "Yes". Fourteen (14) respondents representing 14% responded "No" and 19% representing 19 respondents from all the ten (10) MFIs had no idea.

**4.1 PROVISION OF CREDIT ADVICE**

In trying to ascertain whether the MFIs offer or provide credit advice to their customers, it became clear from the responses that most MFIs in Ghana do not provide credit advice to customers once loans are released. Data analysis shows that over 60% of the MFIs in Ghana have no active credit advice bureau. Indeed, almost all except Opportunity International (Accra), ProCredit (Accra) and Express Savings and Loans Ltd (Koforidua) do not provide credit advice in a bid to put a downward pressure on risks associated with their credit services.

**4.2 DEMANDS FOR COLLATERAL**

An overwhelming majority of MFIs dealt in this study have collateral enshrined and entrenched in their terms and conditions for issuing loans. Over 50% of MFIs answered "Yes" when the question of whether collateral is demanded was put. The striking exception is Opportunity International-Techiman branch, where other considerations override collateral.

**4.3 MODELING MICROFINANCE RISK MANAGEMENT**

The study used multiple Regression to examine the inter-relationship between **Microfinance Risk Management (Dependent variable)** and a number of **explanatory (Independent) variables** such as **Need for Standard Procedure for Delinquency Follow-up (X1), Sanctions against Defaulters (X2), Need for Better Loan Collection & Disbursement Strategies (X3), Provision of credit advice (X4), Demand for collateral (X5)** as factors contributing to microfinance risk management.

Mathematically:

**Microfinance Risk Management ⟶ Constant + Need for Standard Procedure for Delinquency Follow-up (X1) + Sanctions against Defaulters (X2) + Need for Better Loan Collection & Disbursement Strategies (X3) + Provision of credit advice (X4)+ Demand for collateral (X5)**

**OR**

$Y$ **Microfinance Risk Management** $= b_0 + b_1X1 + b_2X2 + b_3X3 + b_4X5 + \varepsilon$;

Where $Y$ is the **Microfinance Risk Management**, the dependent or predicted variable, is the **Microfinance Risk Management strategies in the operational area**

**X1** is the Need for Standard Procedure for Delinquency Follow-up

**X2** is the Sanctions against Defaulters

**X3** is the Need for Better Loan Collection & Disbursement Strategies

**X4** is the Provision of credit advice

**X5** is the Demand for collateral respectively.

***Where*** $b_0, b_1, b_2, b_3, b_4$ and $b_5$ are unknown constants whose values are estimated by the regression analysis from the SPSS output in Table 6.

$\varepsilon$ is the random error term with expected value of zero and variance of 1.

**TABLE 6: COEFFICIENTS[a]**

| Model | | Unstandardized Coefficients | | Standardized Coefficients | t | Sig. | 95.0% Confidence Interval for B | | Correlations | | | Collinearity Statistics | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | B | Std. Error | Beta | | | Lower Bound | Upper Bound | Zero-order | Partial | Part | Tolerance | VIF |
| 1 | (Constant) | 2.232 | .025 | | 89.061 | .000 | 2.180 | 2.284 | | | | | |
| | Demand for collateral | -.013 | .000 | -.993 | -36.760 | .000 | -.014 | -.013 | -.993 | -.993 | -.993 | 1.000 | 1.000 |
| 2 | (Constant) | 2.126 | .048 | | 44.587 | .000 | 2.026 | 2.226 | | | | | |
| | Demand for collateral | -.013 | .000 | -.946 | -31.145 | .000 | -.014 | -.012 | -.993 | -.990 | -.747 | .624 | 1.602 |
| | Provision of credit advice | .002 | .001 | .076 | 2.518 | .021 | .000 | .003 | .656 | .500 | .060 | .624 | 1.602 |

a. Dependent Variable: Risk Management Strategies

The regression model is developed using the *STEPWISE* method for all the explanatory variables. This method is preferred because it adds the explanatory variables into the model one after the other at a time. It begins with the variable that has or exhibits the highest correlation with the predicted variable, in our case **Microfinance Risk Management**.

If an explanatory variable is found not to be contributing significantly to the dependent or predicted variable, it can be removed. The *STEPWISE* method is especially useful if the independent variables are very large and the motive is to include only those contributing significantly to the model.

After critically examining the SPSS output for the regression model the study has considered model 1 and 2 on the *STEPWISE* regression model table as the best models.

**4.3.1 JUSTIFICATION FOR SELECTING MODEL 1 & 2 AS THE BEST MODELS**

As stated earlier in our discussion under the Stepwise method, the SPSS package begins selecting explanatory variables that contribute highly to the dependent variable. Hence, the package identified **Demand for collateral** as being the independent variable that makes the highest contribution to **Microfinance Risk Management**. It then identified **Provision of credit advice** as having the highest partial correlation with **Microfinance Risk Management** so it was added in the second model, model 2.

Mathematically the final and best model is:

***Y* Microfinance Risk Management** = 2.232 -0.13*X4* + 0.02*X5*

Where **X4** is the Provision of credit advice **and**

**X5** is the Demand for collateral

A look at the model summary reveals that R, the multiple correlation coefficients is very high. R = 0.993 and 0.995 for model 1 and 2 respectively. This shows that there is a very strong correlation between the observed and predicted values of the dependent variable, **Microfinance Risk Management**. The value of R-squared is 0.985 indicating that 98.5% of the variation in the dependent variable is explained by the regression model, and the Adjusted R-squared which corrects the R-squared to more closely reflect the goodness of fit of the model in the population is also 98.5%. The model has a reasonable number of explanatory variables included. The t values, beside the constant are all high in excess of 10. This indicates that the two explanatory variables **Provision of credit advice (X4)** and **Demand for collateral (X5)** are very important to the model.

**TABLE 7: MODEL SUMMARY[c]**

| Model | R | R Square | Adjusted R Square | Std. Error of the Estimate |
|---|---|---|---|---|
| 1 | .993[a] | .985 | .985 | .06307 |
| 2 | .995[b] | .989 | .988 | .05603 |

a. Predictors: (Constant), Demand for collateral

b. Predictors: (Constant), Demand for collateral, Provision of credit advice

c. Dependent Variable: Risk Management Strategies

Also, a critical inspection of the Variance Inflation Factors (VIF) values in table 6 of these models is less than 10 which are signs of non-existence of collinearity or multicollinearity. This indicates that the best model does not have problems associated with models with too many variables which do suffer from the issue of over fitting, making it hard to interpret such models.

## 5. DISCUSSIONS

This section is dedicated to further commentary of the outcome per the analysis of relevant data based on which conclusions are drawn.

### 5.1 STANDARD PROCEDURES FOR DELINQUENT FOLLOW-UPS

On the need for standard procedures regarding delinquent follow-ups, it emerges that most MFIs in Ghana have instituted standard systems for following-up on delinquent customers. All the respondents agree that their respective institutions have delinquent follow-ups processes, except that the margin that exists between those who accept the need for standard procedure versus those who do not agree or have no idea is very narrow. For instance, analysis of data reveals that 52% of respondents agree that there is the need for standard procedures and 42% represents the combined percentage of those who have no idea and those who are against the idea of any standard procedure. The lack of knowledge as reflected in the responses of employees of Express Savings and Loans Ltd (Koforidua) and First National Savings and Loans Ltd (Takoradi and Cape branches) is discomforting. This calls for capacity building for the staff on the policies and procedures of the organization.

### 5.2 BETTER LOANS DISBURSEMENT PROCESSES AND IMPROVED LOAN USAGE

The analysis of the data on the application of best practices on loans disbursements and better loan investments such as sampling some loans for checks and balances shows that MFIs controls in connection with judicious utilization of loans by clients leaves a lot to be desired. The results demonstrate that 41% of MFIs staff agrees that their organizations do not sample clients for checks. The remaining 49% were divided between those who claimed have no idea or agree that their organizations sample clients for checks. It is surprising to note that the percentage of those who had no idea about the question far outweighs those who claimed to have an idea that their organisations conduct credit (background) checks of their clients. The outcome reflects a palpable weakness in monitoring and evaluating loans usage.

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### 5.4 LOAN DEFAULT RATES

The Non-payment of loans and accrued interest is widespread based on the research findings. Opportunity International Savings and Loans Ltd (Accra) recorded the highest loan default rate of 70% followed by Women's World Bank with 66.7%, ProCredit (Accra) and Ezi Savings and loans Ltd (Kumasi) with 60%, Express Savings and Loans Ltd (Koforidua) with 57.1%and finally ProCredit (Kumasi) with 53.3%. These colossal default rates if not reversed can jeopardize the liquidity position of the MFIs in Ghana.

### 5.5 CREDIT CHECKS AND SCREENING

Concerning the processes for screening out credit worthy clients from those with weak credit ratings, data analysis finds that 57% out of the total of 100 respondents accept that their respective MFIs have screening processes for loans services. 34% opine that their organisations do not have any screening processes for identifying credit worthy clients. Though the outcomes are quite satisfactory, it is poignant to note that organisations such as Express Savings and Loans Ltd (Accra) could not establish clearly whether the organization has such processes or not.

### 5.6 SANCTION REGIMES AGAINST LOAN DEFAULTERS

Regarding the necessary sanctions for loans defaulters, the research findings show that almost all the MFIs in Ghana have sanctions regime, except First National Savings and Loans Ltd (Cape Coast). First National Savings and Loans Ltd recorded an incredible rate of 0% for loan default. First National Savings and Loans Ltd have a robust credit advice and follow up strategies in regulating and controlling their clients' loan utilization.

### 5.7 PROVISION OF CREDIT ADVICE

Credit advice is the effort of providing borrowers with technical and management skills in order to promote the judicious utilization of loans. From the data analysis, it is apparent that majority of financial services providers jettison this scheme much to their operational peril. Perhaps it is in recognition of the dangers of non-provision of credit advice that the government of Ghana has launched a programme seeking the services of consultants to engage microfinance companies in order to build their capacities in offering technical and management assistance to Small and Medium Scale Enterprises (SMES). This government of Ghana hopes will minimize risk in provision of credit (Daily Graphic, February 2013). In trying to ascertain whether the MFIs offer or provide credit advice to their customers, it became clear from the responses that most MFIs in Ghana do not provide credit advice to customers once loans are released. Data analysis shows that over 60% of the MFIs in Ghana have no active credit advice bureau. Indeed, almost all except Opportunity International (Accra), ProCredit (Accra) and Express Savings and Loans Ltd (Koforidua) do not provide credit advice in a bid to put a downward pressure on risks associated with their credit services.

### 5.8 DEMANDS FOR COLLATERAL

On the issue of collateral, the study finds an uncompromising demand for collateral by MFIs before loan applications are approved. Clients that serve as respondents have loud misgivings about the terms and conditions on collateral. Apart from Opportunity International, Techiman, all other MFIs covered under this work request for collateral as a strong condition for granting loans. This is not surprising because collateral is a dominant factor in minimizing Microfinance risk. A cursory glance at the value of MFIs reveals both a social mission and a commercial vision. The demand for collateral favours clients with moderate to strong financial status. The have nots by every stretch of financial logic cannot claim ownership of properties let alone provide same as collateral. With this situation, it follows those MFIs lofty dream towards alleviating poverty through micro loans appear to be a distant prospect.

## 6. RECOMMENDATIONS

It is clear from the study that MFIs in Ghana are performing creditably. However there is some room for improvements particularly in their strategies for loans recollection and interest payments by clients.

These recommendations are aimed at MFIs and practitioners in an attempt to contribute to best practices that can help minimize risk in the operations of MFI's.

### 6.1 CHECKS AND BALANCES

Concerning Savings and Loans Checks and Balances, the MFIs in the country, except Opportunity International Savings and Loans Ltd (Accra), are ineffective as far as this control system concerned. This urgently calls for the setting up of special units or departments in every MFI in Ghana to supervise and discharge this function.

### 6.2 LOAN DEFAULT RATES

The study shows that loan default rate is in the ascendency, particularly in Opportunity International Savings and Loans Ltd (Accra), Women's World Bank and ProCredit Savings and Loans Ltd (Accra and Kumasi). The exorbitant interest rates charged by the MFIs accounts for the spiraling default situation. The interest rate chargeable needs to be reviewed downwards but a pre cursor to this is the need to minimize the risk of loan nonpayment through training of clients in financial and business opportunity identification and investment.

### 6.3 MONITORING LOAN USAGE

In respect of monitoring activities, it emerges that ProCredit Savings and Loans Ltd (Accra) and First Ghana Building Society scarcely follow-up on how loans are being used by clients. Management of these Institutions should consider putting in place effective strategies that will serve as an apparatus for providing early warning signals about the potential for default and measures to claw back loans defaulted. Strategies such as task force regular visits on clients, promoting group loans more than individual loans, and offering discount to clients or groups who pay the loans and interest on time can help stem the tide of loan default.

### 6.4 SANCTIONS REGIME AGAINST LOAN DEFAULT

Concerning appropriate sanctions to serve as deterrent to potential defaulters and actual defaulters, recommended sanctions include verbal warning, followed by warning letter and finally legal action against the defaulting client in a court of competent jurisdiction. With the advent of the Credit Bureau in Ghana, the MFIs need to capitalize on it by educating their clients on the adverse consequences of feeding negative credit traits into the system of the Credit Bureau.

### 6.5 INTEREST RATE AND LOAN PAYMENT DURATION

The data analysis points to some difficulties on the part of clients to settle loans. The study has already established the link between high interest rates and loan default. An added dimension to the scenario of nonpayment of loans is the short period usually given to clients to make good the debt. To enhance the regularity of payments, MFIs should make credit periods more elastic by elongating loan payment duration. This will give clients some room to maneuver payments which will sap away the spectre of loan default.

Beside, MFIs such as Express Savings and Loans- Accra, ProCredit Savings and Loans Ltd-Accra, and First National Savings and Loans Ltd- determine interest charge of customers based on their ability to pay. This system of interest rates assessment raises ethical questions bordering on honesty. Clients should be made to pay standard interest rate as required of anyone irrespective of class.

Furthermore, charging higher interest rate to clients with wobbling credit foot is also not a best practice. The revelation is that almost all MFIs with the notable exception of Opportunity International Savings and Loans Ltd (Accra) engage in this practice. It appears ironical that, potential defaulters position is rather made worse by the high interest rates charged leaving them deep in the quagmire of loan default. It is reasonable to pose the question; if a customer may not be in a position to pay back loans interest, why should you worsen the condition by charging high interest rate?

### 6.6 CREDIT ADVICE AND GUIDANCE

Opportunity International Savings and Loans Ltd (Accra), ProCredit Savings and Loans Ltd (Accra), Ezi Savings and Loans Ltd (Kumasi) and Express Savings and Loans Ltd (Koforidua), do not offer credit advice to their customers when loans are given out.

Credit advice to customers help minimize investment losses (Fafchamps, 1997) and loans default. Credit advice helps the customers to make good choice of investment even when there are diverse investment portfolios to choose from (Khan, 2010).

### 6.7 DEMANDS FOR COLLATERAL

Clients of the MFIs except that of Opportunity International Savings and Loans Ltd (Techiman) agree that the demand for collateral to serve as security against loan default is a condition instituted by banks before loans are granted. Potential clients without collateral face a daunting task in their quest for a loan. Research has shown that the demand for collateral as security for loans inhibit growth of business enterprises and development (Khan, 2010). Individuals and firms who may not wish to lose their properties to MFIs will not attempt to secure loans for business expansion at all. MFIs in an attempt to relax the condition of collateral could resort to deduction of repayments at source, where the individual is a government worker or require of applicants credible persons as guarantors for the loan. By so doing, MFIs would have widened the frontiers of loan provision and soften the channels of loan repayments.

## 7. LIMITATIONS OF THIS STUDY

The study has been conducted in seven (7) regions of Ghana. Future research work could widen the scope of study to include the other three (3) regions where MFIs are doing brisk business. Beside, this work also focused on the risk associated with clients. Whilst this is important, the internal risks that MFIs possibly face such as weak corporate governance structures, inadequate internal control systems leading to fraud is a palpable risk faced by MFIs in Ghana. Future studies in risk management in MFIs could concentrate on this area.

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# CONSUMER TRUST IN ONLINE SHOPPING IN THE DOABA REGION OF PUNJAB

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**ABSTRACT**

*The internet has clearly revolutionized the way consumers acquire, process and marketers disseminate information. Online shopping in India is an emerging trend for marketers to promote their merchandise in wide geographical area using internet. Lack of trust is biggest obstacle to the success of online shopping. The present study focus on to study the relationship of trust antecedents with consumer trust and consumer trust with online shopping activities. Structural Equation Modeling (SEM) used to achieve the purpose of this research and to test the hypothesis. The result revealed that knowledge and Privacy protection doesn't have significant relationship with consumer trust. Security protection, perceived risk and perceived benefits are very important antecedents for building trust among the consumers towards online shopping. Consumer trust has significant relationship with online shopping activities. It means if a consumer has trust towards the online shopping then he will definitely go for activities. There was also significant influence of consumer trust on online shopping activities. Thus winning trust is the primary condition for enduring success in e- commerce. Finally, some useful implications have been offered to the marketers at the end.*

**KEYWORDS**

online shopping, online trust, privacy, risk, security.

## INTRODUCTION

In the past twenty years, there was rapid development of the internet and huge growth of internet users. Internet performs an important role in enhancing the level of convenience and novelty. It provides a common platform of business transactions for sellers and buyers. This has given a new dimension to marketing. Online shopping has become very popular for the consumers. This is the new and innovative pattern of shopping. It is not only providing wide range of products to the consumers, but it also offers huge market and business opportunities.

Online shopping is a form of electronic commerce in which customer buys a product or service by using internet, instead of going to a traditional brick and morter store. Amazon.com first online bookstore. In India, online transaction is only 8%, internationally it is 18%. There is a lot of potential. 8 million Indians shopped online in 2012. As online retail sales continue to increase at a slower pace than expected, practitioners and academics alike are still searching for factors that influence the consumer's online shopping behavior (Korgaonkar and Karson, 2007).

According to Gurleen, (2012) the growth in online shoppers are greater than internet users. There are two main reasons for online shopping: price and convenience. Online sites not only offer deals but also give optimum convenience to the customers. On the contrary, privacy and security concerns, lack of familiarity or experience and risk associated with online shopping are very important. There are other critical issues that discourage consumers from shopping online. Fear of fraud, lack of standard technologies for the secure payment, privacy concerns and lack of trust in e- commerce were the major reasons that the consumers do not want to engage in an online shopping (Lee and Turban, 2001; Chen et al., 2002). Hoffman et al., (1999) found that consumers may fear to provide credit information to any commercial web provider. Perceived risk among consumers related to online shopping results into reluctance to use debit and credit card information. That results in their disengagement from electronic transactions. In order to reduce the barriers, vendors must develop a trustworthy relationship with customer.

Trust is a complex issue that has been studied in various disciplines. The concept of trust in e-commerce has been examined in recent years; there is little doubt that trust plays a key role in customer's online purchasing decisions (Jarvanpaa & Tractinsky, 1999; Koufaris and Sosa, 2004; Riegelsberger and Sasse, 2001; Salo & Karjaluoto, 2007; Kim &Jones, 2009).

Trust is defined as an attitude of confidence directed towards the online vendor that may be influenced by the personality of the trustor and the attributes of the trustee (Mayer et al., 1995).Today most of the internet sites do not focus on building and nurturing trust as important part of an ongoing relationship with their customers (Urban et al., 2000).Trust is an important part of online trade off relationship characterized by uncertainty, lack be difficult, but guarantees provided by online retailers are very important means of gaining trust of consumers (Chellappa and Pavlou, 2002).

Trust has always been an important element in influencing consumer behavior towards merchants (Schurr and Ozanne, 1985) and has been shown to be high significance in uncertain environments such as Internet- based EC environments (Fung and Lee, 1999). Trust is a critical factor in any relationship in which the consumer doesn't have direct control over the actions of a merchant, the decision is important and the environment is an uncertain (Deutsch, 1958 &Mayer et al., 1995).

## LITERATURE REVIEW

Matic and Vojvodic (2014) examined the effect of insecurity of internet usage towards online purchase decision. The result showed that there is significant relationship between the insecurity of internet usage and intention to purchase. When online purchasers purchase online very frequently that decreases the insecurity. It also revealed that consumers have positive attitude towards online purchase. The findings may be helpful for marketing managers and internet marketers.

Masoud (2013) examined the effect of perceived risk on online shopping behavior. Consumer's perceived risk is very important determinant during online shopping. This study examined five dimensions of perceived risk: financial risk, product risk, time risk, delivery risk & information security risk. The result revealed that perceived time risk and perceived social risk have no effect on online shopping. Financial risk, product risk, delivery risk and information security risk negatively affect online shopping behavior. This provides the marketers to adopt adequate risk reduction strategies to build trust among the online consumers.

Ling et al (2010) identified the customer online purchase intention and examined the impact of online trust and prior online purchase experience on the customer purchase intention. It was necessary to identify the determinants of the customer online purchase intention. The result showed that online trust and prior online experience is positively associated to the customer purchase intention. The findings helped the marketers to build strategies that increase the customer online purchase intention.

Tsai et al (2010) determined whether availability and accessibility of privacy information affect the purchasing decision of online shopping. More prominent display of privacy information will cause consumers to incorporate privacy considerations into their online purchasing decisions. Consumers preferred to purchase from

that online retailer who protect their information. Participants in the privacy information condition were more willing to purchase from that website even when it is charging higher prices.

Wang et al (2009) examined the relationship between the knowledge and trust in online shopping. Lack of trust is a biggest obstacle to the success of online shopping. Success of online shopping is determined by whether consumers trust sellers and their product which they cannot touch physically. Knowledge is very important factor that influenced the consumer trust in online shopping. The finding showed that trust in online shopping was positively associated with online shopping activities. Many factors influence the consumer trust but knowledge is very strongest. The more the consumers know, the more they trust online shopping.

## IMPORTANCE OF THE STUDY

This study provides an understanding the relationship between consumer trust and online shopping activities. In terms of practice, this study gives strategic implications and direction for the development of online shopping in Punjab.

## OBJECTIVES

1. To examine the relationship between knowledge, privacy protection, security protection and trust in online shopping.
2. To ascertain the relationship between perceived risk, perceived benefits and trust in online shopping.
3. To study the relationship between trust in online shopping and online shopping activities.
4. To examine the influence of consumer trust on online shopping activities.

## HYPOTHESES

**KNOWLEDGE**

Knowledge based trust occurs when internet users familiar to one another interact frequently (Koehn, 2003). It is very important to examine the relationship between knowledge and consumer trust in online shopping.

**HYPOTHESIS 1**

**$H_1$: Knowledge is positively associated with consumer trust in online shopping.**

**PRIVACY PROTECTION**

Privacy protection is very important factor in building on line trust (Hoffman et al., 1999; Shankar et al., 2002). The privacy is considered as the major concerns of the online shopper (Tsai et al., 2010).

**HYPOTHESIS 2**

**$H_1$: Privacy protection has positively associated with consumer trust in online shopping.**

**SECURITY PROTECTION**

Concerning about whether information of credit cards gets intercepted and information of the transaction is correctly transmitted (Riegelsberger and Sasse, 2001).

**HYPOTHESIS 3**

**$H_1$: Security protection has positively associated with consumer trust in online shopping.**

**PERCEIVED RISK**

Perceived risk is the potential for loss in pursuing a desired outcome when engaged in online shopping (Ko et al., 2004). Some researchers have the finding that with less perceived risks associated with online buying, the more willingly consumers disclose personal information and the more trust a person has in the online store (Corritore et al., 2003., Teo and Liu, 2007). **Hypothesis 4**

**$H_1$: Perceived risk has significant relationship with consumer trust in online shopping.**

**PERCEIVED BENEFITS**

Perceived benefits are consumer's belief about the extent to which he or she will become better off from online transaction with a certain website. These benefits include convenience, time saving because of finding information about the product within a short time frame and less time spent on shopping, or having more products to choose (Kim et al., 2008).

**HYPOTHESIS 5**

**$H_1$: Perceived benefits have the significant relationship with consumer trust in online shopping.**

**CONSUMER TRUST**

Trust in online stores influences individual's willingness to buy (Javenpaa et al., 2000).If there will be more trust of consumers towards online shopping then they will conduct more online shopping activities.

**HYPOTHESIS 6**

**$H_1$: Consumer trust in online shopping is positively associated with online shopping activities.**

## RESEARCH METHODOLOGY

**SOURCES OF DATA:** The study is descriptive in nature based on primary and secondary data. Primary data has been collected by designing structured close ended questionnaire.

**AREA OF SAMPLING:** The study is conducted in Doaba region of Punjab.

**SAMPLE SIZE:** A sample of 300 was collected for the study. Three districts from Punjab selected i.e. Jalandhar, Kapurthala and Hoshiarpur.

**SAMPLING TECHNIQUE:** Judgmental sampling technique has been applied.

**STATISTICAL TOOL:** Structural Equation Model (SEM) is used to analyze the data.

**RELIABILITY AND VALIDATION**

This study measured the five seven constructs including knowledge, privacy protection, security protection, perceived risk, perceived benefits, consumer trust and online shopping activities.

**1. RELIABILITY**

Cronbach's alpha value calculated in order to measure the reliability of these constructs. The Cronbach's alpha of knowledge, privacy protection, security protection, perceived risk, perceived benefits, consumer trust and online shopping activities were 0.793, 0.789, 0.883, 0.874, 0.938, 0.899 and 0.929.

**2. CONTENT VALIDITY**

To ensure content validity, a thorough review of the literature on the subject of study was conducted. The questionnaire was also pilot tested by expert's review it, after which necessary changes were made to improve both content and clarity of the questionnaire.

**3. CONSTRUCT VALIDITY**

Construct validity was examined by assessing convergent validity and discriminant validity. Convergent validity is considered acceptable when all item loadings are greater than 0.50.The cumulative percentages of variance explained by each factor greater than 63% for all constructs.

**4. DISCRIMINANT VALIDITY**

The average variance extracted (AVE) can also be used to evaluate discriminant validity. Discriminant validity is checked by examining whether the correlations between the variables are lower than square root of the average variance extracted. All square roots of each AVE value are greater than the off diagonal elements.

## DATA ANALYSIS AND RESULTS

AMOS analyzes structural equation models, including measurement and structural models with multi item variables.

**1. DEMOGRAPHIC PROFILE OF RESPONDENTS**

A judgemental sample of 300 respondents was surveyed and their demographics comprised of following:

Gender wise: Males 166 (55%) and females 134 (45%). Mean is 1.45 and Standard deviation is 0.498.

Age group wise: 17-25 yrs 64(21%), 26-35 yrs 113 (38%), 36-45 yrs 77 (26%) and 45 & above yrs 46 (15%).The mean is 2.35 and standard deviation is 0.982.

Occupation wise: employee 95 (32%), business owner 111 (37%), student 43 (14%) and other occupation 51 (17%). The mean is 2.17 and standard deviation is 1.056

Income wise: below 4 lac 94 (32%), 4-8 lac 91 (30%), 8-12 lac 75 (25%) and 12 lac & above category 40 (13%). The mean is 2.2 and standard deviation is 1.029.The demographic profile of the respondents are summarized in table 1.

**TABLE 1: SHOWING DEMOGRAPHIC PROFILE OF RESPONDENTS**

| Categories | Sub categories | Frequency | % age | Mean | Standard Deviation |
|---|---|---|---|---|---|
| Gender | Male | 166 | 55 | 1.45 | 0.498 |
| | Female | 134 | 45 | | |
| | Total | 300 | 100 | | |
| Age | 17-25 yrs | 64 | 21 | 2.35 | 0.982 |
| | 26-35 yrs | 113 | 38 | | |
| | 36-45 yrs | 77 | 26 | | |
| | 45 & above | 46 | 15 | | |
| | Total | 300 | 100 | | |
| Occupation | Employee | 95 | 32 | 2.17 | 1.056 |
| | Business owner | 111 | 37 | | |
| | Student | 43 | 14 | | |
| | Other | 51 | 17 | | |
| | Total | 300 | 100 | | |
| Income | Below 4 lac | 94 | 32 | 2.2 | 1.029 |
| | 4-8 lac | 91 | 30 | | |
| | 8-12 lac | 75 | 25 | | |
| | 12 & above | 40 | 13 | | |
| | Total | 300 | 100 | | |

**2. STRUCTURAL EQUATION MODELLING (SEM)**

To confirm whether the following construct: Knowledge, privacy protection, security protection, perceived risk and perceived benefits measure consumer trust and consumer trust measure online shopping activities or not, Confirmatory factor analysis was used. Confirmatory factor analysis (CFA) was conducted by using AMOS Statistical Software Package version 18. The method adopted in CFA was maximum likelihood extraction to estimate the CFA model. Various goodness -of-fit measures can be produced by CFA by which a model can be evaluated.CFA is the base of measurement modeling in SEM.

**2.1 MESUREMENT MODEL**

To evaluate the strength of measurement among the constructs and the statements, the measurement models are estimated. During each estimated models, items that determine the reliability and cross load are dropped, then the measurement model is re-estimated. This examined the various relationships among the measures of constructs including: Knowledge, Privacy protection, Security protection, Perceived risk Perceived benefits, Trust and online shopping activities. The values of chi square, degrees of freedom, Normed chi-square and other model fit indices including: RMR (root mean residual), GFI (goodness of fit index), AGFI (adjusted goodness of fit index), CFI (comparative fit index) and RMSEA (root mean square error of approximation). These model fit indices are very important to be taken into consideration because based on these model fit indices values, researcher is able to see whether the model is fit or not. These values can be improved. Therefore it leads to another modification of the measurement model.

Further validation of the measurement model was done with constructs. One item who has low regression weight less than 0.5.This item is deleted from the model.

The Table 2 shows the values of RMR, GFI, AGFI, RMSEA and Normed chi square that are essential to check the model fit. There are different cut off criterion for each value. The model comprising the measurement items showed adequate fit RMR (0.058) close to 0,CFI(0.823),RMSEA(0.107).There are small changes occurred in the values because only one item was deleted from the model otherwise all the values reached the cut off criteria and significant at p value. Next was to evaluate the psychometric properties of the model in terms of reliability, convergent validity and Discriminant validity.AVE value is 0.5 was meeting cut-off criterion.

**TABLE 2: FIT INDICES OF MULTIPLE GROUP CFA ANALYSIS FOR MEASUREMENT MODEL**

| GOF Index/Absolute Measures | Measurement Model 1 | Measurement Model 2 |
|---|---|---|
| $X^2$(chi-square) | 1396.835 | 1338.394 |
| Degree of Freedom | 329 | 303 |
| Probability | 0.000 | 0.000 |
| GFI | 0.755 | 0.755 |
| RMSEA | 0.104 | 0.107 |
| RMR | 0.057 | 0.058 |
| Normed chi-square($x^2$/df) | 4.24 | 4.41 |
| Incremental Fit Measures /CFI | 0.820 | 0.823 |
| Parsimony Measures/AGFI | 0.698 | 0.694 |

**2.2 STRUCTURAL MODEL**

Once the validity of the measurement model has been done, then we moved to validity of structural model. Structural theory explains the transition from the measurement model to structural model in series of the relationship among constructs. The comparison between the measurement model and structural model is that the measurement model represents all the constructs with non causal or correlation relationship among them.

The preliminary analysis of the structural model was tested upon with the final items of the measurement model II. Knowledge, privacy protection, security protection, perceived risk, perceived benefits are in relationship with each other .This leads to consumer trust and consumer trust further leads to online shopping activities.

Table 3 shows that the parameters which are considered in declaring the overall model fit. The values of parameters are close to the threshold levels. Some of the values were not close enough to conclude the fitness of the model. Hence the model fit indices values can be modified and re specifies the model. Where RMR is close to 0, RMSEA is less than 1 and Normed chi square value should be near to 3, the Normed chi square value is 3.6 very close to threshold level which is

significant at p value (0.000).All other model fit indices are also very close to threshold level and thus it represents it is moderate fit and is significant. The factor loadings and reliability is very high for all the constructs.

**TABLE 3: FIT INDICES OF MULTIPLE GROUP CFA ANALYSIS FOR STRUCTURAL MODEL**

| GOF Index/Absolute Measures | Structural Model 1 | Structural Model 2 |
|---|---|---|
| $X^2$(chi-square) | 1484.083 | 819.938 |
| Degree of Freedom | 309 | 215 |
| Probability | 0.000 | 0.000 |
| GFI | 0.738 | 0.825 |
| RMSEA | 0.113 | 0.097 |
| RMR | 0.106 | 0.085 |
| Normed chi-square($x^2$/df) | 4.8 | 3.6 |
| Incremental Fit Measures/CFI | 0.799 | 0.859 |
| Parsimony Measures/AGFI | 0.680 | 0.694 |

## FINDINGS

This study aimed to examine the consumer trust in online shopping on online shopping activities. Multi items were adopted from the past studies and modified as per the need of the study.

This study holds six hypotheses. The result revealed that $H_1$ hypothesis was rejected. It means knowledge doesn't positively associated with consumer trust in online shopping. Secondly $H_2$ hypothesis was rejected it means privacy protection is not positively associated with trust in online shopping. Thirdly, $H_3$ hypothesis was accepted. Security protection is positively associated with trust in online shopping.

The hypotheses fourth and fifth helped to achieve the second objective i.e. to examine the relationship between perceived risk, perceived benefits and trust in online shopping. Hypothesis $H_4$ supported that perceived risk has significant relationship with consumer trust in online shopping.$H_5$ hypothesis supported that perceived benefits has significant relationship with trust in online shopping.

Whereas the last and the sixth hypothesis $H_6$ helped to achieve the third objective.i.e.to examine relationship of consumer trust with online shopping activities. It showed that trust positively associated with online shopping activities. In other words we can say that online vendors should work to increase consumer trust in online stores to increase their intention to purchase online. The last objective to examine the influence of consumer trust on online shopping activities was fulfilled by R square value. The research demonstrated that online shopping activities are influenced by consumer trust. Figure 1 shows the relationship of trust antecedents on consumer trust and consumer trust to online shopping activities.

## CONCLUSION

Past research has revealed that online shopping are inherently risky and therefore trust is an important factor that giving the consumer confidence to engage in online transactions. The findings uncovers that efforts to increase security and perceived benefits of online shopping will tend to advantageous for consumer trust and companies engaging in online shopping. Online retailers should work to increase the consumer trust in intention to increase online shopping activities. Security protection, perceived risk and perceived benefits are barriers that must be torn down in order to increase the consumer trust in online shopping. Thus the model and results have many important implications for merchants who wish to build their online business by increasing the consumer trust.

## LIMITATIONS

1. The findings of today may not hold good tomorrow.
2. The sample was limited to a particular geographical location, so generalization of other regions in India and other countries should be made caution.
3. The sample was of 300 respondents but for better generalization of the findings sample size can be increased.

## SCOPE FOR THE FURTHER RESEARCH

- ✓ In terms of future research of this study, it is recommended to replicate the study in the other geographical areas, such as metropolitan cities by considering a much larger sample. This would generate a much larger sample for each variable under study.
- ✓ It is recommended that consumer demographics should be defined more elaborately such as social contacts, educational qualifications and living style. This would help to get more insight into the consumers trust in online shopping.
- ✓ It is also recommended that further research be done of a qualitative research that will explore, in depth about the online shopping, trust in online shopping.

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